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CUSTOMER EXPERIENCE IN THE AGE OF ARTIFICIAL INTELLIGENCE: CHALLENGES AND OPPORTUNITIES IN THE RETAIL BUSINESS

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CUSTOMER EXPERIENCE IN THE AGE OF ARTIFICIAL INTELLIGENCE:
CHALLENGES AND OPPORTUNITIES IN THE RETAIL BUSINESS

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Thanks for everything to you, my soul mate, my best friend, my accomplice, the greatest love of my life. Nobody knows how grateful I am to have you in my life. You have improved my life in every way possible, and you have done and are doing for me more than it would even be fair to ask. I owe everything to you. I dedicate everything to you.

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Abstract

Purpose: The advancement of technologies, the development of artificial intelligence and the need to involve customers in unique and innovative experiences bring a major challenge for firms as well as for society. The attention towards customers as central subjects of companies' strategies is more and more frequent, a phenomenon that seems something extremely simple to explain, but at the same time more difficult to realize. In retail contexts, interactions between customers and companies become increasingly immediate and demanding through a variety of different channels, so as a consequence the diffusion of conversational agents based on artificial intelligence capable of creating a continuity between physical and digital contexts is increasing too. This research aims to understand and introduce challenges and opportunities offered with these technologies by exploring the role they assume in relation to three foundational concepts: customer experience, customer engagement and customer journey.

Design/methodology/approach: This research focused on the comparison between retrospective and current data is carried out through the application of multiple methodologies and approaches with a common thread. The review of the literature and to form the theoretical background is conducted in a systematic way through the simultaneous application of PRISMA and bibliometry. The collection of case studies as described by companies and retrieved online requires a thematic analysis capable of extrapolating a conceptual framework. The collection of semi-structured interviews that give the interlocutor space to expand beyond the boundaries set at the beginning involves the adoption of a narrative analysis to interpret the transcripts. Finally, the data resulting from the action research presupposes an illustrative approach that allows the results obtained to be presented and compared with what was previously reported with a desk analysis.

Findings: Conversational agents, as an emerging technology that emulates human behaviour, make a major contribution to the generation of unique and unforgettable experiences for customers. Used at different times and through different channels, they can recognize customers, engage them, and have a real conversation with them. The immediacy, the personalization, richness of information provided, and the way of communicating allow us to interpret the conversational agents as a new actor to be considered in service ecosystems.

Originality/value: This research finds its originality in the application for the first time of a framework based on three conceptual elements to explain the impact of a technology in service contexts.

Keywords: Customer Experience, Artificial Intelligence, Retail business, Service robots, Conversational agents, Chatbots

Table of contents

List of figures

List of tables

Chapter 1

Introduction and overview of the study

Background · Problem Discussion · Identifying Gap and Research Questions · A summary of thesis chapters

Chapter 1

Introduction and overview of the study

The purpose of this chapter is to make the work clearer and more understandable by giving the reader an introduction and an overview of the entire study. Composed with a general description of the context, the identification of gaps and research questions, a presentation of the identified structure and the process followed allows to bring out all the motivations that led to this study and consequently arouse interest in its reading.

1.1. Background

Customer Experience (CX), a concept introduced by Holbrook and Hirschman in 1982 and later expanded by Fornell et al. (1985), has accumulated more and more importance over the years within management and business studies, thus generating several contributions and different perspectives for interpretation. There is a significant increase in articles published on the topic (about 50 articles in the 2010s and about 300 articles in the 2021s), or the high number of reports and white papers shared by consulting companies (such as McKinsey, Gartner, etc.).

The CX introduces an experiential perspective of customers behaviour over the traditional one (Klaus, 2014), in line with the conceptualization of paradigms such as Service Dominant Logic (Vargo and Lusch, 2016), Service Logic (Grönroos and Gummerus, 2015) or Customer Dominant Logic (Heinonen and Strandvik, 2018). This perspective considers the role of emotions and feeling of customers in making their decisions, analysing every point of contact at which different actors interact with each other and the degree of involvement that derives from this interaction (Verhoef et al., 2009; Maklan and Klaus, 2011; Bagdare, 2015; Kranzbühler et al., 2018; Manthiou et al., 2020). This topic appears to be of fundamental importance for the retail field, as contemporary retailing has evolved their exchange process trying to deliver a joyful shopping experience (Verhoef et al., 2009; Jones et al., 2010b; Jin and Sternquist, 2004). The aims can be measured as improvement of customer satisfaction and loyalty (e.g. Baron et al., 2001), in particular with a significant impact on retail sales (e.g. Bagdare and Jain, 2013).

In addition, companies face continuous technological improvement impacting consumer behavior and offering new opportunities to frame their relationships with market actors (e.g. Elmuti and Kathawala, 1997; Agnihothri et al., 2002; Ostrom et al., 2010; Zaki, 2019). Indeed, recent studies open to the introduction of new technologies, in particular Artificial Intelligence (AI) in service settings, considered as the new paradigm for customer experience management in next-generation networks (Bolton et al., 2018; Gacanin and Wagner, 2019; Hoyer et al., 2020; Ameen et al., 2021). Artificial intelligence has numerous advantages as it allows you to provide a completely personalized experience, for example through recommendations and promotions based on customer preferences and their behavioural data (Solis, 2017), through the automation of decisions without the need of human input (Bolton et al., 2018),

or through processing and transforming data into information (Paschen et al., 2019). Practically, it allows companies to sustain pushing requests and, at the same time, to increase expectations from customers thus achieving a potentially better customer experience (Lemon and Verhoef, 2016; Huang and Rust, 2018; Evans, 2019). A tool strictly related to Artificial Intelligence are chatbots, intelligent computer programs designed to interact automatically with people by exactly emulating a human conversation (McTear et al., 2016; Shawar and Atwell, 2007).

1.2. Problem Discussion

The Customer Experience (CX) originates from a series of interactions between a customer and a service provider (Gentile et al., 2007), does not appear in these words as a central idea of business until first studies of the 2010s, but it is possible to identify the existence of this concept also in the previous articles relating to the concept of experience.

The studies on CX, as suggested by Sindhu and Bharti (2020), can be better differentiated in various consequential and overlapping phases, starting with the phase of conceptualization ranging from 1957 to 1990 years that have as main contribution the articles of Parsons (1934) and Keynes (1936), passing through the practice phase ranging from 1991 to 2006 years with Verhoef et al. (2009) that emphasize the process and the practice of the CX in a retail context, until the more recently phase of management starting in the 2007 years until now. In this general framework it is possible to frame the digital transformation process and the introduction of new technologies, including artificial intelligence, machine learning and deep learning (Parise et al., 2016; Ameen et al., 2021). The introduction of artificial intelligence (AI) in business has the potential to revolutionize the interaction between firms and customers (McLean and Osei-Frimpong, 2019) and allow for the creation of interconnected strategies between multiple channels, both physical and digital, providing a unique seamless experience for the customer (Carroll and Guzman, 2015).

The development of artificial intelligence and their related technologies, born in engineering and information systems domains, has gradually experienced its introduction in the context of services and is gaining more and more interest from scholars (Wirtz et al., 2021). AI-based technologies are changing the nature of service provision (Caic et al., 2018; Pitardi et al., 2021). Studies on smart service provide greater evidence of the role of technology at the front-line interactions and new propositions that emerge by enhancing personalization, interactive feedback, connectivity, and responsiveness (Rust and Huang, 2014; Caic et al., 2019; van Pinxteren et al., 2019). Artificial intelligence allows a machine to perform actions, communicate, and deliver service as a human in an autonomous way and allows companies to satisfy the enormous and extravagant requests of users without the expenditure of many resources (van Doorn et al., 2017; Wirtz et al., 2018; Huang and Rust, 2018). More specifically, AI has the potential to continually improve the customer experience (Newman, 2019; Neuhofer et al., 2020) in conjunction with other technologies, such as augmented reality, conversational agents, and similar ones (Baxendale

et al., 2015; Pizzi et al., 2020). In a service context where the interaction between company and consumer is predominant, it is invaluable that companies seek scalable solutions capable of assisting or replacing employees in those repetitive actions that demoralize workers and make the service offer ineffective leaving space and time for more complex activities (Huang and Rust, 2018; Paluch and Wirtz, 2020; Paluch et al., 2021), such as when cognitive and emotional complexity are expected to be delivered (Huang et al., 2019; Lu et al. 2020). In the not too distant future, when AI is able to recognize emotions and look like humans, it will influence marketing strategies and sales processes, as well as customer behaviours and habits, such as for conversational agents (Davenport et al., 2020).

Conversational agents are stated to facilitate various business processes, particularly those related to customer service and personalization, because of their accessibility, fairly low cost, and ease of use for the end consumers (Przegalinska et al., 2019), and therefore to minimize the distance between customers' expectations and agents' performance (Pantano and Pizzi, 2020). Some studies adopted the focus on routinary actions and self-service technologies, as the automation is increasingly becoming of primary importance in retailing and, more generally, in the service domain, to improve the efficiency of quite standardized activities that carry out a specific set of customer needs (Sheehan et al., 2020). Consequently, they are useful for exchanging direct question-answers, rather than for understanding users' sentences and how the relationship evolves (Chakrabarti and Luger, 2015).

Developments in deep learning and machine learning that join natural language processing (NLP) bring researchers' attention back to how these new technologies could enhance the opportunities offered by chatbots by extending its applications into service provision. The goal is to make the interaction between computers and humans feel exactly like human-to-human interaction (Kietzmann et al., 2018). The AI technologies can easily simulate human conversations and provide more realistic experiences (Lai, 2000; Hill et al., 2015; Mou and Xu, 2017), learning from previous conversations and continuously adapting their actions from what has been learned (Xu et al., 2017). Studies on Intelligent System Assistance (ISA) offer just evidence on how these technologies influence decision-making by using emotional associations, social effects, or other methods to affect customer choices (Murray and Häubl, 2009; Burr et al., 2018). ISAs learn the personality traits of individual users from their behavioural signals and this information can then be used to match the marketing offering to consumers' preferences at the appropriate moment (Matz and Netzer, 2017).

1.3. Identifying Gap and Research Questions

As described above, the concept of experience, not a recent introduction in managerial and academic research as it was early introduced in the 80s, laid the foundations in management and business studies of an ideal thinking where people do not carry out only actions but really live experiences. This concept was then deepened and expanded over the years finding and analysing elements, tools, or links with other topics. Indeed, considering it from a different perspective it is possible to explore how customers

interact and engage with companies. Customer engagement can be identified as a psychological state in service relationships (Brodie et al., 2013) that first allows companies to detect and understand about customers' behaviours and later to create and share personalized unforgettable experiences. Likewise, closely related to customer experience research is the theme of the customer journey, where the focus goes into detail of lived experiences mapping all single interactions that take place between customers and companies (Lemon and Verhoef, 2016). The analysis and the study of these interactions would allow companies to identify shortcomings and opportunities to enhance relationships management. Nowadays, the development of new technologies and autonomous tools based on artificial intelligence has brought about huge changes in real environments. They strongly influence lived experiences, engagement strategies, and used touchpoints, thus generating doubts and opportunities for researchers. Although knowledge about these foundations is widespread, little is still known about the application of technologies in relation to these foundations. Technologies, in particular for this research conversational agents, are constantly changing and exponentially advancing, so requiring more research to contextualize them (Heinonen et al., 2018; Bond et al., 2020). Scholars usually identify conversational agents as an opportunity to improve customer experience in retailing considering them as a touchpoint along the customer journey (Baxendale et al., 2015). Focusing on their role in the management of routinary actions (Sheehan et al., 2020), the personalization of services (Chung et al., 2018), the engagement of users (Schuetzler et al., 2000), they could allow companies to minimize the distance between customers' expectations and companies' performance (Pantano and Pizzi, 2020). Anyway, conversational agents have been investigated in different disciplines including information systems (Groom et al., 2009), human computer interactions (Qiu and Benbasat, 2009) and only more recently in marketing and service research (Riikkinen et al., 2018). It is evident how previous studies have mainly focused on the development of this technological tool from a technical and organizational perspective leading to a lack of research in how companies and customers use them in their customer experiences. A topic of great interest just as analysed by Ameen et al. (2021) who, identifying the critical success factors of AI-enabled customer experiences from a consumer perspective, suggest how future studies should consider the critical success factors of AI-enabled customer experiences could and should be implemented within a retail organization. A topic further supported by Ostrom et al. (2021) who, reviewing managing and delivering services to identify future research priorities, state how researchers and practitioners should deeply analyse the link between technology and customer experience, in particular exploring how companies could integrate digital, physical, and social elements to design seamless experiences.

This research intends to take the perspective of companies in retail contexts and aspires to fill the identified gap through a holistic vision composed by the simultaneous analysis and comparison of three elements: customer experience, customer engagement and customer journey. Therefore, the research questions can be identified as follows:

(i) how AI-based technologies, and in particular conversational agents, enable innovative services and impact on the design of renewed customer experiences;

(ii) what are the roles and assumptions that contribute to accruing customer engagement;

(ii) how and to what extent they can be incorporated along the customer journey.

In conclusion, this research proposes to carry out a holistic reflection, as described in the previous paragraph, considering the temporal evolution that led to the creation of seamless experiences as suggested by Bizzi and Langley (2012) as methodological choices to be made in process research. In the same way, Leonard-Barton (1990) suggests that combining retrospective and real-time studies is one effective way to handle the trade-off between the two designs, thus offering the possibility of tackling an ongoing process with the awareness of its previous evolutions. Therefore, first with a reflection starting back from the existing knowledge in academic studies, and then looking forward to analysing in real time companies' behaviours and technology applications, the role of conversational agents will be explored.

1.4. A summary of thesis chapters

After this brief explanation of the context in which this study is positioned, it is necessary to highlight how the following chapters will follow one another in order to achieve an effective contribution to the existing literature. It is inevitable to begin the study of an emerging theme with the context in which it is inserted. In order to provide greater emphasis on the attention that companies place today towards customers, the former chapter is dedicated to understanding and explaining those theoretical concepts that act as lenses for reading the findings where the customer is the main subject. Concepts like customer experience, customer engagement and customer journey all have the same word in common: the "customer". Customers are the main actors who buy, consume, and consequently direct the marketing strategies of a company. This chapter is intended as a review as it is dedicated to retracing the existing literature on these three themes to date. A second chapter is dedicated to the focus of this thesis, conversational agents. Although the theoretical background has already been defined, to it is added all the literature that highlights the role of smart technologies in enabling and improving the use of the customer experience. In particular, it is based on the understanding of service robots and on the analysis of previous contributions related to conversational agents. A third chapter is then dedicated to the exposition of the findings, the central heart of this thesis.

This structure is summarized in Table 1, which reports the order and purpose of each chapter, and in addition highlights the main contents and the methodologies adopted to write the content. Some information on the data used is shown below. This representation is useful for getting a complete picture of the work. However, some chapters are not shown, as for the chapter regarding the methodology

adopted in the identification of findings and the chapter relating to the introductions and conclusions of this thesis.

	Towards a greater customer emphasis	**The role of smart technologies and design of customer experience**	**Exposure of the findings**
Purpose	provides a complete picture of the fundamental concepts that revolve around the customer	composes the theoretical framework on which this thesis is based	illustrates the results that emerged during this research thesis
Research design	Review	Review	Qualitative
Principal theoretical lenses	Customer experience, Customer journey, Customer engagement	Service robots, Conversational agents	Empirical exploration
Methods	Systematic literature review through PRISMA method	Systematic literature review through PRISMA method combined with a bibliometric analysis	Case study research combined with Action research
Data	Scientific articles extracted from Web of Science database	Scientific articles extracted from Web of Science database	Companies reports, Interviews transcriptions and extracted usage data of a retail company

Table 1. Overview of thesis chapters.

Chapter 2

Towards a greater customer emphasis

The increasing importance of customers for companies · A systematic way to frame the theoretical background · The concept of Customer Experience · Relevance of the Customer Engagement · Application of the Customer Journey · From traditional to new perspectives · The influence of "digital" in literature · Challenges and Research Opportunities

Chapter 2

Towards a greater customer emphasis

This chapter provides a picture of the concepts at the basis of the theoretical framework on which this study is based. This is necessary to understand how much and what has been studied up to now, underlining the main concepts and definitions, and why the customer increasingly assumes a central role. The chapter begins by describing the concept of customer experience, and then analyzes how it relates to businesses even after the introduction of digital technologies.

2.1. The increasing importance of customers for companies

The focus on the customer is more and more frequent, although this is not a completely new concept. In 1954, Drucker already wrote that by now it was the customer who determined what a company is, what it produces and whether it will be prosperous. In 1960, Kotler and Levy connote how marketing in the more progressive firms provides a continuous attention to the changing needs of customers. In the 70s and 80s, several researchers began to conduct studies on the relationship that is inevitably created between companies and customers, highlighting how the latter represent an enormous resource for the company and not just a goal to be achieved (e.g., Von Hippel, 1978; Von Hippel, 1986; Lundvall, 1986). Indeed, the customer-supplier relationship plays a central role in the formation of the companies' knowledge base (e.g., Telford and Håkansson, 1987; Takeishi, 2001), as a driver for innovation (e.g., Johnsen et al., 2006; Selden and MacMillan, 2006) and as a source of ideas (e.g., Wagner and Majchrzak, 2006). By learning about their customers, companies can redesign and direct their strategies in order to meet their needs (Levitt, 1960), and consequently convert those needs into revenues. In other words, the centrality of the customer means something extremely simple to explain, but at the same time more difficult to realize. It goes from the construction of an organization starting from the customer's point of view, going to consider his/her times to establish the timing of the organization, his/her needs to fix the needs of the organization, his logic to define the strategies of the organization. According to Dwyer et al. (1987) the relationship between buyer and seller is a phenomenon that develops over time and each element that contributes to generating it, identified in the single episode of exchange, is at the same time both the result of what has occurred in past, and a predictor of what may happen in the future.

The concept of customer centricity, born in the literature on Relationship Marketing (Sheth et al., 2000), was then investigated in relation to various research topics (e.g., Shah et al., 2006). Grönroos and Gummerus (2014) introduced a perspective commonly recognized as Service Logic (SL) starting to shift the focus on the value in use and no longer on the exchange value, in the same way Vargo and Lusch (2016) introduced the Service Dominant Logic (SDL) perspective recalling the role that customers assume in the co-creation of value, or even more Heinonen and Strandvik (2015) introduced

the Customer Dominant Logic (CDL) perspective stating that there is no need to talk about value creation or value co-creation as the fundamental point is that value emerges from the customer's value formation process. Although these interpretations describe different ways in which value is created by giving customers an ever-changing role, they agree in a direction where customers increasingly take on a greater role in relationships by becoming actors in a service ecosystem with multiple stakeholders who contribute to the creation of value. In particular, scholars and managers are increasingly attentive to customers (Strandvik et al., 2012) to design offerings expected to have value in use and context (Chandler and Vargo, 2011; Vargo and Lush, 2016). They tend to explore new avenues to be ever closer to customers, such as for the emerging of topics as customer experience (Berry et al, 2002; Meyer and Schwager, 2007; Gentile et al., 2007), customer engagement (Verhoef et al., 2010; Kumar et al., 2019), or customer journeys (Lemon and Verhoef, 2016; Varnali, 2019; Mele and Russo-Spena, 2021). The following paragraphs concerning the literature review are based on the analysis and understanding of these concepts, respectively.

2.2. A systematic way to frame the theoretical background

The development and transition from a vision focused solely on goods towards the broader service that companies offer to customers, placing the latter at the centre of business choices, has generated a huge increase in the interest of researchers and practitioners on this topic.

A literature review is an essential component of almost any research project (Fisch and Block, 2018), it is like a "knowledge map" that analyses and synthesizes the existing studies (Frank and Hatak, 2014). Nowadays, the spread of online databases such as Web of Science and Scopus or even search engines such as Google Scholar simplify the work and help the researcher to identify the theoretical background more easily at the base of his/her work. Nevertheless, when the research domain has reached a high degree of maturity it becomes difficult to disentangle between studies to understand the literature generated by the scientific community for this specific domain without following a precise methodology. Tranfield et al. (2003) suggest how many literature reviews lack completeness as they inevitably report the thoughts and prejudices of the researcher, while a correct analysis of the literature should simply report what already exists without influences by researcher's thoughts. The review process needs to be objective (Clark et al., 2020). In this context, scholars began conducting a systematic review of the literature, a process composed by simple and transparent replicable passages that allow to skim and identify the most relevant studies to include in the review process (Littell et al., 2008). Proponents of the systematic literature review just mentioned point out how the influence of personal bias can be avoided in this way.

However, to better understand the diffusion of this research methodology in management and business studies, it is possible to note that about a thousand scientific articles have already been published and

that this methodology is in an ascending phase as shown in Figure 1 (the year 2022 is not yet complete, therefore it is still less than the previous one).

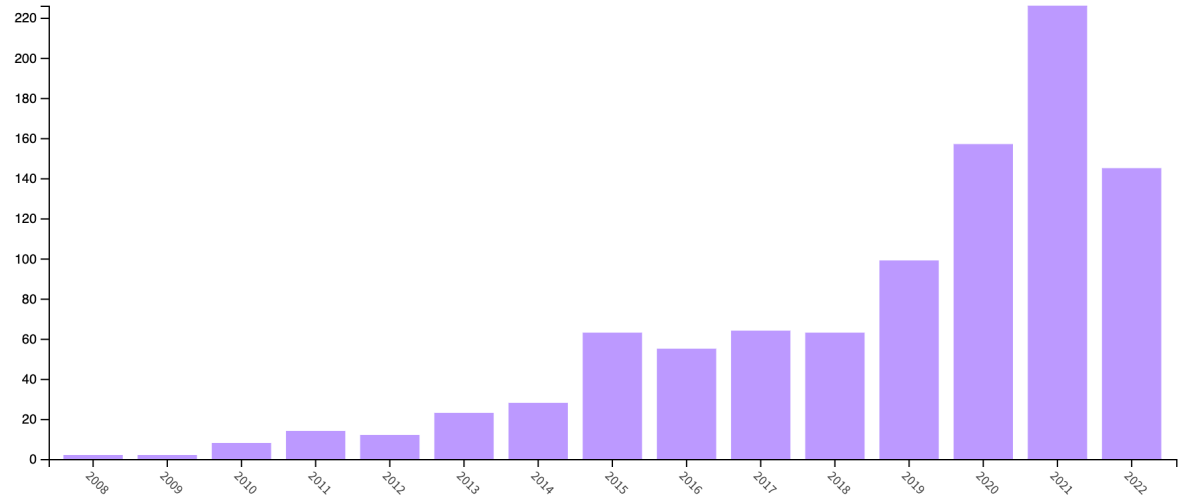


Figure 1. Bar Chart of scientific articles about "systematic literature review" in management, business, and economics categories for years. Extracted from Web of Science in August 2022.

A systematic review of the literature can be conducted indifferently for both quantitative and qualitative studies. It assumes only different terminologies based on what it analyses: meta-analysis if it includes only quantitative studies in the research, meta-ethnography if it concerns the synthesis of qualitative studies. From this point of view, it is evident that currently, on the basis of the different interpretations, it is possible to identify different methods and suggestions for conducting a systematic review of the literature (Bryman, 2016). There is no recipe for the perfect structure of a systematic review document as the final structure depends on the authors' insights and expected emphasis points (Palmatier et al., 2018). However, Watson et al. (2017) represent an example that establishes the boundaries of a review. Littell et al. (2018) identify six key steps representing essential components of a review. Fisch and Block (2018) suggest six tips to consider in business and management research, further extended by Clark et al. (2021) with three additional tips. Although different, all authors share a similar structure. First, define the purpose and scope that lead to this review. Second, search for studies relevant to the scope and purpose of the review using specific and consistent search terms. Finally, evaluate and analyse the identified studies. In other words, as described above, the structure of analysis needs to be clearly articulated and potentially replicable.

An important contribution to define a right structure for systematic literature reviews is provided by Moher et al. (2010) with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement composed by a 27-item checklist (Figure 2) to include and a four-phase flow diagram (Figure 3) to follow.

Section/topic	#	Checklist item	Reported on Page #
Title			
Title	1	Identify the report as a systematic review, meta-analysis, or both.	
Abstract			
Structured summary	2	Provide a structured summary including, as applicable: background; objectives; data sources; study eligibility criteria, participants, and interventions; study appraisal and synthesis methods; results; limitations; conclusions and implications of key findings; systematic review registration number.	
Introduction			
Rationale	3	Describe the rationale for the review in the context of what is already known.	
Objectives	4	Provide an explicit statement of questions being addressed with reference to participants, interventions, comparisons, outcomes, and study design (PICOS).	
Methods			
Protocol and registration	5	Indicate if a review protocol exists, if and where it can be accessed (e.g., Web address), and, if available, provide registration information including registration number.	
Eligibility criteria	6	Specify study characteristics (e.g., PICOS, length of follow-up) and report characteristics (e.g., years considered, language, publication status) used as criteria for eligibility, giving rationale.	
Information sources	7	Describe all information sources (e.g., databases with dates of coverage, contact with study authors to identify additional studies) in the search and date last searched.	
Search	8	Present full electronic search strategy for at least one database, including any limits used, such that it could be repeated.	
Study selection	9	State the process for selecting studies (i.e., screening, eligibility, included in systematic review, and, if applicable, included in the meta-analysis).	
Data collection process	10	Describe method of data extraction from reports (e.g., piloted forms, independently, in duplicate) and any processes for obtaining and confirming data from investigators.	
Data items	11	List and define all variables for which data were sought (e.g., PICOS, funding sources) and any assumptions and simplifications made.	
Risk of bias in individual studies	12	Describe methods used for assessing risk of bias of individual studies (including specification of whether this was done at the study or outcome level), and how this information is to be used in any data synthesis.	
Summary measures	13	State the principal summary measures (e.g., risk ratio, difference in means).	
Synthesis of results	14	Describe the methods of handling data and combining results of studies, if done, including measures of consistency (e.g., I^2) for each meta-analysis.	
Risk of bias across studies	15	Specify any assessment of risk of bias that may affect the cumulative evidence (e.g., publication bias, selective reporting within studies).	
Additional analyses	16	Describe methods of additional analyses (e.g., sensitivity or subgroup analyses, meta-regression), if done, indicating which were pre-specified.	
Results			
Study selection	17	Give numbers of studies screened, assessed for eligibility, and included in the review, with reasons for exclusions at each stage, ideally with a flow diagram.	
Study characteristics	18	For each study, present characteristics for which data were extracted (e.g., study size, PICOS, follow-up period) and provide the citations.	
Risk of bias within studies	19	Present data on risk of bias of each study and, if available, any outcome-level assessment (see Item 12).	
Results of individual studies	20	For all outcomes considered (benefits or harms), present, for each study: (a) simple summary data for each intervention group and (b) effect estimates and confidence intervals, ideally with a forest plot.	
Synthesis of results	21	Present results of each meta-analysis done, including confidence intervals and measures of consistency.	
Risk of bias across studies	22	Present results of any assessment of risk of bias across studies (see Item 15).	
Additional analysis	23	Give results of additional analyses, if done (e.g., sensitivity or subgroup analyses, meta-regression).	
Discussion			
Summary of evidence	24	Summarize the main findings including the strength of evidence for each main outcome; consider their relevance to key groups (e.g., health care providers, users, and policy makers).	
Limitations	25	Discuss limitations at study and outcome level (e.g., risk of bias), and at review level (e.g., incomplete retrieval of identified research, reporting bias).	
Conclusions	26	Provide a general interpretation of the results in the context of other evidence, and implications for future research.	
Funding			
Funding	27	Describe sources of funding for the systematic review and other support (e.g., supply of data); role of funders for the systematic review.	

Figure 2. Checklist of items to include when reporting a systematic review (with or without meta-analysis). Source: Moher, D., Liberati, A., Tetzlaff, J., Altman, D. G., & Prisma Group. (2010). Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. International journal of surgery (London, England), 8(5), 336-341.

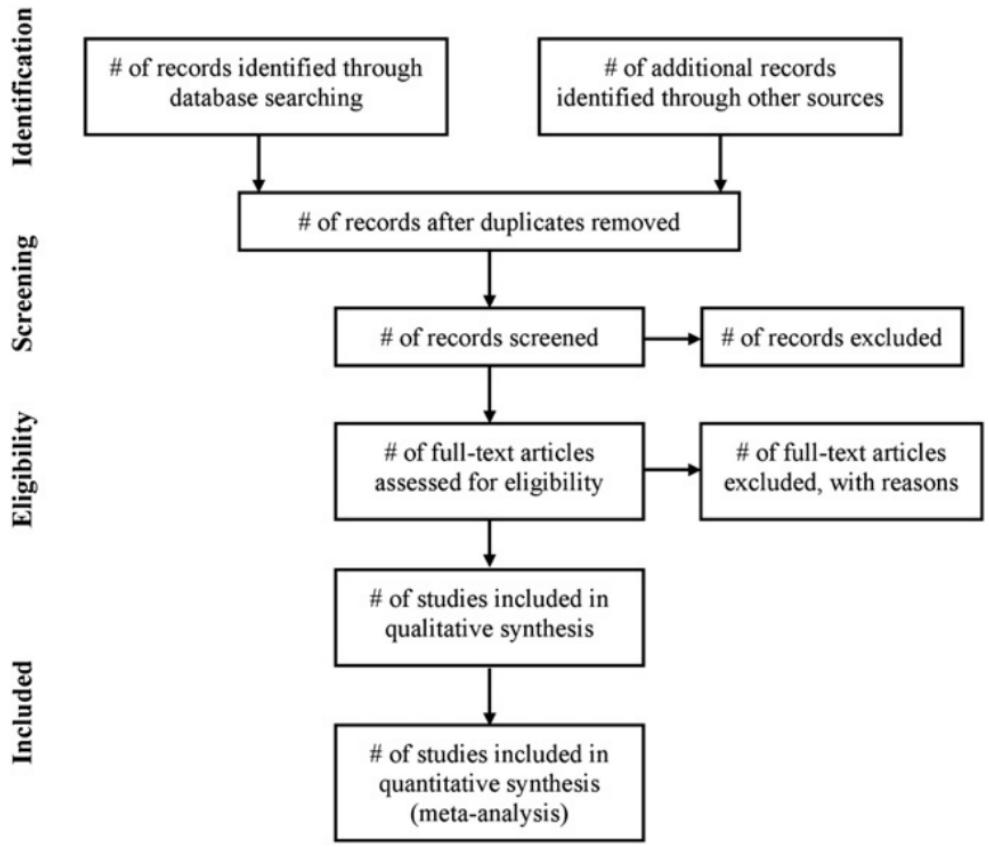


Figure 3. Flow of information through the different phases of a systematic review.
Source: Moher, D., Liberati, A., Tetzlaff, J., Altman, D. G., & Prisma Group. (2010). Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. International journal of surgery (London, England), 8(5), 336-341.

The adoption of the PRISMA statement guides researchers in the identification of the studies to be included in the review and ensures that the selection and analysis of included papers are transparent (Booth et al., 2020). It starts from the phase of identification of the researched scientific articles using a specific database. The chosen database, however, does not always include all the works relating to a specific topic. Therefore, it may be necessary to include other resources. At this point the screening phase begins, based on the removal of duplicates and works not strictly related to the reason for the review. Some of them could then be excluded by the researcher for certain well-justified reasons, thus reaching the list of studies included in the summary. Wide freedom is left to the researcher in the interpretation of the records resulting from the use of the methodology.

The use of this statement is quite new in management and business studies. Minatogawa et al. (2018) use it to determine business model innovation influencing factors. Abelha et al. (2020) use this statement as a formal guideline for data collection in order to analyse the role of higher education institutions in promoting the development of competences for employability as reported in international literature. Regona et al. (2022) use the PRISMA protocol to identify the adoption challenges of AI for the construction industry.

However, this statement will be used in the following paragraphs as it is considered as a right guide to better peruse the literature clarifying objectively the concepts and definitions at the base of this work, represented by three elements whatever denominated: customer experience, customer engagement and customer journey. Any documents not extracted with the queries used but considered important as they are known or systematically cited by other authors will be further investigated and included in the literature review.

2.3. The concept of Customer Experience

Customer experience (CX) is essentially about the experience that customers live in the direct or indirect interaction with the company. Introduced in the 1980s with contributions from Holbrook and Hirschman (1982), has over the years characterized more and more the way of thinking, consequently generating a multiplicity of research that analyse the different aspects. Following the methodology chosen to carry out the screening of the literature, these documents will be treated in a systematic way.

There are several databases for management and business studies, and among these the best known are Web of Science and Scopus. Although with small differences due to the different functioning of the platforms, the topic in question is widespread and its most relevant documents are certainly included in the main research queries. Therefore, the database chosen to carry out this analysis is Web of Science. Following the PRISMA method, the first step is to identify the records to be analysed. The analysis was conducted considering how the concept of customer experience could be written or used as keywords by the different authors in the literature. This involves taking into account that the authors may have written both in the singular and in the plural and that the client may have been identified with other terms. In fact, the customer can also be referred to as a consumer or more generally as a user. Therefore, the query used for the search in topic fields (title, abstract, and author keywords) is composed by the following terms: “customer experience*”, “consumer experience*”, “user experience*”, “experiences of customer*”, “experiences of consumer*”, or “experiences of user*”. Quotation marks are used to locate only records that include the search terms as written. As a result, the search led to the identification of 24.077 records. They represent all documents, whether they are papers, procedures, or other that include these terms in the main fields for some reason. However, it was considered to include additional six records not found in the search query. These are some bibliometric reviews of literature and are certainly useful for defining the concept being researched. At this point, given the breadth of this topic and having to contextualize its use in the studies of interest, some exclusions have already been made in this first step. First, all documents not written in the English language (n = 391) were excluded, as it would not be possible to read it. After that, it is important to include within the records to be analysed only the scientific articles (n = 13.624) and belonging to the reference context, made up of the categories of business or management (n = 8.615). All records that do not fall within these parameters have therefore also been excluded.

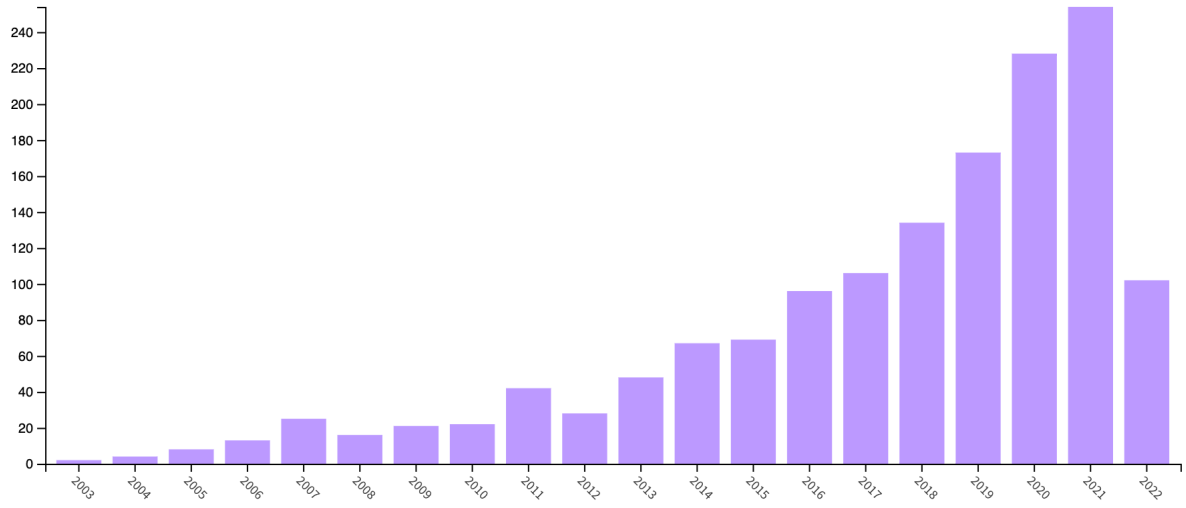


Figure 4. Bar chart of annual scientific production on customer experience.

The distribution of the documents identified is strongly ascending (Figure 4). A substantial increase is seen starting from 2016 with more than one hundred articles published in a year, then doubling in 2020 and 2021. In this way it is highlighted that this is a topic of extreme relevance even today, although introduced in the last century. As part of this distribution, it is also important to report which are the main authors on the topic (Table 2). They are pioneers and promoters of the same.

Author's name	**N. of records**
Klaus P.	29
Mccoll-kennedy J. R.	12
Rajaobelina L.	9
Gustafsson A.	8
Nguyen B.	8
Edvardsson B.	7
Flavian C.	7
Maklan S.	7
Rahman Z.	7
Burton J.	6

Table 2. More productive authors on customer experience.

However, considering this distribution the number of records is still high (n = 1.483) to conduct the review. Therefore, the following steps are useful for screening and individualizing the most useful documents among them.

Once the records that apparently belong to the query used for the search have been defined, it needs to start skimming these records more and more in detail. The second step, more commonly called "screening", is based on a first general analysis which does not enter into the content of the documents but is based exclusively on primary data such as titles, authors' keywords, number of citations, or lack of information necessary to understand its eligibility. In this sense, other records were excluded from the analysis. In particular, the steps followed in this phase are the following. First of all, all records that had no keywords in the Web of Science database (n = 85) were excluded. The reason for this exclusion is that the lack of essential data does not allow their proper analysis. Subsequently, all rarely cited records were excluded as it is believed that they would not make an additional contribution to the general definition and understanding of the concept under study. In this sense, starting from an average of the citations (average number of citations = 30), all those who did not reach this average (n = 1.080) were excluded. Finally, a simple and quick analysis was conducted with the reading of the title and keywords of each record not yet excluded. By simply reading these data it is possible to identify the purpose of the authors and define their inclusion in the documents to be analysed in line with the topic definition. It is easy to imagine how the authors have included the word customer experience within the abstract for some reason, leading to the extraction of these records, but this is not the focus of their work. Indeed, several documents (n = 176) were excluded for this reason as they were, for example, studies aimed at offering a contribution in the development of information systems or others and not directly on the development of customer experience. However, all documents in question were left for further analysis in the next step and that all excluded records were quickly revised to understand if they should be re-included. For example, it is normal that the documents published in the last year do not yet have a high number of citations and could therefore be excluded through an automatic selection as described. This resulted in the re-inclusion of 32 documents for more in-depth analysis.

Finally, the third step analyses the screened records in more detail to define which documents need to be read and studied. In this phase, inclusion and exclusion criteria are defined. All records concerning specific case studies or related to the customer experience but not focused on it, as for those that have as their object the construction of new business models or the analysis of customer satisfaction, were excluded. In practice, the exclusion criterion concerns all documents that do not describe what is the customer experience.

The result of applying the PRISMA method made it possible to considerably reduce the number of records and to identify only those necessary for understanding the concept. At the end of this process, there are 90 selected articles. A summary of the different steps followed as a subsequent flow of information is shown in Figure 5. Furthermore, a table showing the records as result of this process is attached in Appendix I.

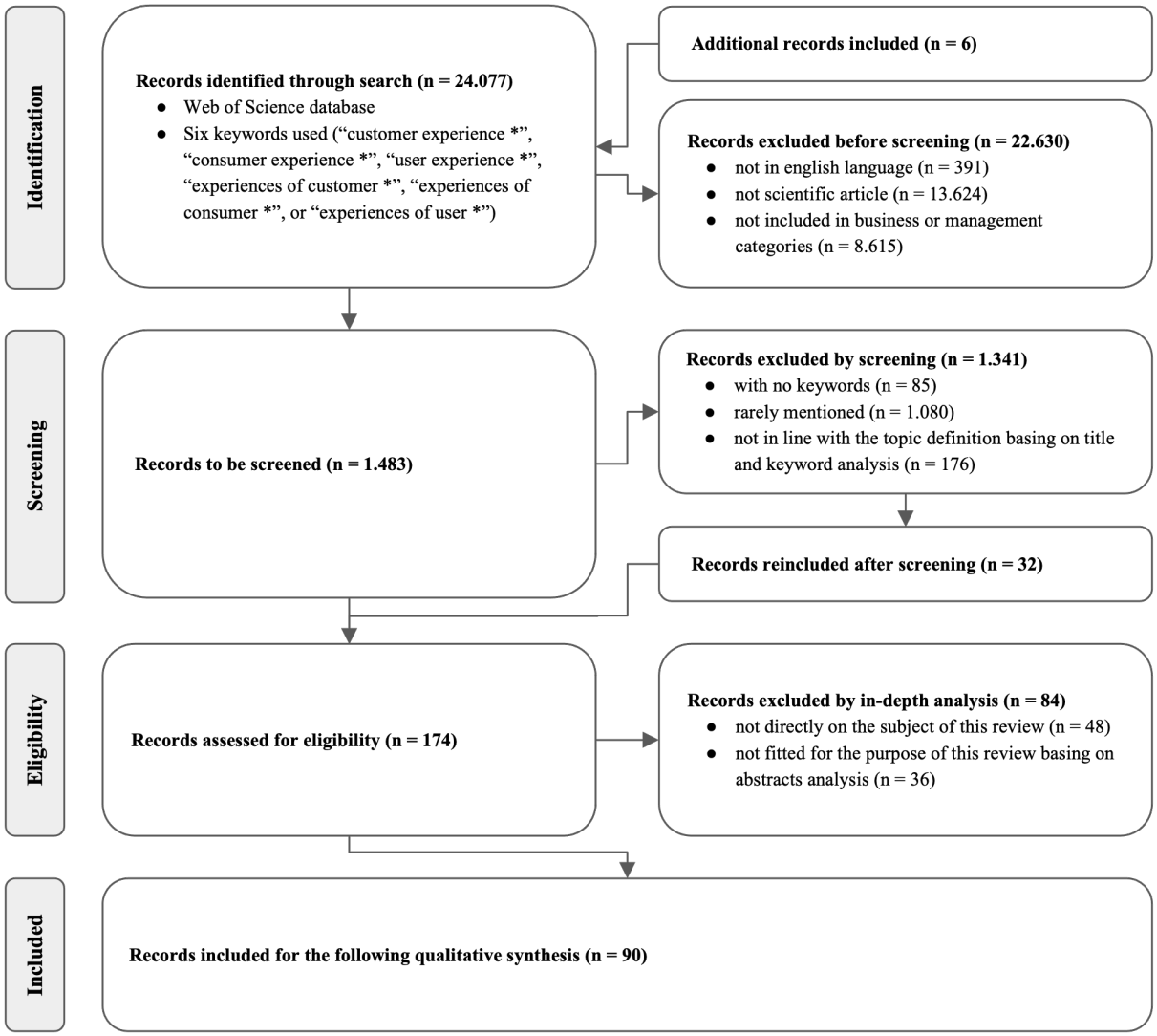


Figure 5. Flow of the customer experience systematic review.

Having detected which documents to analyse, a structure is proposed below trying to highlight the essential elements that allow us to frame a correct interpretation of the concept of customer experience. It begins with general observations on the introduction of the topic and its definition, then moving on to the way in which the experiences are designed and managed, to finally analyse how they are measured and what effects they cause on the topics related to it.

2.3.1. General observations

The concept of customer experience is certainly not new. Indeed, it is quite widespread both within academic and economic contexts. The first authors to introduce a first idea of experiences in customer interaction are Holbrook and Hirschman (1982) who, considering the importance of an experience "as a phenomenon directed to the pursuit of fantasies, feelings and enjoyment", have laid the foundations for a broader definition as "the subjective and internal responses that clients have in any direct or indirect contact with a company" (Meyer and Schwager, 2007), although the real diffusion occurs only

later thanks to Pine and Gilmore (1998) which explicitly welcome the experience economy, a distinct economic offering from services and goods that companies follow and build. Although an SDL informed service system will evoke a better overall customer experience than a GDL informed service system as supposed by Edvardsson et al. (2011), the authors describe how an experience arises when a company harmonizes services and goods in order to engage the customer in a memorable event, an event that is difficult to forget and manage to integrate material and experiential consumptions (Schmitt et al. 2015). Accordingly, Kim and So (2022) arise customer experience is more than the consequence of a single encounter.

The concept of customer experience is based on early marketing theories on buyer behaviour as it is actually a determinant based on emotions and feelings that lead customers to purchase decisions (Klaus, 2014; Roy et al., 2020). With this statement it is possible to understand how customer experience is nowadays considered as an important marketing route to create a unique, pleasurable, and unforgettable experience (Jain et al., 2017) capable of attracting, satisfying, and retaining customers over time. Also defined by Lemon and Verhoef (2016) as the main study area in the entire service research and actually invested by several doubts to investigate (e.g., McColl-Kennedy, 2015a; Jain et al., 2017; Goyal and Deshwal, 2022).

In the last few decades, this concept has had the opportunity to be suitably analysed both by going into detail and by studying its position within various theoretical topics. Obviously starting from business and management studies (e.g., Jain and Bagdare, 2009; Gentile et al., 2017), passing through specific contexts such as hospitality (e.g., Walls et al., 2011; Nysveen et al., 2018; Rahimian et al., 2021), tourism (e.g., Mahrous and Hassan, 2017; Rather, 2020) or banking (e.g., Mbama and Ezepue, 2018; Mbama et al., 2018; Chauhan et al., 2022), up to completely different fields such as healthcare (e.g., Lee, 2019; Wilson et al., 2020) or engineering (e.g., Weber and Chatzopoulos, 2019). In this stream, several definitions have characterized and concise the concept of customer experience over the years. Lemon and Verhoef (2016), analysing the moods of customers, provided a multidimensional definition of customer experience based on the cognitive, emotional, behavioural, sensorial, and social response of a customer to offerings of firms. A definition closely related to the way interactions occur during the shopping journey and the perceptions that customers have on these interactions. Therefore, an experience is built up through a collection of touchpoints and the different dimensions of responses need to be measured (Keiningham et al., 2017). Becker and Jaakkola (2020) described customer experience from the customer point of view assuming that it is composed of "non-deliberate, spontaneous responses and reactions to particular stimuli", while Cetin (2020) in his definition recalls how these memorable events could influence the future choices of customers. Moreover, it is useful to clarify that the concept of customer experience has not remained anchored only to its definition but it has been further developed with relation to other relevant constructs although the difference with them has been made clear, such as customer satisfaction (e.g., Zeithaml, 1988), customer delight (Bolton et

al., 2014), customer loyalty (e.g., Mascarenhas et al, 2016), service quality (e.g., Parasuraman, 1988), customer engagement (e.g., Brodie et al., 2011), customer journey (e.g., Følstad and Kvale, 2018).
In addition to academic importance, it has also gained widespread attention in business practices, becoming a great source of competitive advantage for companies that take it into consideration in their marketing choices (Verhoef et al., 2009). It plays an important role in designing, providing, and managing customer relationships (Kandampully et al., 2018). However, although the concept of customer experience is now widely spread as just shown, many authors still believe that there is no full understanding in service scholarship. Already in 2013 Ferreira and Teixeira tried to sort out the large number of documents on the topic through a bibliometric study. Bibliometric studies actually allow to cover a greater number of documents than systematic reviewing ones, but it is always limited to the year of its execution. This is the reason why the strong increase in production observed in recent years has recently pushed back in a new light the production and dissemination of systematic and bibliometric studies. Sindhu and Bharti (2020) mapping the customer experience studies identify three essential production phases composed of conception (from 1957 to 1990), practice (from 1991 to 2006) and management (from 2007 to 2017), and highlight a reflection on the main authors, institutions and countries that have contributed over the years to add an extra piece to this concept. In this sense, they therefore try to direct future research through theoretical, thematic, and methodological tips. More recently Kim and So (2022) try to contextualize bibliometric research by analysing exclusively the documents relating to the hospitality and tourism domain, providing a conceptual model of customer experience and related topics such as customer journey or customer experience management. Arici et al (2022), assuming that this understanding was not yet complete as outdated or too specific, further investigate this concept through a bibliometric analysis that offers the identification of five main clusters of the knowledge domain: methodology and information technology, customer co-creation of value, service quality and customer satisfaction, tourist experience, customer perception in service environments. Finally, Kumar et al. (2022) chart the intellectual structure of customer experience research through a co-citation analysis able to reveal research groups that share the same thematic interests. Exposing these examples of studies exclusively based on the review of the literature that help scholars in re-examining and framing the development of the concept, it is clear how the topic is always of extreme importance and how its boundaries are wide. Therefore, the following paragraphs will not try to offer a picture of all the existing contributions in literature, as recently proposed by the authors just mentioned, but to provide a small picture of those elements considered essential from an organizational and communicative perspective to understand the concept of customer experience.

2.3.2. Designing experiences and creating value

As a consequence of the advancement of customer experience research and the increasing importance, service innovation is now driven by the implementation of this concept (Keiningham et al., 2017). Companies have embraced the providing of experience over years as a competitive advantage for their marketing strategies (Shaw and Ivens, 2002), inevitably leading to the need of new methods for collecting data and depicting experiences (Teixeira et al., 2012). Methods useful for facilitating the implementation and its use in companies. A dilemma that has led service design researchers to explore new avenues, such as physical and recently digital environments, people's behaviours, the value formation process, and more generally the entire service delivery process. According to Maglio and Spohrer (2008), Service Design is a toolbox for investigating service systems, aiming to create a basis for systematic service innovation and drive transformation (Vink and Koskela-Huotari, 2021). As it is possible to imagine, this research is mainly based on the observation and understanding of the customers, focal point and users of the proposed experience. Several authors agree with their interpretation, recalling that service design has been conceptualized as design-centred contributions to service innovation based on a human-centred perspective and creative methods (e.g., Mager, 2008; Polaine et al., 2013). Therefore, the methods used in research to identify the best way or the best choice to design a service that is able to offer a customer experience range from techniques focused on specific elements (e.g., Bitner et al., 2008; Voss et al., 2008; Patrício et al., 2008) to holistic techniques (e.g., Kuo, 2011; Teixeira et al., 2012). As a result, several contributions exist in literature. Among them, Johnston and Kong (2011) for example propose a real road map to follow for the implementation of strategies based on the customer experience formed by ten stages: objective setting, creating of business case, coordination, customer research, defining of experience, prioritization, action research, development, change of support systems and assess the impact. Internships that follow the entire process of designing the service up to its subsequent analysis. Conversely, Lipkin (2016) does not focus on defining a clear roadmap but rather on explaining the customer experience formation process, in other words the "different ways in which an experience is realized". In this way, it is from the understanding of the phenomenon that the best implementation technique is identified. However, experience is created by people for people. Although the concept of customer experience can be seen as a strategic choice, it is the people who make it a strategy and it is the people who implement it. Employees have the responsibility of representing the company in the process of building successful experiences (Harris, 2007).

Furthermore, in service design, the value that the customer generates for the stakeholders involved should not be underestimated. Companies as suppliers of the good or service are those who make value propositions, pre-determining, offering, enabling, and facilitating use (Helkkula, 2011). But they are not the only actors participating in the value formation process. Customers as participants drive the consumption (Tynan et al., 2014) and at the same time co-create value (Chathoth et al., 2016). The value

co-creation occurs when customers transform themselves from passive audiences to active players (Prahalad and Ramaswamy, 2004; Vargo and Lusch, 2004). In this sense, several authors have helped to strengthen customer experience. Lusch et al. (2010) underlined how the value co-creation processes and customer experiences cannot be understood in isolation from the more general service system in which they are embedded. Bolton et al. (2014) analysing the interactions between customer and company remembered how small details make big differences. McColl-Kennedy (2015b) responded by researching which practices are used by customers to co-create service experiences. Finally, Wu and Gao (2019) in their research identified key customer co-creation behaviours that enhance customer experience creation offering excellent managerial implications.

Anyway, although the process of training and providing the customer experience is extremely important, it is also necessary to understand how it is managed (e.g., Grewal et al., 2009; Puccinelli et al., 2009).

2.3.3. Management of customer experience

Having traced the path about the evolution of the relationship process of companies with the customer, customer experience as a complex construct will be analysed by a different perspective in order to provide understanding about its management. The customer experience is made up of continuous relationships and interactions that change over time (Homburg et al., 2001), making it dynamic and difficult to capture.

Most customer encounters are not only experiences but a part of a broader endeavour to build and maintain long-term relationships (Palmer, 2010). Analysed both in b2c interactions (Kandampully et al., 2018) and in b2b interactions (Zolkiewski et al., 2017), to manage a correct customer experience it is necessary to control various elements such as individual direct or indirect interactions, also known as touchpoints, or feelings (Meyer and Schwager, 2007), and measure their results (Gentile et al., 2007). These are all stages to be overcome to reach the customer experience management maturity.

However, the management of customer experiences might not be completely under firms' control (Harris and Daunt, 2013). Each person has a different background, values, attitudes, and beliefs that characterize the living of an experience, leading to the emergence of different individual situations. And at the same time, such interactions can occur through multiple channels (Payne and Frow, 2004) highlighting the need for a management method or system. An example could be found in Customer Relationship Management, better known with the acronym of CRM, that is an integrated approach for the management and development of relationships with the aim of building customer loyalty (Kumar and Reinartz, 2018); a combination of people, processes and technology that facilitates the knowledge of companies' customers.

2.3.4. Different ways to get measurements

As widely described above, the primary goal of companies is nowadays to optimize strategies offering their customers superior experiences compared to their competitors (Chakravorti, 2011). Companies need to invest in the analysis of all available data collected during the years in order to enhance the customer experience processes. Indeed, thanks to the measurement methods, it is possible to find out what really satisfies customers and what makes the contrary, insights useful to anticipate their requests and improve services. In this context, several scholars have explored the topic by trying to summarize key dimensions to be taken into consideration and related measurement systems to use. Bagdare and Jain (2013), as well as later Bustamante and Rubio (2017), tried to measure retail customer experience, Garg et al. (2014) presented a scale capable of measuring customer experience in bank, or Alnawas and Hemsley-Brown (2019) analysed service quality in hotel industries.

Each measurement method inevitably involves the collection of customer data as a first step (Chang and Horng, 2010). The experiences, as described above, can be experienced differently by each client, generating a multitude of possible results. Therefore, what favours a correct measurement is the acquisition of data directly from the customer. It can be carried out in different ways, for example by allowing the user to expose feedback or by identifying sensors which are capable of revealing respondents' different perceptions. As for example, a text mining model can then be used for analysis of these customer textual feedback enabling companies to assess the impact of interactive service processes on customer experiences (Ordenes et al. 2014). However, some key dimensions to be intercepted are certainly loyalty, perceived quality and customer satisfaction, external effects generated by the implementation of strategies aimed at creating an experience for the customer. Zeithaml et al. (1996) developed a 13-item battery questionnaire forming a five-item behavioural loyalty scale. Differently, Dagger et al. (2007) proposed a 5-item customer satisfaction scale. Maklan and Klaus (2011) introduced a new measurement system based on the previous ones, also known as customer experience quality (EXQ) scale, that includes the analysis of all these dimensions, further expanded by the same authors with a subsequent study (Klaus and Maklan, 2013) and recently revisited by other scholars (Kuppelwieser and Klaus, 2021). In the same year, Kim et al. (2011) developed a parsimonious Consumer Experience Index (CEI) composed of a seven-factor model to analyse environment, benefits, convenience, accessibility, utility, incentive, and trust. A new management tool that can be used by companies to compute a consumer’s experience. Anyway, any system used is useful for understanding the progress of the strategy adopted and possible avenues to correct them.

2.4. Relevance of the Customer Engagement

In recent years, another concept that has aroused a lot of interest among both researchers and practitioners is customer engagement (CE). It is essentially the action of engaging the customer within business processes, as an integrated part of them. Introduced for the first time in 1998 by Oxford

Corporate Consultants, it is now considered as a resource investment in the management of interactions (Kumar et al., 2019). Consequently, over the years scholars have explored its conceptualization and use leading to the birth of different theoretical perspectives (Van Doorn et al., 2010; Hollebeek et al., 2019). The concept of Customer Engagement goes beyond simple intrinsic value, better assumed as "involvement", enhancing the experiential value that is generated when the customer is part of the company and co-creates value with it (Jaakkola and Alexander, 2014). This is the reason why this concept is included in the theoretical background analysis of this thesis.

As for the previous paragraph, the analysis is carried out by extrapolating the data from the Web of Science database and identifying which of them to analyse through the application of the PRISMA method. Therefore, also in this case the first phase consists in identifying the records connected to the research topic. The database was queried using the following search terms: "customer engagement", "consumer engagement", "user engagement", "engagement of customer*", "engagement of consumer*", or "engagement of user*". The keywords are similar to those used for the analysis of the customer experience literature in that it is believed that the customer can be identified in the same way also as a consumer and as a user, involving only the change of the word experience into engagement. In addition, special characters are used in the same way to include any plural versions of its use and limit the search exclusively to subsequent words. As a result, the identification of 6.018 records related to the searched topic is obtained, which also in this case needs to be skimmed in order to identify only the documents of interest for the purpose of this review of the literature. Other three documents were then included because they concern bibliometric reviews of the literature, but do not fall within the parameters used. To maintain a certain rigor in the definition of the theoretical background, the same path has been followed in this case as well. First of all, some exclusions based on the characteristics of the documents have been applied. Therefore, even before viewing the extracted data, all documents not written in English (n = 60), all documents not identified as scientific articles (n = 2.156) and all those not falling within the categories of our interest identified in business and management (n = 598). In this way we obtain a list of documents made up of 1.501 records that will be subject to the application of the PRISMA method. Before continuing, however, it is useful to report some interesting insights on this topic.

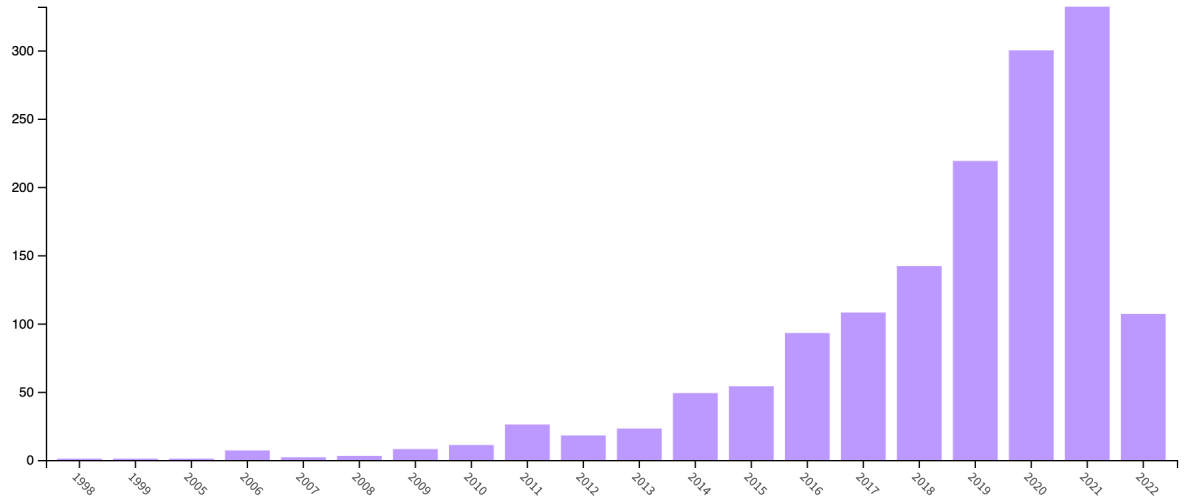


Figure 6. Bar chart of annual scientific production on customer engagement.

The distribution of documents (Figure 6) starting from the 2000s is also in this case strongly ascending, reaching 200 articles per year from 2019, thus noting an incremental interest in the topic that is still current. The decline reported in 2022 is only figurative as this year has not yet ended at the date of extraction of the articles. Along this distribution, several authors are also interested in understanding its meaning and possible use. Therefore, Table 3 shows the most productive authors, therefore considered the most relevant for this topic.

Author's name	**N. of records**
Hollebeek L.D.	31
Kumar V.	17
Conduit J.	14
Harrigan P.	14
Brodie R.J.	13
Malthouse E.C.	11
Ul Islam J.	11
Cheung M.L.	9
Rahman Z.	9
Veloutsou C.	9

Table 3. More productive authors on customer engagement.

The application of the PRISMA method continues with the screening phase, an important phase to begin identifying in this large number of records the most interesting and related to the purpose of the review. As explained above, this phase is based solely on primary data without going into the details of their content. The exclusion parameters are always the same. The first 87 records are excluded as they do not

contain any keywords in the chosen database. Having no keywords, it would be difficult to analyse the content. Then 1,101 records are excluded as they are rarely mentioned. They are identified by calculating the citations' average (average number of citations = 35) and eliminating the documents with a lower number of citations. Third, 165 records are excluded because they are deemed not in line with the topic definition based solely on reading the titles and keywords. As previously described, in fact, the title and the keywords chosen by the authors are representative elements of the document content and allow for an initial analysis on them, although the documents in question are left for the analysis of its abstract in the next step. From this analysis it emerges that some documents referred to completely different topics than the topic under review and that included the word engagement only as part of the authors' speech. This is the case, for example, of documents that have as their object social media marketing, or experience management, or even the study of the acceptance of technologies. Therefore, a total of 1.353 documents are excluded as a result of this phase. But the screening phase did not end there. In fact, as in the previous case, the excluded records were in turn scanned in order to identify any errors of exclusion, as in the case of articles with few citations because they are too recent. With the completion of this phase some documents were reincluded (n = 30), assessing the number of records eligible for the next phase.

The third step, the most important one, is the one that goes into depth by analysing every single abstract, finally leading to the choice of documents considered important for carrying out a correct review of the literature. The exclusion criterion adopted in this last phase concerns all those documents which add nothing to the understanding of the concept itself, but which analyse any influence of other topics on it. The purpose of this review is in fact exclusively the understanding of the meaning of customer engagement, how and when it was introduced and how it has evolved over time. In particular, from this analysis, some documents were excluded because they are not directly connected to the topic of this review (n = 66) and others because they are not fitted for the purpose of this review (n = 33).

As a final result of the application of the research method, 79 articles were defined as necessary for the following qualitative synthesis. All the steps carried out have been shown in Figure 7 and a detailed table with the main information on the selected records has been attached in Appendix II.

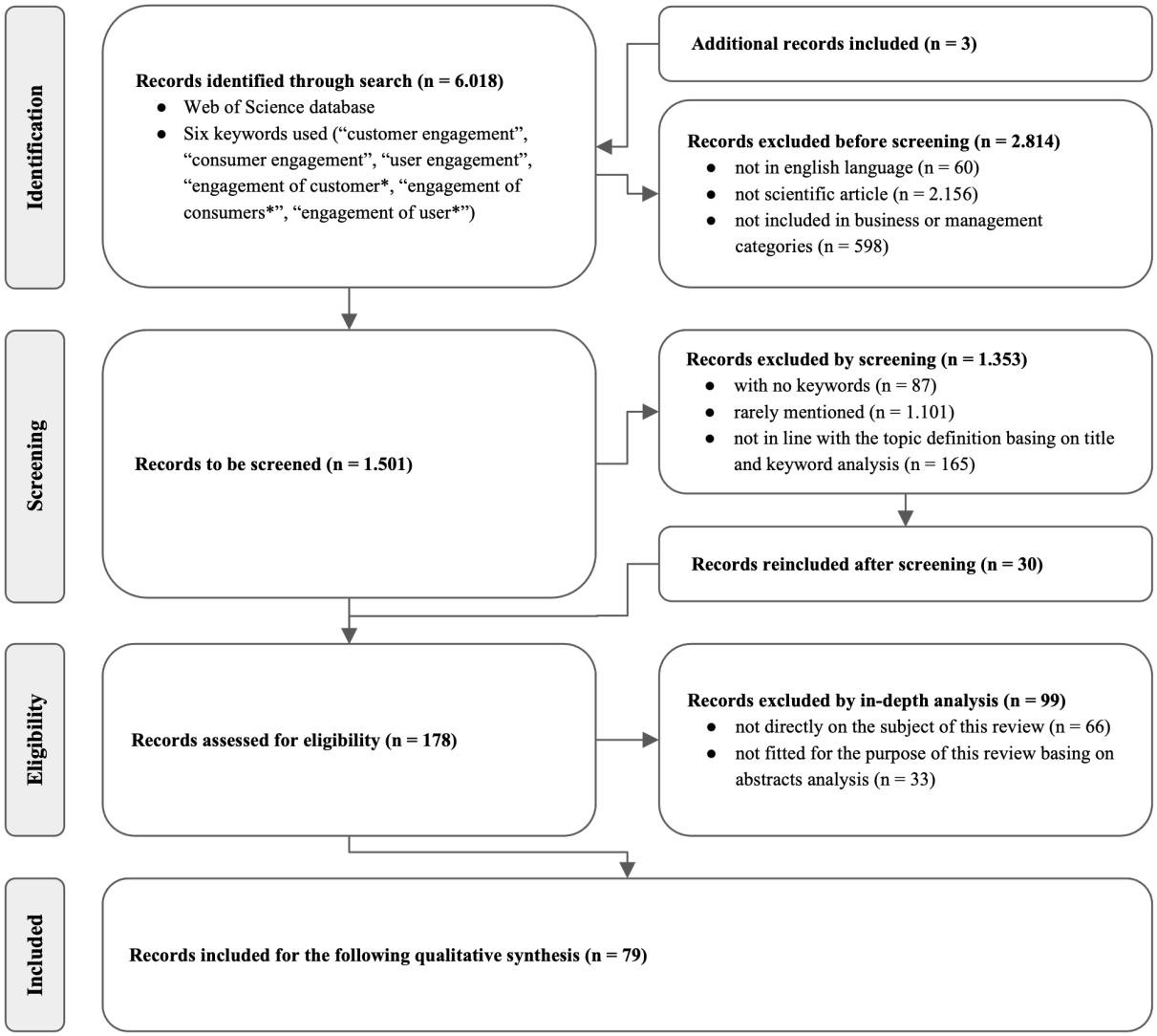


Figure 7. Flow of the customer engagement systematic review.

As previously described, the use of the PRISMA method allows only to identify which documents are imported to define the theme and carry out a qualitative system. Therefore, also in this case, a structure is proposed containing the essential elements capable of describing the concept of customer engagement. It is made up of some general observations regarding its introduction into the literature, then analysing the dimensions that different authors have defined over time and its effects on the more general concept of the customer experience.

2.4.1. General observations

The concept of customer engagement has acquired more and more interest in the last decades in academic research as supported by research priorities of Marketing Science Institute (2020). Although the words "customer engagement" appear for the first time in 1998 as an expression of Oxford Corporate Consultants, academic research on this topic really begins to spread from 2010 onwards, becoming today one of the elements of competitive advantage to be necessarily considered in

organizational studies to address companies' relationship marketing strategies (Hollebeek, 2013; Brodie et al., 2013; Islam and Rahman, 2016a; Van Tonder and Petzer, 2018; Alvarez-Milán et al., 2018). Indeed, a correctly engaged customer, systematically involved in the company's activities and continually subject to attention, could contribute to increasing revenues (Kumar and Pansari, 2016).

As with any new concept introduced in literature, research first start exploring its conceptualization (e.g., Van Doorn et al., 2010; Harmeling et al., 2017), widely debate over the years (Hollebeek et al., 2022a), and then in-depth analysing it such as looking for different measurement methods (e.g., Vivek et al. 2014; Holleback et al., 2014) or specific contexts applications (e.g., So et al, 2014; Chathoth et al., 2016). In this context, Bowden (2009) considered customer engagement as a psychological process model useful for management to understand how customer loyalty is formed. Similarly, Brodie et al. (2013) stated that customer engagement can be seen as a psychological state that occurs in service relationships. Van Doorn et al. (2010), starting from the meaning of the verb "to engage", argued that it inevitably implies a focus on customer behaviours. Pansari and Kumar (2017) suggested that customer engagement occurs when an emotional bond is created during a relationship and the customer is overall satisfied. Kumar et al. (2019) defined customer engagement as an investment of operant and operand resources in customer interactions. However, although these different definitions explore the concept of customer engagement from different perspectives, whether they are focused on the customer's point of view or the company's point of view, they all agree that this construction is based on the establishment of relationships that are established with the customer. Therefore, Holleback et al. (2014) have made an important contribution to mapping this extensive literature and having a complete picture. Given its inherent characteristics, customer engagement gains a lot of interest in service research, especially following service dominant logic. In this sense, Kumar et al. (2017) developed a real framework together with companies' managers from multinational companies to facilitate the acquisition of customer engagement in the service delivery process. It is considered as a successful avenue to create novel positive experiences. Similarly, a few years later Holleback et al. (2019) have proposed an integrative framework composed of foundational processes, benefits, and consequences. A framework useful to make a step toward the consolidation of this concept.

More recently, this concept has undergone an extension. In an increasingly networked society where customers interact easily with each other and with companies, it is not possible to speak exclusively of customer engagement, but it is necessary to speak more generally of actor engagement (Brodie et al., 2019). It is a zooming out perspective that moves away from the customer-firm dyad to approach the idea of actors involved in a network (Alexander et al., 2018) as suggested by Vargo and Lusch (2011). Chandler and Lusch (2011) first mentioned actor engagement in their research study about the involvement of multiple actors in service experiences. Storbacka et al. (2016) considered actor engagement as the involvement of actors in an interactive process of resource integration. Stadtelmann et al. (2019) argued that actor engagement includes behaviours provided by different stakeholders.

However, based on these ideas, Hollebeek et al. (2022) recently reviewed all previous contributions underlining the shift from customer to actor or stakeholder engagement.
As companies begin to undertake strategies to improve customer engagement, the need arises to identify measurement scales capable of verifying whether the strategies undertaken are heading in the right direction or if it is necessary to change course. An idea theorized in literature (e.g., Vivek et al., 2014; Harmeling et. al, 2017; Venkatesan et al., 2018) and shared in practical research (e.g., Thakur, 2016; Bruneau et al., 2018; Vinerean and Opreana, 2021), but which is still in an embryonal state.

2.4.2. Value dimensions of the customer engagement

Recent research suggests the concept of customer engagement is expected to contribute to the value co-creating process. From previous studies on the customer experience, it is known that the creation of value does not occur only in the moment of the sale of a good or product, but rather through a complex mechanism that involves the customer. In this context, Kumar et al. (2010) conceptualize four core dimensions of the value generated through customer engagement. First, customer purchasing behaviour is strongly influenced by engagement as the customer, knowing the company and having confidence in it, is inclined to purchase and use the services offered by that company. This behaviour generates the so-called customer lifetime value, i.e. the present value of all future profits generated through the interaction with the firm. Second, referral programs motivate and incentivize users to spread the company through recommendations to others. This reduces the cost of acquiring customers and creates the so-called customer referral value. Third, customer opinions and information sharing have a strong impact on the choices of other potential buyers. This, while not controlled by the company, generates a customer influencer value. Finally, the feedback left to companies directly by customers about new ideas of innovations or improvements contributes to the expansion of business knowledge. Helping understand their preferences, customers generate value. This is called customer knowledge value by authors.
However, the concept of value creation is more complex in the case of customer engagement. It is not generated in a single direction but is simultaneously co-created by both companies and customers during the different interactions (Vargo and Lusch, 2008). In a service encounter, customers often express an intention to reciprocate by offering their contribution. The subsequent satisfactory resolutions are the subject of a successful value co-creation process. This is the reason for which it is stated that customer engagement induced value co-creation, or on the contrary value co-destruction (Zhang et al., 2018). Anyway, it is an intrinsic characteristic of the concept of customer engagement to be interactive and therefore co-created by multiple actors (Brodie et al., 2013). On this current, Jaakkola and Alexander (2014) explored and conceptualized value co-creation in a multistakeholder service system.

2.4.3. Effects on customer experience

More recently, a need has arisen to understand how the concepts of customer engagement and customer experience are related to each other. To improve understanding, it is necessary to take a small step back. As described above, the customer experience is the result of the way customers experience interactions with companies in each potential touchpoint. These interactions, although take place in different ways, inevitably require the involvement of customers as recipients and evaluators of the experience. In turn, customer engagement is nothing more than a way to improve customer interactions and relationships. Therefore, it is possible to note how the concept of customer engagement cloud be actually considered as a precursor of the customer experience (Khan et al., 2019). Rather and Hollebeek (2021), responding to the research priorities identified by the Marketing Science Institute, have made an enormous contribution to service research precisely by highlighting this correlation. Although restricted to the tourism context alone, they investigated the impact that customer engagement has on customer experience and behavioural intent, demonstrating the effectiveness of its key role. But this is not just a contribution to service research. Indeed, this statement is of great importance also for companies' managers as it is suggested that improving the engagement actions companies also improves the more general customer experience.

From the analysis carried out so far, it is possible to hypothesize that a higher level of customer engagement leads to a higher level of customer experience. Two dimensions can be considered. Customer engagement is closely related to the increase of customer loyalty and the spread of word-of-mouth activities. Loyalty increases when the customer is satisfied with the company and at the same time word of mouth activities occur when the client shares the successful experiences. Nowadays, customers are no longer passive receivers of companies' shares, but they are continuously involved in brand management. They want to act rather than accepting standardized services delivered by providers (Morgan et al., 2010). Likewise, "marketing communications are no longer only monologues described by companies" (Islam and Rahman, 2016b), but the result of a mutual conversation. In this sense, these two dimensions, although generated by higher customer engagement, indirectly lead to enhanced memorable experiences.

2.5. Application of the Customer Journey

As the last part of the theoretical background, it was considered useful to deepen the topic of the customer journey. Customer journey is essentially a way of interpreting the path that the customer follows in relations with a company, formed by a series of touchpoints that follow one another since the customer does not yet know the company and that make up the entire customer experience (Lemon and Verhoef, 2016). Considered for this reason as an increasingly popular strategic management tool useful to understand how organization's customer experience takes place (Rosenbaum et al., 2017), it is

included as an integrated part of the theoretical background of this thesis in order to go into detail and understand how interactions between company and customer take place.

Although the phenomenon is more recent, the revision of what has been said so far in the literature follows the same methodology identified in the PRISMA method. In fact, this method not only allows to skim large numbers of records extracted from databases but also to identify among a few records which ones are useful for the purpose of the review. In other words, it is a structure to follow in order to carry out a correct review of the literature. Furthermore, in order to maintain a certain continuity, the chosen database is always the same: Web of Science. As usual, the first phase consists in identifying the records under study. For this reason, after having clarified which database is used, it is necessary to use search terms capable of including the documents relating to the topic. The keywords used in this case as a query for the database are the following: "customer journey*", "consumer journey*", "user journey *", "journey of customer*", "journey of consumer *", or "journey of user*". Remember that keywords always have the same synonyms and the same special characters. It is believed that in order to be able to identify and follow the same methodology for three different but connected topics it is useful to keep similar queries, giving the possibility of a subsequent comparison between them. As a result of this query, 604 records match the search performed. A number certainly lower than the two previous reviews, but which is still difficult to analyse in its entirety. The PRISMA method is therefore also in this case undoubtedly useful and its application is carried out also in this case following the same inclusion and exclusion criteria.

At this point, a first exclusion is carried out before the screening phase based on general filters that can be applied directly through the database functions. They lead to the exclusion of 420 records as not in English (n = 15), not scientific articles (n = 270), not included in business or management categories (n = 135). These exclusions, although general, allow to focus the attention already in advance only on the documents that are related to this research work and that can be useful for this review of the literature.

The list extracted for the screening phase is thus composed of 184 documents. Its distribution (Figure 8) reflects the trend of the others already carried out, an upward trend and still of significant interest in recent years. Also in this case, the decline in the year 2022 is due to its incompleteness.

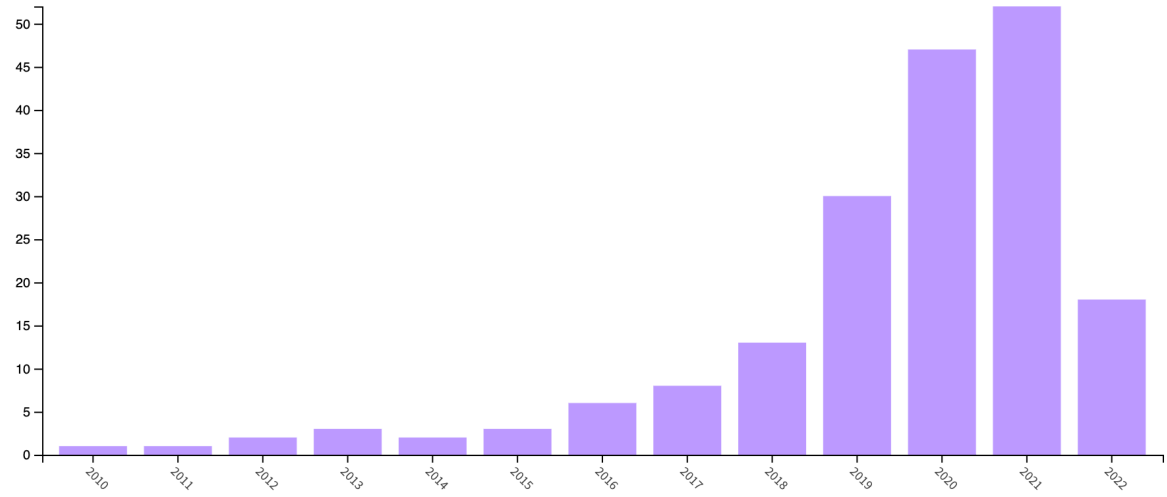


Figure 8. Bar chart of annual scientific production on customer journey.

However, it should be noted that for this topic the number of records per author (Table 4) is considerably lower as it is later introduced into the literature and researched. In any case, the same number of more productive authors are always reported. It is useful to identify if there is a link between the previous topics and the one covered by this review. It can be seen that, despite the presence of new authors, the most productive one is the same as the customer experience. In fact, the two topics are connected to each other and therefore it is not difficult to find that an author interested in the more general theme composed of the customer experience, in his career has then deepened more specific topics such as that relating to customer journey.

Author's name	**N. of records**
Klaus P.	4
De Keyser A.	3
Farah M.F .	3
Jaakkola E.	3
Kannan P.K.	3
Mccoll-kennedy J.R.	3
Ramadan Z.B.	3
Rauschnabel P.A.	3
Sands S.	3
Sousa R.	3

Table 4. More productive authors on customer journey.

However, the application of the PRISMA method still has to continue in its phases in order to extrapolate from this list only the most relevant documents. The second phase, also called the screening phase, concerns the general analysis of the extracted documents. Following the criteria identified in the previous reviews, records that do not contain keywords (n = 12) are excluded, records that are rarely mentioned (n = 128) as they are lower than the average of citations that have documents that talk about the same topic (average number of citations = 25) and the records not related to the topic (n = 22) but which include the search terms in some field. In fact, some documents, although they include these terms, deal with topics such as the impact of augmented reality, or autonomous shopping systems, or even engagement behaviour. In practice, related topics, which may have an impact on the customer journey, but which in reality do not allow us to understand the definition and meaning of this topic. By repeating the structure established in the previous reviews, 9 records are re-included that had been erroneously excluded based on the automatic filters. Therefore, as a result of the screening, there are 31 documents that move on to the next stage.

The last phase, better known as the eligibility one, analyses in detail the records coming from the previous passages, pinning its skimming on the abstract proposed by the authors. With this phase, further documents are excluded, even if they are already limited in number. In particular, some as focused for example on online retailing and therefore not directly on the subject of this review (n = 10), others as too specific as in the case of service innovation in e-commerce and therefore not fitted for the purpose of this review.

In conclusion, 18 documents are obtained that are truly useful for defining the customer journey and its essential elements. Figure 9 summarizes the different phases described so far, while a list of the documents analysed for the following qualitative summary is attached in Appendix III.

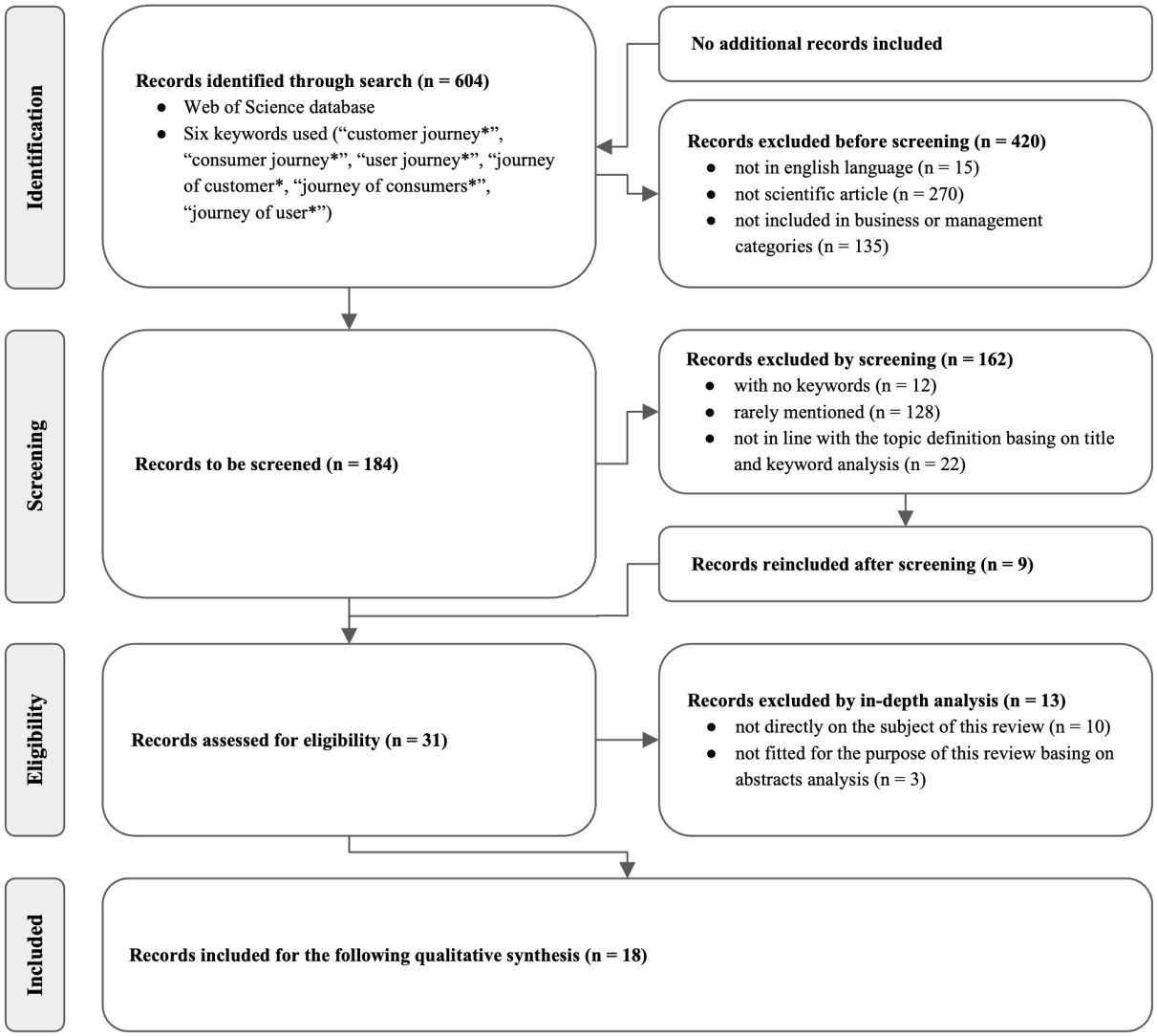


Figure 9. Flow of the customer journey systematic review.

The analysis of these documents as well as the results of the PRISMA method subsequently made it possible to identify and propose a structure useful for providing a framework on the concept of customer journey, including the identification of the multiple existing touchpoints, the mapping process, and its link with the main theme of customer experience.

2.5.1. General observations

For some time, the path that the customer followed to purchase a good or service was identified through the purchase funnel model pioneered by Elias St. Elmo Lewis in 1898, the behavioural pattern of a consumer who includes a decision process made up of different stages in order to reach a choice. The outdated funnel model is characterized by five distinct phases, namely: Awareness, Familiarity, Consideration, Purchase and Loyalty.

The first phase, that of Awareness, concerns the ability to identify a product or service as a means of satisfying a need and concerns awareness. In a second moment, empathy with the brand comes into

play, through the phase called Familiarity, in fact, the potential customer recognizes the brand thanks to the product-producer association. During the third phase, called Consideration, the consumer is oriented towards a specific product or service and compares its characteristics, as well as comparing its price. At this point the customer moves towards the action phase, defined as the Purchase phase, where the customer is ultimately ready to proceed with the purchase. The last phase, and also the most important one, is the Loyalty phase. In fact, through this last phase, customer loyalty is determined or not. The goal for each company is precisely to develop a capacity that continues to arouse interest in other products of the same brand. Although outdated today, it has laid the foundation for the conceptualization of a broader model called the customer journey.

The customer journey, also considered as a metaphor (Shavitt and Barnes, 2020), is represented by all the interactions that the customer activates with the company, brand, product, or service during the entire purchase process (Lemon and Verhoef, 2016). When a customer purchases a product or service, the moment of the transaction is only the tip of the iceberg in what is essentially a journey created by all the moments (touchpoints) that precede and follow the purchase. Indeed, the journey begins when the customer meets the company for the first time, because he/she has become aware and shows interest in it, continues with the subsequent interactions that lead the customer to actually consider the purchase phase, and then request a subsequent follow-up for any problems the customer's needs. In this context, the value deriving from the application of the customer journey is incorporated in the anticipation by the company of future interactions with the customer. The client builds expectations and imagines the experience (Lemon and Verhoef, 2016; Kruger and Saayman, 2017), an experience that needs planning. Therefore, firm-customer encounters along the customer journey are essentially sources of value and knowledge for companies (Yachin, 2018).

Introduced in the 2000s, it immediately generated interest due to its usefulness for companies' strategies. Although differently, all definitions converge towards the same meaning. Zomerdijk and Voss (2010) described the customer journey as a series of touchpoints involved in the service delivery process identified by taking a customer perspective. Richardson (2010) identified the customer journey in those steps that customers follow in engaging with a company. Edelman and Singer (2015) stated that the customer journey is a process made up of different phases that leads customers to proceed in the loyalty loop. Rosenbaum et al. (2017) identified the customer journey in a sequence of events where the customer can interact with the company. Similarly, Shavitt and Barnes (2020) found the customer journey in a sequence of touchpoints that involve all the activities and events connected to the service delivery process. In practice, the meaning of customer journey is equally shared in the literature. However, more recently, as with the previous transition from customer engagement to actor engagement, the customer journey has also undergone an extension. Holleback et al. (2022b) move the concept of customer journey towards the stakeholder journey, with extensive attention to the paths of employees, managers, or competitors. An important step to position this useful tool in a service

ecosystems perspective (Vargo et al., 2012) and making it more adaptable to the needs of understanding external factors changes.

As a result, the customer journey concept was used for several purposes. Norton and Pine (2013) used the customer journey to road test and refine the business model. Lemon and Verhoef (2016) applied the customer journey to understand customer experience. Van Der Veen and Van Ossenbruggen (2015) highlighted the importance of mapping the customer journey as a strategy for channels' management. Subsequently, Gao et al. (2020) reviewed the literature on multichannel integration to understand the benefits of the customer journey. Neslin (2022) used the customer journey to identify how to integrate physical and digital channels with each other. In summary, all authors shared the usefulness of customer journey as a service design support tool and used it to enhance companies' marketing strategies.

2.5.2. Designing journeys through the identification of touchpoints

By offering such an interpretation, severe challenges are posed for marketing managers. Therefore, authors such as Kuehnl et al. (2019) have proposed operational schemes to be followed to conceive, design, and measure effective customer journeys. Differently, but with the same aim, De Keyser et al. (2015) highlighted how a multichannel customer segmentation composed of a schema three stage is essential to understand channel usage across all stages of the customer journey, and consequently design promising marketing strategies.

Therefore, from an operational point of view, the essential element to be analysed for the design of a customer journey is represented by the identification and interconnection between different touchpoints. A process also known as customer journey mapping (Rosenbaum et al., 2017). Touchpoints are not a new element, but they are extensively investigated in the literature. Some authors describe touchpoints as cases of interaction or communication between a customer and a service provider (Patrício and Fisk, 201w). Zomerdijk and Voss (2010) presented them as moments of contact between the customer and the organization. Others see them as a place or channel for mediating interaction or communication (Clatworthy, 2011). Still other authors do not make a clear distinction between the two uses of touchpoints (Stickdorn and Zehrer, 2009; Gloppen, 2009; Kimbell, 2011). These authors seem to see touchpoints as instances of interaction and communication, as well as tangible objects and the physical environment.

Anyway, given its meaning, it is also useful to understand how many and how these touchpoints are distributed. Customers interact with the companies through a considerable number of contact points, or through multiple channels and media, a more complex topic to be analysed. Studies suggest that different touchpoints can be identified within the customer journey (Baxendale et al., 2015) and that they can be grouped into four categories: touchpoints owned by companies, touchpoints owned by partners, touchpoints owned by customers and last touchpoints considered as owned by social, external, independent actors. Customers could interact with each of these categories at any time during the

experience, although they may differ at each stage. Homburg et al. (2017) pointed out that companies should develop different mindsets and skills to successfully manage the customer journey design. Therefore, since the customer journey perspective has been adopted to support the management and design of the customer experience, it is understood that the customer journey is not just about the observable series of steps or touchpoints that a customer goes through as part of the provision of the service, but it also affects the emotional and cognitive responses in the customer mind. As a consequence, not all touchpoints have an equivalent value, however each one still advances the customer to an interaction with the next one.

2.5.3. Usefulness for the customer experience

Over the years, scholars have investigated how consumers undergo decision processes as a successful service provision depends on companies' ability to provide customer-centric services (Gustafsson and Johnson, 2003). Providing customers with superior experiences has been proven to be a competitive advantage with a clear revenue impact for companies (Fornell et al., 2006). However, these experiences often occur in fragmented matter (Meyer and Schwager, 2007). As described in the previous paragraphs, the customer journey as a tool made up with a sequence of interactions between customers and companies is intrinsically capable of improving the customer experience. The sequential trajectory of steps in completing customers goals (Siebert et al., 2020) collectively captures the customer experience (Lemon and Verhoef, 2016) and allows companies to understand what is missing and what could be improved in order to enable better experiences (Edelman and Singer, 2015). In this sense, as for example Varnali (2019) provided an interesting discussion about the redesign of end-to-end customer experiences through rethinking the customer journey while Kokins et al. (2021) argued that customer experience-driven innovation evaluates opportunities primarily within the contact points identified along the customer journey. In summary, the customer journey is a tool that starts from all single points to arrive at a holistic analysis about companies' marketing strategies.

2.6. From traditional to new perspectives

With the spread of the internet and digital technologies in the second half of the 20th century, extraordinary improvements have been made in the management, archiving, analysis and transmission of data and information. "The digital age has arrived, and it is not only changing the way customers make purchasing decisions, but also how firms do business" (Klaus and Nguyen, 2013). Companies that managed customer relationships marginally in previous years began to understand how this represented a great investment and opportunity to enhance their presence within the market and so to increase revenues. Thus, a constant exchange of information with customers began, integrating marketing strategies with the use of technology.

In order to optimize their processes, companies need to increasingly advance the use of autonomous integrated systems. Digital technology is gradually transforming organizational processes and, consequently, the methods of providing services. Companies that previously offered a service through human-to-human interaction are now providing the same or new services through the use of technologies. It is for this reason that a digital service occurs when its diffusion occurs through a digital format, devices, or platforms. In the digital age, one of the greatest challenges arising from these changes concerns the ability to revolutionize companies' ways of thinking and acting. The transformation must also be seen in terms of business models, processes, organization, strategies, and corporate communication. Therefore, in the following paragraph the difference between digitization, digitalization and digital transformation is clarified.

2.6.1. Digitization, Digitalization or Digital transformation

Evolution and transformation are phenomena that have always characterized human beings, just think of the first motorized machines, industrialization and so on. This trend has not changed over time. Society is constantly experiencing a process of change that tends to improve both people's daily and working lives more and more. Today, in fact, it can be said that this change is influenced by the introduction of technologies and their continuous advancement.

As extensively described by Verhoef et al. (2021), however, the process of change is not immediate. It goes through several stages so that the introduction of technologies leads to an effective digital transformation of the company. First of all, technologies have enabled the possibility for companies to carry out existing actions through them, improving results, speeding up processes and at the same time reducing costs. An action that previously was carried out with an enormous expenditure of resources and with long processing times, can now be carried out automatically through digital tools. This first phase is identified by the authors as the Digitization phase. But the benefits that the introduction of technologies can bring do not end there. In fact, they allow new business possibilities by altering existing business processes with new processes guaranteed exclusively using the technologies themselves. This second phase is identified by the authors in the Digitalization phase. Finally, a complete change is achieved when the company designs new business models by abandoning old patterns and basing technologies at the heart of their strategies. Here the authors speak of Digital transformation. As for technologies, services have also undergone a strong change over the years, just think that the logic centred on goods has passed to a logic based on services. Consumers are increasingly at the centre of corporate strategies and much attention is focused on their experience while using them. Companies analyse the customer journey, identify the different points of contact, and try to improve the weak points from time to time, often resorting to the use of technologies.

2.7. The influence of "digital" in literature

After defining the theoretical background behind this thesis work and understanding that a disruptive element has inevitably led to a rearrangement of scientific research, it is necessary to reflect and understand the turning point in literature. Table 5 represents a comparison of the topics dealt with so far with a specific detail to their evolution over time.

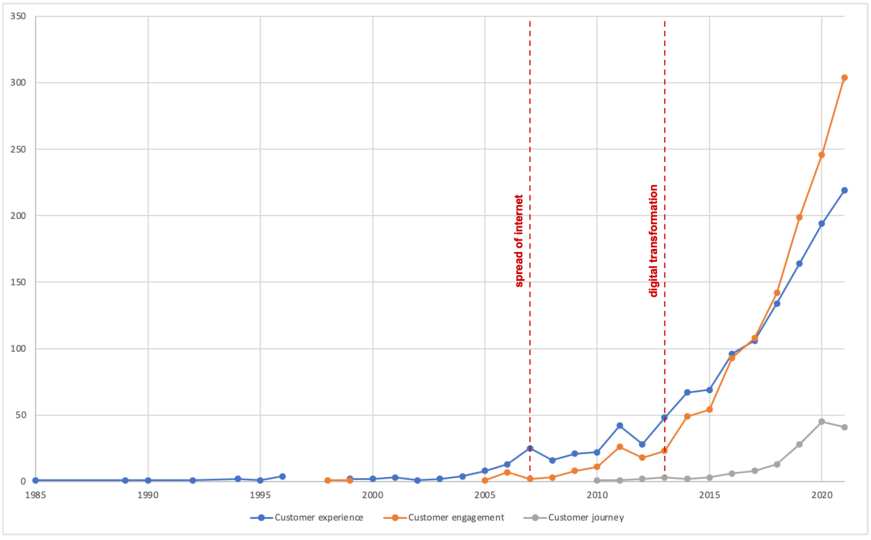
	Experience	**Engagement**	**Journey**
Definition	"Customer experience is the internal and subjective response customers have to any direct or indirect contact with a company." *Meyer and Schwager* "Customer experience is a key marketing concept" *Becker and Jaakkola*	"Customer engagement is a psychological state that occurs by virtue of interactive, co-creative customer experiences with a focal agent/object (e.g., a brand) in focal service relationships." *Brodie et al.*	"The process a customer goes through, across all stages and touchpoints, that makes up the customer experience" *Lemon and Verhoef* "Customer engagement is an increasingly popular strategic management tool praised by both academics and practitioners for its usefulness in understanding an organization's customer experience. *Rosenbaum et al.*
Foundation Year	during the 1980s	during the 1990s	during the 2000s
Pioneering Authors	Holbrook and Hirschman *and* Pine and Gilmore	Bezian-Avery et al. *and* Brodie et al.	Zomerdijk et al. and Oxford Corporate Consultants
Most Productive Authors	Klaus P. *and* Mccoll-kennedy J. R.	Hollebeek L.D. *and* Kumar V.	Klaus P. *and* De Keyser A.
Evolution over the years			

Table 5. A comparison of the literature along the time.

The elements included in the table, better detailed by repeating some of the main definitions, first of all highlight the year in which they were founded. The customer experience represents the main topic coined in the 1980s, expanded and deepened in the following decades through the introduction of two other topics: customer engagement and customer journey. Simply by comparing these concepts it is possible to note that the pioneering authors, that is those who introduced the topic, are not representative of the same as with the diffusion of research new and more productive authors have taken over. The only author who appears almost throughout the evolution of the theme is Klaus P., who falls within the number of articles published as first author both in the case of the customer experience and in the case of the customer journey. Anyway, the main element of this table is the analysis of the evolution over time. Although the concept of customer experience and that of customer engagement have been introduced for some time, until the 2000s they remained a topic of marginal interest, only subsequently arousing the curiosity of other authors. It is only with the spread of the internet and subsequently with the wider digital transformation that scholars have begun to focus their attention and their research on the possible nuances deriving from these concepts, so much to highlight a strong ascend phase still growing today. For this reason, the following paragraphs highlight the influence that "digital" has in literature, and in particular on the elements that make up the theoretical background of this thesis.

2.7.1. Digital customer experience

The customer experience has emerged as a crucial dimension in modern marketing. The level of well-being and technological innovation achieved in recent years has shifted the horizon of the individual's needs. It is inevitable that technology plays a leading role in the creation of this new way of business models by companies. As described above with the contribution of Sindhu and Bharti (2020), customer experience can be better differentiated in various consequential and overlapping phases, starting with the phase of conceptualization ranging from 1957 to 1990 years that have as main contribution the articles of Parsons (1934) and Keynes (1936), passing through the practice phase ranging from 1991 to 2006 years with Verhoef et al. (2009) that emphasize the process and the practice of the CX in a retail context, until the more recently phase of management starting in the 2007 years until now and strongly impacted by digital technologies. In order to understand this impact, it is possible to reconstruct the changes that customers have experienced and are still experiencing. The Internet has made possible to access information instantly and everywhere in the world, e-commerce has redesigned the way to buy sometimes without even contact with the customer, smartphones and mobile applications have made services simpler and more usable directly on personal devices, social media have allowed the exchange of ideas and opinions (Hoyer et al., 2020). Consequently, in this general framework it is possible to frame how digital transformation process and the introduction of new technologies, including artificial intelligence, machine learning and deep learning (Parise et al., 2016; Ameen et al., 2021), improve and facilitate the response of companies to new types of needs arising in consumers. For example, the

introduction of artificial intelligence (AI), in conjunction with other technologies, such as virtual reality or augmented reality (Baxendale et al., 2015; Pizzi et al., 2020), has the potential to revolutionize the interaction between firms and customers (McLean and Osei-Frimpong, 2019) making them fast, personalized, and automatic, and so continually improving the customer experience (Newman, 2019; Neuhofer et al., 2020).

On this flow, Rose et al. (2012) investigated the relationship between antecedents and online customer experience in e-retailing. Similarly, Bilgihan et al. (2016) sought to understand how the customer experience manifests itself in online shopping environments. Again, Roy et al. (2017) identified the consequences of a smart customer experience in retailing contexts. Instead, Flavián et al. (2019) analysed the impact that reality distortion technologies have on the customer experience in order to formulate a better understanding of a technological customer experience. Furthermore, as the application of robotics is progressing rapidly, Tung and Au (2018) explored the influence of robotic embodiment in hospitality customer experiences. In practice, scholars sought to understand what had changed from before and how technologies revolutionized both company strategies and customer behaviours. Studies previously carried out in the conceptualization phase of the customer experience, where everything changes when a disruptive element such as digital transformation intervenes.

However, it is important to underline that digital transformation does not involve the disappearance of what was previously built. Customers today do not only experience digital experiences, but also physical experiences, thus entailing enormous difficulties in cohesion and correlation in the marketing strategies adopted by companies. Weber and Chatzopoulos (2019) have devoted an entire work to highlighting how digital technologies can carry the risk of ignoring non-digital experiences. They emphasize digital and physical are part of the same total customer experience. Therefore, although one may be heavier than the other, both must be taken into consideration.

2.7.2. Customer engagement through digital technologies

As for the concept of customer experience, customer engagement has changed following the introduction of digital technologies. The use of social communities or digital communication tools has led to rethinking the way companies engage their customers. Interactions happen in a more direct and immediate way and stakeholders are becoming increasingly responsible, interconnected, and willing to share their knowledge and ideas with themselves and companies (Viglia et al., 2018). Rangaswamy et al. (2020) propose an interesting study on the digital business platforms with which the company allows interaction between authorized third parties. This is practically an example of how a service can be rendered digitally. The use of technologies is capable of revolutionizing marketing as it no longer takes place in the traditional ways and channels, but in a whole new way in an interconnected world where consumers communicate with each other and with companies. In this context, marketing is conditioned and modified by the transformation taking place. It can exploit the potential of technologies to improve

its results, such as the automation of activities, the reduction of costs or the personalization of offers, and at the same time maintain or even increase the satisfaction of consumers, as they feel ever closer to the company and with greater attention to their needs.

Hennig-Thurau et al. (2010) proposed a useful metaphor which describes the ongoing change in customer engagement due to the introduction of digital technologies, in particular referring to social media. The environment is like a pinball game where marketing instruments (the balls) are used by companies to reach consumers, but consumers are not only passive receivers of messages as they have much power to reply as bumpers, kickers, or slingshots. This metaphor allows us to explain how digital technologies have changed the behaviour of users by offering new possibilities for interaction and communication as co-creator of value.

2.7.3. Phygital customer journeys

Nowadays, due to the introduction of digital systems, interactions with customers are also taking place in a new way. Websites, e-mails, chats are nothing more than points of contact with which the customer connects to the company. As they are provided through technological devices and the use of the internet, they are classified with the term "digital", but their meaning remains unchanged from the traditional ones. They are always part of that journey that the user experiences in relations with the company. However, the best way to develop a right digital customer experience strategy is to understand how stages of the customer journey in the digital age change customer behaviours. As previously analysed, nowadays customers tend to use multiple channels and touchpoints during their purchase journey, whether in the consideration, purchase, or post-purchase phase (Weinberg et al., 2007). These moments of contact could be both physical and digital and accompany the user throughout the journey of the experience. However, the introduction of technologies has changed people's habits, leading them to habitually use personal smart devices. In this context, a new label has been proposed in service literature: "phygital". Although this term had already been used to describe customer experience or marketing activities (e.g., Ballina et al., 2019; Johnson and Barlow, 2021), it had not yet been properly linked to the concept of customer journey until last year when Mele and Russo Spena (2021) used it to describe the combination of virtual and real touchpoints along the customer journey. As a result of this application, the phygital customer journey is always a representation of the path that customers follow in their relationships with the company, but with a little difference. Although this path is cyclical and roughly the same for all users, it is composed of a series of different touchpoints for each phase that happen either in person or on the internet, so physical or digital.

2.8. Challenges and Research Opportunities

In summary, the role of technology in service marketing can be identified both as a means to reach customers and as a means to support corporate marketing processes. The service designer is therefore called upon to analyse the current value proposition of a company, to map the customer journey, to recognize possible applicable strategies, to identify the supporting technologies and finally to apply this transformation process. Different tools have also been theorized in order to help the service designer in her activities. Service design tools, such as customer journeys, which capture both cognitions and feelings, can help reveal the interaction between those experiences and take into account the characteristics of experience environments that influence the formation of consumer perceptions and possibly their biased preferences. Moreover, as fully described above, the introduction of technologies has led to a change in the interactions between business and consumer. They no longer take place physically in the store, but take place through digital channels, such as social media or instant messaging platforms. This leads companies to change their processes introducing technologies as a means of communication. At the same time, however, companies are also exploiting technologies to improve marketing processes and the overall customer experience.

The introduction of technology has completely revolutionized the world of services, inevitably generating a need for further research. Although many topics have already been covered, the continuous advancement of the same brings to light new doubts or gaps to be filled. Heinonen et al. (2018) propose an analysis on customer-to-customer interactions where technology, like social media, enables them to overcome those geographical boundaries that have long conditioned the exchange of opinions. At the same time, they recall that the use of technology also includes some skills and abilities that are not always shared. Bond et al. (2020) in their analysis of B2B customer solutions remember how technologies and the trend towards a service logic have changed the way of offering solutions. They argue that remote technologies could provide business solutions, or enable interactions, or create relationships, or help companies overcome organizational problems, or co-create value with customers. It is for this reason that they propose greater customer involvement in solution development as a future direction. Donthu et al. (2021) use a technology themselves (bibliometric software) to develop their research, but also focus on a cluster resulting from their research based on the technology adoption in an innovating market. They identify the same as “hot” topics for future research. Finally, Ostrom et al. (2021) identify technology as a tool for service provision and consumption. They argue that advances in technology, the proliferation of service innovation, and the growth in big data, highlighted the need to enhance service experience and improve well-being through transformative service. Indeed, technology is changing both the nature of work and the customer experience and scholars could help spread greater understanding.

Chapter 3

The role of smart technologies in service encounters

Towards the design of digital customer experiences · The introduction of new technologies · Conversational agents in the business studies · Inclusion of conversational agents in retail contexts · Challenges and Research Opportunities

Chapter 3

The role of smart technologies in service encounters

This chapter is the fundamental theoretical background of this thesis. To correctly analyse an emerging phenomenon and frame how a contribution can be made, it is necessary to identify the pillars of the topic and the evolution of the theme to date in a holistic vision. This chapter deals with the impact of new technologies on the experience proposed by companies, in particular by analysing conversational agents, a type of service robots that communicate through text.

3.1. Towards the design of digital customer experience

Following the introduction of online connections capable of accompanying digital transformation and broadening horizons towards relationships between multiple actors, the integration of digital and smart technologies in service delivery has aroused more and more interest from scholars and practitioners on how this change affects work processes and interfaces with customers. Indeed, at the heart of the digital customer experience there are all new digital interfaces used by users to interact with companies. In a globalized and interconnected market, it is essential to create digital experiences that place customers at the centre of corporate strategies, making sure that each customer-firm interaction point offers the same level of quality and personalization. Nowadays, the customer is no longer the same as yesterday. It is digitally informed and continuously connected, so much so that the interactions that the customer has at each point of contact with the company have much more influence. Digital technologies are therefore useful in managing these relationships. The automation of processes, algorithms and machine-learning, mobile devices, apps, and all other digital devices enable customers to get exactly what they want, when they want it and with a high level of customization. However, for some companies the transition may be more difficult than for others. It involves changing the way a company interacts with its customers and the way in which it manages to provide them with an experience consistent with expectations. Therefore, the following sub-paragraphs have the intention of clarifying how the service encounter occurs and how it is designed by companies.

3.1.1. Understanding about service encounter

The term “service encounter”, defined by Solomon et al. in 1985 and further explored in 1987, suggests there are two parts in the provision of service, a dyadic interaction between customer and supplier. Both, as parties involved, have a role to play in service provision. This definition was then used extensively in academic and managerial research, referring in particular to the meeting that takes place between the parties in marketing activities. In particular, Shostak (1985) broadened the scope of this definition by

defining the service encounter as a period of time during which a consumer directly interacts with a service.

As a starting point, Solomon et al. (1985) identify some relevant perspectives related to the service encounter in order to better frame its meaning. Service encounters are dyadic as the sale is a social situation involving two persons. Indeed, an interaction for there to be a service presupposes an interaction, and this interaction occurs between two parties, on the one hand the employee and on the other the customer. Both participants normally tend to maximize the rewards and minimize the costs of the transaction. But at the same time the authors affirm that in order to better understand its meaning one must not think of the two people as disconnected and analyse them individually, but one must analyse their own interaction in a dyadic view. The ability to identify satisfying factors in service encounters will be helpful in the design of services and revenue management by the company. Second, the authors state that service encounters are human interactions. They take place between two people, albeit with different roles. This statement influences the very way in which one has to see such a concept as it is the action of the people themselves that ends their meeting's success. The experience they experience in such an encounter, an experience that distinguishes one company from others, is the result of a unique interaction in contact with the person. Third, the authors assume that service encounters are role performances. As previously described, each participant has a role to play and understanding the appropriate behaviours to maintain in the positions they occupy allows them to identify possible strategies to be adopted for the meeting to be satisfactory. Although both participants may be very different individuals in their leisure time, they must follow a standardized set of behaviours in certain contexts, whether they are employees or clients. Just think of the clothing and behaviour to be adopted in a fine restaurant, the employee must relate with a certain kindness while the customer must dress and express himself calmly. Finally, Solomon et al. (1985) in their work defining this term, they derive a set of propositions which can be used to examine service encounters.

Bitner et al. (1990) continue the diffusion of this concept defining the service encounter as a service from the customer's point of view. In particular, they pause to isolate particular events and behaviours that occur during an interaction, consequently distinguishing whether they have generated customer satisfaction or dissatisfaction with the encounter experienced. The authors also agree with Solomon et al. (1985) that an effective management of the service encounter refers to understanding the complex behaviours of employees and customers, thus allowing to define possible actions to be taken to improve them. However, in their work they only stop to look at the point of view of the employees forming three groups of possible behaviours. First, when the service delivery system fails, employees are required to respond to consumer complaints or disappointments. Second, when a customer requires the contact, the employee must adapt the service delivery system to suit his or her unique need. Third, there may be some very unexpected employee behaviour from the customer's point of view. By analysing these behaviours, the authors identify some key characteristics of the service encounter. For example, when an employee compensates a customer because the service offered did not go according to plan or does

not meet her expectations, the customer frequently remembers that action in a positive way. It suggests that even service delivery system failures can be remembered as highly satisfactory encounters if they are handled properly. Conversely, if the employee fails to respond in problematic situations due to her inability, the main reason that leads to the failure of the service is the employee's response. In practice, it is how employees respond to such failures that determines how the incident is remembered by the customer. However, this behaviour cannot be generalized to the entire company or to the entire sector. It remains limited to the individual persons who have completed it. Therefore, the authors suggest companies to compare manager, customer, and contact employee perceptions of critical incidents in service encounters and the specific role expectations of all parties so that they can improve the service provision.

However, the spread of the internet, the advancement of technology, and self-service technologies are completely revolutionizing the way customer-company interactions take place. As suggested by Söderlund (2018), several scholars have noted that many traditional activities will be replaced by machines and robots. Therefore, it is necessary within this framework to identify how the service encounter occurs, also considering that in a more holistic view the service encounter is not reserved exclusively to companies and customers but to a multitude of actors related to each other.

3.1.2. Fundamental of service design

Designing digital customer experience inevitably brings back a call to the literature relating to service design. According to Maglio and Spohrer (2008), Service Design is a toolbox for investigating service systems, aiming to create a basis for systematic service innovation. Similarly, Patrıcio et al. (2020) state that service design serves to create new service innovations that promote the desired transformation. In this framework, service design is composed of two elements, in fact it represents the integration between a service perspective and a design approach. The purpose of this theory is to predict how it is possible to design a service so that the same service is at the centre of the design.

Vink and Koskela-Huotari (2022) argue that organizations and communities are enthusiastically adopting service design to drive transformation. In addition to the ever-faster advancement of new technologies, its foundation lies in the increasing role that customers have today within corporate strategies. Indeed, as confirmed by Patricio et al. (2020), service design focused on studying human experiences, incremental changes, and experience-based design initiatives, translating this understanding in the design of new service futures. Several authors agree with their interpretation, recalling that Service Design has been conceptualized as design-centred contributions to service innovation based on a human-centred perspective and creative methods (e.g., Mager, 2008; Polaine, Løvlie, and Reason, 2013). So, it is clear that in this way it assumes an experience and human-centred approach along the designing process. However, service design involves intentional efforts by both parties to shape the institutionalized social structures, so it is primarily linked to institutional work, but

also involves customer involvement within value creation processes. Service Design also reflects collaborative ways of innovation, following the principles of participatory design (Holmlid, 2009) and codesign (Sanders and Stappers, 2008), a creative and transformative approach that can help to go beyond the usual logic. This lays the foundations for the development of a co-creation of value between the various actors involved. Without this awareness, people likely reproduce the institutionalized social structures that they have internalized (Vink and Koskela-Huotari, 2022).

Nowadays, the interactions between business and customer and the value propositions of companies are increasingly characterized by a process of servitization. The service-dominant logic, as the philosophical basis for service science (Maglio and Spohrer, 2008), established the basis for goods to represent distribution mechanisms for services. Companies no longer transfer value but instead offer value propositions, as the value is ultimately determined by the beneficiaries of that service. Yu and Sangiorgi (2018) state that Service Design can be seen as a potential approach to bridge value co-creation and new service development by orienting designing processes toward a customer- / service-centric logic. It is interesting to note that the customer is no longer just a recipient but takes part in the value creation process. Service innovation provides for a process of co-creation, involving numerous stakeholders in the different stages of the new service development process (Russo-Spena and Mele, 2012). Value is jointly created by providers and customers through interactions and determined by customers in their consumption process (Vargo and Lusch, 2008). Recent studies investigated co-creation strategies to proactively involve customers in innovation practices. While companies produce resources and processes for value propositions, serving as a creator of expected value-in-use, customers lead the value determination processes by integrating their own resources with the company's value proposition. For example, customers can co-create value with providers by participating in production through suggestions, interacting with other stakeholders, or expressing their opinion on social media. However, value co-creation presupposes the need for some configurations of people, technology, and value proposition as long as everything is possible. Organizations' need resource integration mechanisms to align their aim and resources to customers' value creation processes, while consumers need to use their knowledge and skills to co-create value. Another insight to keep in mind is that technology is changing how that relationship forms. A new actor enters the scene: social robots, service robots or any other automatic system could play a pivotal role in the co-creation of value.

3.2. The introduction of new technologies

The discovery of mobile devices that can connect people digitally, whatever their distance, has undergone enormous progress over the years. Their introduction in different contexts has seen a change in the way of behaving, the way of working, or the way of thinking (Lew et al., 2018), leading to different adaptations in corporate strategies. However, these advances do not stop exclusively at enabling pre-existing activities through the use of digital devices. Customers or employees, and more in general people, have changed their habits and their needs leading to the necessity of different goods or services (Verhoef et al., 2021). Therefore, digital maturity has now reached a certain level of security, becoming an essential element to consider in designing corporate strategies. New technologies play a pivotal role in enabling companies to make service innovation possible (Lusch and Nambisan, 2015; Randhawa and Scerri, 2015; Witell et al., 2016; Hoyer et al., 2020). Nowadays, scholars are continually grappling with studies on the possible uses of these technologies (e.g. Lu et al., 2020; Chung, 2021), on the different ways to design a service (e.g. Lee et al., 2019; Belanche et al., 2020), on the acceptance by customers (e.g. Legris et al., 2003; Marangunić and Granić, 2015) or even on the impact of these technologies on service delivery processes and customers behaviours (e.g. Akram et al., 2021; Zhang et al., 2022). However, more recently the need for increasingly autonomous technologies capable of satisfying the increasingly frequent customer requests has led to the development of artificial intelligence. Artificial intelligence, as such, makes it possible to make a machine look like a human person and to carry out repetitive activities in a short time. Therefore, the following subparagraphs will aim to provide a framework on the introduction of artificial intelligence in service contexts and the consequent spread of robots as an actor within customer relations.

3.2.1. Disrupting position assumed by artificial intelligence

The development of artificial intelligence, born in engineering and computer domains, has gradually experienced its introduction in the context of services and is gaining more and more interest from scholars. Studies on smart service provision provide greater evidence of the role of technology at the front-line interactions and new propositions that emerge by enhancing personalization, interactive feedback, connectivity, and responsiveness (Rust and Huang, 2014). Artificial intelligence allows a machine to perform actions, communicate, and deliver service as a human in an autonomous way and allows companies to satisfy the enormous and extravagant requests of users without the expenditure of a large number of resources. In a service context where the interaction between company and consumer is predominant, it is invaluable that companies seek scalable solutions capable of replacing the workforce in those repetitive actions that demoralize workers and make the service offer ineffective. In this sense, artificial intelligence makes it possible to support humans by automating certain processes without losing that minimum of interaction that exists between in the human-human relationship. There may be different ways in which it is used, basing the interaction exclusively on the text or trying more

and more to resemble a human with a virtual or real humanoid form, as also described by Wirtz et al. (2018) or Pitardi et al. (2021). On the other hand, their introduction is difficult when dealing with complex tasks, when cognitive and emotional complexity are expected to be delivered as supported by Lu et al. (2020). The capacity and skills of the human being has yet to be achieved by the advancement of technology. Therefore, AI-based service robots are changing the nature of service encounters as supported by Pitardi et al. (2021).

The literature stimulates a debate on the opportunities of Artificial Intelligence not only in terms of new horizons and scenarios. The two sides of the coin facing the introduction of artificial intelligence are companies and customers. On the one hand, the company, as described above, can obtain enormous benefits in terms of automation, increased revenues, and reduced costs. It is represented by the employees, who will be the ones who will train the artificial intelligence. As suggested by Lu et al. (2020) it can benefit employees in executing tasks that are typically repetitive generating great satisfaction. At the same time, it can experience frustration and perceived loss of autonomy in their service jobs or even force them to change their working skills, thus generating job insecurity. This is a first challenge that the company faces to ensure the success of its introduction. On the other hand, it offers a variety of possibilities in the relationship with consumers. Consumers often find themselves interacting with a machine and no longer directly with a person. This machine has enormous possibilities, but there are two possible outcomes of the service encounter: a success or a failure, so create or destroy value. This dynamic view, however, depends on the consumer himself. Machines are designed to replace the human in carrying out certain actions and over time their capabilities will increase more and more, which can elicit a different result on the consumer based on different factors: their ability to use technology, their tendency to talk to a machine, their predisposition towards human relationships. As it is possible to imagine, a consumer who is not inclined to use the technology may encounter difficulties in its use, thus reaching a failure of the encounter with the service. Or a person skilled in the use of technologies may find artificial intelligence still not ready to offer a service, as it often does not understand the requests or does not know how to give an answer. In contrast, Pitardi et al. (2021) argue that such an encounter can be positive when, for example, the consumer is subject to embarrassment in relationships. It is for this reason that it is stated that the meeting with the service has changed due to the introduction of a new actor, AI technology, but that it can be positive or negative based on various factors, some in the hands of the business (i.e., AI-training) others in the hands of the consumer (i.e., skills).

Artificial intelligence, whatever form it takes, is the one that will interface with consumers, the one that will represent the company, and the utmost attention must be paid to its use so that it is not a failure. Therefore, service managers must work to ensure that it generates value and not, on the contrary, destroys it. First of all they owe their attention to the development and training of artificial intelligence, including an analysis of functional elements (namely, perceived ease of use, perceived usefulness, subjective social norms), social-emotional elements (including perceived humanness, perceived social

interactivity, perceived social presence) and relational elements (i.e. trust, rapport) that together drive customer acceptance of service robots and, ultimately, actual customer usage of service robots, as Lu et al. (2020) confirm in their work. Moreover, they must obviously build on the experience of consumers and improve it, they must ensure that the artificial intelligence knows everything about them, for example by connecting the service robots to customer relationship management systems as suggested by Wirtz et al. (2018). Indeed, retracing the contribution of Pitardi et al. (2021) the customer characterizes the success of technology itself, as in the case of an embarrassed person who is more inclined to use a digital service. In summary, service providers have to choose and adapt the right type of service robots to the contexts without underestimating the possible uses and the possible consequences of their bad training.

3.2.2. An overview on service robots

Service seems to be rapidly moving towards a virtual transformation made up of frontline technologies that guarantee greater productivity and better experiences (Wirtz and Zeithaml, 2018), similar to what already happened during the industrial revolution for manufacturing. In this context, De Keyser et al. (2019) offer an opportunity to relate Frontline Service Technologies (FST), defined as "any combination of hardware, software, information, and/or networks that supports the co-creation of value between a service provider and customer at the organizational frontline", to service research and their respective implications for customers, employees, and organizations. Authors support that the development of artificial intelligence (AI) and its swift spread through several connected smart objects is fundamentally changing the ways in which service is delivered and experienced by involved actors, and future research aims to understand the compromise between the effectiveness of these technologies and their efficiency. Indeed, scholars and practitioners are increasingly showing interest in robotics by noting how the combination with cameras, sensors, big data, or artificial intelligence offer potential opportunities to enhance experiences into stakeholders' relationships (van Doorn et al., 2017; Huang and Rust, 2018; Čaić et al., 2018; Wirtz et al., 2018).

Starting from robotics literature, service robots have been widely defined and studied in the literature, still remaining nowadays the subject of much research. Table 6 reports some relevant definitions in management and business literature, trying to highlight their main characteristics. From a functional point of view, service robots perform useful tasks for humans in social encounters (International Federation of Robotics, 2016) by independently developing and maintaining relationships (Van Doorn et al., 2017). They receive and understand input in order to generate an action (Gonzalez-Aguirre et al., 2021). Presenting themselves through adaptable interfaces, physical or virtual (Wirtz et al., 2018), they are able to obtain a human aspect (Čaić et al., 2018). From an operational point of view, they fit into daily settings (Qiu et al., 2020) by carrying out frontline operations (Belanche et al., 2020). As such, they are involved in customers 'journeys as a tool capable of enhancing customers' engagement (Huang

and Rust, 2021) and service experiences (Van Doorn et al., 2017). Although different from each other, they all show the central role of autonomy that service robots assume in relationships, reflecting anthropomorphic characteristics and learning skills. Therefore, it could be assessed that service robots are machines capable of autonomously carrying out predetermined actions along the service delivery process almost like a human, gaining the role of actor in a stakeholders' network. An actor capable of independently recognizing its interlocutor and delivering personalized experiences. They are so considered as a reality that will increasingly replace human service providers (Harris, Kimson, and Schwedel 2018).

Authors	**Definition**	**Main features**
International Federation of Robotics, 2016	Service robots perform useful tasks for humans or equipment excluding industrial automation applications. Service robots range from partial autonomy (including human-robot interaction) to full autonomy (without operational human-robot intervention). Therefore, in addition to fully autonomous systems, service robot statistics include systems which may also be based on some degree of human-robot interaction (physical or informational) or even full tele-operation.	autonomous, able to interact
Van Doorn et al., 2017	Service-providing humanoid robots lead to an increasing level of automated social presence. The ability of technology to engage in social encounters and develop relationships with humans will have substantial implications for both customers' service experiences and how such experiences should be managed.	humanoid, autonomous, engagement
Wirtz et al., 2018	Service robots are system-based autonomous and adaptable interfaces that interact, communicate and deliver service to an organization's customers. They can have a physical representation (e.g. Pepper) or are only virtually represented (e.g. Alexa).	autonomous, adaptable, humanoid
Čaić et al., 2018	Socially interactive robots are autonomous and can interact with people in a human-like way. The value proposition for these assistive robots emphasized functional assistance to humans, through physical interaction.	autonomous, human-like, able to assist
Belanche et al., 2020	Service robots are autonomous technology employed in frontline operations with some physical interface.	autonomous
Qiu et al., 2020	Service robots have unique characteristics in that they carry out tasks in human daily settings, face complicated and changing environments, and work with humans around them. Service robot attributes are the basis for perceptions and assessment by humans, exerting an influence on services: autonomy, anthropomorphism measures, perceived intelligence.	interact with human, autonomous, human-like, intelligent
Gonzalez-Aguirre et al., 2021	Service robots are machines that can carry out a series of actions. They are capable of autonomous decision making based on the input they receive from their sensors, cameras, and microphones, and they can adapt to the situation, and learn from previous actions	autonomous, able to learn, adaptable
Huang and Rust, 2021	Service robots automate social presence in the frontline. Service robots can easily do surface acting, and "one-voice" AI can enhance customer engagement by integrating various interfaces involved in a customer's journey.	autonomous, integrated

Table 6. Some definitions of service robots in literature.

However, service robots come in different forms. Van Doorn et al. (2017) investigated the different types of robots in service by measuring the interplay between automated and human social presence. In

the same direction, Wirtz et al. (2018) underlined how interactions can occur both physically through a physical representation and virtually through the use of text and voice. In both cases they can be simply a machine that performs actions without a particular shape or have a human aspect, resembling as much as possible a human.

Although both arouse significant interest, robots that interact only virtually are easily implemented along the customer journey, with low costs and huge potential. In the following paragraphs, attention will be focused solely on this type of service robots, in particular analysing how conversations between company and customer can take place autonomously.

3.3. Conversational agents in the business studies

Conversational agents are text-based computer programs that interact with users interpreting and responding to questions through the use of a normal natural language (Maudlin, 1994; Shawar and Atwell, 2007; Dale, 2016). They integrate computational linguistics techniques in an internet environment of communication. The term conversational agent properly describes its meaning. Composed of two words (conversational and agent), describe the exchange of thoughts, opinions, or feelings that usually happen during a conversation through a system identified as agent to create a resemblance to the human being. However, since its first introduction this technology has been recognized in literature under different terms shaping the interactions with customers (Xiao and Kumar, 2021). These terms include "virtual assistants", "digital assistants", "conversational agents", "chatterbots", or "chatbots" among others (e.g., Bibault et al., 2019; Dale, 2016; Shawar and Atwell, 2007; Tavanapour et al., 2019).

From a functional point of view, conversational agents are stated to facilitate various business processes, particularly those related to customer service and personalization, because of their accessibility, fairly low cost, and ease of use for the end consumers (Przegalinska et al., 2019), and therefore to minimize the distance between customers' expectations and agents' performance (Pantano and Pizzi, 2020). Some studies adopted the focus on routinary actions and self-service technologies, as the automation is increasingly becoming of primary importance in retailing and, more generally, in the service domain, to improve the efficiency of quite standardized activities that carry out a specific set of customer needs (Sheehan et al., 2020). As a consequence, they are useful for exchanging direct questions-answers, rather than for understanding users' sentences and how the relationship evolves (Chakrabarti and Luger, 2015).

The developments in deep learning and machine learning joining the classical natural language processing, the major technology for the deliberative module contained in it, point the researchers' attention on how these new technologies can change the way conversational agents are developed and how they can be used in new and varied service applications. The goal is to make the interaction between computers and humans feel exactly like human-to-human interaction (Kietzmann et al., 2018). The AI

technologies can easily simulate human conversations and provide more realistic experiences (Lai, 2000; Hill et al., 2015; Mou and Xu, 2017), learning from previous conversations and continuously adapting their actions from what has been learned (Xu et al., 2017). Studies on Intelligent System Assistance (ISA) offer just evidence on how these technologies influence decision-making by using emotional associations, social effects, or other methods to affect customer choices (Murray and Häubl, 2009; Burr et al., 2018). ISAs learn the personality traits of individual users from their behavioural signals and this information can then be used to match the marketing offering to consumers' preferences at the appropriate moment (Matz and Netzer, 2017).
In this technological context, the following paragraphs deal with an in-depth analysis of their use in business and management studies.

3.3.1. Literature review process

As described in the previous chapter, a systematic analysis of the literature allows scholars to construct and identify a knowledge map of the studies present in the literature. More in detail, it allows them to identify, select and critically evaluate published documents in order to answer a question formulated in detail (Balaid et al., 2016). This methodology is an excellent way to explore literature as it is widely used by scholars, but often they need to analyse the progress of the evolution of a theme by analysing a large number of documents at the same time. In this sense, Pritchard (1969) introduced the bibliometric method for the first time, a type of qualitative analysis that tries to consider words as a numerical datum to be analysed. It takes into account all the information of a document nowadays contained through the most common databases, such as for example the number of authors, journals, citations, published documents, to perform analyses based on statistical data such as frequency or co-occurrence (e.g., Bellardo, 1980; McBurney and Novak, 2002). In this way it is possible to more easily extrapolate data on the current trend of the literature and identify the main themes faced by scholars on a given topic. However, to be more precise, it is quite common that the bibliometric analysis involves a series of subsequent analyses divided into performance analysis and science mapping, the first concerning general insights on the documents extracted from the database and the second which enters the topic by searching for currents. research streams (e.g., White and McCain, 1998; Börner et al., 2003). Following its introduction into literature research, today it represents an interesting method of analysis widely used in literature (e.g., Liao et al., 2008; Greenberg et al., 2010; Belter and Seidel, 2013), and recently also adopted in management and business studies (e.g., Donthu et al., 2020; Khan et al., 2021).
However, as far as the method of analysis is concerned, it says little about the selection of documents. Therefore, the analysis that will be carried out in the following paragraphs will be structured as follows: first the documents will be extracted from the chosen database, then the PRISMA method will be applied to carry out a first screening and eliminate the documents not pertinent to the literature review but which for some reason include the search terms in the parameters used, and finally carry out a

bibliometric analysis of the collection of documents collected. A further qualitative analysis will be conducted on the topics resulting from the application of bibliometric analysis.

Furthermore, it should be noted that the database chosen for the analysis of the literature is Web of Science, a database widely used in management and business studies as described above, while two software will be used to conduct the bibliometric analysis, the open-source R package bibliometrix to analyse the data (Aria and Cuccurullo 2017), and VOSviewer to create and visualize the results in a graphical form (Van Eck and Waltman, 2010).

The analysis of the literature made to explore the theorizations of conversational agents in business and management literature - in line with criteria above - was carried out alternatively looking for the following terms: "chatbot*", "chatterbot*", "conversational agent*", "virtual agent*", "virtual assistant*", "digital agent*" or "digital assistant*". As a result, there were 10.924 articles in the Web of Science database up to date. No additional records have been added as it is considered that the terms used extensively for the database search already satisfy the intentions of this search. It is also evident in this case that a large number of documents makes it difficult to carry out a review of the literature if only those of real interest are not well filtered. Then, filters similar to those already used previously according to the PRISMA method are applied in order to extrapolate among these only the documents that will be used for the following qualitative synthesis. Therefore, even before starting with the application of the method, some documents are excluded directly through the basic filters provided by Web of Science. In particular, all documents not written in English were excluded as they were impossible to analyse (n = 156), all documents that were not articles as it is preferable to define a topic based on peer-reviewed documents (n = 6.184), and all documents not falling within the categories of management and business studies as they are not related to this research area (n = 3.560). These filters led to the exclusion of 9.900 documents. Although this seems a large number, it is easy to imagine that, being a technology based on computational language, most of the documents concern on the one hand the development of the same, generating a high number of studies in engineering and computer literatures, and on the other the functioning of the computer. itself generating a high number of studies in psychological and linguistic literatures.

Once the documents present in the database that are potentially useful for the research in progress have been defined, we proceed to the next step more commonly known as screening. The screening phase applied in this case was based on only two criteria: all documents that did not contain any keywords of the authors were eliminated (n = 16) and all documents that were not in line with the purpose of the search basing on title and authors' keywords (n = 58) although through the search query used had become part of the collection, thus reaching a total of 74 documents. Unlike the application of the same method in the previous chapter about the reviews on customer experience, customer engagement or customer journey, the criterion that has not been used in this case is the exclusion of the rarely mentioned documents. Although this criterion is reasonable and allows not to consider all those documents that have not made an important contribution to the literature, it is not applicable in this case

as the topic of conversational agents is quite recent, most of the contributions have emerged only in the last three years, consequently generating the need to select all of them in order to correctly identify the thematic evolution. As usual in the application of the PRISMA method along this thesis, a brief analysis of the excluded documents was carried out, which led to the re-inclusion within the collection of five documents erroneously set aside as not falling within the parameters of inclusion.

As a last step in this selection process, it is necessary to verify that the records included so far are eligible for subsequent qualitative analysis. The analysis is conducted on the eligible documents by reading the abstracts. Four other records are excluded because they are not directly focused on the topic of this research. For example, Sidaoui et al. (2020) in their research they train and use a chatbot in order to administer interviews on their behalf. Although this document includes the word chatbot in the search terms, it is not properly indicated as useful as it adds nothing to the literature related to conversational agents. Instead, Lee and Shin (2020) investigate the use of artificial intelligence algorithms, as machine learning, rather than conversational agents, thus also leading to their exclusion. A summary of the steps followed in the different phases with a detailed description of the criteria adopted for inclusions and exclusions is contained in Figure 10, a representation capable of clarifying the entire process of literature review on conversational agents. A list of documents is instead reported in Appendix IV.

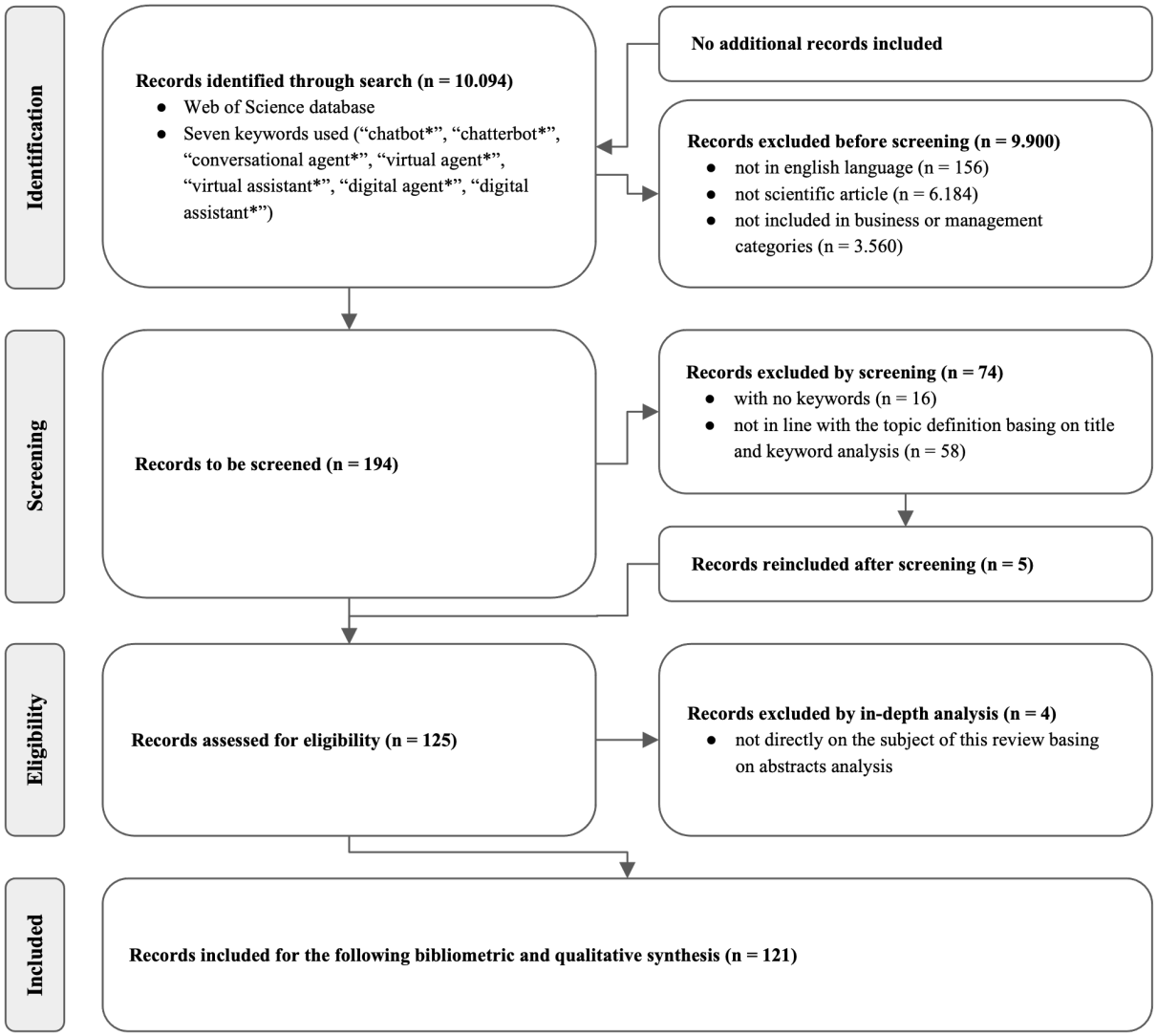


Figure 10. Flow of the literature review process on conversational agents.

These are the data used for the following bibliometric and qualitative synthesis, a multistep analysis that allows to obtain a complete picture on which to base and direct the research. However, the following paragraphs will be organized as follows. A first paragraph will be dedicated to the exposition of general data on data collection, then a science mapping will be performed, while the following ones will try to explain the main themes investigated in the literature.

Before moving on to the next paragraph, it is useful to clarify that in order to carry out the bibliometric analysis, the data extracted from Web of Science underwent a normal adaptation in order to avoid inconsistencies. Therefore, all terms differently indicated in the singular and plural form, all terms written by the authors with abbreviations and all terms written with special characters have been grouped under a single representative keyword.

3.3.2. General insights of the literature

A summary of the collection extracted via Web of Science is shown in Table 7. It is divided into two sections: one showing the main data of the documents and one showing the main data of the authors who wrote these documents. First of all, the timespan in which the downloaded records are included range from 2008 to 2022. Usually, it is customary to eliminate the current year in bibliometric research as it is not yet finished and could influence the analysis of the research carried out. Although this is almost true, the topic of conversational agents is quite recent and most of the contributions only occur in the last few years. Therefore, this year is not excluded, but is taken into consideration for any influences it may bring to subsequent analyses. The collection features 121 documents with an average citation of 19,02 in 58 different sources. Based on the selection process, these sources are composed solely of peer-reviewed journals. Finally, 424 keywords proposed by the authors represent the essential elements of their research, necessary and useful information to define the direction of the topic in the literature. As for the authors, there are 340 authors, most of them belonging to multi-authored documents, highlighting how this topic is the result of collaborative and not individualistic research.

Description	**Results**
Main information about data	
Timespan	from 2008 to 2022
Sources	58
Documents	121
Average years from publication	1,65
Average citations per documents	19,02
Average citations per year per doc	6,604
References	6604
Author's Keywords	424
Main information about authors	
Authors	340
Authors of single-authored documents	7
Authors of multi-authored documents	333
Documents per Author	0,356
Authors per Document	2,81

Table 7. Main information of data collection on conversational agents.

However, these main information are not sufficient on its own to show the evolution of the theme but requires further investigation as proposed below.

Starting from a simple analysis of the data, it is possible to verify how these documents are distributed over the years. Figure 11 shows through the use of bar charts the annual scientific production on conversational agents. It begins with the contribution of McGoldrick et al. in 2008, which introduced online assistants with avatars in marketing actions highlighting their adaptation to customer needs and buying contexts. Such technology has previously been extensively discussed in information system literature, but this is one of the first times that their purpose in business strategies is brought to light. A few years later, other authors began to show interest in conversational agents although identified with different names. Chattaraman et al. (2011) talk about virtual agents, Nunamaker et al. (2011) talk about Embodied Conversational agents, Ben Mimoun et al. (2012) talk about Embodied virtual agents. In practice, everyone talks about text-based tools sometimes accompanied by an avatar highlighting the characteristics, the reasons for implementation and the reasons for failure. The distribution then remains almost unchanged until 2016 when it begins to register increases that lead to a strong upward phase from 2019 to current. The last year, the current one in which such research is conducted, as described during the analysis of the main information of this collection, in this case is not representative of the annual production as the year has not yet ended. This distribution therefore shows an annual growth rate of 46.96% (2022 is not considered in the calculation of this percentage), a number that underlines how the documents on the subject almost double every year. This is a statistical element that underlines the growing interest of the scientific community in deepening the topic from different perspectives.

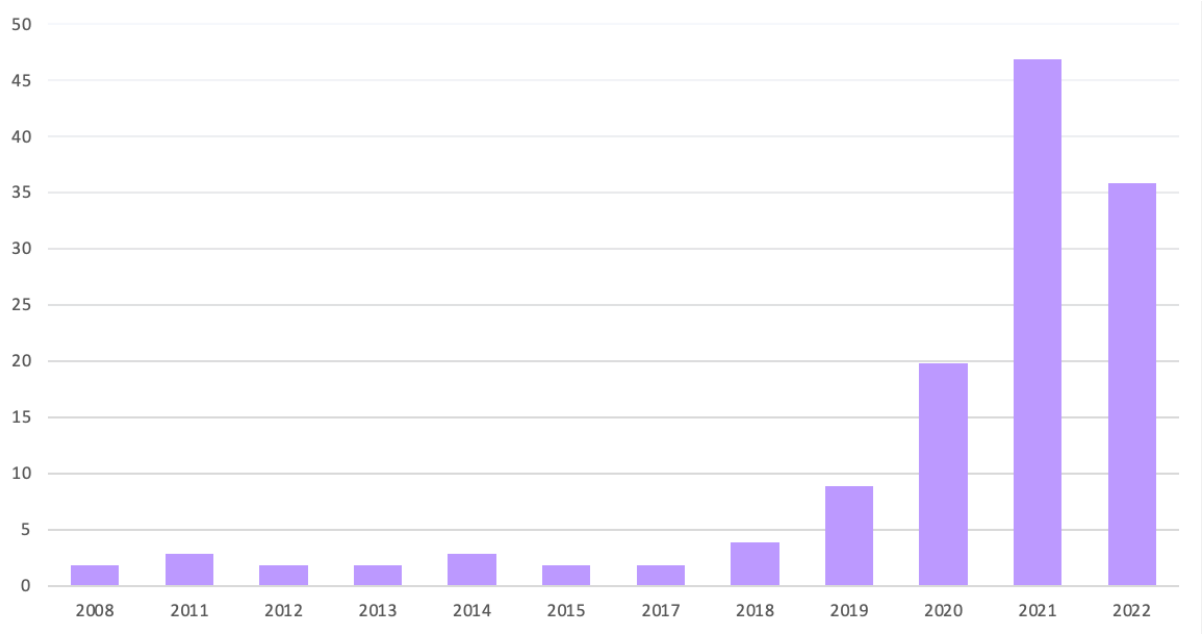


Figure 11. Bar chart of annual scientific production on conversational agents.

During these years, not many journals interested in this topic have already published contributions. As reported in table 7, the collection consists of 58 journals, although most of them are not actually representative of the theme as they have not published a large number of documents. In fact, among these 23 journals hold 71,07% of the extracted documents, while the rest have published only one document on the topic. Table 8 reports the most relevant sources in conversational agents' literature. Among them certainly emerge Journal of Business Research and Journal of Retailing and Consumer Services, two extremely important journals in business and management studies.

Sources	**N. of Articles**
Journal of Business Research	14
Journal of Retailing and Consumer Services	11
Electronic Markets	9
Journal of Service Management	5
Psychology & Marketing	5
Internet Research	4
Business Horizons	3
International Journal of Contemporary Hospitality Management	3
International Journal of Retail & Distribution Management	3
Journal of Research in Interactive Marketing	3
European Journal of Marketing	2
Industrial Marketing Management	2
Information Systems and E-business Management	2
International Journal of Bank Marketing	2
Journal of Consumer Behaviour	2
Journal of Innovation & Knowledge	2
Journal of Internet Commerce	2
Journal of Management Information Systems	2
Journal of Marketing	2
Journal of Marketing Management	2
Journal of the Academy of Marketing Science	2
Service Industries Journal	2
Technological Forecasting and Social Change	2

Table 8. Most relevant sources in conversational agents' literature.

For a better understanding, however, it is also possible to analyse how the journals have positioned themselves over the years. The number of documents published is not always a reference number to understand the interest of a magazine on a topic, but to understand how it is linked to this topic, when and for how long it is an element that offers more clear and significant information. Figure 12 shows just the main source dynamics over years. With this graphic representation it is in fact possible to highlight several insights. The first journal that dealt with the subject, i.e. Journal of Marketing Management, is not present among the main journals on the topic and remains with a number of only two published documents. Instead, the second, Journal of Retailing and Consumer Services, which started publishing in 2011 is now one of the main magazines interested in the topic with a total of eleven published documents. From the graphic representation, however, it emerges that the magazines that publish first do not always become those most relevant to the topic. In fact, the most relevant journal, namely Journal of Business Research, began publishing only in 2019, collecting fourteen documents in just three years that allow it to obtain the main position on the topic. Its ascending phase is also evident in the graphic representation. However, in a more general view, it is then possible to state that no major journal has disinterested over years as they all maintain a growing trend, despite the different growth.

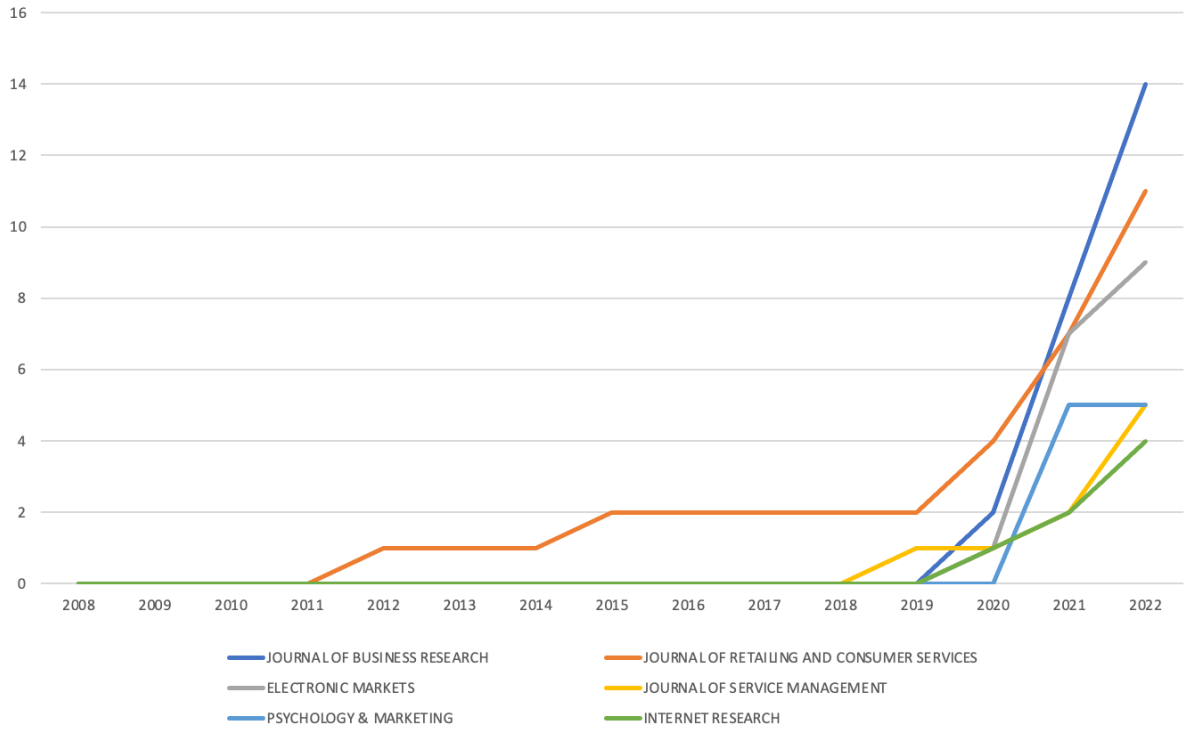


Figure 12. Line graph of main source dynamics over years.

The information shown so far essentially concerns general data of the collection of documents collected, but more detailed information on the scholars who contributed to the formation of the topic is necessary. Therefore, this type of information is dealt with below.

The authors as researchers and readers of the contributions published by the journals have a pivotal role in the definition and evolution of the theme over the years. A first reflection can be made on the number

of articles published. It is evident that the main authors, although identified as the most relevant authors in conversational agents' literature, have actually published a limited number of documents. The authors with the highest number of documents (n = 3) are Ben Mimoun and Pocin, on the same level as co-authors of the same scientific articles. Then followed by a series of authors all with the same level of production. Precisely only 10% of authors (n = 34) hold more than one publication on the topic, highlighting how this is still a recent and emerging topic in the more general literature of business and management studies. However, Table 9 reports the first ten authors extracted through the bibliometric software. Although with few articles, they have nevertheless collected a significant number of global citations, while the number of local citations, i.e. the citations made between authors who write about conversational agents and who are therefore included in this collection, is still low. Within this table it is useful to note that McGoldrick, despite being the first author as previously highlighted through the annual scientific production, is not present today among the most relevant authors as well as the rest of the first authors interested in the topic. Among these only Ben Mimoun and Pocin, fourth authors to have published on the topic, then continued their research becoming today the points of reference. This trend is not exclusive to this topic, often this also happens for other topics as in the case of the customer experience, but it certainly represents an element to keep in mind.

Authors	N. of Articles	Local Citations	Global Citations
Ben Mimoun M. S.	3	24	111
Poncin I.	3	24	111
Balakrishnan J.	2	7	36
Canhoto A. I.	2	4	81
Chattaraman V.	2	2	39
Cheng Y.	2	3	17
Chuan C. H.	2	1	16
Ciechanowski L.	2	13	64
De Keyser A.	2	10	113
Derrick D. C.	2	7	162

Table 9. Most relevant authors in conversational agents' literature.

However, as with the sources, it is also possible for authors to verify their distribution over time. In this sense, Figure 13 shows with a dot the year in which the authors published and highlights with lines the time elapsed between one publication and the other. However, as with the sources, it is also possible for authors to verify their distribution over time. In this sense, Figure 13 shows with a dot the year in which the authors published and highlights with red lines the time elapsed between one publication and

the other. It is interesting to note that none of the authors have continuously countered the research on conversational agents. Ben Mimoun and Pocin, although the most relevant authors, stopped their production in 2017, while new ones emerged starting in 2019, such as De Keyser, Ciechanowski and others. This brief reflection tends to verify how interest can change over time.

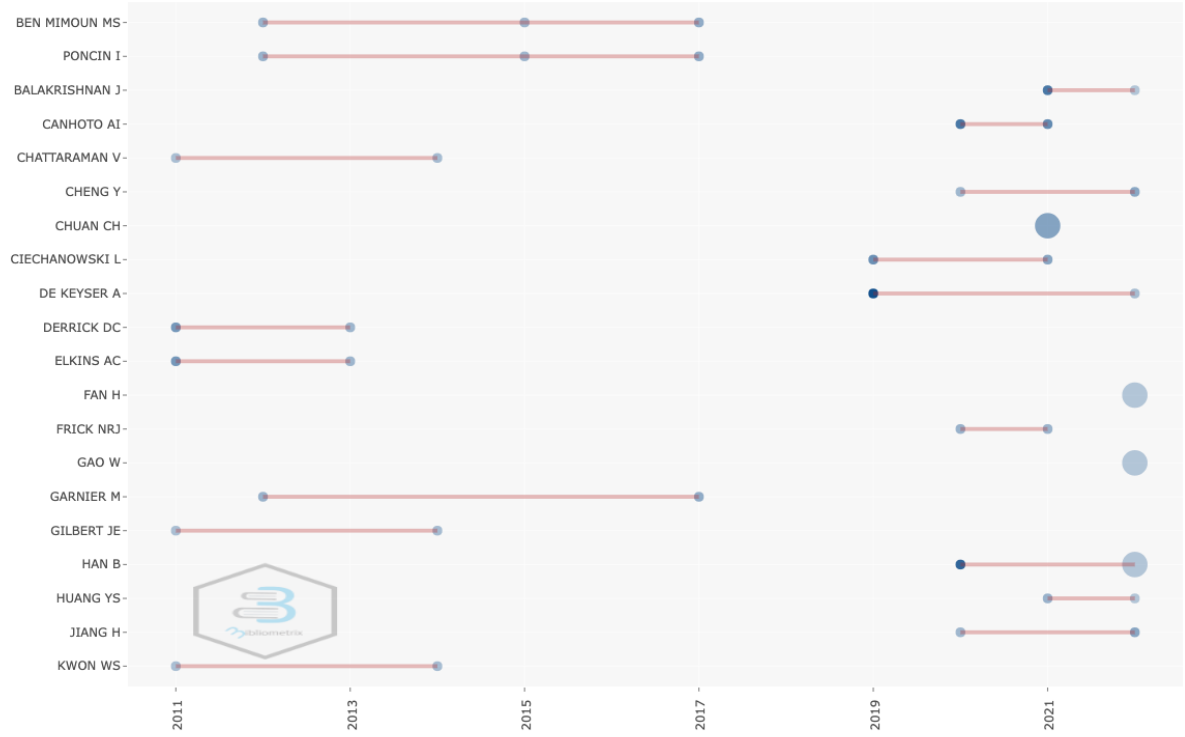


Figure 13. Line graph of authors' production over time.

A final general analysis on the collection of records extracted from Web of Science concerns the identification of the most influential documents that speak in some way of conversational agents. Table 10 shows the top 15 documents present in the collection object of this review, reporting the essential information and the number of citations that led them to be considered as such.

Reflecting on the results proposed here, it is important to note that the most relevant documents represented by Chung et al. (2020) and Luo et al. (2020) do not reflect the previous analysis carried out. Indeed, these authors are appearing for the first time and have not been named as relevant to conversational agents searches until now. Nevertheless, their contributions have the highest number of citations (n. 147 citations for the first one and n. 145 for the second one). Ben Mimoum, considered as the most relevant author, falls into this ranking, but only in a subsequent position with 48 citations.

On the resource side, on the other hand, the distribution seems to partly reflect what has previously emerged. Journal of Business is in fact the journal with the highest number of published documents and also the one who published the document with the highest number of citations. However, other journals emerge from this table despite not having been included previously.

Authors	Title	Journal	Year	Citations
Chung et al.	Chatbot e-service and customer satisfaction regarding luxury brands	Journal of Business Research	2020	147
Luo et al.	Frontiers: Machines vs. Humans: The Impact of Artificial Intelligence Chatbot Disclosure on Customer Purchases	Marketing Science	2019	145
Nunamaker et al.	Embodied conversational agent-based kiosk for automated interviewing	Journal of Management Information Systems	2011	126
De Keyser and Köcher	Frontline service technology infusion: conceptual archetypes and future research directions	Journal of Service Management	2019	111
Hoyer et al.	Transforming the customer experience through new technologies	Journal of Interactive Marketing	2020	94
Adam et al.	AI-based chatbots in customer service and their effects on user compliance	Electronic Markets	2021	85
Sheehan et al.	Customer service chatbots: Anthropomorphism and adoption	Journal of Business Research	2020	67
Pillai and Sivathanu	Adoption of AI-based chatbots for hospitality and tourism	International Journal of Contemporary Hospitality Management	2020	60
Canhoto and Clear	Artificial intelligence and machine learning as business tools: Factors influencing value creation and value destruction	Business Horizons	2020	54
Przegalinska et al.	In bot we trust: A new methodology of chatbot performance measures	Business Horizons	2019	49
Riikkinen et al.	Using artificial intelligence to create value in insurance	International Journal of Bank Marketing	2018	49
Mimoun et a.	Case study—Embodied virtual agents: An analysis on reasons for failure	Journal of Retailing and Consumer services	2012	48
Brill et al.	Siri, Alexa, and other digital assistants: a study of customer satisfaction with artificial intelligence applications	Journal of Marketing Management	2019	45
Trivedi	Examining the customer experience of using banking chatbots and its impact on brand love: the moderating role of perceived risk	Journal of internet Commerce	2019	43
Thomaz et al.	Learning from the dark web: Leveraging conversational agents in the era of hyper-privacy to enhance marketing	Journal of the Academy of Marketing Science	2020	42

Table 10. Most relevant documents in conversational agents' literature.

Given these general reflections on the collection of collected documents, it is now necessary to go into detail and analyse the content of these documents. It is through an in-depth analysis that interesting contributions can emerge to define the current research current and the evolution of the topic over the years. Therefore, with the next paragraph a science mapping is carried out that is able to define a conceptual structure on conversational agents.

3.3.3. Defining a conceptual structure

The use of the bibliometric methodology, as previously described during the exposition of the review process of the literature on conversational agents, is formed by a succession of analyses aimed at exploring and identifying performance, structural and scientific information on the topic (e.g., Byington et al., 2019; Zupic and Čater, 2015). However, science mapping is the part commonly attributed to the scientific analysis that allows for the extraporal cognitive patterns present in the literature. The purpose of this paragraph is precisely to develop this part and allow scholars to obtain an overview of the topic. There are different procedures that can be followed in order to carry out a science mapping. Peters and Van Raan (1991) have described how co-authorship allows to measure the connection between the different authors who collaborate with each other, whereas Callon et al. (1983) or Ravikumar et al. (2015) have suggested how the co-occurrence of keywords, also known as co-word analysis, allows to unpack a conceptual structure inside the extant literature. Therefore, although both are of great interest, in order to achieve the purpose of this review, co-occurrence analysis makes it easier to obtain the necessary information and identify the directions present in the study of conversational agents. This research strategy has been adopted by several authors in management and business studies with different objectives. For example, Leung et al. (2017) carried out a co-word analysis to identify the evolution of social media research over time, thus developing a research agenda. Donthu et al. (2020) identified the most frequent research topics of Journal of Business Research between 1973 and 2017 by analysing the author-specified keywords discussed at least 25 times. Gao et al. (2021) instead used this strategy to obtain a holistic view of the publication trends and draw future research trajectories in electronic marketing. While Verma et al. (2021) used the authors' keywords to discover the overall trends based on changes of applying artificial intelligence in marketing strategies. Therefore, it is assumed that co-word analysis is the correct strategy to follow in this review process as a tool to get an overview on evolution of conversational agents' research.

In order to conduct it, the software "bibliometrix", as already described in the previous paragraph, will be used to extrapolate the data, while VOSviewer will be used to create the graphical representation. All the keywords have been collected from the components that make up the collection on which this search is based. They have been cleaned up as described above, eliminating for example singular and plurals and other elements that could lead to identifying the same keyword as two different ones. A co-occurrence analysis based on the Louvain algorithm, that associates keywords by analysing their betweenness and closeness, helped to map the research domain's conceptual and create a network representing the intellectual structure of conversational agents. A graphical representation is shown in Figure 14. A graphical representation is shown in Figure 14. Through the use of points with different dimensions and colours it is possible to highlight the word frequency and the belonging to a different cluster, while the lines identify the connections between them.

Based on the correlation reason between the authors' keywords, four themes emerged from this co-occurrence analysis. As usual, at the centre of the network there are the main words of the theme resulting in "chatbots" and "artificial intelligence". A combination of words that highlights how the main trends of conversational agents' research are addressed by the potential use of artificial intelligence in service contexts. However, first among the identified themes, depicted with green colour, are the technical characteristics of this technology as the keywords refer to the way in which they communicate that is with a natural language processing, to the way in which they learn this through machine learning and the way they work together. The red colour, on the other hand, describes the way in which the conversational agents present themselves and the perception that customers have of this technology as it refers to its social presence, its connection with other technologies, acceptance, and customer use. Linked to this, the yellow colour describes the effects that the introduction of conversational agents has on the customer experience, highlighting the role of quality, satisfaction, and loyalty. Finally, the blue colour highlights the anthropomorphic tendencies that service robots are acquiring in order to resemble humans, underlining automatisms and the trend towards intelligent machines. It is interesting to note how the distance between the green cluster and the others makes it clear that the functions of chatbots have moved on to its introduction in service actions. Therefore, the following subsections aim to extrapolate some insights regarding these four lines of research identified through the co-occurrence analysis of authors' keywords.

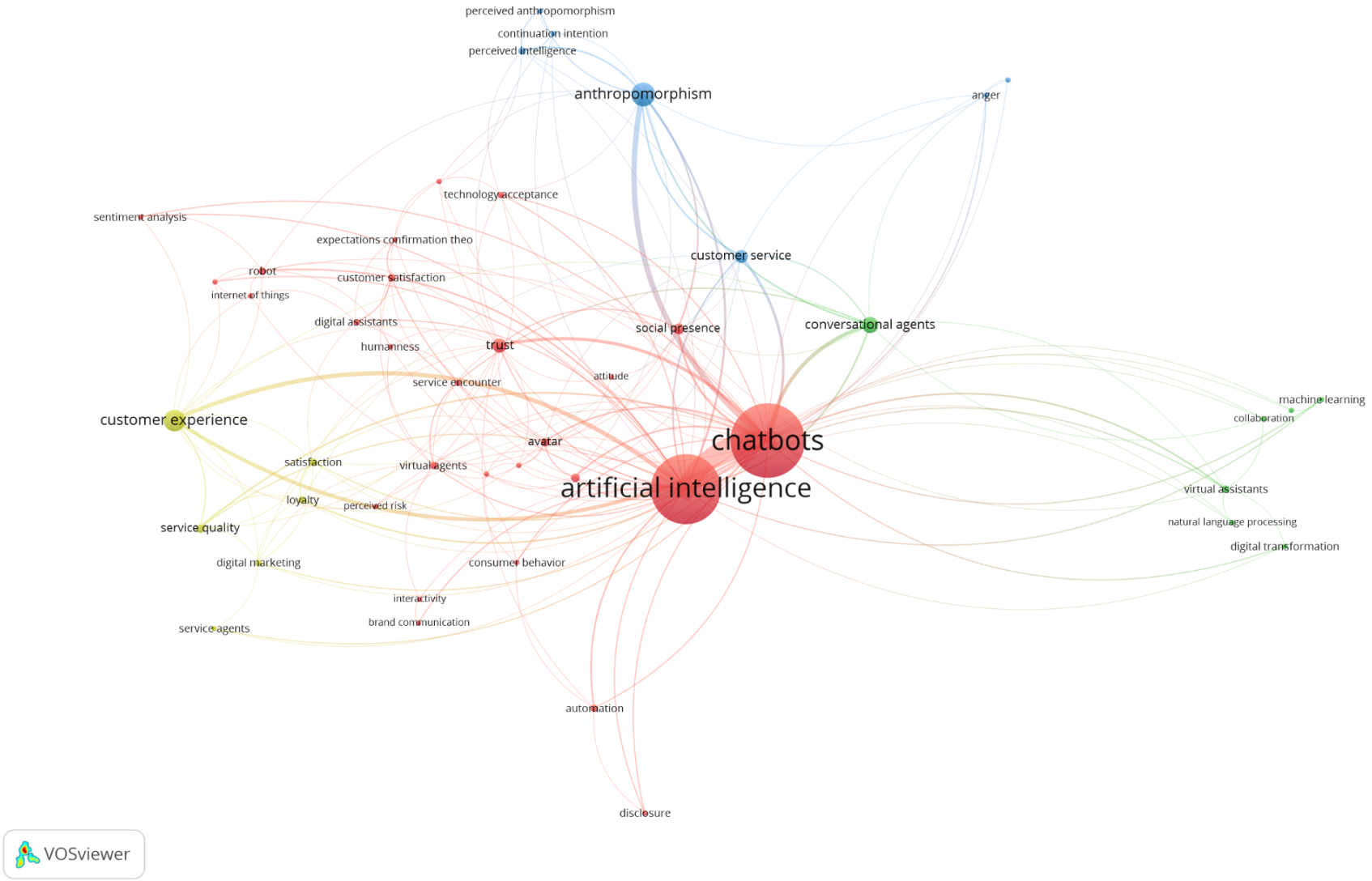


Figure 14. Co-occurrence network of conversational agents based on authors' keywords.

3.3.4. Properties of conversational agents

As previously described, conversational agents take on different nuances and definitions in literature. Weizenbaum (1966) introduced them as simple computer programs capable of making natural language conversations between human and computer possible. Mauldin (1994) considered them as robots able to maintain a sequence of appropriate responses during a conversation. Shawar and Atwell (2005) described them as machine conversation systems that interact naturally with humans. Przegalińska et al. (2019) highlighted how they are complex interfaces that lead to human-machine interactions. Daugherty et al. (2019) argued that they are tools able to understand consumers' requests and address them effectively. Ciechanowski et al. (2019) identified chatbots in software or computer interfaces which rely on technical AI applications to communicate with customers. Therefore, it is possible to assume that conversational agents are computer programs used by companies to interact in conversations with customers and, for this purpose, they must be able to acknowledge the questions asked by customers, understand their meanings, and generate predetermined or personalized answers. A process that is simple to describe, but difficult for a machine to perform.

Actually, conversational agents are increasingly accustomed to the use of artificial intelligence due to its incremental potential (Hoyer et al., 2020). Artificial intelligence, just as its literal meaning detects, renders a product, service, or solution intelligent (Shankar, 2018) as it performs cognitive functions such as learning, solving problems, or making decisions, usually traced back to human behaviour. In particular, to reach these objectives, artificial intelligence could be considered as an assemblage of technological components that through a joint use allow to simulate human intelligence (Canhoto and Clear, 2020). For example, artificial intelligence uses algorithms that allow the understanding of the natural language used by humans or learning methods that allow the acquisition of information from experiences and the portrait of emotions. More in detail, natural language processing is a computational technique for the automatic comprehension of human languages (Chowdhary, 2020), while machine learning is a learning program that automatically improves a system's knowledge through the acquisition of new data and information (Mitchell et al., 1990; Canhoto and Clear, 2020). However, these are not the only components. They include all those techniques that allow to perform data collection and storage, as speech recognition or image detection tools (Gaikwad et al., 2010; Kodra et al., 2013; Wuenderlich and Paluch, 2017), to in-depth analyse them, as deep learning algorithms (Ain et al., 2017 Mathew et al., 2020), and consequently to generate the correct output, as natural language generation (Santhanam and Shaikh, 2019; Suhaili et al., 2021). Therefore, the use of artificial intelligence to support conversational agents improves automation and efficiency of processes, giving them higher usability and responsiveness (Chen et al., 2021). They reply immediately, are easily accessible and always available (Roy et al., 2018) making customers feel comforted and valued. Conversational agents thus intrinsically become the real creators of values (Riikkinen et al., 2018).

However, to be clearer, broader insights into technology roles and customer perceptions are given below.

3.3.5. Technology positioning and customer perceptions

While physically the interactions take place through the exchange of words in face-to-face conversations, online they take place through messaging services where the conversational agents perform active communicative actions. Nowadays, conversational agents are commonly used in the delivery service process supporting companies to manage external relationships with customers or to improve and accelerate internal workflows (Johannsen et al., 2021). Service providers increasingly use conversational agents to communicate with customers in real time performing marketing strategies, gaining more engagement, improving productivity, and concurrently reducing costs (Luo et al., 2019; Leung and Yan Chan, 2020; Blazevic and Sidaoui, 2022).

However, a conversation can be made up of simple repetitive tasks or complex non-repetitive tasks. If you need information or a service, conversational agents can have a personal conversation with you as if you are talking to a human salesperson (Hoyer et al., 2020). They are able to better understand and predict customers' own preferences so that companies easily complete simple requests and marketing automation (Moriuchi et al., 2021), but this technology is not always able to control complex requests inevitably requiring the intervention of employees. Indeed, although defined as an autonomous technology, it actually has the task of supporting employees and not replacing them (Mittal et al, 2016; Brown and Halpern, 2021). As a result, Cheng et al. (2021) highlighted that there is a demand for a deeper understanding of consumer perceptions and responses to text-based service robots.

In this context, the technology acceptance model (TAM) is an excellent tool, widely used also in this case (Araújo and Casais, 2020; Rese et al., 2020), to describe customers' behaviours, understand their perceptions and measure their degree of acceptance. Using this model, it is possible to really understand how conversational agents affect service delivery processes in the customer's sphere. Customer interactions often need empathy and friendliness to successfully address superior experiences (Cheng et al., 2021). Empathy is that attitude of putting oneself in the shoes of others, it indicates the ability to enter deeply into connection with other people and to understand their state of mind. It is identified as a required skill to be acquired to achieve successful interactions between consumers and robots (Birnbaum et al., 2016) as a better understanding of consumers' needs allows for providing broader alternatives to address their problems. Consequently, the perception of customers would be more positive. On the other hand, friendliness is a kind attitude towards the interlocutor during a conversation. Being friendly with customers, conveying positive emotions and providing helpful services bring pleasure to customers and increase their perception of higher service quality (Chen et al., 2012). These components make up trust and, if it is established in a relationship, customers tend to relive that relationship (De Visser et al., 2016; Sameh et al., 2010).

3.3.6. Effects on customer experiences

The customer experience is the sum of the individual activities that the company performs in order to create something unique for the customer. Conversational agents are increasingly utilized in frontline interactions, in addition to or replacing the frontline employed, and therefore inevitably lead to consequences (Luo et al., 2019). The question of whether they have a positive or negative impact on the general customer experience affects scholars' studies. Cheng and Jiang (2021), exploring the marketing effort of conversational agents in customer-brand relationships, supported how interactions, information, accessibility, entertainment, and personalization achieved through the use of this technology in addressing services are all components of business strategies that impact user experiences. Therefore, having clarified the expectations and perceptions in the previous paragraph, it is now useful to show which dimensions of conversational agents' experience are affected.

As a first element, it is possible to consider the quality that conversational agents generate. Trivedi (2019), examining the customer experience of using banking chatbots, suggested that the quality of the service is essential to determine customer satisfaction, and consequently effects on addressing better customer experience. However, the concept of quality is not easy to understand. It can be considered from various points of view. Quality can concern the system, looking in this case at usability, availability, and adaptability for the processes to be performed and the information to be provided (Oostenbrink, 2015). At the same time, however, it can affect the effectiveness of the information provided, which is required to be accurate and relevant (Clikeman, 1999). Or it can also relate more generally to the quality of the service offered, encompassing responsiveness, assurance, and empathy established by technology usage (Delone and McLean, 2003). Therefore, in analysing conversational agents it is necessary to take into account that quality is a complex construct to be coordinated and managed in order to obtain results, results that manifest themselves to the satisfaction of customers. Poor management of the combination of conversational agents and frontline employees could lead to negative consequences (Prentice and Nguyen, 2020), even if Wirtz et al. (2018) suggested that balancing of tasks occurs on the basis of technology's characteristics and capabilities. While it is quite common that service robots powered by artificial intelligence, including conversational agents, perform better than employees in some situations, while employees dominate in some other situations, it is not to be underestimated (Ruan and Mezei, 2022).

Conversational agents have inherent potential that easily address benefits to customers and companies. Automation, personalization, and social presence are just some examples of the benefits they can bring to customers on the one hand, and also to companies as they are easily achievable and convenient, as shared by both scholars (e.g., Ashfaq et al., 2020; Eren, 2021) and practitioners (e.g., Baier et al., 2018; Wise et al., 2016). These benefits play a crucial role in customer satisfaction. As conversational agents become more widespread, interest in customer satisfaction grows (Rese et al., 2020). However, even in

this case its understanding is not easy. Indeed, satisfaction could be linked to utilitarian attributes, which mainly concern the functions performed, or experiential, which concern the generation of affective responses in customers' behaviours (Brakus et al., 2014). In this context, Mimoun and Pocin (2015) suggested that when the attention is focused on functional attributes automated systems perform better leading to higher customer satisfaction than interactions with employees, but when the attention is focused on experiential attributes automated systems lead to higher customer satisfaction only if their emotional communications are considered superior or at least at the same level as those of employees. As a result, when the service provision of companies meets customer expectations, trust and then loyalty grow in customers (Eren, 2021).

As described during the formation of the theoretical background of this thesis, quality, satisfaction, and trust contribute to establishing a sense of customer loyalty towards the company. They are considered as predictors of customer loyalty (Pratminingsih et al., 2013; Van Vuuren, 2021). A concept that expresses the degree with which a customer remains tied to a company even as there are possible alternatives from other suppliers (Fornell, 1992). The value perceived by customers in the use of conversation agents and the satisfying lived experience result in the intentions of retention and repurchase (Jones et al., 2006; Kim et al. 2017; Kim et al., 2012), indirectly leading to higher levels of company revenues. Given its importance for routing higher customer experiences, it has been extensively analysed in the literature. For example, Cheng and Jiang (2020) examined gratifications, perceived privacy risk, satisfaction, loyalty, and continued use to better understand the formation of the digital customer experience through the use of AI-driven conversational agents. Rajaobelina et al. (2021) analysed how the chatbot's usability, privacy concerns, and user personal variables influence the formation of loyalty. Recently, Jenneboer et al. (2022) also carried out a systematic review of the literature in order to clarify the impact that chatbots have on customer loyalty as this determines the provision of a better customer experience.

However, companies could fail in their intent. Castillo et al. (2021) argued that there is a dark side to AI-enabled service interactions due to cognition challenges, affective and functionality issues, or integration conflicts. Artificial intelligence gains more popularity due to its contribution to productivity and efficiency, but there is no universal solution to each service situation, often it depends on the characteristics of the individual customer. Conversational agents who do not understand the questions or do not know how to answer, or who do not have detailed information as they are not integrated with the company's resources, can easily bring anger, confusion, and dissatisfaction into the customer's mind rather than improve general customer experiences. Similarly, Mimoun et al. (2012) argued that the service provision fails when companies do not match customers' expectations. When companies promote intelligent conversational agents and encourage their use, but users remain dissatisfied with the service due to functional disruptions or hedonic deficiencies, it is clear that the service is no longer a success but rather a failure. This definitely doesn't bring enjoyable interaction experiences.

3.3.7. Anthropomorphic tendencies

The enormous advances in the development of artificial intelligence have made conversational agents more and more similar to humans (Candello et al., 2017), almost passing that Touring test that affirms the indistinguishability between a human and a machine (Mozafari et al., 2021). The anthropomorphism theory, recently used in correlation to conversational agents, argues that human-like presence of service robots facilitates the development of human-robot interactions (Blut et al., 2021), thus easily increasing customers' satisfaction (Söderlund and Oikarinen, 2021). People are used to interacting with other people, at least this was how the interactions between company and customer took place. However, the digital transformation has overwhelmed these habits, as extensively described above, leading to a complete redesign of the relations between them. These interactions, although facilitated by the potential offered by digital devices and artificial intelligence, tend to change customer perceptions. The presence of automated systems capable of thinking like a human and presenting themselves as a human would alleviate this disorder. When non-human objects behave like humans, people are more likely to respond and interact with them (Sundar and Nass, 2000; Wang, 2017; Lee, 2018; Sheehan et al., 2020). Conversational agents can resemble humans with small tricks. Giving them a name, a gender, a voice, or in the most extreme cases even a face, also known as an avatar, allows for a more fluent dialogue. Several authors have therefore investigated this opportunity over the years. McGoldrick et al. (2008) have already argued that a friendlier interface best suits customer needs and buying contexts, thus establishing opportunities for further directions. Mull et al. (2015) conducted an exploratory study on using avatars as online salespeople. Chérif and Lemoine (2019) found how conversational agents associated with the use of the voice generate a greater sense of social presence in the customers who interact with it. Weber et al. (2021) investigated how the transmission of human qualities should increase the acceptance of conversational agents and their perceived effectiveness. Han (2021) analysed the impact of anthropomorphism tendencies manifested through human-like chatbots on consumers' purchase decisions as a result of greater engagement. However, this trend is not entirely shared by scholars and still needs further investigation. Crolic et al. (2022) have recently brought to light how conversational agents with an anthropomorphic form, also known as embodied conversational agents, can have negative effects on customer satisfaction when they are in an angry emotional state. Therefore, it is required to pay close attention in the designing of services through the use of conversational agents, also considering the context in which they will be used play a pivotal role to reach customers' satisfaction. The following paragraph is intended to correctly address the theoretical background towards the context of analysis of this thesis

3.4. Inclusion of conversational agents in retail contexts

During the observation and analysis of conversational agents, scholars underline how this tool is essential and commonly applied in retail contexts. In fact, its intrinsic features lead it to be a widely used tool to support employees in answering questions addressed to customer service. Chattaraman et al. (2009) carried out an exploratory study on online customer service representatives that assist customers to easily search for product information. Later, Chattaraman et al. (2011) studied virtual agents during more general adoption in e-commerce. Luo et al. (2019) analysed the influence of conversational agents in purchasing decisions. Leung and Wen (2020) explored the use of intelligent conversational systems in restaurants as useful tools to take out orders, also making a comparison with the previous methods. Rese et al. (2020) investigated the introduction of chatbots in the online fashion retail sector looking for signals of reduced privacy or technology's immaturity.

Therefore, scholars describe and continually highlight the potential of artificial intelligence and the real possible application of conversational agents as advisor, assistant, and companion. An even more widespread trend nowadays following the pandemic. Indeed, in order to respect social distancing but at the same time guarantee efficient and pleasant services to customers, retail companies have shown a greater interest in conversational agents (Huang and Kao, 2021). However, the pandemic is not the only external influence that has contributed to the spread of this technology. More generally, digital transformation has led to a frequent use of services through the use of mobile devices. Although this trend may seem little present in older people, young customers are born in the world of technology and wish to entertain relationships anywhere and at any time (De Cicco et al., 2020). In this sense, artificial intelligence and conversational agents make it possible to satisfy their expectations as for example aiding them in taking shopping decisions (Chopra, 2019).

In addition, as described above, additional touchpoints and channels were introduced with the spread of digital technologies (Lemon and Verhoef, 2016; Shankar et al., 2016). These include social media, websites, or even smartphones. While on the other hand consumers are increasingly active, informed and connected (Prahalad and Ramaswamy, 2004). The service encounter therefore occurs unpredictably through one or more of these channels or touchpoints (Lee et al., 2018; McColl-Kennedy et al., 2015), consequently generating the need for companies to understand how to deal with this change. Conversational agents fit into retail contexts as actors capable of independently maintaining relationships along the customer journey (Adam et al., 2020). They position themselves in the middle between employees and customers by offering support to both sides and creating unique experiences. Supporting employees to find information within company databases or to get rid of repetitive tasks to pay more attention to complex ones. Supporting customers in all phases of customer journey, for example in the pre-transaction phase by providing personalized recommendations and detailed information needed to make a decision (Xiao and Benbasat, 2007; Yoon et al., 2013), in the transaction phase performing marketing actions (Kaczorowska-Spychalska, 2019), or in the post-transaction phase

providing assistance and recommending additional consumption. However, with advances in the development of artificial intelligence, smarter and more sophisticated conversational agents are appearing. The integration with sensors capable of recognizing audio, facial expressions, movements, allows for affective behaviours, even identified in anthropomorphic tendencies, to face this instrument. This offers future research insights and integration opportunities in performing retail activities.

3.5. Challenges and Research Opportunities

As widely described through the analysis conducted in this chapter, service robots represent a disruptive change in service settings with high potential benefits for both companies and customers.

There was a time now distant, in which the network did not exist and the only ways to express thoughts and require information were through in person conversations, postal letters and in some cases by telephone. The advent of technology has enabled new channels and ways of interacting with companies and between people. Customers are no longer the passive actors of relationships, but they are increasingly considered as active participants, thus becoming prosumers and creators of value in a service setting made of interactions. Companies on the other hand use to enable these relationships through smart technologies and frequently involve customers in the co-creation of value.

In this context, Wirtz et al. (2022) assume that the service revolution has arrived bringing with it a dramatic change in the service sector. Although at the beginning autonomous technologies, such as service robots and conversational agents, were hardly accepted, required long implementation times, and needed high development costs, nowadays the benefits are more widespread, customers are more likely to use them, and costs are surely lower. It is so clear how new challenges and opportunities arise for scholars and practitioners, as also Wirtz et al. (2018) supported in their research claiming that service robots are still in their infancy and only the passage of time will bring about their growth.

Technologies have a broad spectrum. Although mainly related to contexts in which the interaction takes place between company and customer, they can also be used in business-to-business or customer-to-customer contexts. Along this line, Bond III analyses the possible future directions of B2B customer solutions, identifying how many gaps still need to be filled through academic inquiries. Directions ranging from service design to the benefits they bring in customer relationships. However, this does not fill all the possible paths that can be taken. Another factor that affects people's choices today is privacy. The concept of personalized customer experiences is based on knowing as much information as possible about the user, even hidden ones, in order to predict customers' needs and offer a solution in advance. The performance of privacy by companies prevents them from fully knowing their customers, scholars and practitioners are therefore called upon to find alternative solutions capable of guaranteeing a fair balance (Ling et al., 2021). Moreover, Donthu et al. (2021) identify some themes, such as “technology, innovation & design”, “wellbeing” and “service encounters”, as hot topics for future research. As the service has changed and technologies are established, future research must, for example, analyse the

generation and management of emotions in a service encounter, or the successful achievement of well-being for both customers and employees. Therefore, higher elements that make up a superior customer experience and that can be achieved with the help of artificial intelligence combined in service robots. Conversational agents, as a typology of service robots, are included and contribute to the formation of future research directions. The ability to learn independently, the ability to offer personalized services, and the ability to generate dynamic content are just some of the characteristics of conversational agents that influence their use. Nonetheless, they are not fully developed but need further in-depth analysis to better reach their intrinsic intentions. Bavaresco et al. (2020) argue that there are unexplored scenarios in business domains that indicate opportunities for new studies. Zooming into specific contexts to explain all possible aspects related to conversational agents helps to create greater knowledge. However, to conclude, these are only a few examples of future directions that can be taken, but there are still many roads open that scholars and practitioners need to investigate.

Chapter 4

Methodology and Research design

A Qualitative Research · Research Process · Unit of analysis ·
Data collection · Data analysis

Chapter 4

Methodology and Research design

This chapter can be seen as an instruction booklet, a guide that was followed to research and collect the empirical data subsequently analysed. The chapter describes and explains the different choices made to better understand the research process. A precise and appropriate description allows to maintain a certain level of rigor during the research, an essential element for the research to be reliable and shared in the academic community.

4.1. A Qualitative Research

After framing the reference literature through a careful analysis of contributions conducted through the application of systematic methods, this research proposes to adopt a qualitative approach to the analysis of the phenomenon. Although initially considered as complementary to quantitative research and particularly criticized for its nature (Silverman, 1993), after a decade of progress (Bluhm et al., 2011) qualitative approach is now recognized as an independently adequate method of knowledge production among academic community (Eriksson and Kovalainen, 2008; Kovalainen and Eriksson, 2015). It is an approach that emphasizes mainly the analysis of words rather than numbers with a strong involvement of the researcher in the interpretation of the data. To create order in this wide field, several scholars tried to frame the previous contribution with a qualitative research process identifying the essential elements. For example, Lee et al. (1999) reviewed the body of qualitative research, and later Denzin and Lincoln (2005) retraced the progress of qualitative research over the years underlining how it is possible to identify different stages in them, called traditions, which characterize its application forms and highlight the multiple difficulties emerged in characterizing qualitative research. However, up to date this approach has been often used in social and business studies as also suggested by Cassell et al. (2006). In particular, qualitative research is preferable for exploratory research as considering the breadth, novelty and complexity of the topic, in which research moves for the first time (Bryman, 2016). Differently, with the choice of quantitative research, many social and cultural aspects could be lost or treated superficially due to its inherent feature of generalization (Myers, 2019). The qualitative choice prevails as it allows hidden results to emerge, which cannot be predetermined a priori as not known or not considered. Similarly, other authors believe that qualitative research is the best choice to tackle exploratory research. Parise et al. (2016) explore how companies are leveraging digital technologies to transform the customer experience through a series of consecutive interviews, or even Pantano and Vannucci (2019) that conduct qualitative research to explore the technological challenges in terms of technology infusion.

However, the goal of a research work is to fill an identified gap, merely conceptual or empirical, and at the same time make the reader confident in the reading. Holmlund et al. (2020), in guiding researchers

to better design and carry out their ideas and contributions, identify and discuss five elements of an excellent qualitative research, which are relevance, rigor, integrity, narration and impact. These elements are essential for the research conducted to be clear, systematically executable, and easy to understand for the reader. Therefore, the following paragraphs on methodological choices are designed to achieve this result.

4.2. Research Process

Before starting to describe the path followed in this thesis, it is useful to clarify what scholars synthesize for the research process and how it is constructed. Research process, as defined by Langley in 2009, involves the study of how and why some significant temporally evolving phenomenon unfolds over time. Bizzi and Langley (2012) confirm that the research process examines and theorizes about temporal patterns, such as events, activities, and choices as they emerge, and sequence themselves over time. Similarly, Cloutier and Langley (2020) state that process research involves a narrative storyline that reveals the mechanisms by which events and activities play out over time. However, although they start from the same definition, they approach the issue differently. Cloutier and Langley (2020) focus their attention on identifying the way in which scholars can construct conceptual contributions thanks to this theory, while Bizzi and Langley (2012) focus their attention in understanding the evolution of networks and the processes occurring in and around them. In doing so they define main process options for setting up a study.

According to Bizzi and Langley (2012), networks are identified as dynamic interrelationships constantly reconstituted by ongoing activity. For this reason, the mapping of a research process is fundamental to better understand how networks emerge and evolve over time. The authors then state six main different approaches to developing research designs and add at the end three more general suggestions for improving process understanding of business networks. First, they reflect on the importance of temporal orientation highlighting two alternatives: tracing back or following forward. Starting from the current knowledge of an outcome, on the one hand scholars can go back in time to understand how this outcome was born and evolved over time, assuming the possibility of obtaining reliable data on key events, and on the other hand can analyse and capture data in real time, although its problematic as outcomes may emerge only gradually. These two orientations are not opposites, but they can be used at the same time. Indeed, Leonard-Barton (1990) suggests that combining retrospective and real-time studies is an effective way to handle the trade-off between the two different designs, thus offering the possibility of tackling an ongoing process with the awareness of its previous evolutions. Second, they reflect on the boundaries regarding the unit of analysis. Although the processes have fluid boundaries and variable degrees of temporal embeddedness, a boundary must be established for the unit of analysis to be consistent with its contribution. For this reason, they then reflect on the depth or breadth that sampling must have in the research process. For example, in-depth single case studies tend to

produce rich understanding of specific contexts, while multiple case studies offer scope to develop insight from cross-case comparisons. This is a choice that a researcher has to make along the research process design, and it consequently affects the whole following analysis. The choice of a right approach allows the researcher to maintain a certain consistency in his work and to align the results achieved with the objective of the research, preventing them from degenerating into an impasse. Tomaszewski et al. (2020) offer the opportunity to identify and appear some fundamental approaches frequently used in qualitative studies, which are study, ethnography, narrative inquiry, and phenomenology. In particular, they affirm that in conducting qualitative research scholars are continually faced with processes of choice, characterized by previous choices, and a critical knowledge of the different approaches is necessary for the choice to be made in the right way. However, before adopting the right approach to use in this thesis, it is considered necessary to describe them briefly. The case study approach is based on the examination of one or more specific cases, in particular by noting its activities and its characteristics. Frequently used approach to illustrate, test, or extend an existing theory, to obtain a practical insight from a theoretical concept. The simple choice between analysing a single case study or more case studies determine consequences, as the choice of a single case study presupposes that it is analysed in detail while the choice of multiple case studies presupposes that a comparison is made between them. Then, the ethnographic approach involves the study of a culture, of a group of people, of their behaviours, of their language. Useful for describing and exploring the characteristics of a particular group, ethnography requires an extended period of contact between the researcher and the study subject. The narrative approach focuses on how an individual behaves in relation to an experience, obtaining the results from a storytelling process. Similar to case studies, it can be conducted on one or more people. Finally, the phenomenological approach focuses on a lived experience, analysing the way in which different people have lived it. Therefore, it is possible to highlight how the choice of a research approach has inevitable consequences on the path followed to reach the goal. Consequences that lead the researcher to collect data in different ways, to analyse them in different ways and to respect a certain rigor in the different steps of the analysis. In this context, the suggestions proposed allow scholars to reflect on how each choice, each approach, each methodology defines a different path and achieves different results. A good knowledge of them allows the researcher to choose the right one based on the relevant theme that he/she has decided to analyse.

The research process described in Figure 15 therefore has the purpose of rethinking and mapping the entire research followed in this thesis and at the same time frame the subsequent steps describing the way in which they will be analysed and synthesized in order to achieve the intended objective, which undoubtedly is an answer to the research question. A more in-depth description is provided below.

As a result of the previous chapters, a first part of this thesis was based on the study of the existing contributions in the literature relating to the main concepts, competing with each other, but at the same time different, which characterize the understanding of the topic: customer experience, customer engagement, customer journey, and conversational agents. The motivation that led to the analysis of

such a broad theoretical background was to consider the entire literature on relationships between customers and companies both before and after the digital transformation and how new technologies have been addressed over time in particular by relating with conversational agents. Although the topics have been divided into two different chapters, they participate together in the design of the theoretical background on which this thesis is based.

Having defined the theoretical background, the research continues in the exploration of empirical data. In fact, before being able to apply this research and measure its results, it is necessary to carry out a correct investigation on those contributions which cannot be detected in scientific articles, but which represent the result of companies' daily work. Here the research moves on a series of semi-structured interviews conducted with representative actors (service providers and companies) on conversational agents, in combination with the analysis of several secondary data. However, all data relating to this phase of the research is based on previous experiences. The case studies shared by the companies concern projects that have already been completed, just as the interviews conducted with service providers or with the companies themselves concern activities that have already been carried out. Therefore, it is possible to state that the exploration of empirical data takes place is cross-sectional in a retrospective time horizon.

Finally, the research continues with a direct application of the knowledge acquired in a retail context. There is no better way for a researcher to actively participate in the designing of a service than through the observation of changes before and after its introduction in corporate strategies, a way that effectively contributes to filling the little identified gap in the literature through the lenses of a scholar immersed in corporate environments. This way of acting is widely shared by scholars as a form of professional learning across management and business studies applications (Coghlan & Shani, 2016). Indeed, scholars agree that greater insights can emerge during the research when they interact and observe the topic through an internal perspective.

In summary, this thesis assumes a mixed-method qualitative approach useful to meet the aim described at the beginning. Each technique and methodology used in this research strategy, as also reported in Figure 15, allows for the analysis of multiple data, and contributes to achieving secondary results as prerequisites for the primary objective (Saunders et al., 2009). However, the description of the research process described here does not provide in-depth details on the methodologies used. Therefore, they are reported in the following sub-paragraphs as part of the guidelines presented in this chapter of the thesis.

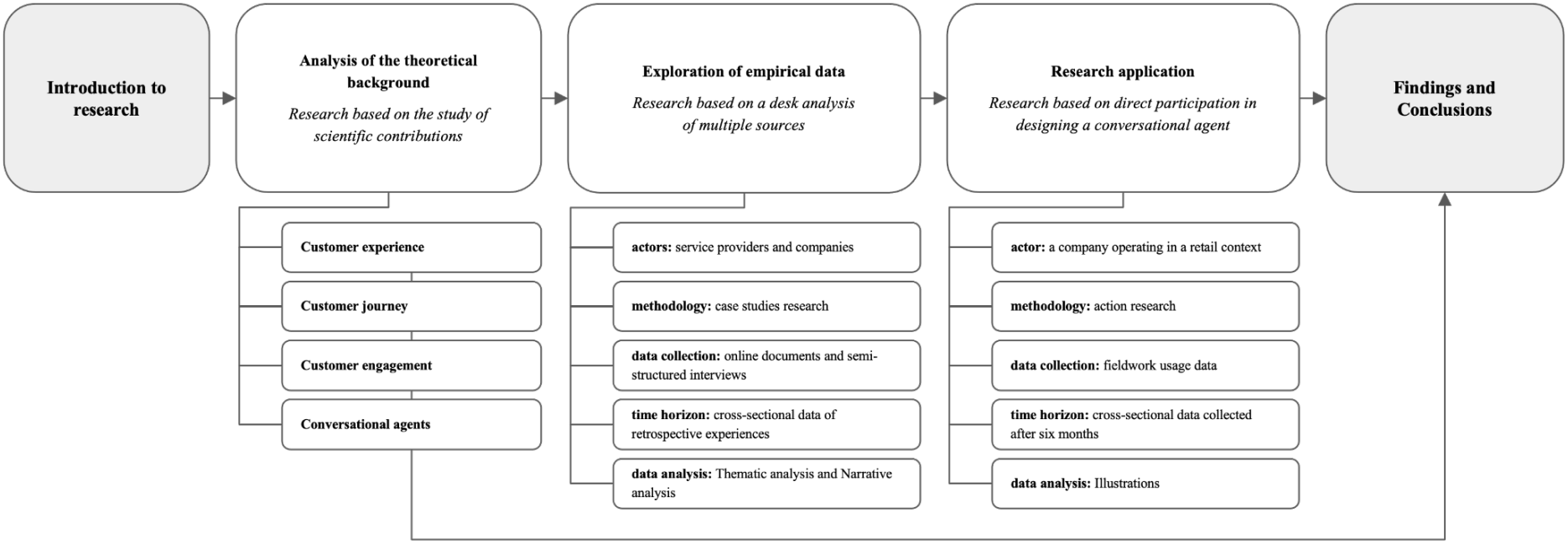


Figure 15. Mapping of the research process.

4.2.1. Case study research

Regarding the exploration of empirical data, considered as the following step of this thesis in Figure 15, an investigation based on the search and analysis of case studies are carried out to show how companies are implementing conversational agents, for what reason, and with what results. An examination of the existing experiences in the application of a new technology, although limited, are nevertheless important in order to avoid possible errors of evaluation. Furthermore, from the researcher's point of view, it is from the analysis of these exemplary cases that it is possible to identify common pathways followed during the design of a service. What has been said so far presupposes how the methodological choice of a case study research for this step of the thesis is founded in order to understand the existing framework of the conversational agents' use.

Case study research has been used extensively over the years in various disciplines as a method for theory building when not a lot is known about it (e.g., Runeson and Höst, 2009; Crowe et al., 2011), and these also include business and management studies (e.g., Woodside and Wilson, 2003; Dul and Hak, 2007; Ridder, 2017). Case study research obviously can be used in different ways (Bryman, 2016) although it is extremely important in the exploratory phase of a research topic to discover the relevant features, factors or issues related to the research purpose (Myers, 2019). In particular, on the one hand, it allows researchers to investigate experiences and situations that have already occurred over the years and that are usually communicated by scholars, practitioners, and companies. On the other hand, it allows researchers to show how theoretical research has practical implications, convincing readers of the applicability or inapplicability of their study and thus linking the academic world to real life. Moreover, this methodology has been facilitated over years thanks to the progressive introduction of internet-based technologies in daily activities. The spread of online databases, websites and newspapers has also allowed the researcher to identify and find more easily what is of interest for the research thus leading to a wide diffusion of the use of this methodology.

The case study research is not just a summary of what was found, but it is a more compiled method that deeply analyses the sampled cases (Myers, 2019). First of all, to conduct case study research it is necessary that researchers have a thorough knowledge of the subject matter and are familiar with the research topic, a certainty usually acquired through a careful analysis of the literature. For this purpose, the previous chapters have been constructed in order to enclose all the elements necessary to understand and identify the cases relevant to the search for findings and to answer the research question. Second, researchers need to write up case studies that relate to their topic, otherwise they would be useless. Although of obvious understanding, sampling is an essential part of this methodology. Besides making the research effective, researchers need to consider and overcome time and cost issues. A balance between time and cost spent with the additional contribution that each case brings to research is extremely important, thus identifying exclusion parameters capable of limiting waste of resources. Along this thesis, a limitation is placed in considering exclusively exemplary cases concerning retail

contexts, as described below in identifying the unit of analysis. Finally, researchers must correctly address the results of applying this methodology making them clear and convincing for readers. They need a clear explanation of the contribution they bring to knowledge in the field and a certain level of engagement that can make the story interesting. In this context, multiple sources converging in a triangulation of results benefits to strengthen theoretical propositions. As a result, it is possible to summarize that the purpose of case study research in business and management is to address empirical evidence emerging from real companies' applications towards an original contribution in knowledge making.

However, while with case studies research the researcher usually understands examples, observes the progression of events and asks about lived experiences, with the following action research the researcher is directly involved in the transformation process interacting in the identified context while at the same time studies the effect of that intervention. This methodological choice of starting with case study research and then falling into action research is based on the idea of passing from a more explorative perspective able to frame the context within a more practical one able to enable the construction of a novel knowledge. Therefore, in line with this consideration, the following subparagraph is dedicated to expose the main elements of action research.

4.2.2. Action research

The term "action research" was first introduced in 1946 in relation to a social experiment linking theory and practice for the production of knowledge. He believed that no one cannot understand a topic correctly if not by observing it closely, just as one cannot understand a change if not by being part of it. As such, this methodology differs from other research methods in that the researchers are not limited exclusively to the study of the phenomenon as an external observer but is directly involved in the change thus becoming an internal actor who acts and studies the phenomenon in a new perspective (Baburoglu & Ravn, 1992). This way of acting and doing research immediately aroused enormous interest in scholars and practitioners, as a way to connect these two closely related worlds. Indeed, it has been used over the years in multiple disciplines, from computer and engineering studies (e.g., Lau1997; Baskerville and Wood-Harper, 1998) to medical research (e.g., Hughes, 2008; Cordeiro and Soares, 2018), to the application as an innovative methodology also in business and management fields (e.g., Näslund et al., 2010; Scaratti et al., 2018; Shani and Coghlan, 2021). However, it is necessary to underline that the action research goes beyond the boundaries of traditional methodologies fixed in a linear sequence of application as it in a circular way introduces, examines, adapts, and contributes to real contexts at the same time involving multiple actors and resources. An explanation that is also reflected in its own name, as a methodology that acts and researches at the same time. Academic research precedes and directs the changes, while the practical actions are subsequent to the application of what is logically deduced in theory, therefore a close connection between them facilitates this

process. An important contribution to understanding the circular characteristic that distinguishes action research is offered by Eden and Ackermann (2018). Their graphic representation shows both the progression that from the design leads the researchers to act and then elaborate a theory to be used again in practice, and how other research methods inform and support each single step of the action research application. Regarding this last suggestion, the different methodologies used for the review of the literature and the case study research used in the exploration of lived experiences add a contribution to the application of action research in a retail context, as described below in the following chapter.

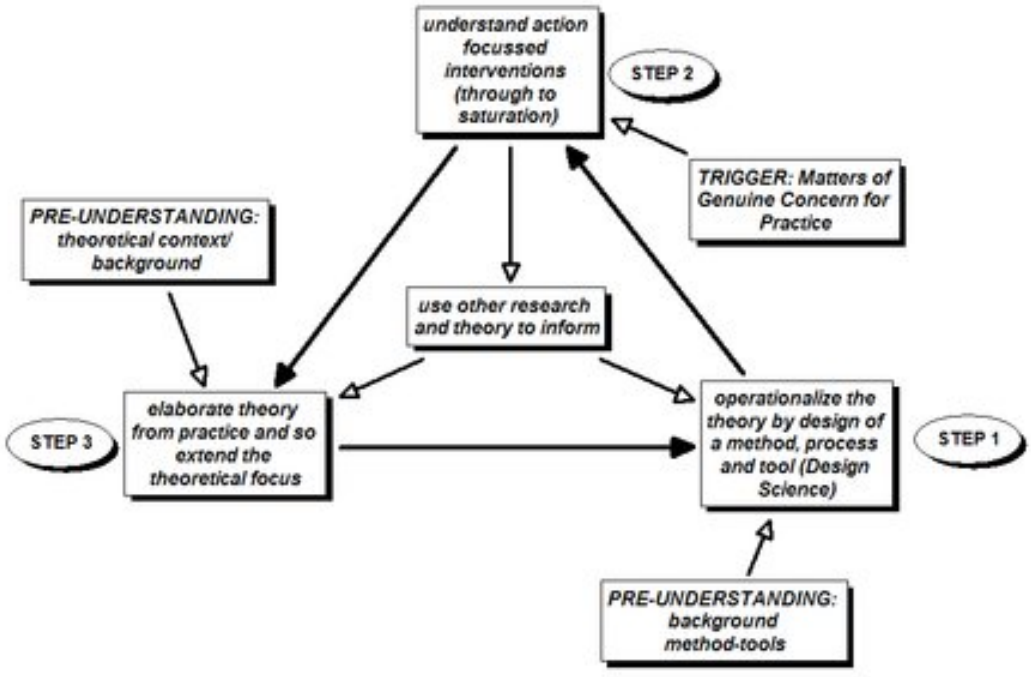


Figure 16. Starting the Action Research Cycle. Source: Eden, C., & Ackermann, F. (2018). Theory into practice, practice to theory: Action research in method development. European Journal of Operational Research, 271(3), 1145-1155.

Action research over the years has furthermore posed small changes that led it to be declined by scholars in different ways. In this sense Cassell et al. (2006), in their reorganization of qualitative methods in management research, framed four main expressions of action research: Experimental Action Research, Inductive Action Research, Participatory Action Research, and Deconstructive Action Research. Although all focused on the strong participation of researchers during a certain period of time as actors of change, in this thesis the first expression is the one that most effectively embodies the objective of its use. Indeed, as the authors report, the researchers involved in experimental application of their research first design, then plan and finally act, allowing in this way to obtain unique data and information, a real confirmation of what has been analysed in the literature and observed from the outside. However, attention needs to be paid in the evaluation and positioning phase to ensure an

objective approach to the definition of the research results. In action research, the production of knowledge is closely linked to the responsibility of researchers in elaborating, developing, and improving real and consistent results (Myers, 2019).

In conclusion, this methodological choice, although it needs special attention in its application, is undoubtedly well suited with the objective of the current thesis, giving a wide possibility to identify practical implications from the conducted research. Starting from the study of literature, passing through the research of what has already been done by other companies, participating directly in a change, it is in fact possible to link the theoretical results to the practical ones, offering a more real contribution and a more concise story to present to readers.

4.3. Unit of analysis

Conversational agents is a technology that companies and public bodies belonging to different contexts are gradually adopting as a business strategy to improve their services. The growing advancement of technology therefore reveals a difficulty of interpretation in a holistic vision of the theme as it is still an emerging theme in the literature, as it emerges from the previous review carried out. A common tendency in the academic community to fully understand a small part of the larger picture regarding an emerging topic is to first zoom in to analyse the details and then zoom out to understand the same topic in a larger context (Kanter, 2011). For example, Yue et al. (2014) highlight how understanding travel behaviour is significant for understanding more generally how to manage travel demand, or Wang et al. (2022) underline how analysing the issue of mobility more directly allows us to understand the functioning of driving in urban studies in general. In this sense, this research work tends to define the limits within which it moves, that is the unit of analysis taken as a reference in looking for cases and subsequently performing the action research.

The unit of analysis are therefore the paramount principles that researchers use in their research project to identify what and how to search for data (Bryman, 2016). It can be identified in the way actors are identified, that is, as individuals or as collective groups, or in geographical contexts, such as cities or towns. In this thesis, as indicated between the lines just above, the unit of analysis is instead identified through the context in which the conversational agents are used. A way to make the research clearer and to immerse it in a well-defined context. However, this is not the only parameter used. Considering that the level of analysis could be multiple and that the perspectives in turn could concern different actors involved, it was chosen to limit the research exclusively to companies that on the one hand develop the technology and on the other implement it in their daily activities. This is a way to put research from a business perspective concerning the process followed in the design of a service, taking into account those elements that nowadays contemplate business choices as the customer is now an active part of the service delivery.

4.4. Data collection

Having identified and explained the way in which this research will be conducted, it is then necessary to establish how the data will be collected. The data useful for conducting a correct search, of course, can be of different types, as there are texts, images, audio, video, etc., and can be obtained in different ways, through internet searches, through interviews, through newspapers, through software and so on. A multitude of different data that can lead to completely different results. In this context, Tomaszewski et al. (2020) offer a great contribution by resuming as the "big three" data sources of qualitative research (archival documents, interviewing and observation) are certainly of enormous importance to make the research consistent. They assume that data should not be seen as single resources in its own right but as different components of a single resource made of many different pieces. A methodologic triangulation of data allows comparisons and enriched results, also offering the opportunity to bridge the weaknesses of one source by compensating it with the strengths of others (Bowen, 2009; Bak, 2011; Verleye et al., 2019). Similarly, the possibility of combining qualitative and quantitative data should not be excluded. Because of its complexity, the authors argue that the derivation of conceptual insights from process data could be particularly challenging. One way to overcome this dilemma could be, for example, the stimulation of various forms of comparison. At the end of this process, the outcomes that emerge from the analysis could be different, such as patterns, mechanisms, meanings, or predictions. Moreover, in addition to these insights into the research process, the authors have identified some suggestions related to the concept of network. They must not be considered as entities that could be fixed in space and time but as entities constituted by flows of activity, in particular dedicating a focus on key changes or transformations. Network studies presuppose the need to collect data across multiple interlinked organizations, in this case all actors related to conversational agents. The following paragraphs are therefore dedicated to explaining how the data was collected during the research, differentiating them according to the methodology used. The first two paragraphs tending to archival documents and interviews are mainly related to case study research, while the third one tending to observation mainly concerns the application of action research.

4.4.1. Online documents

The term "documents" means a variety of different types of resources. Companies produce documents every day, some making them public, others remaining private. Those that can be found without asking the company may concern, for example, newspapers, letters, guides, etc. Moreover, more recently, thanks to the spread of the world wide web, the documents have also undergone a transformation becoming more and more accessible and easy to share, findable as well as for example reports, white papers, corporate presentations, social comments, etc. However, whether they are physical or virtual documents, indifferently they have common characteristics (Myers, 2019). First of all, the documents are not produced on request, but are produced independently by the companies, always there waiting to

be collected, assembled and analysed by the researchers. Although available, they do not already represent research. For this reason, they are not even specifically produced for the purpose of the research, but it is up to the researchers to verify their reliability, read their contents and interpret their useful meaning in order to understand how they can be useful in identifying their own theory. in real contexts. To this end, Scott (1990) has identified four criteria that researchers must consider before starting to analyse them: authenticity, credibility, representativeness, and meaning. Through these criteria, it is possible to understand if a document can be included or not within the research, and they do not change according to the type of document collected.

In particular, within this thesis, it was decided to conduct a collection and a subsequent qualitative analysis of only texts and documents deriving from multiple online sources. On the one hand, companies that develop conversational agents are inclined to explain how it was done, with which companies and satisfying which needs, on the other hand, many consulting companies are interested in conducting analyses on market trends and on the actors involved. These data are extremely important and have been used as a primeval stage in exploring empirical data. However, the analysis is conducted until the data emerging from the different sources reach a certain degree of confidence.

4.4.2. Semi-structured interviews

A type of data usually used, perhaps the most used, in qualitative research is then represented by interviews. Although written data allows you to have ready and detailed information useful for research, the direct relationship with company members or customers allows scholars to discover and obtain hidden data, probably not previously identified in the documents. Although they come in different forms, they share some common features as in each case they concern the interaction that occurs between the interviewer and the interviewee (Bryman, 2016). Interviews are thus mainly designed to encourage conversation and allow the participants involved to share their point of view, their impressions, their knowledge (Jones et al., 2010a).

In qualitative research, this way of collecting data often occurs in unstructured interviews and semi-structured interviews. Sometimes researchers examine a topic for the first time and then ask companies for any information or idea, other times, having already a basic knowledge, direct the conversation in order to obtain more relevant data. Along this thesis, it was decided to conduct a series of semi-structured interviews in order to avoid limiting the response of the people interviewing. This choice is made as the questions are made within the frame of both the insights deriving from the previous analysis of the literature and results emerging from online documents but leaving the possibility for the interviewer to ask further questions coming from the interview itself (Bryman, 2016). It is believed, as claimed by Mason (2010), that interviews have been carried out until sample saturation is reached, i.e. until nothing new appears in the interviews carried out. The focus of identifying how the elements coming from the letter have been applied in the development and use of conversational agents is asked

directly to the interviewees, identified in the service providers and in the companies that use conversational agents in their daily activities. The sessions were held online through the use of Microsoft Teams and following an interview guide as reported in Appendix V, so conversations were recorded and transcribed, and then subsequently analysed in detail. As a result, combination and comparison emerging from the analysis of both documents and interviews allows scholars to obtain and achieve better results and greater reliability.

4.4.3. Fieldwork data emerging from usage interactions

The data collection ends with a third type emerging from direct participation in a retail context. As a result of action research, by designing, implementing, and observing the functioning of a conversational agent in a retail context, there are different data that can be collected and analysed in order to move the research from a theoretical to a practical spectrum. Myers (2009) argues that, although interviews already allow us to approach companies, another way to gather qualitative data is to participate directly. This way of acting is recognized in the literature with the term "fieldwork", initially introduced by Hughes (2005) as a method of collecting data based on the observation of people on the spot, and subsequently expanded by Wolcott (2005) identifying it as a way of collect data that involves the personal involvement of researchers in ongoing activities related to the purposes of research. A way to gather understanding and generate knowledge to share with others.

The main feature of this type of data is that they are not predetermined. They are influenced by the knowledge applied by the researchers, by the possibility of access in a specific context and at the same time by the expertise of the researchers in collecting them (Myers, 2019). For example, the conversations or the observations that occur during fieldwork can happen anywhere and at any time. They are not directly available, but they take time to generate and collect. Some information may be official, others informal. In practice, they are certainly replicable but only under certain conditions, but at the same time they offer contributions that are difficult to reach with other roads.

The collection of data following this way of acting is obviously facilitated by the direct participation of the researcher in the activities. For the purposes of this thesis, conducting the action research, a direct involvement was necessary to implement the conversational agent. First framing all data analysed in the previous steps, then designing a conversational agent in collaboration with company members, then integrating it into customer conversations and finally collecting and analysing how customers have lived experiences. As a result, a series of practical insights, which certainly could not have been collected through a desk analysis, emerged from the usage interactions. Data summarily attributable to real examples of conversations and concise statistics of times and moments in which the interaction is activated. Anyway, each type of data requires a different method of analysis so that the maximum is obtained from their understanding, as specifically described in the next paragraph.

4.5. Data analysis

Once data collection is made, the data needs to be analysed. Each data has different intrinsic characteristics and led researchers to ask themselves the best method to use to understand the meaning of that data and to use it for their own purposes. Data analysis has multiple facets, different approaches, multiple differently named techniques. There may be obstacles in carrying out a correct and effective analysis. Therefore, the following sub-paragraphs are dedicated to clarifying the research process followed by providing all the information necessary to understand how the data collected as described above were respectively subjected to analysis. An accurate description also makes it possible to provide a certain rigor and high reliability to the study conducted, thus noting the importance of its description.

4.5.1. Thematic analysis

Within the qualitative approaches to analyse commonly collected data, thematic analysis is used to research, find, and underline the prevailing recurring themes. Although not recently introduced as can be seen along different disciplines in the studies of Aronson (1995), Braun and Clarke (2006) or Alhojailan (2012), it is increasingly used also in management and business studies, as for example Sodhi et Tang (2018), Sewak et al. (2021), or Gan et al. (2021). The objective of this approach is very clear in the academic community, nevertheless the process by which the themes are extracted has not been specified in detail over the years (Jones et al., 2010), sometimes even considered as an underdeveloped procedure (e.g., Bryman, 2016; Myers, 2019), thus leaving room for researchers to identify the most correct path. However, scholars (e.g., Ryan and Bernard 2003) suggest that the comprehension of "theme" meaning is extremely important in order to identify them. They are considered essentially as the reasons hidden behind the analysed text produced by the writer's thought and the reader's reading (Bryman, 2016). A recurring identifiable category or research focus that provides a theoretical understanding of the data. Therefore, considering this direction, it presupposes a high level of researchers' reflection in coding, analysing, and finding a sense of continuities and linkages between the lines (Braun and Clarke, 2012). The use of frameworks, matrices able to synthetically order and show the essential information for each identified theme (Ritchie et al., 2003), is often a strategy that scholars connect for assisting the thematic analysis of qualitative data.

Thematic analysis is used in this thesis as an analytical approach to detect how the case studies extracted from online documents are connected to the founding themes of the theoretical background. Customer experience, customer engagement and customer journeys often repeat and occur in the developments of service providers or in the choices of user companies, but they are not well specified and distinct. This approach allows you to read the documents produced for information, presentation, or advertising purposes line by line, identifying for what reason, how and when the conversational agents are currently used.

4.5.2. Narrative analysis

Otherwise, a more performing approach is necessary for the analysis of the interviews. Narrative analysis is an approach that takes into account the timeline, the way of presenting and the story told (Bryman, 2016). It tends to emphasize the experiences lived by the interviewees by taking their point of view, understanding their needs, and taking into account their knowledge or resources. In practice, by analysing at the same time both the information provided and more generally the succession of events in lived episodes, the researchers' attention shifts towards making sense of what has really happened. This is a great opportunity for researchers to get one step into a practical perspective.

As in the previous analysis approach, narrative analysis has also undergone a growing evolution in qualitative studies. Passing through different disciplines such as sociological (e.g. Franzosi, 1998), psychological (e.g. Smith and Sparkes, 2009; Stephen, 2011), or medical studies (e.g. Kruse et al, 2017; Väänänen et al., 2021), it has also been used in management and business ones according to different applications such as for organizational processes (Søderberg, 2006), for tourism marketing (Pike and Page, 2014), or for the understanding of entrepreneurial ecosystems (Hakala et al., 2020), thus noting its relevance for this thesis.

The narrative analysis used in this thesis is conducted in order to capture as much information as possible from the semi-structured interviews performed. In order to understand the complex decision-making routes that led to the introduction of conversational agents in daily activities, it is useful to leave ample space for the interviewees to tell their own experience, therefore encouraging and not limiting the story. Sometimes even inviting them to express their point of view for future directions in the development of the service. With this aim it is therefore necessary to enter their mind and understand their perspective, a possibility offered using a narrative approach.

4.5.3. Illustrations

Finally, a third approach is then used for the most extreme intervention of the researcher in real contexts. The triangulation is so complete. Fieldwork data that emerge through the direct participation of researchers in the change process as envisaged by action research cannot be analysed following the same approaches shown. Something more suitable is needed so that the data that emerged after months of usage are made understandable for readers and usable to answer the research question that characterizes the entire research work conducted in this thesis.

The conceptual framework that has begun to be built with the application of the two previous approaches is completed through the illustration of a specific case resulting from the practical conduct of action research. Illustrations, as strongly shared by Siggelkow (2007), allow readers to immerse themselves in the context and imagine how a conceptual theme might be applied in an empirical setting. Therefore, an approach widely used in business and management studies to approach the analysis of case studies (e.g., Storbacka and Nenonen, 2015; Andersson and Mattsson, 2016; Ramaswamy and

Ozcan, 2018). However, from an academic point of view, it is commonly considered as a proper framework capable of inspiring researchers and leading them to the derivation of renewed conceptual contributions (MacInnis, 2011). Illustrating a conceptual framework in which the intentions of interdependent actors are underlined, it is possible to guide and describe step by step the emergence of a novel service ecosystem (Taillard et al., 2016). In conclusion, this empirically informed procedure analyses and organizes current research into a viable managerial form (Storbacka, 2012) aligning design elements and management practices and consequently helping scholars to add a piece that bridges the identified research gap.

Chapter 5

Exposure of the findings

Framing the business perspective · Exploration of empirical data · Application in a retail context

Chapter 5

Exposure of the findings

After defining the theoretical background on which the research is based and the methodology used to conduct it, this chapter collects and presents the results obtained following the established instructions. The presentation of the findings is the first step towards the composition of a novel and wider knowledge, as a piece to add to that gap identified by the study of literature. A detailed description of the empirical data addressed and contextualized in the main customer-related constructs is therefore provided.

5.1. Framing the business perspective

The unit of analysis as described in the previous chapter leaves ample room for interpretation. The context identified in which the data was collected and analysed is the retail one, but nevertheless what we are observing concerns purely both the way in which the conversational agents are designed and the role they assume in relation to the three main elements previously identified in the literature: customer experience, customer engagement, and customer journey.

The analysis of the findings must inevitably start from understanding and specifying which actors are the subject of the collected data, those actors who are involved in the service delivery process. Therefore, trying to frame the way in which the service is created and delivered, it could be made a simplification by interpreting this process in a linear path that starts from the technology service provider, goes through the companies that implement the technology and reaches the customers who finally use the technology, as also shown in Figure 17. It is a simple interpretation which however reveals some hidden information useful for correctly directing the researcher and rightly improving reading of the results. Indeed, even if the process is described linearly, different connections exist in an ever-wider network interpretation of actors' relationships. Actors have relationships with other actors for different reasons, at different times and through different tools. For this reason, basing on their position, they could take different perspectives on the role of conversational agents along the service delivery process, but nevertheless they share a common idea about the usefulness that conversational agents have or must assume to be an effective and efficient tool. In this chapter, by exposing the findings carefully collected by rigorously following the pre-established methodology, the focus is not on the different actors' perspectives but tends to bring out ways, features and reasons related to introduction of this technology in daily corporate activities. It doesn't matter from which actor the information comes, but more about what information is being talked about. In this sense, the business perspective concerns more than anything else the contribution that technology makes and not the perceptions that the different actors have of it.

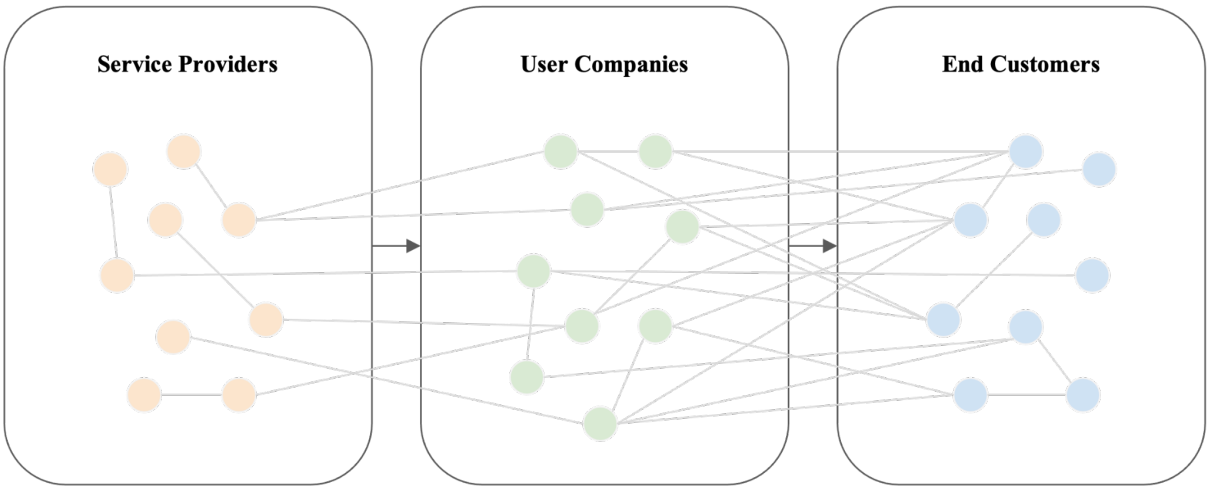


Figure 17. Conversational agents' service delivery process.

5.2. Exploration of empirical data

This step identified in the methodology as the exploration of empirical data concerns first a preliminary desk analysis of multiple case studies collected online, then followed by an early consultation of companies' perspectives through direct interviews with leading actors operating in retail contexts. This kind of acting based on real and lived experiences provides useful examples and ideas for the synthesisation of compelling information to use in the designing of an effective conversation agent, and at the same time provides practical and helpful linkages related to the three pillars of an experience previously identified above in the literature. This exploration is an effective process that allows both the researcher and the readers to delve into an emerging topic, acquire skills and create awareness, elements also necessary to then derive a novel knowledge not only based on theory but based on the reality of things. In this thesis, this stage is identified as a preliminary phase useful for providing empirical outcomes subsequently applied in the design of a conversational agent acting in a retail context. It is the consequence of what has been proposed and described in the methodology as a path for carrying out action research. Knowing what has already been done, for what reasons and with what results allows you to better target the design of a service.

5.2.1. Presenting exemplary cases

The topic of conversational agents, as highlighted throughout the entire analysis of the literature, can be considered as an emerging topic, still little known and still under development. In order to effectively address a new theme, research and case study analysis is shared in the literature as an effective approach. In this thesis, the analysis of the case studies was conducted by analysing the websites of both providers and companies, market research reports already conducted, news published by sector magazines, with the aim of extrapolating how they contributed to the customer experience, or have improved

engagement, or have enabled new connections in the customer journey. Although many case studies have been found, only a few have been selected as specimens for the purpose of this thesis. Table 11 is a graphical representation of an empirical framework that crosses these three elements for each case study analysed. Sorted in alphabetical order, and not by priority, it allows readers to imagine different possible uses of the technology and at the same time allows researchers to address various useful insights for a wide understanding.

As for the customer experience, the most recurring words concerning the renewed support offered to customers, the personalization of the information provided, the strong automation and simplification of self-service processes, or even the continuous presence of the company in relationships. Therefore, it is possible to follow a common line in which technology allows you to live in a simpler way the inevitable relationship that is activated between the customer and the company, consequently generating a unique and unforgettable experience that leads to formation of a stronger brand identity and greater brand loyalty.

As for customer engagement, the most recurring words instead refer to the world in which the interaction is activated, managed as it would be done by a human, accurately and effectively. The conversational agents identified here also underline how the customer can feel more involved when the company responds promptly in a decidedly short time, but also advising and recommending possible alternatives or additions to the requests made. The customer involved in the interaction also appreciates the painless climb from artificial intelligence to the human operator in case of difficulty, a way to keep that established involvement active and close.

As for customer journey, there are two possible insights that can be extrapolated from these case studies. On the one hand it is possible to identify which touchpoints are used in the contact between the company and the customer, on the other hand it is possible to see at what moment along the customer journey the conversational agents have been designed to make a contribution. Customers relate to the company through their devices, such as smartphones or personal computers, mainly using live messaging tools installed on the website or messaging services provided by social media. Conversational agents therefore position themselves alongside employees as an active part of customer service. Mainly used in a pre-purchase phase to provide all the information necessary to accompany the customer towards the conclusion of the purchase, it is in fact sometimes also used to provide first aid in case of problems arising after the purchase.

In conclusion, the analysis of the case studies identified here assumes that conversational agents, thanks to their intrinsic characteristics, inevitably contribute to improving relationships between customers and companies, consequently generating positive consequences on the three conceptual pillars analysed in this thesis. In different ways and with different objectives, this technology is efficiently and effectively used in the daily activities of these companies. Nevertheless, a more systematic and in-depth analysis is necessary to understand the effective implication that it has in business strategies and the actual satisfaction of customers in its use.

	Customer experience	Customer engagement	Customer journey
Aboca *a case study retrieved on Usebot website*	Support customers in their health and lifestyle choices by giving answers on Aboca natural products and conscious nutrition, automating processes and conversations.	An intelligent virtual assistant, installed on your website, capable of automating responses and interacting with users.	Every day, hundreds of customers interface with the Customer Care team to get advice, indications on the use and characteristics of the products and information about the company. A tool has been introduced that recognizes the needs of customers, directs them in the right choice and improves response times by providing a smooth and uninterrupted Customer Service.
Allianz *a case study retrieved on Landbot website*	Simplifying the claim process for the insurance products using conversational experiences, we wanted to develop a decision aid tool that would always be available. A tool that would make the customer happy and which would continuously be improved.	With chatbots transforming a complex form filling and unorganized system into an operationally efficient process along with a product feedback loop, Allianz Benelux is now ready to serve millions of customers. Within a year more than 18,000 customers used the chatbot with 90% positive feedback ratings.	Now, we can help our customers find the correct form or support number to file their claim via website, and every customer comes to the right destination within a minute. With Landbot, we created simplicity out of complexity.
ASICS *a case study retrieved on Amelia website*	Amelia indirectly is also expected to improve experiences for ASICS' employees by reducing call center workload, which will enable staff to focus solely on high-value tasks.	Amelia is a critical addition to the company, with an unmatched ability to understand, learn, interact and empathize with our customers while accurately and efficiently resolving their inquiries.	ASICS customers can now interact with Amelia 24/7 via numerous channels – email, website chat and social media – for assistance with transactional requests relating to order status and return status updates, dispute case status flows, return instructions and shipping information.
BNP Paribas *a case study retrieved on Amelia website*	NOA will enhance the client experience with 24/7 on-demand access to information and services. These implementations also offer secondary benefits by automating high-volume client needs, which frees experienced support staff to focus on complex or higher-value tasks.	NOA guides shareholders through exercise options and provides up-to-date information regarding funds from sales.	NOA guides shareholders through exercise options and provides up-to-date information regarding funds from sales. As the first point-of-contact for more than 1 million customers and employees, NOA was trained to complete 27 tasks in English and French.
Bricobravo *a case study retrieved on Algho QuestIT website*	Andrea, the Virtual Assistant equipped with Artificial Intelligence developed by QuestIT for the e-commerce of Bricobravo, a shop that sells bricolage and do-it-yourself products, designed to improve the customer experience by making the search for information more usable and the buying process.	Having a virtual assistant allows us to be available to the customer 24 hours a day, seven days a week and to provide all the answers to the questions that our average user has.	The real strength of the platform is that it is an open system that can be used both in voice and text form, focused on targeted requests, so as to respond to the precise needs of the customer or user who wants more information. Through the Virtual Assistant it is possible to obtain automated navigation of the website or even request information relating to the purchase conditions and pre and post-sales information.
CircleK *a case study retrieved on Artificial Solutions website*	Teneo enables us to achieve what we want in terms of adding languages, porting to new channels and integrating into back-end systems. Major improvements in customer satisfaction, sales and cost reductions have made an impact	Circle K built and developed a highly complex and dynamic Conversational AI solution that was capable of answering a diverse range of customer requests. In cases where a query is outside of its expertise, Teneo will seamlessly hand the	When dealing with requests, Teneo is able to assimilate all the information provided by a customer over the phone or via text chat, and consider other factors such as context, user preferences and back-end data sources to deliver the right

	on the growth and expansion of the business.	conversation over to a live agent, complete with the transcript to provide the user journey up to the point of handover.	response.
Coop Sweden *a case study retrieved on EBI.AI website*	With an AI assistant, people become familiar with Coop and vice versa, strengthening their bond while building trust in the Coop brand. Deciding what to buy is easy. When a Coop customer doesn't know what to have for dinner, they can ask Cooper for ideas. Buyers need a sweeter experience to whet their appetite if they're to come back for seconds.	Using AI, Coop can easily add fun features to their AI. Always using the most up-to-date information it can successfully answer common questions. Cooper is also programmed to recognise the products Coop sells, so customers can scan them with the camera on your phone and Cooper will tick them off the list. It's a simple way to get people to the checkout faster, with less stress.	Having a conversational AI assistant on the Coop website and app means Coop customers can start a conversation with the store, anytime, anywhere. Coop has unlocked an infinite number of ways to help every type of customer shop in any way they choose to in their store — online and in-person — and link every part of their experience together.
Cup Solidale *a case study retrieved on Usebot website*	CupSolidale speeds up requests for tampons, exams and medical visits during the pandemic with a virtual assistant. Users always receive the right answer in a few moments and are directed and accompanied towards the resolution of their requests.	A Virtual Assistant powered by artificial intelligence that automates responses and interacts with users as if it were a human but which, when necessary, in the case of complex requests, invites the user to contact a human operator.	The digital assistant, supported by conversational artificial intelligence, guides and informs the user about CupSolidale's services, helps and guides in creating an account, booking and cancelling visits and analyses.
Fnac *a case study retrieved on Inbenta website*	An omnichannel approach to serve the customer better. Fnac has been betting on making it easier for their clients to shop online and build an omnichannel customer experience. Fnac decided to implement self-service tools to handle clients' requests as easily as possible, in the fastest possible way.	An AI-based chatbot builds conversations with users and resolves queries more dynamically. It escalates unresolved requests to support agents within the same discussion box.	Fnac offers a powerful knowledge center and a chatbot on their site, and are already planning on deploying a new chatbot instance for a Whatsapp channel.
Hype *a case study retrieved on Algho QuestIT website*	The Artificial Intelligence system that improves Customer Service work, reduces waiting times and offers a fast and personalized experience to its customers.	With Algho we have intercepted the need for Customer Service by developing a customized Email-Bot that has significantly simplified our work but above all contributed to guaranteeing a level of support for our Customers up to our standards: fast, simple, effective.	The Hypebot 2.0 assistant has been integrated with the help desk management software with the aim of automatically responding to customer requests received by email. The Customer sends a request for information via email and the system manages and analyses the ticket and then responds autonomously.
Ikea *a case study retrieved on Artificial Solutions website*	Ask Anna is one of IKEA's most versatile employees. Ask Anna delivers a better customer experience for those visiting the IKEA website, combined with the ability to provide sales help and advice to customers.	Ask Anna is extremely intelligent; she understands the context of conversations and unlike many virtual assistants has a memory for details. Ask Anna also helps IKEA cross-sell by recommending other complementary items or suggesting alternative products that are similar. For example, ask Anna about sofas and she will offer a list of options.	Ask Anna is now connected to all of IKEA's products, allowing her to answer any questions at a moment's notice delivering the results in an extended product view. Should customers require help after their purchase such as a query over a missing part or care instructions for an item, Ask Anna can help them too and even order the missing item.
Lloyds Banking Group *a case study retrieved on Creative Virtual website*	It's important that our customers can have conversations with us how they choose to. And if that's Facebook or Twitter, then they should be able to get the same level of service as our more traditional channels. We searched the market and decided that the Virtual Assistant was the best tool to help us improve the	Consistent, accurate and seamless engagement across channels is crucial for building much needed brand loyalty in a highly competitive marketplace. Customers must feel confident that they will receive the same information and support no matter what channel they use as web, mobile, bank branch, kiosk,	As customers adopt these new digital services, it's important that financial organizations also provide the necessary support options to make those services successful.

	customer experience.	social, contact center, or they will leave for another bank.	
National Rail Enquiries *a case study retrieved on Creative Virtual website*	Customer experience management optimizes customer interaction and conversations through every contact point in an effort to enrich the relationship customers have with their brand and gain customer loyalty. This allows the user experience to remain in one location, so there is no need to leave Facebook or open another window.	Customers can easily ask questions about their trip and receive instant answers to help them plan and complete their journey.	Instead of simply having the website Virtual Agent accessible from Facebook, Ask Lisa has been integrated into the Facebook page as an app. Company successfully provides customer support across multiple channels.
Nital *a case study retrieved on Usebot website*	Responding to customers quickly, competently, assisting human operators in the peaks of intense traffic and in particular, providing customer support even during unattended hours and days.	Users always receive the right answer in a few seconds from the Virtual Assistant.	This intelligent assistant, installed on the iRobot website with a chat widget, supports customers in the purchase process, offers advice on available products and provides technical assistance on products already purchased.
Resorts World Las Vegas *a case study retrieved on Amelia website*	Amelia, named RED for resort guests, is used to enhance the overall guest experience. Red creates extraordinary customer experiences, provides critical employee services, and boosts internal operations.	Amelia caters to guests' needs by processing requests for service and supporting employee operations. Resort guests are able to reach Red at any time, day or night, with their questions or special requests.	Patrons of the resort can text or chat with RED, who will immediately process requests ranging from extra towels and amenities, to dining reservations and hotel checkout.
Škoda Auto *a case study retrieved on Artificial Solutions website*	The conversational AI solution demonstrates the company's commitment to provide our customers with the best service and experience possible. Thanks to Teneo's topic switching ability, the customer can at any time interrupt the conversation and for example, return back to advice about what car to choose, or see what options might be available on a different budget.	'Laura' was able to collect data across a number of touch points and provide highly personalized recommendations to drivers reviewing ŠKODA´s product range. The engagements and interactions helped SKODA to adapt responses based on personal preferences.	The solution rapidly transformed the digital experience of visitors to Škoda Auto digital properties, providing major improvements to customer journeys with a totally automated system. In a short time frame, the team were able to communicate and engage with millions of additional users while supporting their individual requests and requirements.
Stena Line *a case study retrieved on EBI.AI website*	For Stena Line, the beauty of using AI to be able to speak instantly with any customer that passes through their terminals is that Stina can appear on any device, on or off-board their vessels. Passengers will start to see more real-time interaction onboard with Stina, helping them with anything they need, instantly, whenever they need it, at any time of the night or day. It makes traveling with Stena Line the thing every traveller wants: effortless and stress-free.	Conversational AI brings Stena Line closer to their customers. Customers talk more often and in real-time. Since tens of thousands of passengers can all speak to an AI assistant at the same time, one change to the information Stina gives out can reach countless passengers at once.	Stena Line's AI journey began with a Facebook messenger chatbot. As live chat and smartphone technology progressed, so did our AI assistants. At first, we developed Stina as a chat widget, intertwined with their Travel Mate app, before adding AI capability to the Stena Line UK website.
Wellness Group International *a case study retrieved on Amelia website*	Our mission is to help people around the world take control of their health and wellness. By launching MilaNova, powered by Amelia's Conversational AI, we make it easier for people to access nutrition and wellness services and products, helping them to become the healthiest versions of themselves.	MilaNova collects customers' contact information, creates accounts for new users, and discusses products and services that are suitable for their unique requirements.	MilaNova has been deployed to fulfil digital customer onboarding through conversational automation on Wellness Group's website.

Table 11. Empirical framework based on exemplary case studies.

5.2.2. Comparing semi-structured interviews

The data that emerge from the desk analysis of exemplary case studies identified through careful online scouting are strictly confirmed by the information collected directly by questioning some representative actors who have already developed an AI-enhanced conversational agent or who have followed its introduction into a company. This is a way to move from an external view of the context to an almost internal one. Actors who work daily with this technology can tell stories and provide suggestions that are not easily identifiable only by reading shared success stories. Often the implementation of such innovative technology may fail or may encounter several difficulties, but they are not always openly communicated in online settings. Therefore, this may be one of the reasons that leads to the intersection of data from different sources in order to create an all-encompassing knowledge of the topic.

As described in the previous chapter dedicated to the definition of methodology followed in this thesis, the interviews have been conducted in a semi-structured way. A series of different questions differentiated on the type of actor interviewed, allowed the conversation to fall in the right direction and to bring out interesting results for the research aim. Briefly, it is possible to divide actors into service providers and user companies. Although their divergent perspective is almost indifferent to the purpose of this research mainly based on the understanding of the contribution that conversational agents produce in corporate strategies aimed at introducing or improving the customer experience, they must be taken into consideration to formulate the questions correctly and allow the interlocutor to expand the dialogue. For example, the former was asked with questions regarding the functioning of the conversational agents, the needs identified in the customers and the requests made by them, or the problems encountered during development, while the latter, were asked with questions about the motivation that led them to implement a conversational agent, the feature requested to service providers and the results obtained with its use in the service offering. It therefore ranged from more technical information to more practical information, both of which are necessary to understand the design and the impact of conversational agents on the theoretical pillars of this thesis. In conclusion, twenty interviews equally divided between service providers and client companies were conducted. All of them have been transcribed and analysed identifying recurring and useful elements to be later compared with the previous desk analysis carried out. As several insights aroused interesting outcomes for this research, they will be reported as experts in Table 12 and shortly described below.

The main difficulty presented by user companies concerns how to manage an innumerable mass of conversations, often with repetitive questions, when companies open the possibility for customers to contact them via digital devices. Customers contact every day at any time. Therefore, it is unmanageable for the company to guarantee a high level of professionalism and involvement through its customer service staff. This causes not only hasty and inaccurate responses, but also a possibility of customer dissatisfaction. Service providers, on the other hand, in response to these needs, underline how their technology would allow to automate a good part of the conversations, always respecting that human

touch which is an intrinsic feature of an operator. For example, conversational agents offer 24/7 instant responses, understand natural language used by customers, react in different languages, connect through different channels, or convey different actors.

Considering the elements related to the customer experience, it is possible to highlight among the interviews carried out a strong tendency to emphasize that the introduction of conversational agents within customer relationships has enhanced the way of interacting along conversations. Companies' employees, freed from repetitive questions, have the opportunity to dedicate themselves to solving those more complex problems that cannot be solved independently, on the other hand customers receive immediate assistance. However, at the same time, given the countless possibilities offered by artificial intelligence, it would also be possible to improve customers' lived experiences, and not just automate communication processes. Conversational agents are able to recognize, collect and process a series of information about the habits, needs and history of the interlocutors and use them to provide more adequate and personalized answers. Overall, customers will be faced with a better experience offered by the company as they get faster services, receive personalized information, and have the time to connect with a human operator when the conversation becomes difficult.

Considering the elements related to the customer engagement, it is also possible in this case to rediscover some common elements. Conversational agents are considered not really with a simple automatic machine that receives an input and responds with an output, but rather an intelligent machine that is able to understand the meaning of the question asked by the customers, their mood, and their urgency, and to act accordingly as a human. Therefore, conversational agents do not carry out operations but have a real conversation, sometimes in a serious way and sometimes with joking tones. All of this creates engagement. Customers are not left to fend for themselves but receive a unique and unforgettable service based on engaging, personalized and continuous conversations, thus capturing a considerable success in customer satisfaction.

Considering the elements related to the customer journey, in this case it can be noted that the main use of conversational agents is in support of employees dedicated to customer service. Although the moments of interactions may be different, the main examples provided by the interviewees underline a strong tendency to use in the pre-purchase phase where the user always needs the same information, suggestions, or advice, while in the post-purchase phase there is a tendency yet to respond through a human operator who is able to fully understand the problem encountered or further customer requests. Conversational agents are also omnichannel and multimodal. Indeed, they can interact simultaneously on different channels and through different modalities. The interviewees learn how conversational agents are mainly used on the official website, email systems and social media.

As a result of this narrative analysis, it is possible to expand what was found in the previous paragraph by laying the foundations for the conscious construction of a conversational agent in a retail context.

Company interviewed	Excerpt from the conversation
Aboca	As a production company we have decided to move up to now mainly on channels or institutional sites, product sites, community sites, Facebook, social networks, etc. However, managing customer interactions is really difficult. The questions that are asked of us must be answered only and exclusively according to the directives that the regulations impose on us and which are extremely stringent, especially if we are talking about medical devices. Promotional messages, if you cannot be certain that they are after-sales, must first be authorized by the ministry of health. In this context, our internal organization does not allow us to be so reactive and since most of the questions concern product information we have to adopt a conversational agent who is sure of the answers thanks to the careful training carried out and is more immediate and reactive in the answers. For a customer, simply getting more directly to an answer without the usual classic round of a call center generates a better experience.
Algho	First of all, our virtual assistant has a series of technologies that make it possible to switch from a user-machine interaction to a consumer-machine relationship. To better explain, our platform equipped with AI-technologies such as emotion expression recognition, emotion analysis, audio signal processing, computer vision, natural language generation, natural language processing, etc., give life to a humanoid who has the ability to really converse with the user. The integration of business intelligence allows that when you relate to the virtual assistant it is clear that you go to identify and build a customer journey of the customer, verifying through a voting system when and how much the user is satisfied and at the same time if the answer was exhaustive. Furthermore, conversational agents' feature allows you to interact at the same time on different channels thus becoming omnichannel but also to interact in a multimodal way, i.e. via text, audio, or video. The company is thus in a situation of saving time and resources, where the employee does not have to always respond to the same problems, and the customer is more satisfied with continuous and personalized assistance. Furthermore, it is also possible to create an avatar which gives the company the impression of having an additional employee who is acting for them in a natural and precise way. Bricobravo uses the virtual assistant for its e-commerce. The user is accompanied to the sale or even to the after-sales service through a customer service that is always ready and equal to the human one. It also manages cross-selling. For example, it can recognize the customer through simple questions as "have you already bought from us? Is this your first purchase?" and basing on acquired information it can offer further coupon codes or recommendations.
Crafter.ai	We are convinced that placing conversational agents at that point where the company comes into contact with the outside world and where conversations arise allows companies to provide not only a particular, personalized, customized and good quality experience to users, but also to filter the data received from them. For a our customer, we started with the automation of the presale and we gave the conversational agent three objectives: to be able to guide a customer in creating a quote, to be able to support him during the compilation of the format that manages the registration of a contract, and where the choices of users make it useful to push, that is, attempts to upsell to promote the acquisition of a contract of greater value. Always with the possibility at any time to be able to ask to speak with a human operator where the conversational agent manages the handover of the conversation at the call center. Human touch is always important in a relationship, but our goal is not to make a conversational agent that looks human, but to give users who use the bot a feeling of being treated with a personalized experience.
Laila	What we market is a service of conversational agents that are activated on the sites or social channels of customers and who supervise these sites with a double objective: on the one hand, to provide assistance to customers who online need an answer to a question because they have a problem or an information need, on the other hand that of creating a strong engagement with customers. These are conversational operators that when an event occurs during the user's navigation are activated automatically and propose something to the user, almost creating the perception of communicating with a human operator. To do this, on the one hand there is the need to create an artificial intelligence engine capable of understanding what the user needs, on the other hand to create an artificial intelligence that studies the user's tone of voice and adjusts the conversation accordingly. From a conversational point of view, both lead generation and customer care serve to improve the perception that customers have of their interlocutor. The feeling of having to deal with a company for which an operator works to answer their questions, in the context of a conversation customers are also more likely to give their data and to recognize a value. Right now, our customers are using the chatbot to do lead generation as they need to increase customer data and sales based on their behaviour, and to manage customer care as many can't handle countless conversations.
Tea	The conversational agent in our company is an experimental project, therefore not yet open to the public. In this case, since internal technical assistance is used, it is only to relieve the help desk of those recurring tickets of trivial management that could be managed by a bot. It can be used by Tea employees. It is always available 7 days a week, so if you have a problem in the evening, you can ask Althea without waiting for the day after the ticket is answered. The answers that Althea tries to give you are immediate, so you don't have to wait your turn to get an answer. It is multitasking, so you can ask multiple questions at the same time and can answer you instead of the operator.

Table 12. Some excerpts from interviews with companies.

5.3. Application in a retail context

As a result of the data that emerged from the previous practical survey, this paragraph aims to get to the heart of the retail context. Chapter 4, dedicated to research methodology, described in detail also the path in which this analysis was carried out, underlining how action research allows the researcher to act and at the same time acquire knowledge to share. Knowledge that does not derive exclusively from indirect observation but from an active participation. However, a fundamental prerequisite for applying action research is the availability of one or more companies to involve the researcher in daily activities. Therefore, in order to conduct this type of research a company operating as an online retailer has given its availability. As a reseller it was fully congruent with the reference context of this thesis, and as an online operator it had all the features so that the implementation of a conversational agent could take place easily. Nevertheless, success is determined by the abilities of the researcher, who must correctly balance work and research, and by the collaboration of the members of the company, who must be open to change.

The following paragraphs are intended to gradually describe on the one hand the implementation of the conversational agent, underlining the needs to be filled, the goals to be achieved and the process implemented, and on the other hand the results recorded in six months of use of the technology as customer service assistant in customer interactions. Furthermore, some links with the underlying themes of this thesis work are also shown, although they will be better discussed in the following chapter completely dedicated to identifying the contribution obtained from the entire analysis conducted here.

5.3.1. Business needs and purposes

Any change in business strategies, business behaviours, due to the introduction of a new technology in daily activities is always conditioned by a careful analysis of the needs and purposes that the company wants to achieve. First because in order to identify the best technology that can support a company, it is necessary to understand what need you want to satisfy, second because in order to fill this need you need to understand the results expected from the company in terms of both efficiency and effectiveness. Thus, a more in-depth analysis is due to improve understanding, as addressed below.

The spread of the internet and the continuous technological advancement has over the years initiated a process of digital transformation that has led companies to consider a new channel of relationship with customers. Companies have begun to develop digital profiles on social media, to build websites to always be present in this new context, and at the same time to use alternative communication systems, such as email or instant messaging, to be ever closer to customers. In this mainstream, some operations have and are being revolutionized, sometimes moving directly into virtual contexts, other times determining phygital contexts of harmonization between physical and digital. Among them, online commerce has grown exponentially in recent years. This is the complete transition from a direct sale in person between customer and company, to an indirect sale that takes place through the use of any type

of device available to the customer. Although it has been widespread and known for years, the current COVID-19 pandemic almost over has strongly increased this change by forcing customers to contact and communicate with companies in different ways. Communications that take place in digital contexts and which, based on their type, require different responses from companies. Indeed, while customers expect an almost quick but not immediate response from the company to an email, through messaging services such as whatsapp, telegram, etc. customers expect an instant response to their inquiries. Furthermore, considering that digital technologies make it possible to reach any type of company, wherever it is and at any time, the number of interactions that are activated at the same time are much higher than those that take place in person and inevitably require more resources to be satisfied. Companies, in a process of digital transformation, therefore, have a moral obligation to consider these elements and the need to adopt only sustainable solutions that improve their service without creating the possibility of failure. They must address the needs by identifying possible solutions that can balance the use of resources in creating an experience that is unique to the customer, an experience that allows them to establish trust and loyalty.

This issue was addressed in the identified company used as a reference actor to conduct action research. Thus, first of all a form of collaboration was established by setting up a brainstorming session among its members as it has been considered the best creative group technique that allows participants to bring out innovative ideas aimed at solving the problem. The session lasted about two hours with heated debates aimed at identifying how time was consumed and in which activities the company was lacking in offering the right service. As a result, a number of elements came to light concerning mainly the ways in which customer relations were managed. Customers who are shopping online have continuous and different needs. They are not always able to find the necessary information by browsing the website, but ask for assistance for the most diverse reasons, starting from simple information on the characteristics of the products, up to problems that emerged during the purchase phase such as payment methods or of shipment, or even arisen at a later time after receiving the order placed, such as how to return or exchange a product. Although the reasons may be different, however, they always present and recur in the same form resulting in a high time consumption in answering repetitive questions and leaving little room for customer service representatives to solve real problems. Company members complained how such responses needed to be better targeted for customers to be promptly serviced. Therefore, at this moment the implementation of a conversational agent was proposed as a solution, trained thanks to the experience of the conversations already held, able to assist customer service in the relationship with customers. Employees know well what repetitive questions are and what company directives need to be explained to customers. This information is already available online but can be provided in a conversation automatically simplifying their reachability and thus improving the experience lived by the customer, who does not have to independently search for information but can simply establish a conversation managed independently by a system equipped with artificial intelligence. This is the purpose on which the subsequent implementation steps are based and which is

followed by the researcher in order to bring purely theoretical research into a practical context. This can offer insights and suggestions to help fill the gaps that still exist in the literature.

5.3.2. Process of implementation

Presenting the implementation process followed in collaboration with the company allows readers to have a complete picture of the assessments and actions performed, in particular also underlining the contribution made by the researcher and the information acquired in carrying out action research. It is a process that starts from the implementation decision, as described in the previous paragraph, up to the effective integration of the service into the daily activities of the company. Furthermore, a graphical representation is designed in Figure 18 as an aid to readers to understand and follow the process, subsequently in depth described below as usual.

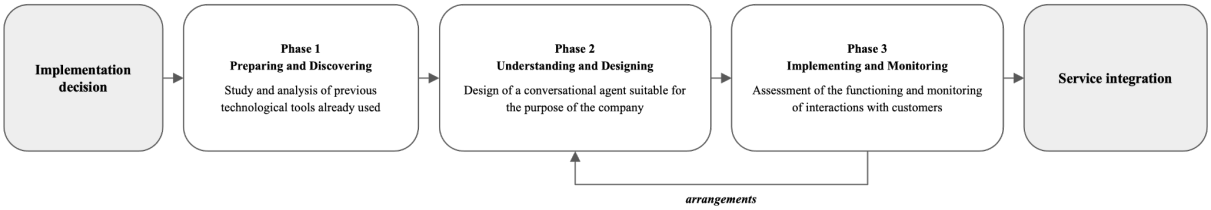


Figure 18. Phases followed during implementation.

The process consists of three stages. The composition of these three stages were identified by combining the recurring path of action research as proposed by Eden and Ackermann (2018), widely explained in the previous chapter, and the suggestions provided by Hofmann et al. (2020) to develop purposeful AI use cases in an intuitive problem-solution-fit process. As a result, the process is therefore composed in a linear way, first preparing, and discovering all information that employees deem necessary to interact correctly with customers, second understanding this information and thus designing the conversational agent, finally implementing, and monitoring its operation. Moreover, possible arrangements have been envisaged between the second and third phase as from the continuous monitoring it is possible to identify further shortcomings not previously considered. It is a process that takes into account all the steps required to correctly complete the change and that, with a certain degree of confidence, ultimately led to a successful integration of the service in corporate strategies. The three stages are further described below detailing how they were conducted, and the information collected.

Phase 1: Preparing and Discovering

The first phase first concerns the preparation, that is the collection of all those specific information that have the aim of preparing the technology to be integrated into the service delivery process. Although

the business needs and purposes in implementing a conversational agent to support customer service have already been highlighted, it is still necessary to identify the elements and factors that will form the basis for training the technology. In practice, it is necessary to collect all the information that according to the company, and more particularly according to the employees, are necessary to correctly interact with customers and make the technology useful. Since from the brainstorming session in the company it emerges that the problems can be different and can occur in different phases of the path that the customer follows in interacting with the company, in order to conduct this phase, it is decided to discover the problems and find a solution based on existing data, i.e. on an analysis of previous conversations manually answered by the customer service operators. The conversations of the last two months are then extracted and grouped according to the type of information or problems posed by customers. The questions asked once or a few times are excluded to highlight only those repetitive and which would save resources to the company. This grouping is therefore composed of a series of questions divided on the one hand according to the time during the trip in which they are asked and on the other according to the type of request made. This concludes the first phase consisting on preparation and discovery of essential data needed to understand how to design the conversational agent.

Phase 2: Understanding and Designing

The second phase concerns more properly the understanding of the problems that emerged from the collected data and the identification of possible solutions to be automated through the use of a conversational agent. In practice, they make up the training base of artificial intelligence that allows the conversational agent to understand the requests of the interlocutors, to understand them and to respond almost like a human. Employees are called upon to participate at this time, as this technology is not a way to replace them but a way to support them. An abstraction is made of all data collected to reveal the real nature of requests and reduce complexity generated from customers' way of writing. All the information analysed here is also compared and increased by the desk study conducted by the researcher in the analysis of the literature and empirical use cases. As a result of a collaboration with the customer service employees, the elements that constitute the most frequent requests combined with further assumptions made on generalized data of researcher's knowledge have been analysed, deriving which features have the possibility of being automated and which are not considered. In this context, the assignment of functions to artificial intelligence is made on the basis of response simplicity and hypothetical ability that an automated technology may have. However, understanding is followed by design. As part of the design process foreseen in this phase, employees also provided standardized responses to these identified requests by forming the basic knowledge that was fed to the artificial intelligence to train. Based on real data extracted through the application of an adapted methodology and the direct participation of the researcher and employees, companies are more likely to meet the real needs of customers in the right way.

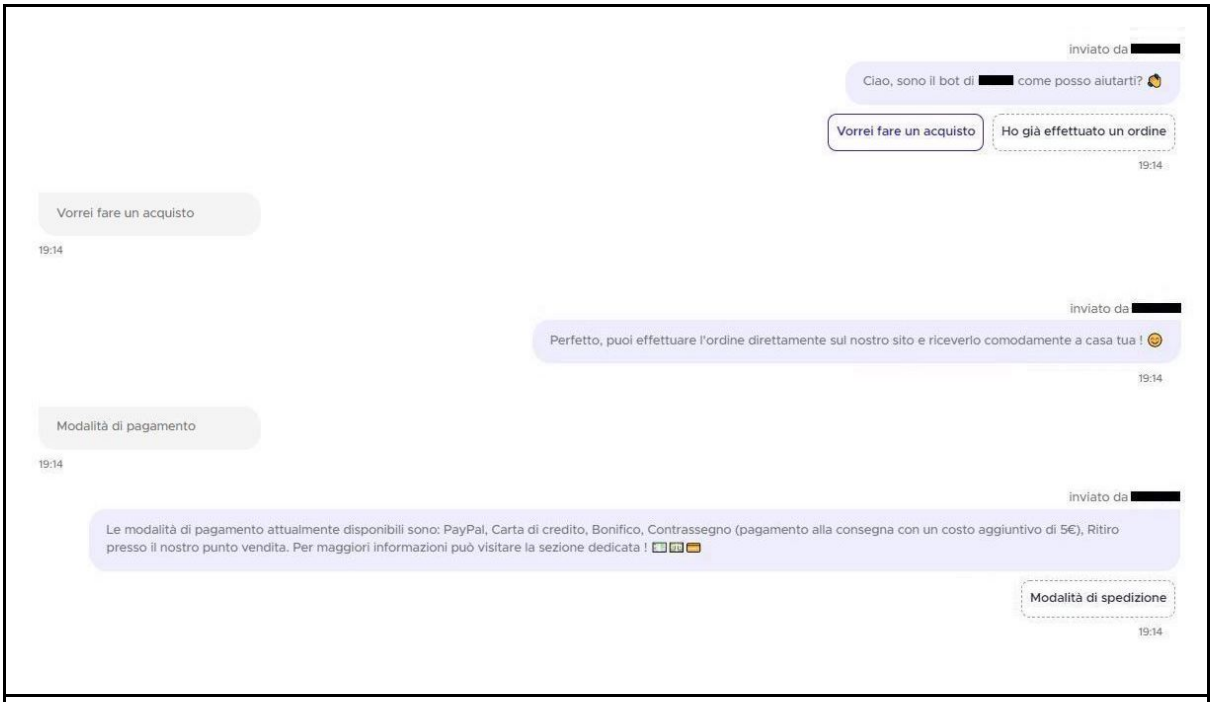
Phase 3: Implementing and Monitoring

The third and final phase finally involves the implementation of the technology formed in customer interactions and the following monitoring of its operation. This is the phase that allows the company to successfully overcome the conception of a conversational agent towards its use in daily activities. Following the design of the technology and the training of artificial intelligence, it is then necessary to insert this technology and match its operation with the other systems present within the company, such as mailing systems or instant messaging apps. However, this step is usually left to the IT staff that deals with its integration. The implementation is thus achieved but, although identified as the terminal stage of the entire implementation process, it is no less important than others. The opening of a technology to a direct relationship with customers can quickly lead to an improvement in the service or to its total failure. It foresees a particular attention of the employees in the continuous monitoring of the answers given by the conversational agent to eventually readapt some wrong behaviours in the right form. This is also the phase that brings more useful insights to the researcher, who has the opportunity to verify the effective functioning of an AI-based technology and to extrapolate useful data to derive useful contributions to expand the existing literature.

5.3.3. Examples of conversations

After an initial adjustment due to some corrections that have been made to improve and ensure the correct functioning of the technology, the conversational agent implemented was operational. Customers easily started using it in different ways and for different reasons, and except for a few isolated cases, it was able to respond with the correct answers and direct conversations to employees when needed. The figures presented in this paragraph are just two examples of short successful conversations held autonomously by the conversational agent with customers.

As a first example, Figure 19 shows an example of a conversation that took place before the customer made the purchase. The conversation was initiated by the conversational agent autonomously who, noticing difficulties in the user's behaviour given the prolonged wait on the same purchase page, suggested starting a conversation. The customer needed to know what the payment methods were as



Translation

Posted by Company

Hello. I am the bot of the company, how can I help you?

19:14

Posted by Customer

I would like to make a purchase

19:14

Posted by Company

Perfect. You can place your order directly on our website and receive it comfortably at your home!

19:14

Posted by Customer

Terms of payment

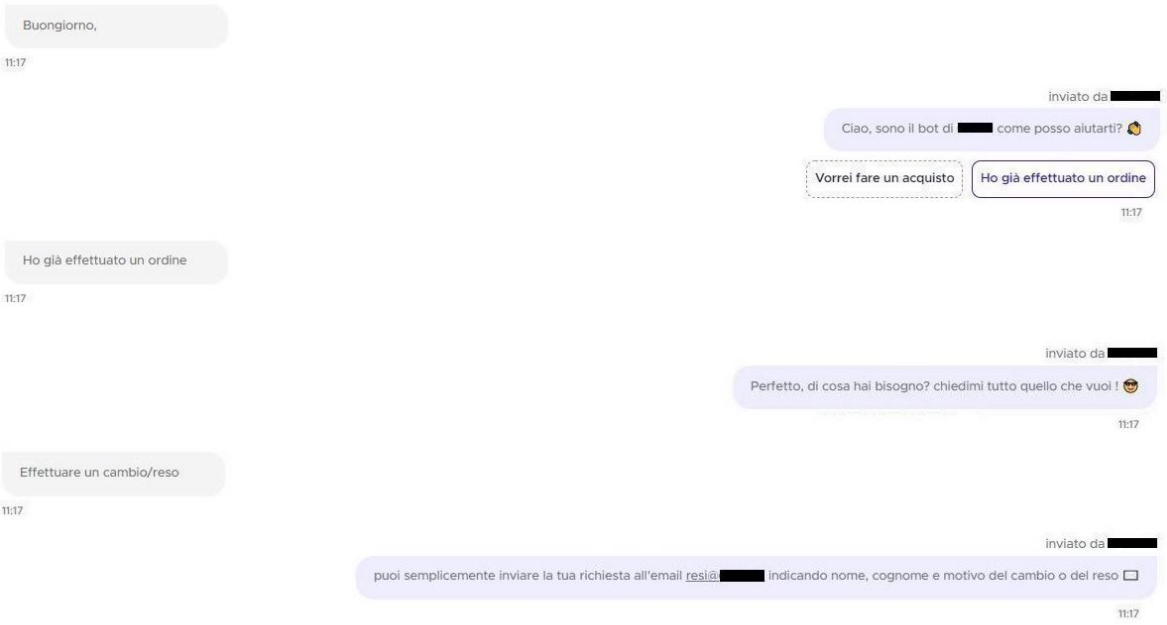
19:14

Posted by Company

The payment methods currently available are Paypal, Credit Card, Bank Transfer, Cash on Delivery (Payment on delivery with an additional cost of 5 €), Withdrawal from our store. For more information you can visit the dedicated section!

19:14

Figure 19. Example of conversation in the pre-purchase phase.



Translation

Posted by Customer

Good morning

11:17

Posted by Company

Hello. I am the bot of the company, how can I help you?

11:17

Posted by Customer

I have already placed an order

11:17

Posted by Company

Perfect. What do you need? Ask me anything you want!

11:17

Posted by Customer

Make an exchange / return

11:17

Posted by Company

You can simply send your request to the email returns@company.it indicating name, surname, death of the exchange or return.

Customer

Figure 20. Example of conversation in the post-purchase assistance phase.

he/she had not found this information on the website and, enticed by the proposition of the conversational agent, asked the question. The reported conversation is not made up of a simple question-answer, but the conversational agent seems to interact with natural language just like a human. It responds and at the same time advises the customer how to continue the conversation. All in a very short time horizon as the whole conversation takes place in just one minute.
Almost the same happens in the second conversation shown in Figure 20, although the timing and reason for the interaction is different. Indeed, the second conversation is about post purchase support. In this case it is the customer who activates the conversation who, already knowing the company and having already made the purchase, needs assistance to change or return a purchased product. The conversational agent acknowledges and understands the question, thus suggesting the terms of return envisaged by the company. All always in a very short time horizon and with a natural language.

5.3.4. Reported results

However, a more detailed analysis of the results obtained through the implementation of the conversational agent in corporate daily activities is necessary to understand benefits and improvements brought to the service offering and above all to the customer experience.

General observations	**Number of users**	1.169
	Number of messages exchanged	8.406
	Number of conversations held	1.301
	Average messages per user	7
Groups of information requested *The information is shown in descending order*	**Purchase**	496
	Greetings	244
	Delivery	218
	Exchange / Return	196
	Company information	15
Most requested interactions *The information is shown in descending order*	**Terms of payment**	224
	Return / exchange methods	203
	Delivery status	156
	Shipping conditions	59
	Availability of sizes and colours	44
	Product size	40

Table 13. Main information on the data collected while using the conversational agent.

Table 13 reports a series of data six months after implementation pointing out how, when and where the conversational agent was used. The data are thus organized in general usage observations, groups of information to which customer questions refer and their most requested interactions fulfilled independently by the conversational agent.

A primary observation concerns how much the technology has been used by customers in these six months. Customers who entered the company's website found a button at the bottom right with which they could start a conversation. It was default enabled to respond only if requested, but in the case in which the user remained on the same page for a prolonged time it assumed his indecisiveness, and only at this moment the conversational agent sent autonomously a notification to start a conversation asking what the customer needed. Since its publication, 1.169 customers have started a new conversation with conversational agents. Conversations that were not limited to a simple question, but that determined the beginning of a real conversation made up of questions and answers as it happened with humans. Indeed, it can be noted that 8.406 messages were exchanged with an average of 7 messages per customer. An average of conversations according to employees that reflects the number of messages usually exchanged during a request for assistance. Furthermore, some of these customers were satisfied with the interaction as the number of conversations held (n = 1.301) is greater than the number of customers once selected who interacted with the conversational agent, assuming that some of these customers interacted more times with it. While it is possible to extrapolate from the numbers that customer engagement is quite satisfactory, there are several benefits that the company can derive from such use. In addition to simplifying and improving customer service management, in fact, this technology also allows you to collect a list of leads that can be used in future marketing actions. Indeed, you can extract the first name, last name, and email address that customers entered in a form before starting the conversation. Although this step is an additional action required by the customer, it brings enormous marketing action benefits to the company. Indeed, it has a list of real contacts not only interested in buying products but also already involved in the establishment of an early successful relationship with the company.

A secondary observation can be made on when and where the interaction was activated by customers. The groups of information, carefully identified during the implementation process and linked to the individual intents trained in artificial intelligence, and the most requested interactions, promptly identified in collaboration with the employees, respectively reflect the different phases along the customer journey. and the repetitive questions that the conversational agent has been trained to answer. The phase in which customers have the greatest need for customer service assistance is during the purchase. A total of 496 questions are in fact addressed to intents falling into this group, such as the payment terms requested 224 times or the shipping terms requested 59 times, but also more strictly information regarding the products themselves such as their availability or size specifications. Still, there are other moments along the customer journey in which the conversation is initiated. It is possible to identify a number of high requests in the moments following the purchase. First, customers ask about

product delivery (n = 218). Although shipments are managed through the use of couriers, the customer's interlocutor is always the company. Customers who make a purchase are waiting for nothing more than to receive it and at every small delay due to external factors they immediately ask for information and updates to the customer service. Most of them are simply resolvable through a shipment tracking, others instead require the assistance of a human operator as the shipment could be in storage or even have been lost. The conversational agent, identifying such inquiries, correctly addresses the response to the customers. Furthermore, other information is requested after receiving the product in the event that it does not meet the customers' expectations, or it is necessary to replace the product due to an error made or a defect on the same (n = 196). In particular, customers ask for information on the process to follow to make the return or exchange. Still other moments in which interactions are activated are then more general and concern general information about the company (n = 15) or thanks for receiving assistance (n = 244). Also in this case, from the analysis of the information requested, customers are not the only ones to receive benefits as they are promptly answered, but also the company obtains useful information such as the series of statistical data that can be evaluated in order to understand which information needs to be provided more clearly to customers. Therefore, the conversational agent is a source of inspiration for future company strategies.

However, presenting results in more detail it is possible to highlight two essential elements useful to really understand experiences that have been lived by customers in the interaction with a conversational agent driven by artificial intelligence: the portion of conversations or messages managed independently by the artificial intelligence and the average time it took to respond.

The number of single messages handled autonomously by the AI is greater than the number of total conversations handled autonomously by the AI, as shown in Figure 21. Although the understanding is quite high and the responses appropriately adapted, some user requests are more complex. At this point it is possible to identify a possible momentary limitation of the technology as it is not trained correctly or unable to interpret the words of the customers. Nevertheless, the degree of autonomous response and the correct addressing of the complex request to a human operator guarantees customer satisfaction in any case, and more generally the achievement of a superior customer experience. Indeed, although the customer has not responded independently, he is promptly assisted by the conversational agent.

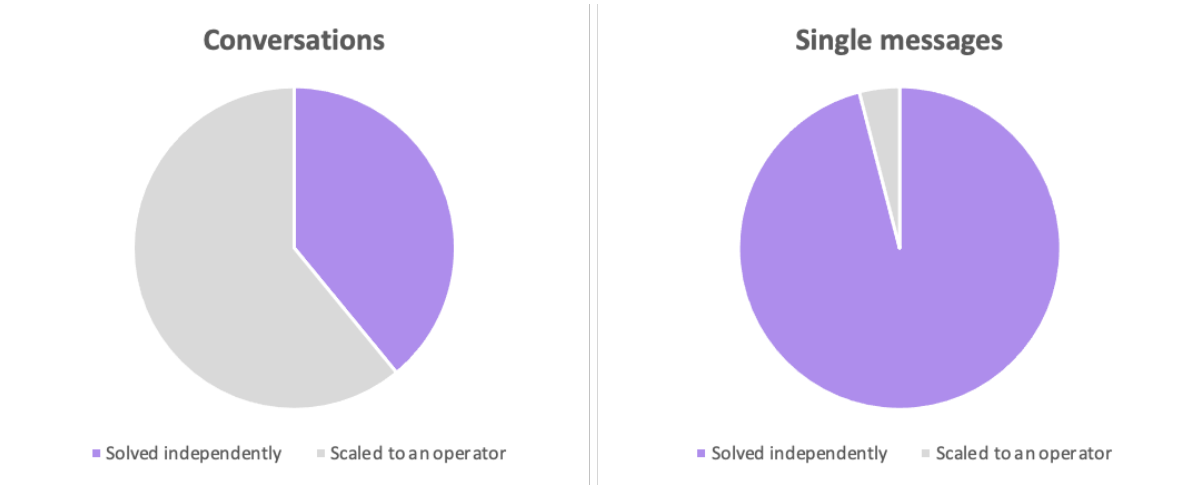


Figure 21. Portions of conversations and messages managed by artificial intelligence.

Consequently, with figure 22 instead we compare the average time between the artificial intelligence and the human operator through the use of a line graph. The purple line, almost always tending to zero, highlights just how the conversational agent is able to respond in a very short time, always below a human operator, reflecting what is expected from the use of an innovative technology. Indeed, some reported peaks show that in some moments the human operator may not be available or be overwhelmed by too many requests and therefore not ready to lend assistance to customers who are waiting there. The conversational agent is easily scalable, it is able to respond to multiple conversations at the same time, always guaranteeing a high level of satisfaction. Purpose required by the company in the initial phase and necessary to achieve a superior customer experience.

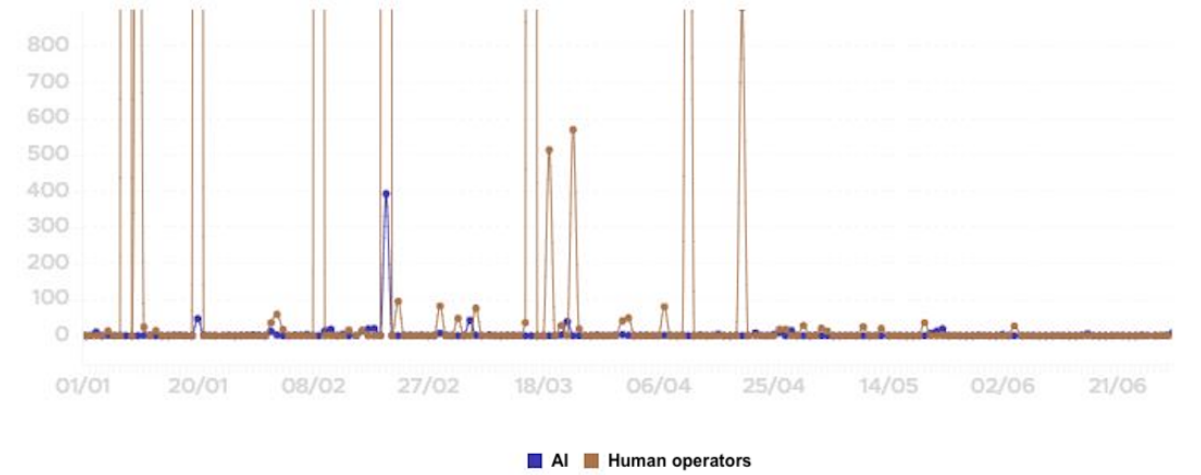


Figure 22. Line graph of the average response times.

Anyway, the following paragraph is essential to offer several ideas into what has limited possible further improvements, and at times generated some minor failures in responding to customers. A technology still under development and recently implemented is not perfect but falls within boundaries inevitably imposed by external needs.

5.3.5. Boundaries and limits

All that glitters is not gold. The introduction of the conversational agent within the company took place, but in any case, respecting some boundaries imposed by the company and some limits due to technology. A first boundary is determined by the availability of the company, considering that the implementation process was conducted over a short time horizon. Wanting to make a metaphor, artificial intelligence can be compared to a child. Just as the child needs time and years to train, so too artificial intelligence needs time and years of company training for it to really be able to look like a human. Although the company has been willing to accept the change and satisfied with the results achieved, the process is still ongoing and continuous improvements are needed. A second boundary can be identified in the resources allocated by the company. A conversational agent works to its full potential when it is seamlessly integrated with corporate systems. Integrating a conversational agent does not only mean allowing you to receive requests from different channels of interaction, but also having the ability to store, analyse and extract data from the company's business intelligence. It must be able to access historical customer data, sales statistics, basically all data that can improve its knowledge and enable new customized functions for customers. However, developing such a solution has high costs, not allocated at this early stage by the company board. Likewise, some limitations then depend on the continuous advancement of technology. Artificial intelligence is quite developed nowadays, but it is still far from being defined as true intelligence. Although it is able to correctly understand the natural language used by clients during a conversation, it needs multiple developments for it to be able to generate a thought on the spot, understand its emotions and adapt to situations. Some solutions are coming up, but they are not yet of common use. Therefore, this problem inevitably limits the possibilities that service providers and consequently user companies can offer through the proposed solutions. Nevertheless, there are many benefits already identifiable in shared applications as discussed in the following chapter.

Chapter 6

Conclusions, contributions and implications

Discussions · Extended knowledge on conversational agents · Implications of the research · Limitations · Future directions

Chapter 6

Conclusions, contributions, and implications

This chapter discusses the results achieved along the entire research project. It offers the possibility of clarifying the analysis carried out, answering the questions posed at the outset, and therefore highlighting the contribution made to the literature. In addition, it also clarifies what the implications are for scholars and practitioners by giving the research a chance to be clearly legible to different types of readers. Limitations and future directions are also posed as a conclusion.

6.1. Discussions

This research conceives the effects that the introduction of conversational agents in customer-firm relationships has in generating and offering unique experiences. It describes how conversational agents affect the theoretical framework composed of customer experience, customer engagement and customer journey from a business perspective. The theoretical and empirical analysis allows researchers to bring out insights and suggestions useful to consider this technology as an actor able to autonomously contribute to co-create value. The methodology used in this research made it possible to obtain a retrospective view on the use of conversational agents - by collecting case studies and interviewing stakeholders who have developed or introduced this technology - and to compare with current data - developing and observing a use case in retail where the conversational agent is used as a frontline employee - successfully serving predicted outcomes related to the theory. In more detail, the findings that emerged in relation to each single component of the theoretical framework are discussed below, thus answering the research questions set at the beginning of the research.

Nowadays, given the high degree of interconnectedness and an increasingly hectic life, customers expect companies to always be there, to respond without long waiting times and to dedicate themselves to them appropriately. Living a unique experience is synonymous with customer satisfaction and loyalty. Therefore, companies should not underestimate the possibility of introducing systems that can lighten the workload of employees and at the same time offer better service for customers. Conversational agents are a technology that automates conversations with customers while maintaining a high level of humanity in relationships. Although at the beginning of its entry into the market it did not work correctly and was exclusively seen as a way of being innovative, the rapid advancement of technology thanks to the introduction of artificial intelligence has made this technology more efficient as both companies and customers have expected. Consequently, the benefits it brings in creating experiences are enormous.

The experiences are nothing but satisfying moments where companies have been able to correctly intercept the needs of customers and have adopted a series of activities aimed at satisfying those needs, not only from an operational point of view but also with an emotional perspective. Conversational

agents mainly provide information, but in doing so they try to emulate human behaviour sometimes with improvements. As the empirical analysis showed, simply responding immediately with a precise answer already improves the customer experience as they don't have to wait their turn. At the same time, they bring other contributions as by analysing the history of customers in an automatic way they are able to predict their needs and offer advice or suggestions without being asked. A way to make a service proactive and strictly personalized.

This type of technology behaviour also leads to the view that the user feels more engaged. In fact, the conversation does not take place in a univocal sense, that is, by showing information online where the customer has to look for and read it, but by activating a real series of back and forth. Customers converse with a machine that understands natural language, receives information, and responds accordingly. Although it may seem like a trivial thing, this way of acting keeps the customer in the conversation, gradually increasing their satisfaction with the service offered, consequently helping to strengthen that improvement in the customer experience. As the empirical analysis showed, this behaviour does not remain only in theory, but it is possible to intercept it in its real functioning. Customers are not afraid to ask questions, but they ask for the intervention of the technology immediately, sometimes switching from one topic to another, and finally thanking a machine for the assistance received. Engagement reaches its peak when the conversational agents then manage to identify the client, his/her needs or sentiments and consequently change the answers or tone of voice adapting them to the conversation.

Furthermore, conversational agents can be used for different reasons, at different times and in different ways. They are able to be programmed to answer any type of question, be it related to company information, product information or policy information, and to interact through different channels, be it the website, mail systems or social networks. average. Therefore, this intrinsic feature of the technology allows it to be present throughout the entire customer journey and to act in a multichannel context formed by different touchpoints. However, although the technology is rapidly spreading and with increasingly interesting results, from the empirical analysis carried out in this research it often emerges that it is mainly used in certain situations and through the same channels. Most of the companies analysed, as well as during the practical application carried out with action research, use conversational agents as a frontline employee who mainly assists customers in the pre-purchase phase. Training a conversational agent to respond to often repetitive information about products or company policies is much easier than teaching him to identify a problem and solve it, thus leaving this second phase to the intervention of a human operator. Although it may be reductive, in any case this way of acting leads to an improvement in the customer experience. Customers, receiving immediate and personalized answers, live an experience. At the same time, companies mainly use conversational agents on their websites, leaving few possibilities for channel integration. Although this can lead to a further improvement of the experience lived by customers, this does not take away from the above benefits brought by conversational agents.

6.2. Extended knowledge on conversational agents

This research proposes new opportunities for service studies offering a holistic view of technology on three closely related concepts: customer experience, customer engagement and customer journey. Although these concepts have often been linked together due to the mutual exchange of benefits and opportunities, infrequently they have been brought together to form an analytical framework. In this research, based on the deepening of an emerging technology, it was useful and necessary to compare between them as the technology itself shaping the previous knowledge. For this reason, given on the one hand the breadth of the topic and the depth of the analysis, different methodologies were used with the same guiding thread. This way of acting has made it possible to offer a contribution to service literature by offering a complete vision of how conversational agents impact on the designing process of experiences, highlighting in each phase challenges, opportunities, and results. Therefore, the findings of this research not only increase the understanding of the functioning of the technology in service contexts, but also add insights into the effect it has on the service. A strong contribution can be then identified on the way in which the conversational agents affect the service, thus showing elements such as personalization, immediacy and richness of the information provided. The service offer can be identified not as a simple supply of companies, but additionally as an experience based on the customers' own choices, thus offering a way for researchers to consider the centrality of customers in performing service innovation. Last but not least, this research shows how the integration of artificial intelligence in a tool capable of carrying on a conversation with customers on its own leads to consider this same technology as a real actor. Conversational agents take on more and more human features and must therefore be considered by researchers not as a machine but as an actor.

6.3. Implications of the research

The research conducted along this thesis has several implications for both scholars and practitioners. The description of research implications, sometimes underestimated by the authors, is actually an essential element to correctly address the content and effectively engage readers. Indeed, if research is based only on the presentation of theoretical reviews, processes followed and discussions of the findings, it may not clarify the contribution carried out or make research interesting enough (LaPlaca et al., 2018). Furthermore, as a suggestion, Holmlund et al. (2020) recommend not only to consider implications as an essential element of a research but also to target those implications towards precise stakeholder groups that authors see as their own reading audience. Therefore, this paragraph has been organized by dividing the implications for both scholars and managers, as described below.

6.3.1. Implications for scholars

Researchers can consider this research to reflect on the impact that the technology has on customers. Although technologies are widespread and research on them as a result is numerous, often when considering these technologies little is said about how they affect or create unique experiences for customers. On the one hand, companies need to understand how and when to integrate or innovate a service. On the other hand, customers, who have a wide choice thanks to the greater interconnection provided by the use of the internet, require and seek unique and unforgettable experiences. Researchers could act as a glue.

This research expands academic knowledge on the role of conversational agents by providing precise indications on how they are connected to the concepts of customer engagement and customer journey that together allow to achieve what can be defined as a seamless experience. Nevertheless, much is still missing. Initial attempts exist in the literature that map and measure behaviours, expectations, or preferences. Other attempts exist regarding the design of the service. However, the results of this research can be used by researchers as a starting point for further research as described in a later paragraph.

Anyway, since conversational agents are an emerging topic that links technologies to computational, communication, service or other skills, researchers need to consider a multidisciplinary approach to conduct exhaustive research on the topic. For example, the creation of unique experiences for clients is based on the study of their behaviours, on the analysis of their feelings and emotions. Elements that can then be satisfied through the use of a technology that communicates and interacts autonomously. A technology that creates and designs a service. In this case, it can be seen how different the disciplines involved are, such as robotics, psychology, business, management, and communication science.

6.3.2. Managerial implications

The topics covered in this research and the results obtained shed more light on the functioning of conversational agents and the benefits they bring to the offer of services. The effects that immediate and continuous communications over time can have on lived experiences and customer satisfaction underlines the reason why managers should consider improving relations with their customers through conversational agents, and more generally through autonomous technologies. Managers could consider the process followed along this research as a methodology to correctly implement a technology within their processes. Indeed, considering that the comparison between what already exists and what is instead created leads to an expansion of the information necessary to design a conversational agent, it is of significant interest to define the path to follow and thus succeed quickly.

However, at the same time this research can be useful for understanding what are the contributions that conversational agents make to companies. On the one hand, it produces a series of information capable of highlighting and making clear how customers use the tool, and on the other hand, which automatic

data tools such as conversational agents allow to extrapolate. Knowing your customer is essential for creating experiences. Understanding how the customer interacts with the company, when he/she is engaged, at what time and through which channel allows managers to better design services. Furthermore, once implemented it also allows managers to discover problems and suggestions not easily identifiable before.

6.4. Limitations

This research suffers some inevitable limitations due to the conditions set for a more careful analysis of an emerging phenomenon and the possibility of interactions with companies. This research starts from the review of the literature on three widely known pillars of experience in the managerial and academic fields, which are the customer experience, customer engagement and customer journey, to then understand how the disruptive influence of a new technology can impact on them. A former limitation can be identified in the analysed context. This research was in fact limited to analysing exclusively the retail context which, although quite widespread, is not the only environment in which conversational agents are used. This therefore leads to the question of whether what has been studied here is then also respected in other contexts. However, this is not the only limitation. The same methodology used represents a block to be overcome. The action research in fact allows the researcher to come into close contact with the company and to acquire empirical information that is difficult to recover in a different way, but at the same time it is time-consuming thus reducing the analysis to one or a few companies. In this research, although a triangulation of empirical data was carried out, only one of the different cases was it possible to analyse it with one's own hands and closely observe its real implications. In this case it would be advisable to expand the number of companies involved and perhaps compare the different behaviours or results achieved by following the same methodology. Yet another limitation can then be identified in the perspective that was taken to research and analyse the data. Although the service providers and user companies maintain a rather similar line on the interpretation of conversational agents, the experience told by the customers, i.e. those who actually use the product offered, could be different. Therefore, it is essential to consider that an essential element in the service delivery process has not expressed its opinion contributing to the definition of the findings. In conclusion, it is necessary to not forget that in this research the only technology analysed are conversational agents. Nowadays artificial intelligence is applied in different ways and through different tools, such as service and social robots. A correct analysis of how the overall customer experience changes in the age of artificial intelligence must take into account the different ways in which artificial intelligence can be presented and perhaps compare how the experience is enriched, engagement is improved, and the travel is enabled in the various applications.

6.5. Future directions

The set of these limitations just mentioned in the previous paragraph might be addressed in several future research questions. Researchers should build on what has been previously analysed in the literature and broaden this knowledge with more and deeper investigations. The advancement of technologies is nowadays ever increasing, consequently leading to a continuous change and adaptation in the behaviours of companies that tend to keep up with the times. A few years ago, not so far away, the internet, robots, artificial intelligence were still unknown topics or little applied on a daily basis, while today they are commonplace. The interconnection between smart objects and digital technologies makes it possible to imagine infinite possible applications of tools already developed today and which are expected to increase in the coming years. The integration between physical and digital is a barrier still to be overcome and we need to deepen these possibilities so that companies can integrate and improve their services, increase customer engagement and the way in which they can get in touch, thus leading to the composition of new and renewed experiences. Experiences are even more effective when companies are able to understand emotions and improve customers' well-being.

Nonetheless, technologies often also lead to perplexities in its users. Ethical and moral implications as well as privacy issues can slow down the spread of technologies and customer acceptance. Companies must not forget these elements and therefore increasingly need methodologies and tools capable of understanding the potential of a technology and addressing corporate strategies, so that corporate decisions are the result of a powerful and prudent reflection. However, in order to simplify the possible directions for the reader to follow in the choice of topics to be explored, Table 14 serves as a summary of possible questions to ask oneself about.

Theme	**Research questions**
Advances in technology	What features are widely requested by companies and nowadays not yet developed by service providers? What resources will need to be integrated in conversational agents to obtain better human-robot interactions? What are the common elements that companies need to consider when implementing conversational agents in corporate strategies? How will the interconnectedness of technologies overwhelm the behaviour of conversational agents? How will the relationship between employees and customers be managed once conversational agents become commonplace? What skills will employees need to be taught so that they are ready to accept and use conversational agents or, more generally, new technologies? Technologies are gradually replacing humans in those often repetitive actions, so will current job positions be completely eliminated or redesigned differently? What ethical and moral boundaries must be kept in mind when introducing new and

	intelligent technologies? How could the growing sensitivity towards privacy mitigate or limit the development of conversational agents?
Customer Experience	How will services need to be designed to enable better customer experiences? How will companies be able to harmonize physical and digital services in a phygital context to obtain unique experiences? How will conversational commerce change customer habits and demand for experiences? How will understanding customers' emotions improve the lived experience? Will the conversational agents' understanding of emotions lead to more authentic experiences? How will the physical appearance of conversational agents improve the customer experience? How will it be possible to measure the implications that conversational agents have on the customer experience? What will be the impact of experiences with AI-based conversational agents on customer satisfaction? What impact will the experiences with AI-based conversational agents have on the customers' or employees' well-being? Could conversational agents initiate value destruction processes? What elements must be taken into consideration to avoid negative impacts on customers' experiences?
Customer Engagement	How can conversational agents increase customers' sense of engagement? What elements can generate personalized services capable of engaging customers individually? What indicators can be used to measure the level of engagement with conversational agents? Could conversational agents have negative impacts on customer engagement?
Customer Journey	How could the role of conversational agents change along the customer journey? What will be new channels through which companies will have to entertain relationships with customers? What new methodologies or tools can be made available to companies to design autonomous digital services?

Table 14. Future research questions.

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Appendix I. Documents included for literature review on Customer Experience

P.Y.	Authors	Article Title	Journal	Author Keywords	T.C.
2000	Novak, TP; Hoffman, DL; Yung, YF	Measuring the customer experience in online environments: A structural modeling approach	Mark. Sci.	Internet Marketing; Electronic Commerce; Online ConsumerBehavior	1459
2004	Payne, A; Frow, P	The role of multichannel integration in customer relationship management	Ind. Mark. Manage.	CRM; multichannel integration; channel management	144
2007	Frow, P; Payne, A	Towards the 'perfect' customer experience	J. Brand Manag.	co-creation; brand; customer experience; encounter management; retail banking	163
2007	Harris, P	We the people: The importance of employees in the process of building customer experience	J. Brand Manag.	internal branding; guiding principles; genuineness; transparency; Orange	45
2007	Meyer, C; Schwager, A	Understanding customer experience	Harv. Bus. Rev.		555
2008	Patricio, L; Fisk, RP; Cunha, JFE	Designing multi-interface service experiences - The Service Experience Blueprint	J. Serv. Res.	service experience; blueprint; customer experience; multi-interface	209
2010	Biedenbach, G; Marell, A	The impact of customer experience on brand equity in a business-to-business services setting	J. Brand Manag.	brand equity; customer experience; business-to-business; brand management	109
2010	Chang, TY; Horng, SC	Conceptualizing and measuring experience quality: the customer's perspective	Serv. Ind. J.	customer experience; experience quality; customer services; service experience; experiential marketing	123
2010	Deng, LQ; Turner, DE; Gehling, R; Prince, B	User experience, satisfaction, and continual usage intention of IT	Eur. J. Inform. Syst.	cognitive absorption; perceived utilitarian performance; perceived hedonic performance; expectation disconfirmation; IT satisfaction; continual usage intention	174
2010	Walter, U; Edvardsson, B; Ostrom, A	Drivers of customers' service experiences: a study in the restaurant industry	Manag. Serv. Qual.	Customer orientation; Social interaction; Restaurants; Sweden; Customer services quality; Corporate strategy	75
2011	Edvardsson, B; Ng, G; Min, CZ; Firth, R; Yi, D	Does service-dominant design result in a better service system?	J. Serv. Manage.	Service-dominant logic; Goods-dominant logic; Value co-creation; Service system design; Consumer behaviour	49
2011	Johnston, R; Kong, XY	The customer experience: a road-map for improvement	Manag. Serv. Qual.	Customer satisfaction; Quality improvement; Service improvements; Budgetary control	137
2011	Kim, S; Cha, J; Knutson, BJ; Beck, JA	Development and testing of the Consumer Experience Index (CEI)	Manag. Serv. Qual.	Consumers; Service climate; Service operations; Communication; Measurement	40

2011	Kohler, T; Fueller, J; Matzler, K; Stieger, D	Co-creation in virtual worlds: the design of the user experience	MIS Q.	Virtual worlds; Second Life; co-creation; action research; experience design	217
2011	Lemke, F; Clark, M; Wilson, H	Customer experience quality: an exploration in business and consumer contexts using repertory grid technique	J. Acad. Mark. Sci.	Customer experience; Repertory grid; Service quality; Service-dominant logic	423
2011	Walls, A; Okumus, F; Wang, YC; Kwun, DJW	Understanding the Consumer Experience: An Exploratory Study of Luxury Hotels	J. Hosp. Market. Manag.	Experience marketing; consumer experience; experiential consumption; luxury hotels; trip-related factors; personal characteristics	165
2012	Garg, R; Rahman, Z; Qureshi, MN; Kumar, I	Identifying and ranking critical success factors of customer experience in banks An analytic hierarchy process (AHP) approach	J. Model. Manag.	Banks; Consumer behaviour; Critical success factors; Customer experience; Analytic hierarchy process	35
2012	Klaus, P; Maklan, S	EXQ: a multiple-item scale for assessing service experience	J. Serv. Manage.	Consumer behaviour; Customer services quality; Pre-purchase satisfaction; Customer satisfaction; Customer loyalty; Customer experience; Customer experience quality; Service experience; Scale development; Repurchasing behaviour	186
2012	Rose, S; Clark, M; Samouel, P; Hair, N	Online Customer Experience in e-Retailing: An empirical model of Antecedents and Outcomes	J. Retail.	E-retailing; Online customer experience; Trust; Satisfaction; Repurchase intention; Structural equation modeling	453
2012	Teixeira, J; Patricio, L; Nunes, NJ; Nobrega, L; Fisk, RP; Constantine, L	Customer experience modeling: from customer experience to service design	J. Serv. Manage.	Customer experience; Service design; Interaction design; Customer service management; Design	160
2013	Bagdare, S; Jain, R	Measuring retail customer experience	Int. J. Retail Distrib. Manag.	Retail experience; Scale development; Retail store; Emotion; Cognition; Consumer behaviour; Retailing	91
2013	Klaus, P	The case of Arnazon.com: towards a conceptual framework of online customer service experience (OCSE) using the emerging consensus technique (ECT)	J. Serv. Mark.	Customer experience; Service experience; Amazon.com; Online experience; Online customer experience; Web experience; Internet; E-commerce; Online service experience; Online marketing; Social media	110
2013	Klaus, P; Maklan, S	Towards a better measure of customer experience	Int. J. Market Res.		203
2013	Klaus, P; Nguyen, B	Exploring the role of the online customer experience in firms' multi-channel strategy: an empirical analysis of the retail banking services sector	J. Strateg. Mark.	customer experience; marketing strategy; multi-channel management; social media; segmentation; marketing practice	43
2013	Rageh, A; Melewar, TC; Woodside, A	Using netnography research method to reveal the underlying dimensions of the customer/tourist experience	Qual. Mark. Res.	Customer experience; Experiential brands; Tourism industry; Netnography; Tourism management; Egypt	74
2014	Akesson, M; Edvardsson, B; Tronvoll, B	Customer experience from a self-service system perspective	J. Serv. Manage.	Value co-creation; Customer experience; Self-service technologies; Service dominant logic; Service experience; Service system	45
2014	Blazquez, M	Fashion Shopping in Multichannel Retail: The Role of Technology in Enhancing the Customer Experience	Int. J. Electron. Commer.	Brick-and-mortar stores; e-commerce; e-tail; hedonic value; information technologies; multichannel retail; shopping experience; shopping	177

				motivations; utilitarian value	
2014	Bolton, RN; Gustafsson, A; McColl-Kennedy, J; Sirianni, NJ; Tse, DK	Small details that make big differences A radical approach to consumption experience as a firm's differentiating strategy	J. Serv. Manage.	Service innovation; Experience; Customer behavior; Customer requirements; Service delivery system; Service encounter	155
2014	Garg, R; Rahman, Z; Qureshi, MN	Measuring customer experience in banks: scale development and validation	J. Model. Manag.	Customer experience; Banks; Scale development; Validation	59
2014	Kumar, V; Umashankar, N; Kim, KH; Bhagwat, Y	Assessing the Influence of Economic and Customer Experience Factors on Service Purchase Behaviors	Mark. Sci.	the economy; customer satisfaction; service failure; service recovery; personal income; customer experience; service purchase behavior	32
2014	Ordenes, FV; Theodoulidis, B; Burton, J; Gruber, T; Zaki, M	Analyzing Customer Experience Feedback Using Text Mining: A Linguistics-Based Approach	J. Serv. Res.	activities; resources; context; customer feedback; text mining; case study; value cocreation; customer experience	83
2014	Pappas, IO; Pateli, AG; Giannakos, MN; Chrissikopoulos, V	Moderating effects of online shopping experience on customer satisfaction and repurchase intentions	Int. J. Retail Distrib. Manag.	Online shopping; experience; Satisfaction; Multi-group analysis; Intention to repurchase	116
2014	Tynan, C; McKechnie, S; Hartley, S	Interpreting value in the customer service experience using customer-dominant logic	J. Market. Manag.	customer-dominant logic; types of value; value creation; customer experience; luxury; experience marketing; consumer behaviour	56
2014	Zhang, H; Lu, YB; Gupta, S; Zhao, L	What motivates customers to participate in social commerce? The impact of technological environments and virtual customer experiences	Inf. Manage.	Social commerce; Social media; Technological environment; Virtual customer experience; S-O-R model; Participation behavior	366
2015	Chahal, H; Dutta, K	Measurement and impact of customer experience in banking sector	Decision	Customer experience; Satisfaction; Word of mouth; Loyalty; Brand equity	34
2015	Dube, A; Helkkula, A	Service experiences beyond the direct use: indirect customer use experiences of smartphone apps	J. Serv. Manage.	Value-in-use; Co-creation; Service experience; Phenomenology; Smartphone apps; Use experience	41
2015	Martin, J; Mortimer, G; Andrews, L	Re-examining online customer experience to include purchase frequency and perceived risk	J. Retail. Consum. Serv.	Online customer experience; Perceived risk; Trust; Purchasing frequency; e-retailing	138
2015	McColl-Kennedy, JR; Cheung, L; Ferrier, E	Co-creating service experience practices	J. Serv. Manage.	Co-creation; Practices; Service experience; Service co-creation; Customer experience; Service ecosystem	95
2015	McColl-Kennedy, JR; Gustafsson, A; Jaakkola, E; Klaus, P; Radnor, ZJ; Perks, H; Friman, M	Fresh perspectives on customer experience	J. Serv. Mark.	Dynamic; Customer experience; Practice-based approach; Customer role; Holistic	111
2015	Schmitt, B; Brakus, JJ; Zarantonello, L	From experiential psychology to consumer experience	J. Consum. Psychol.	Experiential psychology; Consumer experience; Materialism; Experientialism	141
2015	Verleye, K	The co-creation experience from the customer perspective: its measurement and determinants	J. Serv. Manage.	Service innovation; New product development; Co-creation; Experience; Service co-creation; Expectations	156

2016	Bilgihan, A; Kandampully, J; Zhang, T	Towards a unified customer experience in online shopping environments Antecedents and outcomes	Int. J. Qual. Serv. Sci.	m-commerce; e-commerce; Online communities; Social media; Co-creation; Online customer experience; Web design; Tablet/smartphone applications	109
2016	Foroudi, P; Jin, ZQ; Gupta, S; Melewar, TC; Foroudi, MM	Influence of innovation capability and customer experience on reputation and loyalty	J. Bus. Res.	Innovation capability; Customer experience; Reputation; Loyalty; QCA; Configuration	93
2016	Lipkin, M	Customer experience formation in today's service landscape	J. Serv. Manage.	Individual level; Systematic literature review; Contextual lens; Customer experience formation; Service landscape	38
2016	Srivastava, M; Kaul, D	Exploring the link between customer experience-loyalty-consumer spend	J. Retail. Consum. Serv.	Customer experience; Attitudinal loyalty; Behavioural loyalty; Consumer spend; Loyalty framework	83
2017	Brun, I; Rajaobelina, L; Ricard, L; Berthiaume, B	Impact of customer experience on loyalty: a multichannel examination	Serv. Ind. J.	Marketing; loyalty; service industry; multichannel; customer experience	55
2017	Bustamante, JC; Rubio, N	Measuring customer experience in physical retail environments	J. Serv. Manage.	Satisfaction; Loyalty; Customer experience; In-store	69
2017	Homburg, C; Jozic, D; Kuehnl, C	Customer experience management: toward implementing an evolving marketing concept	J. Acad. Mark. Sci.	Customer experience management; Long-term customer loyalty; Higher-order resource; Marketing concept	292
2017	Keiningham, T; Ball, J; Benoit, S; Bruce, HL; Buoye, A; Dzenkovska, J; Nasr, L; Ou, YC; Zaki, M	The interplay of customer experience and commitment	J. Serv. Mark.	Satisfaction; Loyalty; Customer experience; Service design; Service encounter	43
2017	Roy, SK; Balaji, MS; Sadeque, S; Nguyen, B; Melewar, TC	Constituents and consequences of smart customer experience in retailing	Technol. Forecast. Soc. Chang.	Smart customer experience; Smart technology; Satisfaction; Perceived risk; Customer well-being	96
2017	Varshneya, G; Das, G	Experiential value: Multi-item scale development and validation	J. Retail. Consum. Serv.	Experiential value; Scale development; Retail customer experience; Fashion retail	58
2017	Zolkiewski, J; Story, V; Burton, J; Chan, P; Gomes, A; Hunter-Jones, P; O'Malley, L; Peters, LD; Raddats, C; Robinson, W	Strategic B2B customer experience management: the importance of outcomes-based measures	J. Serv. Mark.	B2B services; B2B customer experience; Outcomes-based measures	36
2018	Bolton, RN; McColl-Kennedy, JR; Cheung, L; Gallan, A; Orsingher, C; Witell, L; Zaki, M	Customer experience challenges: bringing together digital, physical and social realms	J. Serv. Manage.	Service innovation; Technological innovation; Value creation; Service design; Customer experience; Service ecosystem	185
2018	Hilken, T; Heller, J; Chylinski, M; Keeling, DI; Mahr, D; de Ruyter, K	Making omnichannel an augmented reality: the current and future state of the art	J. Res. Interact. Mark.	E-commerce; Customer experience; Technology in retailing; Digitalisations	78
2018	Hoffman, DL; Novak, TP	Consumer and Object Experience in the Internet of Things:	J. Consum. Res.	assemblage theory; consumer experience; Internet of Things; object-	212

		An Assemblage Theory Approach		oriented ontology; self-expansion; self-extension	
2018	Izogo, EE; Jayawardhena, C	Online shopping experience in an emerging e-retailing market	J. Res. Interact. Mark.	E-commerce; Computer mediated communication; Consumer behavior internet; Customer experience; Computer-mediated environments; Consumer shopping	43
2018	Kandampully, J; Zhang, TT; Jaakkola, E	Customer experience management in hospitality A literature synthesis, new understanding and research agenda	Int. J. Contemp. Hosp. Manag.	Social media; Technology; Hospitality; Customer experience management; Customer-to-customer relationships	127
2018	McLean, G; Al-Nabhani, K; Wilson, A	Developing a Mobile Applications Customer Experience Model (MACE) Implications for Retailers	J. Bus. Res.	Mobile retailing; Customer experience; Mobile applications; M-commerce	107
2018	Tung, VWS; Au, NM	Exploring customer experiences with robotics in hospitality	Int. J. Contemp. Hosp. Manag.	Embodiment; Human-robot interaction; Emotions; Experience co-creation; User experience; Consumer reviews	142
2019	Alnawas, I; Hemsley-Brown, J	Examining the key dimensions of customer experience quality in the hotel industry	J. Hosp. Market. Manag.	Experience quality; hotel industry	32
2019	Flavian, C; Ibanez-Sanchez, S; Orus, C	The impact of virtual, augmented and mixed reality technologies on the customer experience	J. Bus. Res.	Virtual reality; Technology-mediated realities; Embodiment; Presence; Interactivity; Customer experience	236
2019	Kabadayi, S; Ali, F; Choi, H; Joosten, H; Lu, C	Smart service experience in hospitality and tourism services A conceptualization and future research agenda	J. Serv. Manage.	Smart service experience; Smart services; Technology; Customer experience	45
2019	Lee, M; Lee, S; Koh, Y	Multisensory experience for enhancing hotel guest experience Empirical evidence from big data analytics	Int. J. Contemp. Hosp. Manag.	Service innovation; Customer satisfaction; Business intelligence; Big data analytics; Multisensory experience	42
2019	McColl-Kennedy, JR; Zaki, M; Lemon, KN; Urmetzer, F; Neely, A	Gaining Customer Experience Insights That Matter	J. Serv. Res.	customer experience; customer journey; touchpoints; marketing metrics; text mining	71
2019	Wu, SH; Gao, YH	Understanding emotional customer experience and co-creation behaviours in luxury hotels	Int. J. Contemp. Hosp. Manag.	Hotels; Customer co-creation behaviours; Emotion triggers and constructors; Emotional customer experience	37
2020	De Keyser, A; Verleye, K; Lemon, KN; Keiningham, TL; Klaus, P	Moving the Customer Experience Field Forward: Introducing the Touchpoints, Context, Qualities (TCQ) Nomenclature	J. Serv. Res.	customer experience; customer experience management; marketing strategy; touchpoints; experience qualities; experience stages; experience context; customer journey	85
2020	Holmlund, M; Van Vaerenbergh, Y; Ciuchita, R; Ravald, A; Sarantopoulos, P; Ordenes, FV; Zaki, M	Customer experience management in the age of big data analytics: A strategic framework	J. Bus. Res.	Customer experience; Customer experience management; Customer experience insight; Big data analytics	45
2020	Hoyer, WD; Kroschke, M; Schmitt, B; Kraume, K; Shankar, V	Transforming the Customer Experience Through New Technologies	J. Interact. Mark.	Customer experience; Experiential marketing; Customer value; Internet of Things (IoT); Augmented and Virtual Reality (AR/VR); AI and robots	91
2020	Keiningham, T; Aksoy, L; Bruce, HL; Cadet, F; Clennell, N; Hodgkinson, IR;	Customer experience driven business model innovation	J. Bus. Res.	Business model; Innovation; Customer experience; Service	46

	Kearney, T				
2020	Khan, I; Hollebeek, LD; Fatma, M; Ul Islam, J; Riivits-Arkonsuo, I	Customer experience and commitment in retailing: Does customer age matter?	J. Retail. Consum. Serv.	Customer experience; Age; Affective/calculative commitment; Brand loyalty	45
2020	Luther, L; Tiberius, V; Brem, A	User Experience (UX) in Business, Management, and Psychology: A Bibliometric Mapping of the Current State of Research	Multimodal Technol. Interaction	bibliometric analysis; co-citation analysis; co-occurrence analysis; citation analysis; user experience; UX	12
2020	Sheth, J	Impact of Covid-19 on consumer behavior: Will the old habits return or die?	J. Bus. Res.	COVID Pandemic; Consumer habits; New regulations for shopping; Customer experience	333
2020	Siebert, A; Gopaldas, A; Lindridge, A; Simoes, C	Customer Experience Journeys: Loyalty Loops Versus Involvement Spirals	J. Mark.	attention economy; customer experience management; customer involvement; customer journey design; customer loyalty; experience economy; experiential involvement; service design	36
2020	Tyrvainen, O; Karjaluoto, H; Saarijarvi, H	Personalization and hedonic motivation in creating customer experiences and loyalty in omnichannel retail	J. Retail. Consum. Serv.	Retail; Customer experience; Omnichannel experience; Personalization; Hedonic motivation	34
2021	Kuppelwieser, VG; Klaus, P	Measuring customer experience quality: The EXQ scale revisited	J. Bus. Res.	Corroboration; Customer experience; EXQ; Customer experience scale; B2B; Customer experience quality; CX measurement	30
2021	Sindhu, P; Bharti, K	Mapping customer experience: a taxonomical study using bibliometric visualization	VINE J. INF. KNOWL. MANAG. SYST.	Management; Quantitative research; User experience	5
2022	Alexander, B; Kent, A	Change in technology-enabled omnichannel customer experiences in-store	J. Retail. Consum. Serv.	Omnichannel; In-store technologies; Physical store; Customer experience; Purchase journey; Fashion retail	6
2022	Arici, HE; Koseoglu, MA; Sokmen, A	The intellectual structure of customer experience research in service scholarship: a bibliometric analysis	Serv. Ind. J.	Customer experience; technology; service scholarship; bibliometric analysis; value co-creation; service quality	4
2022	Arici, HE; Koseoglu, MA; Sokmen, A	The intellectual structure of customer experience research in service scholarship: a bibliometric analysis	Serv. Ind. J.	Customer experience; technology; service scholarship; bibliometric analysis; value co-creation; service quality	4
2022	Chang, YP; Li, JW	Seamless experience in the context of omnichannel shopping: scale development and empirical validation	J. Retail. Consum. Serv.	Seamless experience; Touchpoints; Omnichannel shopping journey; Omnichannel integration; Scale development	3
2022	Gao, JY; Ren, LN; Yang, Y; Zhang, D; Li, L	The impact of artificial intelligence technology stimuli on smart customer experience and the moderating effect of technology readiness	Int. J. Emerg. Mark.	Artificial intelligence technology stimuli; Smart customer experience; Word-of-mouth intentions; Technology readiness	0
2022	Hamacher, K; Buchkremer, R	Measuring Online Sensory Consumer Experience: Introducing the Online Sensory Marketing Index (OSMI) as a Structural Modeling Approach	J. Theor. Appl. Electron. Commer. Res.	sensory marketing; online sensory marketing index; e-commerce; assessment system; sensory imagery; online consumer experience	0

2022	Kim, H; So, KKF	Two decades of customer experience research in hospitality and tourism: A bibliometric analysis and thematic content analysis	Int. J. Hosp. Manag.	Customer experience; Bibliometric analysis; Grounded theory; Thematic content analysis; PRISMA; Experience economy	11
2022	Kumar, P; Mokha, AK; Pattnaik, SC	Electronic customer relationship management (E-CRM), customer experience and customer satisfaction: evidence from the banking industry	Benchmarking	E-CRM; Customer experience; Customer satisfaction; Banking industry	5
2022	Li, R; Zhang, H; Liu, CG; Qian, ZC; Zhang, LH	Bibliometric and Visualized Analysis of User Experience Design Research: From 1999 to 2019	SAGE Open	user experience design; knowledge map; bibliometrics; visualized analysis	0
2022	Manyanga, W; Makanyeza, C; Muranda, Z	The effect of customer experience, customer satisfaction and word of mouth intention on customer loyalty: The moderating role of consumer demographics	Cogent Bus. Manag.	banking; customer experience; customer loyalty; customer satisfaction; word of mouth intention	0
2022	Mokha, AK; Kumar, P	Examining the Interconnections Between E-CRM, Customer Experience, Customer Satisfaction and Customer Loyalty: A Mediation Approach	J. Electron. Commer. Organ.	Banking Industry; Customer Experience; Customer Loyalty; Customer Satisfaction; E-CRM; SEM	1
2022	Quach, S; Barari, M; Moudry, DV; Quach, K	Service integration in omnichannel retailing and its impact on customer experience	J. Retail. Consum. Serv.	Omnichannel; Service integration; Customer experience; Retailing; Flow theory; Hyperbolic discounting theory	24
2022	Roy, SK; Gruner, RL; Guo, JJ	Exploring customer experience, commitment, and engagement behaviours	J. Strateg. Mark.	Services marketing; retail services; customer experience; customer commitment; engagement behaviours; PLS path modelling	14
2022	Stead, S; Wetzels, R; Wetzels, M; Odekerken-Schroder, G; Mahr, D	Toward Multisensory Customer Experiences: A Cross-Disciplinary Bibliometric Review and Future Research Directions	J. Serv. Res.	multisensory; customer experience; text mining; co-citation; systematic literature review	0

All documents were last updated on August 12, 2022

Appendix II. Documents included for literature review on Customer Engagement

P.Y.	Authors	Article Title	Journal	Author Keywords	T.C.
2010	Bijmolt, THA; Leeflang, PSH; Block, F; Eisenbeiss, M; Hardie, BGS; Lemmens, A; Saffert, P	Analytics for Customer Engagement	J. Serv. Res.	analytic models; customer equity; customer management; data mining; decision trees; probability models; word of mouth	219
2010	Kumar, V; Aksoy, L; Donkers, B; Venkatesan, R; Wiesel, T; Tillmanns, S	Undervalued or Overvalued Customers: Capturing Total Customer Engagement Value	J. Serv. Res.	customer engagement value; customer lifetime value; customer knowledge value; customer influencer value; customer referral value	657
2010	Roberts, C; Alpert, F	Total customer engagement: designing and aligning key strategic elements to achieve growth	J. Prod. Brand Manag.	Brand management; Customers; Marketing models	49
2010	van Doorn, J; Lemon, KN; Mittal, V; Nass, S; Pick, D; Pirner, P; Verhoef, PC	Customer Engagement Behavior: Theoretical Foundations and Research Directions	J. Serv. Res.	customer engagement; customer loyalty; cocreation; services marketing	1553
2010	Verhoef, PC; Reinartz, WJ; Krafft, M	Customer Engagement as a New Perspective in Customer Management	J. Serv. Res.	customer relationship management; customer lifetime value; word-of-mouth; customer loyalty	487
2011	Brodie, RJ; Hollebeek, LD; Juric, B; Ilic, A	Customer Engagement: Conceptual Domain, Fundamental Propositions, and Implications for Research	J. Serv. Res.	consumer to consumer; content analysis; customer relationship management; engagement; experience; relationship marketing; service-dominant logic	1482
2011	Hollebeek, L	Exploring customer brand engagement: definition and themes	J. Strateg. Mark.	customer engagement; brands; in-depth interviews/focus group; conceptualization	549
2012	Sashi, CM	Customer engagement, buyer-seller relationships, and social media	Manag. Decis.	Customer engagement; Buyer-seller relationships; Social media; Web 2.0; Relational exchange; Emotional bonds; Customer orientation; Marketing strategy	542
2013	Hollebeek, LD	The customer engagement/value interface: An exploratory investigation	Australas. Mark. J.	Customer engagement; Customer value; Conceptual model; Depth-interviews/focus group	154
2014	Hollebeek, LD; Glynn, MS; Brodie, RJ	Consumer Brand Engagement in Social Media: Conceptualization, Scale Development and Validation	J. Interact. Mark.	Consumer brand engagement; Social media; Scale development; Structural equation modeling	1120
2014	Jaakkola, E; Alexander, M	The Role of Customer Engagement Behavior in Value Co-Creation: A Service System Perspective	J. Serv. Res.	customer engagement; value co-creation; service system; resource integration; customer communities	579
2014	Oviedo-Garcia, MA; Munoz-Exposito, M; Castellanos-Verdugo, M; Sancho-Mejias, M	Metric proposal for customer engagement in Facebook	J. Res. Interact. Mark.	Social media marketing; Social networks; Consumer behavior; Metrics; Facebook; Customer insight	72

2014	Verleye, K; Gemmel, P; Rangarajan, D	Managing Engagement Behaviors in a Network of Customers and Stakeholders: Evidence From the Nursing Home Sector	J. Serv. Res.	customer engagement behaviors; organizational socialization; organizational support; role theory; social exchange theory	178
2015	Hammedi, W; Kandampully, J; Zhang, TT; Bouquiaux, L	Online customer engagement Creating social environments through brand community constellations	J. Serv. Manage.	Participation; Social identity; Brand community; Customer brand-relationship; Personal identification; Social environment	56
2015	Okazaki, S; Diaz-Martin, AM; Rozano, M; Menendez-Benito, HD	Using Twitter to engage with customers: a data mining approach	Internet Res.	Algorithms; Data analysis; Marketing theory; Customer service management; Communications technology; Social networks	55
2016	Blasco-Arcas, L; Hernandez-Ortega, BI; Jimenez-Martinez, J	Engagement platforms The role of emotions in fostering customer engagement and brand image in interactive media	J. Serv. Theory Pract.	Brand image; Emotions; Online cues; Customer engagement; Engagement platforms	51
2016	Dessart, L; Veloutsou, C; Morgan-Thomas, A	Capturing consumer engagement: duality, dimensionality and measurement	J. Market. Manag.	Consumer engagement; social networks; brand engagement; community engagement; scale development; online brand community	200
2016	Dolan, R; Conduit, J; Fahy, J; Goodman, S	Social media engagement behaviour: a uses and gratifications perspective	J. Strateg. Mark.	social media engagement behaviour; social media content; uses and gratifications theory	242
2016	Fernandes, T; Remelhe, P	How to engage customers in co-creation: customers' motivations for collaborative innovation	J. Strateg. Mark.	co-creation; collaborative innovation; customer engagement; motivations	102
2016	Kumar, V; Pansari, A	Competitive Advantage Through Engagement	J. Mark. Res.	customer engagement; employee engagement; firm performance; business-to-business; service; employee empowerment	434
2016	Maslowska, E; Malthouse, EC; Collinger, T	The customer engagement ecosystem	J. Market. Manag.	customer experiences; non-purchase behaviours; brand; brand dialogue behaviours; Customer engagement; engagement ecosystem	128
2016	Robson, K; Plangger, K; Kietzmann, JH; McCarthy, I; Pitt, L	Game on: Engaging customers and employees through gamification	Bus. Horiz.	Gamification; Employee engagement; Customer engagement; Mechanics; Dynamics; Emotions; Behavior change	113
2016	Storbacka, K; Brodie, RJ; Bohmann, T; Maglio, PP; Nenonen, S	Actor engagement as a microfoundation for value co-creation	J. Bus. Res.	Micro-foundation; Actor engagement; Service ecosystems; Co-creation of value	310
2016	Thakur, R	Understanding Customer Engagement and Loyalty: A Case of Mobile Devices for Shopping	J. Retail. Consum. Serv.	Customer engagement; Customer experiences; Customer loyalty; Mobile devices	109
2016	Ul Islam, J; Rahman, Z	Linking Customer Engagement to Trust and Word-of-Mouth on Facebook Brand Communities: An Empirical Study	J. Internet Commer.	Brand community; customer engagement; customer involvement; Facebook; trust; word-of-mouth	91
2017	Dong, BB; Sivakumar, K	Customer participation in services: domain, scope, and boundaries	J. Acad. Mark. Sci.	Customer participation; Mandatory participation; Replaceable participation; Voluntary participation; Cocreation; Coproduction; Customer engagement; Customer innovation	114
2017	Grewal, D; Roggeveen, AL; Sisodia, R; Nordfalt, J	Enhancing Customer Engagement Through Consciousness	J. Retail.	Customer engagement; Customer experience; Consciousness	43

2017	Harmeling, CM; Moffett, JW; Arnold, MJ; Carlson, BD	Toward a theory of customer engagement marketing	J. Acad. Mark. Sci.	Customer engagement; Marketing strategy; Task-based engagement; Experiential engagement; Quasi-experiment	367
2017	Hollebeek, LD; Juric, B; Tang, WY	Virtual brand community engagement practices: a refined typology and model	J. Serv. Mark.	Netnography; Engagement practices; Virtual brand community	119
2017	Kunz, W; Aksoy, L; Bart, Y; Heinonen, K; Kabadayi, S; Ordenes, FV; Sigala, M; Diaz, D; Theodoulidis, B	Customer engagement in a Big Data world	J. Serv. Mark.	Big data; Value creation; Customer engagement; Data-driven engagement	94
2017	Pansari, A; Kumar, V	Customer engagement: the construct, antecedents, and consequences	J. Acad. Mark. Sci.	Engagement theory; Customer engagement; Emotions; Satisfaction; Tangible and intangible performance	579
2017	Sorensen, A; Andrews, L; Drennan, J	Using social media posts as resources for engaging in value co-creation The case for social media-based cause brand communities	J. Serv. Theory Pract.	Social media; Value co-creation; Online communities; Post characteristics; Resources; Customer engagement	41
2017	Viswanathan, V; Hollebeek, LD; Malthouse, EC; Maslowska, E; Kim, SJ; Xie, W	The Dynamics of Consumer Engagement with Mobile Technologies	Serv. Sci.	engagement; disengagement; mobile devices; mobile apps; VAR model	63
2018	Alexander, MJ; Jaakkola, E; Hollebeek, LD	Zooming out: actor engagement beyond the dyadic	J. Serv. Manage.	Service-dominant logic; Customer engagement; Roles; Service ecosystem; Structuration; Actor engagement	115
2018	Alvarez-Milan, A; Felix, R; Rauschnabel, PA; Hinsch, C	Strategic customer engagement marketing: A decision making framework	J. Bus. Res.	Customer engagement marketing; Relationship marketing; Customer experience; Grounded theory; Strategic decision making framework; Consumer-brand relationships	39
2018	Beckers, SFM; van Doorn, J; Verhoef, PC	Good, better, engaged? The effect of company-initiated customer engagement behavior on shareholder value	J. Acad. Mark. Sci.	Customer engagement; Shareholder value; Event study; Word-of-mouth	119
2018	Bruneau, V; Swaen, V; Zidda, P	Are loyalty program members really engaged? Measuring customer engagement with loyalty programs	J. Bus. Res.	Loyalty programs; Engagement; Scale development; Hierarchical scaling	36
2018	Fehrer, JA; Woratschek, H; Germelmann, CC; Brodie, RJ	Dynamics and drivers of customer engagement: within the dyad and beyond	J. Serv. Manage.	Experiment; Customer engagement; Engagement connectedness; Utilitarian service setting	54
2018	Gupta, S; Pansari, A; Kumar, V	Global Customer Engagement	J. Int. Market.	global customer engagement; national culture; level of involvement; level of brand value; economic growth	57
2018	Moliner, MA; Monferrer-Tirado, D; Estrada-Guillen, M	Consequences of customer engagement and customer self-brand connection	J. Serv. Mark.	Customer engagement; Financial performance; Self-brand connection; Customer advocacy	72
2018	Prentice, C; Loureiro, SMC	Consumer-based approach to customer engagement - The case of luxury brands	J. Retail. Consum. Serv.	Luxury fashion brand; Social motives; Customer engagement; Subjective well-being	59

2018	Tu, YJ; Neuhofer, B; Viglia, G	When co-creation pays: stimulating engagement to increase revenues	Int. J. Contemp. Hosp. Manag.	Service-dominant logic; Hospitality; Co-creation; Customer engagement; Willingness to pay	53
2018	van Tonder, E; Petzer, DJ	The interrelationships between relationship marketing constructs and customer engagement dimensions	Serv. Ind. J.	Affective commitment; customer engagement; customer satisfaction; customer perceived value; trust	44
2018	Viglia, G; Pera, R; Bigne, E	The determinants of stakeholder engagement in digital platforms	J. Bus. Res.	Stakeholders; Engagement; Social media; fsQCA; Compliance; Interaction	56
2018	Zhang, TT; Lu, C; Torres, E; Chen, PJ	Engaging customers in value co-creation or co-destruction online	J. Serv. Mark.	Qualitative research; Co-creation; Services marketing; Customer engagement; Co-destruction	91
2019	Bilro, RG; Loureiro, SMC; Guerreiro, J	Exploring online customer engagement with hospitality products and its relationship with involvement, emotional states, experience and brand advocacy	J. Hosp. Market. Manag.	Customer engagement; online experience; involvement; brand advocacy; emotional states; user-generated content	40
2019	Brodie, RJ; Fehrer, JA; Jaakkola, E; Conduit, J	Actor Engagement in Networks: Defining the Conceptual Domain	J. Serv. Res.	actor engagement; customer engagement; connectedness; networks; service ecosystems	108
2019	Eisingerich, AB; Marchand, A; Fritze, MP; Dong, L	Hook vs. hope: How to enhance customer engagement through gamification	Int. J. Res. Mark.	Gamification; Digital service; Engagement; Hope; Compulsion; Digital sales	49
2019	Gligor, D; Bozkurt, S; Russo, I	Achieving customer engagement with social media: A qualitative comparative analysis approach	J. Bus. Res.	Customer engagement; Loyalty; Commitment; Interactivity; QCA; Qualitative comparative analysis	37
2019	Hollebeek, LD	Developing business customer engagement through social media engagement-platforms: An integrative S-D logic/RBV-informed model	Ind. Mark. Manage.	Customer engagement; Industrial marketing; Social media; S-D logic; Resource-based view	60
2019	Hollebeek, LD; Srivastava, RK; Chen, T	S-D logic-informed customer engagement: integrative framework, revised fundamental propositions, and application to CRM	J. Acad. Mark. Sci.	Customer engagement; S-D logic; Conceptual framework; Revised FPs; CRM	374
2019	Kumar, V; Rajan, B; Gupta, S; Pozza, ID	Customer engagement in service	J. Acad. Mark. Sci.	Service experience; Customer engagement; Developed markets; Emerging markets; Service-dominant logic	135
2019	Laurence, D; Valentina, P	How stories generate consumer engagement: An exploratory study	J. Bus. Res.	Consumer engagement; Storytelling; Social media; Brand content	36
2019	Lee, ZWY; Chan, TKH; Chong, AYL; Thadani, DR	Customer engagement through omnichannel retailing: The effects of channel integration quality	Ind. Mark. Manage.	Customer engagement; Omnichannel retailing; Channel integration quality; Repurchase intention; Positive word-of-mouth; Social exchange theory	100
2019	Sashi, CM; Brynildsen, G; Bilgihan, A	Social media, customer engagement and advocacy: An empirical investigation using Twitter data for quick service restaurants	Int. J. Contemp. Hosp. Manag.	Retention; Social media; Commitment; Customer engagement; Advocacy; QSRs	43

2019	Shen, XL; Li, YJ; Sun, YQ; Chen, ZJ; Wang, F	Understanding the role of technology attractiveness in promoting social commerce engagement: Moderating effect of personal interest	Inf. Manage.	Social commerce; Customer engagement; Technology attractiveness; Community involvement; Personal interest	41
2019	Storbacka, K	Actor engagement, value creation and market innovation	Ind. Mark. Manage.	Actor engagement; Resource linkages; Resource density; Market-shaping; Market innovation	37
2019	Ul Islam, J; Hollebeek, LD; Rahman, Z; Khan, I; Rasool, A	Customer engagement in the service context: An empirical investigation of the construct, its antecedents and consequences	J. Retail. Consum. Serv.	Customer engagement; Service quality; Brand experience; Repatronage intent; Gender	106
2020	Christofi, M; Vrontis, D; Leonidou, E; Thrassou, A	Customer engagement through choice in cause-related marketing A potential for global competitiveness	Int. Market. Rev.	Consumer choice; Customer engagement; Cause-related marketing; Cause proximity; Cause type; Global competitiveness	44
2020	Hu, MY; Chaudhry, SS	Enhancing consumer engagement in e-commerce live streaming via relational bonds	Internet Res.	E-commerce live streaming; Financial bonds; Social bonds; Structural bonds; Affective commitment; Consumer engagement	48
2020	Morgan-Thomas, A; Dessart, L; Veloutsou, C	Digital ecosystem and consumer engagement: A socio-technical perspective	J. Bus. Res.	Consumer engagement; Digital ecosystem; Socio-technical; Practice; Sociomateriality; Social media; Brand communities	36
2020	Prentic, C; Nguyen, M	Engaging and retaining customers with AI and employee service	J. Retail. Consum. Serv.	Artificial intelligence; Emotional intelligence; Service experience; Customer engagement; Customer loyalty	40
2021	Rather, RA; Hollebeek, LD	Customers? service-related engagement, experience, and behavioral intent: Moderating role of age	J. Retail. Consum. Serv.	Customer engagement; Customer experience; Experiential marketing; Age; Behavioral intention	38
2021	So, KKF; Kim, H; King, C	The thematic evolution of customer engagement research: a comparative systematic review and bibliometric analysis	Int. J. Contemp. Hosp. Manag.	Customer engagement; Systematic review; Bibliometric analysis; Hospitality; Tourism; Service; Marketing	10
2021	Srivastava, M; Sivaramakrishnan, S	Mapping the themes and intellectual structure of customer engagement: a bibliometric analysis	Mark. Intell. Plan.	Customer engagement; Bibliometric analysis; Bibliographic coupling; Co-occurrence analysis; Cluster analysis; VOSviewer	6
2022	Han, XY; Chen, SP; Chen, B	From employee engagement to customer engagement: A multilevel dual-path model of engagement spillover effects in service ecosystems	J. Retail. Consum. Serv.	Actor engagement; Employee engagement; Customer engagement; Service ecosystem; Dual-path model	0
2022	Hollebeek, LD; Kumar, V; Srivastava, RK	From Customer-, to Actor-, to Stakeholder Engagement: Taking Stock, Conceptualization, and Future Directions	J. Serv. Res.	Stakeholder engagement; actor engagement; customer engagement; stakeholder theory; S-D logic	21
2022	Hollebeek, LD; Sharma, TG; Pandey, R; Sanyal, P; Clark, MK	Fifteen years of customer engagement research: a bibliometric and network analysis	J. Prod. Brand Manag.	Customer engagement; Brand engagement; Bibliometric analysis; Network analysis	12
2022	Lim, WM; Rasul, T; Kumar, S; Ala, M	Past, present, and future of customer engagement	J. Bus. Res.	Customer engagement; Bibliometric analysis; Thematic analysis; Review; Agenda	19
2022	Liu, ZY; Han, SH; Li, C; Gupta, S; Sivarajah, U	Leveraging customer engagement to improve the operational efficiency of social commerce start-ups	J. Bus. Res.	Demand forecasting; Social media; Customer engagement; Inventory management strategy; Resource mobilization	0

2022	Shawky, S; Kubacki, K; Dietrich, T; Weaven, S	The multi-actor perspective of engagement on social media	Int. J. Market Res.	customer engagement; netnography; social marketing; social media; women's empowerment	0
2022	Sim, M; Conduit, J; Plewa, C; Hentzen, JK	Customer engagement with service providers: an empirical investigation of customer engagement dispositions	Eur. J. Market.	Customer engagement; Engagement dispositions; Traits; Characteristics; Service provider	0
2022	Srivastava, M; Sivaramakrishnan, S	A bibliometric analysis of the structure and trends of customer engagement in the context of international marketing	Int. Market. Rev.	Customer engagement; International marketing; Bibliometric analysis; VOSviewer; Biblioshiny	2
2022	Zheng, R; Li, Z; Na, S	How customer engagement in the live-streaming affects purchase intention and customer acquisition, E-tailer?s perspective	J. Retail. Consum. Serv.	Retailing; Live streaming; Customer engagement; E-tailers; Purchase intention; Customer acquisition	0

All documents were last updated on August 12, 2022

Appendix III. Documents included for literature review on Customer Journey

P.Y.	Authors	Article Title	Journal	Author Keywords	T.C.
2012	Crosier, A; Handford, A	Customer Journey Mapping as an Advocacy Tool for Disabled People: A Case Study	Soc. Mark. Q.	research; best practices; other practice areas; innovations; customer journey mapping	33
2013	Rawson, A; Duncan, E; Jones, C	Touchpoints matter, but it's the full journey that really counts	Harv. Bus. Rev.		94
2015	De Keyser, A; Schepers, J; Konus, U	Multichannel customer segmentation: Does the after-sales channel matter? A replication and extension	Int. J. Res. Mark.	Multichannel customer segmentation; Latent class modeling; Customer shopping journey	70
2016	Halvorsrud, R; Kvale, K; Folstad, A	Improving service quality through customer journey analysis	J. Serv. Theory Pract.	Customer journey; Customer experience; Service quality; Empirical study; Service improvement	72
2017	Rosenbaum, MS; Otalora, ML; Ramirez, GC	How to create a realistic customer journey map	Bus. Horiz.	Mall management; Customer journey mapping; Customer decision journey; Empathy map; Customer touchpoints; Strategic innovation	88
2018	Barwitz, N; Maas, P	Understanding the Omnichannel Customer Journey: Determinants of Interaction Choice	J. Interact. Mark.	Customer journey; Omnichannel; Interaction choice; Customer experience	71
2018	Yachin, JM	The 'customer journey': Learning from customers in tourism experience encounters	Tour. Manag. Perspect.	Experience encounters; Customer knowledge; Customer journey; Micro-tourism firms; Value in experience; Guided-tours	38
2019	Herhausen, D; Kleinlercher, K; Verhoef, PC; Emrich, O; Rudolph, T	Loyalty Formation for Different Customer Journey Segments	J. Retail.	Customer journey; Customer satisfaction; Customer inspiration; Touchpoints; Omnichannel management; Customer segmentation	61
2019	Kuehnl, C; Jozic, D; Homburg, C	Effective customer journey design: consumers' conception, measurement, and consequences	J. Acad. Mark. Sci.	Effective customer journey design; Touchpoints; Customer journey; Brand experience; Scale development	69
2020	Grewal, D; Roggeveen, AL	Understanding Retail Experiences and Customer Journey Management	J. Retail.		60
2020	Li, JJ; Abbasi, A; Cheema, A; Abraham, LB	Path to Purpose? How Online Customer Journeys Differ for Hedonic Versus Utilitarian Purchases	J. Mark.	customer journey; hedonic and utilitarian products; information sources; path to purchase; touchpoint management	26
2020	Shavitt, S; Barnes, AJ	Culture and the Consumer Journey	J. Retail.	Consumer journey; Individualism; Collectivism; Independent and Interdependent Self-construal; Thinking style; Power distance; Global and local identities	36
2021	Hamilton, R; Ferraro, R; Haws, KL; Mukhopadhyay, A	Traveling with Companions: The Social Customer Journey	J. Mark.	customer experience; customer journey; joint consumption; social distance; social influence	40

2022	Cui, XW; Xie, QH; Zhu, J; Shareef, MA; Goraya, MAS; Akram, MS	Understanding the omnichannel customer journey: The effect of online and offline channel interactivity on consumer value co-creation behavior	J. Retail. Consum. Serv.	Channel interactivity; Brand involvement; Value co-creation behavior; Cross-channel consistency	3
2022	Gasparin, I; Panina, E; Becker, L; Yrjola, M; Jaakkola, E; Pizzutti, C	Challenging the integration imperative: A customer perspective on omnichannel journeys	J. Retail. Consum. Serv.	Omnichannel retailing; Customer experience; Customer journey; Journey integration	3
2022	Mele, C; Russo-Spena, T	The architecture of the phygital customer journey: a dynamic interplay between systems of insights and systems of engagement	Eur. J. Market.	Phygital customer journey; Smart technology; Journey architecture; Systems of insights; Systems of engagement	2
2022	Rustholllkarhu, S; Toukola, S; Aarikka-Stenroos, L; Mahlamaki, T	Managing B2B customer journeys in digital era: Four management activities with artificial intelligence-empowered tools	Ind. Mark. Manage.	Customer journey; B2B; Artificial intelligence; Management; Digital tools; Activities	1
2022	Towers, A; Towers, N	Framing the customer journey: touch point categories and decision-making process stages	Int. J. Retail Distrib. Manag.	Customer journey; Touch points; Consumer decision-making process stages; Customer engagement	0

All documents were last updated on August 12, 2022

Appendix IV. Documents included for literature review on Conversational agents

P.Y.	Authors	Article Title	Journal	Author Keywords	T.C.
2008	McGoldrick, PJ; Keeling, KA; Beatty, SF	A typology of roles for avatars in online retailing	J. Market. Manag.	Avatars; E-commerce; Internet shopper typology; Selling roles; Embodied conversational agents; Human-computer interaction	38
2011	Chattaraman, V; Kwon, WS; Gilbert, JE; Shim, SI	Virtual agents in e-commerce: representational characteristics for seniors	J. Res. Interact. Mark.	Internet; Older consumers; Consumer behaviour; Web sites; Virtual agents; E-commerce; Aging; Modality; Interaction; Representation	21
2011	Nunamaker, JE; Derrick, DC; Elkins, AC; Burgoon, JK; Patton, MW	Embodied Conversational Agent-Based Kiosk for Automated Interviewing	J. Manage. Inform. Syst.	avatars; deception detection; embodied conversational agents; NeuroIS	126
2012	Ben Mimoun, MS; Poncin, I; Garnier, M	Case study-Embodied virtual agents: Ananalysis on reasons for failure	J. Retail. Consum. Serv.	Virtual salesagents; Embodied virtualagents; Commercial websites; Disconfirmation paradigm; Uncanny valley theory	48
2013	Elkins, AC; Derrick, DC	The Sound of Trust: Voice as a Measurement of Trust During Interactions with Embodied Conversational Agents	Group Decis. Negot.	Trust; Vocalics; Embodied conversational agent	36
2014	Chattaraman, V; Kwon, WS; Gilbert, JE; Li, YS	Virtual shopping agents Persona effects for older users	J. Res. Interact. Mark.	Online retailing; Interactivity; Consumer behavior Internet; Human-centered computing; Older Internet users; Virtual agents	20
2014	Etemad-Sajadi, R	The influence of a virtual agent on web-users' desire to visit the company The case of restaurant's web site	Int. J. Qual. Reliab. Manag.	Social presence; Trust; TAM; E-service quality; Restaurant web site; Virtual agent; Web site humanization; Web-user experience	21
2015	Ben Mimoun, MS; Poncin, I	A valued agent: How ECAs affect website customers' satisfaction and behaviors	J. Retail. Consum. Serv.	Virtual agent; ECA; Shopping value; PLS	28
2017	Ben Mimoun, MS; Poncin, I; Garnier, M	Animated conversational agents and e-consumer productivity: The roles of agents and individual characteristics	Inf. Manage.	Animated conversational agents (ACA); Consumer productivity; Individual characteristics; Consumer profile; Eye-tracking	35
2018	Belk, R; Kniazeva, M	Morphing anthropomorphism: An update	J. Glob. Scholars Mark. Sci.	Anthropomorphism; brand personality; marketplace mythology; robots; conversational digital assistants	5
2018	Castellano, S; Khelladi, I; Charlemagne, J; Susini, JP	Uncovering the role of virtual agents in co-creation contexts: An application to the online wine business	Manag. Decis.	Co-creation; Perceived risk; Wine; Online trust; Virtual agents	3
2018	Riikkinen, M; Saarijarvi, H; Sarlin, P; Lahteenmaki, I	Using artificial intelligence to create value in insurance	Int. J. Bank Mark.	Customer value; Value creation; Artificial intelligence; Service logic; Insurance; Chatbot; Reverse use of customer data	49
2019	Brill, TM; Munoz, L; Miller, RJ	Siri, Alexa, and other digital assistants: a study of customer satisfaction with artificial intelligence applications	J. Market. Manag.	Customer satisfaction; expectations confirmation theory; digital assistants; privacy concerns; artificial intelligence	46
2019	Cherif, E; Lemoine, JF	Anthropomorphic virtual assistants and the reactions of Internet users: An experiment on the assistant's voice	Rech. Appl. Market.-Engl. Ed.	human versus synthetic voice; serial multiple mediation; social presence; trust in the virtual assistant; trust in the website; virtual assistant	17

2019	Chopra, K	Indian shopper motivation to use artificial intelligence: Generating Vroom's expectancy theory of motivation using grounded theory approach	Int. J. Retail Distrib. Manag.	India; Retail; Grounded theory; Artificial intelligence; Consumer motivation; Vroom's expectancy theory	30
2019	De Keyser, A; Kocher, S; Alkire, L; Verbeeck, C; Kandampully, J	Frontline Service Technology infusion: conceptual archetypes and future research directions	J. Serv. Manage.	Service encounter; Blockchain; Conversational agents; Extended reality; Organizational frontline; Technology infusion	111
2019	Kaczorowska-Spychalska, D	How chatbots influence marketing	Manag.-Pol.	digital technologies; chatbots; consumer behavior; marketing	14
2019	Luo, XM; Tong, SL; Fang, Z; Qu, Z	Frontiers: Machines vs. Humans: The Impact of Artificial Intelligence Chatbot Disclosure on Customer Purchases	Mark. Sci.	artificial intelligence; chatbot; conversational commerce; new technology; disclosure	149
2019	Przegalinska, A; Ciechanowski, L; Stroz, A; Gloor, P; Mazurek, G	In bot we trust: A new methodology of chatbot performance measures	Bus. Horiz.	Artificial intelligence; Chatbots; Chatbot performance; Human computer interaction; Performance goals; Customer trust; Customer experience	49
2019	Trivedi, J	Examining the Customer Experience of Using Banking Chatbots and Its Impact on Brand Love: The Moderating Role of Perceived Risk	J. Internet Commer.	Artificial intelligence; brand love; chatbots; customer experience; information system model; perceived risk	43
2020	Brachten, F; Brunker, F; Frick, NRJ; Ross, B; Stieglitz, S	On the ability of virtual agents to decrease cognitive load: an experimental study	Inf. Syst. E-Bus. Manag.	Cognitive load; Virtual assistants; Chatbots; Conversational agents; Task performance; Perceived workload; NASA-TLX	13
2020	Canhoto, AI; Clear, F	Artificial intelligence and machine learning as business tools: A framework for diagnosing value destruction potential	Bus. Horiz.	Artificial intelligence; Machine learning; Value creation; Value destruction; Decision making; Technology adoption; Enterprise value; Chatbot	55
2020	Cheng, Y; Jiang, H	AI-Powered mental health chatbots: Examining users' motivations, active communicative action and engagement after mass-shooting disasters	J. Cont. Crisis Manag.	artificial intelligence(AI); chatbots; crises; engagement; mass shootings; mental health; situational theory of problem-solving (STOPS)	10
2020	Chung, M; Ko, E; Joung, H; Kim, SJ	Chatbot e-service and customer satisfaction regarding luxury brands	J. Bus. Res.	Chatbot; Communication; Digital marketing; Luxury brand; Service agents	147
2020	De Cicco, R; Silva, SCE; Alparone, FR	Millennials' attitude toward chatbots: an experimental study in a social relationship perspective	Int. J. Retail Distrib. Manag.	Chatbot; Interaction style; Avatar; Social presence; Trust; Enjoyment; Attitude	18
2020	Desouza, KC; Dawson, GS; Chenok, D	Designing, developing, and deploying artificial intelligence systems: Lessons from and for the public sector	Bus. Horiz.	Artificial intelligence applications; Cognitive computing systems; Innovation management; Technology adoption	27
2020	Hoyer, WD; Kroschke, M; Schmitt, B; Kraume, K; Shankar, V	Transforming the Customer Experience Through New Technologies	J. Interact. Mark.	Customer experience; Experiential marketing; Customer value; Internet of Things (IoT); Augmented and Virtual Reality (AR/VR); AI and robots	94
2020	Kot, MT; Leszczynski, G	The concept of intelligent agent in business interactions: is virtual assistant an actor or a boundary object?	J. Bus. Ind. Mark.	Boundary objects; Business interactions; Business actors; Business virtual assistants; Human-to-machine interactions; Intelligent agents; Artificial intelligence	10

2020	Leung, XY; Wen, H	Chatbot usage in restaurant takeout orders: A comparison study of three ordering methods	J. Hosp. Tour. Manag.	Takeout order; Chatbot; Human-robot interaction; Social presence theory; Contingency theory	10
2020	Pantano, E; Pizzi, G	Forecasting artificial intelligence on online customer assistance: Evidence from chatbot patents analysis	J. Retail. Consum. Serv.		42
2020	Pillai, R; Sivathanu, B	Adoption of AI-based chatbots for hospitality and tourism	Int. J. Contemp. Hosp. Manag.	AI-based chatbots; Anthropomorphism; Mixed method; Perceived trust; Perceived intelligence; PLS-SEM; TAM	60
2020	Rese, A; Ganster, L; Baier, D	Chatbots in retailers' customer communication: How to measure their acceptance?	J. Retail. Consum. Serv.		40
2020	Schuetzler, RM; Grimes, GM; Giboney, JS	The impact of chatbot conversational skill on engagement and perceived humanness	J. Manage. Inform. Syst.	Conversational agents; system humanness; anthropomorphism; user engagement; social presence; chatbots	30
2020	Seeber, I; Waizenegger, L; Seidel, S; Morana, S; Benbasat, I; Lowry, PB	Collaborating with technology-based autonomous agents Issues and research opportunities	Internet Res.	Collaboration; Emotions; Decision-making; Biases; Unintended consequences; Autonomous technology-based agents; Knowledge and learning	23
2020	Sheehan, B; Jin, HS; Gottlieb, U	Customer service chatbots: Anthropomorphism and adoption	J. Bus. Res.	Chatbots; Artificial conversational entities; Self-service technology; Anthropomorphism; Perceived humanness; Need for human interaction	67
2020	Stoeckli, E; Dremel, C; Uebernickel, F; Brenner, W	How affordances of chatbots cross the chasm between social and traditional enterprise systems	Electron. Mark.	Social information systems; Enterprise systems; Chatbot; Slack; Enterprise messenger; Affordances	7
2020	Thomaz, F; Salge, C; Karahanna, E; Hulland, J	Learning from the Dark Web: leveraging conversational agents in the era of hyper-privacy to enhance marketing	J. Acad. Mark. Sci.	Web; Dark Web; Consumer privacy; Marketing strategy; Chatbots; Conversational agents; Personalization; Anthropomorphism	42
2021	Abdulquadri, A; Mogaji, E; Kieu, TA; Nguyen, NP	Digital transformation in financial services provision: a Nigerian perspective to the adoption of chatbot	J. Enterp. Communities	Nigeria; Banks; Emerging market; Financial inclusion; Digital transformation; Chatbot	18
2021	Adam, M; Wessel, M; Benlian, A	AI-based chatbots in customer service and their effects on user compliance	Electron. Mark.	Artificial intelligence; Chatbot; Anthropomorphism; Social presence; Compliance; Customer service	85
2021	Alt, MA; Ibolya, V	Identifying relevant segments of potential banking chatbot users based on technology adoption behavior	Mark.-Trz.	artificial intelligence (AI); chatbot; banking industry; technology acceptance; segmentation; customer segments	0
2021	Balakrishnan, J; Dwivedi, YK	Role of cognitive absorption in building user trust and experience	Psychol. Mark.	artificial intelligence; chatbots; cognitive absorption; continuation intention; services marketing; technology; trust	36
2021	Blocher, K; Alt, R	AI and robotics in the European restaurant sector: Assessing potentials for process innovation in a high-contact service industry	Electron. Mark.	Artificial intelligence; Robotics; Restaurant industry; Restaurant technology; Smart tourism	12
2021	Borau, S; Otterbring, T; Laporte, S; Wamba, SF	The most human bot: Female gendering increases humanness perceptions of bots and acceptance of AI	Psychol. Mark.	algorithm aversion; artificial intelligence; gender; gendered AI; humanness; machine ethics; robot; stereotypes; trust; uniqueness	17

2021	Castillo, D; Canhoto, AI; Said, E	The dark side of AI-powered service interactions: exploring the process of co-destruction from the customer perspective	Serv. Ind. J.	Value co-destruction; customer resource loss; Artificial intelligence; automated service interactions; chatbots; service robots; value co-creation	27
2021	Chen, JS; Le, TTY; Florence, D	Usability and responsiveness of artificial intelligence chatbot on online customer experience in e-retailing	Int. J. Retail Distrib. Manag.	Chatbot adoption; Online customer experience; Customer satisfaction; Personality; e-retailing	9
2021	Chen, JV; Le, HT; Tran, STT	Understanding automated conversational agent as a decision aid: matching agent's conversation with customer's shopping task	Internet Res.	Decisional guidance; Communication style; Shopping task; Cognitive fit; Decision outcomes; Chatbot	6
2021	Chong, T; Yu, T; Keeling, DI; de Ruyter, K	AI-chatbots on the services frontline addressing the challenges and opportunities of agency	J. Retail. Consum. Serv.	AI-chatbots; Agency; Proxy agent; Services frontline	3
2021	Ebbers, F; Zibuschka, J; Zimmermann, C; Hinz, O	User preferences for privacy features in digital assistants	Electron. Mark.	Information privacy; Digital assistant; Intelligent personal assistant; Choice-based conjoint analysis; Privacy preferences; Internet of things	3
2021	Eren, BA	Determinants of customer satisfaction in chatbot use: evidence from a banking application in Turkey	Int. J. Bank Mark.	Chatbot technology; Expectations confirmation theory; Perceived trust; Corporate reputation; Customer satisfaction	24
2021	Flanagan, F; Walker, M	How can unions use Artificial Intelligence to build power? The use of AI chatbots for labour organising in the US and Australia	New Technol. Work Employ.	trade unions; labour revitalisation; union power; artificial intelligence; organising	2
2021	Gelbrich, K; Hagel, J; Orsingher, C	Emotional support from a digital assistant in technology-mediated services: Effects on customer satisfaction and behavioral persistence	Int. J. Res. Mark.	Emotional support; Digital assistants; Perceived warmth; Customer satisfaction; Persistence	20
2021	Han, MC	The Impact of Anthropomorphism on Consumers' Purchase Decision in Chatbot Commerce	J. Internet Commer.	Anthropomorphism; chabot commerce; chatbot; perceived enjoyment; social presence	13
2021	Hildebrand, C; Bergner, A	Conversational robo advisors as surrogates of trust: onboarding experience, firm perception, and consumer financial decision making	J. Acad. Mark. Sci.	Robo advisors; Chatbots; Consumer financial decision making; Investment automation; Machine intelligence; Trust	18
2021	Huang, DH; Chueh, HE	Chatbot usage intention analysis: Veterinary consultation	J. Innov. Knowl.	Technology acceptance model; User satisfaction; Behavioral intention	9
2021	Huang, YS; Kao, WK	Chatbot service usage during a pandemic: fear and social distancing	Serv. Ind. J.	Fear; social distancing; perceived usefulness; chatbot services; theory of reasoned action	9
2021	Jimenez-Barreto, J; Rubio, N; Molinillo, S	Find a flight for me, Oscar! Motivational customer experiences with chatbots	Int. J. Contemp. Hosp. Manag.	Artificial intelligence; Customer experience; Chatbot; Hybrid experiential model	10
2021	Johannsen, F; Schaller, D; Klus, MF	Value propositions of chatbots to support innovation management processes	Inf. Syst. E-Bus. Manag.	Chatbots; Innovation management; Value proposition; Capability	3

2021	Kull, AJ; Romero, M; Monahan, L	How may I help you? Driving brand engagement through the warmth of an initial chatbot message	J. Bus. Res.	Artificial intelligence; Brand relationships; Brand-self distance; Digital marketing; Stereotype content model; Virtual agent	9
2021	Kushwaha, AK; Kumar, P; Kar, AK	What impacts customer experience for B2B enterprises on using AI-enabled chatbots? Insights from Big data analytics	Ind. Mark. Manage.	Artificial intelligence; Chatbots; Big data analytics; Customer experience; Social media analytics; Service quality	11
2021	Lalicic, L; Weismayer, C	Consumers' reasons and perceived value co-creation of using artificial intelligence-enabled travel service agents	J. Bus. Res.	Artificial intelligence; Service agents; Perceived co-creation; Structural equation modeling; Fuzzy-set qualitative comparative analysis	11
2021	Lei, SI; Shen, HL; Ye, S	A comparison between chatbot and human service: customer perception and reuse intention	Int. J. Contemp. Hosp. Manag.	Artificial intelligence; Chatbot; Computer-mediated communication; Instant messaging; Interpersonal attraction; Reuse intention	6
2021	Li, L; Lee, KY; Emokpae, E; Yang, SB	What makes you continuously use chatbot services? Evidence from chinese online travel agencies	Electron. Mark.	Chatbot service quality; Online travel agency; Extended post-acceptance model of IS continuance; Technology anxiety; Artificial intelligence; Human-machine interaction	16
2021	Liang, TP; Li, YW; Yen, NS; Hsu, SM; Banker, S	How digital assistants evoke social closeness: an FMRI investigation	J. Electron. Commer. Res.	Digital assistants; Personalization; Anthropomorphization; Functional magnetic resonance imaging (fMRI); Electronic commerce	0
2021	Mirbabaie, M; Stieglitz, S; Frick, NRJ	Hybrid intelligence in hospitals: towards a research agenda for collaboration	Electron. Mark.	Hybrid intelligence; Conversational agents; Hospitals; Collaboration; Research agenda; Coordination	8
2021	Mohanasundaram, K; Kumar, RS; Kumar, YVR; Reddy, PR; Rahraman, G	Voice Prescription Application Integrated with AIML Chatbot	Rev. GEINTEC	AIML (Artificial Intelligence Markup Language); Speech-to-text Technology; Voice Prescription	0
2021	Moriuchi, E; Landers, VM; Colton, D; Hair, N	Engagement with chatbots versus augmented reality interactive technology in e-commerce	J. Strateg. Mark.	Augmented reality interactive technology; chatbots; technology engagement; e-commerce; consumers; retail	25
2021	Moussawi, S; Koufaris, M; Benbunan-Fich, R	How perceptions of intelligence and anthropomorphism affect adoption of personal intelligent agents	Electron. Mark.	Personal intelligent agents; Perceived intelligence; Perceived anthropomorphism; Dual-purpose information systems; IT adoption	34
2021	Murtarelli, G; Gregory, A; Romenti, S	A conversation-based perspective for shaping ethical human-machine interactions: The particular challenge of chatbots	J. Bus. Res.	Artificial intelligence; Chatbot; Ethical challenges; Online conversations; Conversation management	18
2021	Ngai, EWT; Lee, MCM; Luo, M; Chan, PSL; Liang, TL	An intelligent knowledge-based chatbot for customer service	Electron. Commer. Res. Appl.	Conversational agent; Chatbot; Knowledge-based system; System design; Case analysis	3
2021	Pizzi, G; Scarpi, D; Pantano, E	Artificial intelligence and the new forms of interaction: Who has the control when interacting with a chatbot?	J. Bus. Res.	Artificial Intelligence; Automation; Chatbot; Human-computer-interaction; Consumer behavior	22
2021	Rajaobelina, L; Ricard, L	Classifying potential users of live chat services and chatbots	J. Financ. Serv. Mark.	Online; live chat service; Chatbot; Classification; Segmentation	4
2021	Rajaobelina, L; Tep, SP; Arcand, M; Ricard, L	Creepiness: Its antecedents and impact on loyalty when interacting with a chatbot	Psychol. Mark.	artificial intelligence; chatbot; creepiness; loyalty; privacy concerns; privacy paradox; technology paradox	11

2021	Ramadan, Z; Farah, MF; El Essrawi, L	From to : How Alexa is redefining companionship and interdependence for people with special needs	Psychol. Mark.	artificial intelligence; companion; feelings; people with disability; reliance	9
2021	Roy, R; Naidoo, V	Enhancing chatbot effectiveness: The role of anthropomorphic conversational styles and time orientation	J. Bus. Res.	Time orientation; Chatbot anthropomorphism; Brand perceptions; Attitude; Intention	32
2021	Sands, S; Ferraro, C; Campbell, C; Tsao, HY	Managing the human-chatbot divide: how service scripts influence service experience	J. Serv. Manage.	Service agents; Chatbots; Service scripts; Education; Entertainment	29
2021	Schanke, S; Burtch, G; Ray, G	Estimating the Impact of Humanizing Customer Service Chatbots	Inf. Syst. Res.	chatbot; artificial intelligence; intelligence augmentation; human-computer interaction; field experiment; customer service; anthropomorphism	9
2021	Schuetzler, RM; Grimes, GM; Giboney, JS; Rosser, HK	Deciding Whether and How to Deploy Chatbots	MIS Q. Exec.	Decision making; Customer services; Chatbots	4
2021	Soderlund, M; Oikarinen, EL	Service encounters with virtual agents: an examination of perceived humanness as a source of customer satisfaction	Eur. J. Market.	Service marketing; Customer satisfaction; Virtual agents; Service encounters; Humanness	8
2021	Soderlund, M; Oikarinen, EL; Tan, TM	The happy virtual agent and its impact on the human customer in the service encounter	J. Retail. Consum. Serv.	Service encounters; Virtual agents; Display of emotions; Happiness	12
2021	Sowa, K; Przegalinska, A; Ciechanowski, L	Cobots in knowledge work Human - AI collaboration in managerial professions	J. Bus. Res.	Collaboration; Artificial intelligence; Virtual assistants; Cobots; Chatbots; Knowledge work	15
2021	Tran, AD; Pallant, JI; Johnson, LW	Exploring the impact of chatbots on consumer sentiment and expectations in retail	J. Retail. Consum. Serv.	Chatbots; Online human agents; Sentiment analysis	6
2021	Tsai, WHS; Liu, Y; Chuan, CH	How chatbots' social presence communication enhances consumer engagement: the mediating role of parasocial interaction and dialogue	J. Res. Interact. Mark.	Chatbot; Social presence communication; Anthropomorphism; User engagement; Parasocial interaction; Dialogue; Brand likeability	14
2021	Tsai, WHS; Lun, D; Carcioppolo, N; Chuan, CH	Human versus chatbot: Understanding the role of emotion in health marketing communication for vaccines	Psychol. Mark.	affect; anger; chatbot; embarrassment; health communication; health marketing; human-machine interaction; perceived agency; vaccine	2
2021	Weber, U; Lomker, M; Moskaliuk, J	The Human Touch: The Impact of Anthropomorphism in Chatbots on the Perceived Success of Solution Focused Coaching	Manag. Rev.	coaching; anthropomorphism; e-coaching; effectiveness of coaching; chatbot	0
2022	Baabdullah, AM; Alalwan, AA; Algharabat, RS; Metri, B; Rana, NP	Virtual agents and flow experience: An empirical examination of AI-powered chatbots	Technol. Forecast. Soc. Chang.	Virtual agents; AI-powered chatbots; Virtual flow experience; Courier and shipping services	0
2022	Balakrishnan, J; Abed, SS; Jones, P	The role of meta-UTAUT factors, perceived anthropomorphism, perceived intelligence, and social self-efficacy in chatbot-based services?	Technol. Forecast. Soc. Chang.	Meta-UTAUT; Chatbot based services; Perceived intelligence; Perceived anthropomorphism; Continuation intention; Social self-efficacy	0

2022	Beeler, L; Zablah, AR; Rapp, A	Ability is in the eye of the beholder: How context and individual factors shape consumer perceptions of digital assistant ability	J. Bus. Res.	Digital assistant ability; AI; Automation; Augmentation; Disclosure; Scale development	0
2022	Ben Saad, S; Choura, F	Effectiveness of virtual reality technologies in digital entrepreneurship: a comparative study of two types of virtual agents	J. Res. Mark. Entrep.	Virtual reality; Avatar; Digital entrepreneurship; Anthropomorphic virtual agent; Flow state; Perceived realism; Telepresence experience	0
2022	Blazevic, V; Sidaoui, K	The TRISEC framework for optimizing conversational agent design across search, experience and credence service contexts	J. Serv. Manage.	Conversational agents; TRISEC; Customer experience; Artificial intelligence; Service logic; Service management	0
2022	Chen, Q; Gong, YM; Lu, YB; Tang, J	Classifying and measuring the service quality of AI chatbot in frontline service	J. Bus. Res.	AI chatbot; Service quality; Artificial intelligence; Scale development; Mixed-method approach	2
2022	Cheng, XS; Bao, Y; Zarifis, A; Gong, WK; Mou, J	Exploring consumers' response to text-based chatbots in e-commerce: the moderating role of task complexity and chatbot disclosure	Internet Res.	Text-based chatbot; Trust; Consumers' response; Task complexity; Identity disclosure	7
2022	Cheng, Y; Jiang, H	Customer-brand relationship in the era of artificial intelligence: understanding the role of chatbot marketing efforts	J. Prod. Brand Manag.	Quantitative methods; Brand communication; Brand management; Artificial intelligence; Chatbot marketing efforts; Customer-brand relationship; Relationship quality; Brand loyalty	7
2022	Crolic, C; Thomaz, F; Hadi, R; Stephen, AT	Blame the Bot: Anthropomorphism and Anger in Customer-Chatbot Interactions	J. Mark.	customer service; artificial intelligence; conversational agents; chatbots; anthropomorphism; anger; expectancy violations	17
2022	Cui, RM; Li, M; Zhang, SC	Al and Procurement	M&SOM-Manuf. Serv. Oper. Manag.	artificial intelligence; procurement; wholesale pricing; automation; smartness	6
2022	De Andrade, IM; Tumelero, C	Increasing customer service efficiency through artificial intelligence chatbot	REGE-Rev. Gest.	Artificial intelligence; Chatbot; Digital transformation; IBM Watson; Service efficiency; Technological innovation; Virtual assistant	0
2022	De Keyser, A; Kunz, WH	Living and working with service robots: a TCCM analysis and considerations for future research	J. Serv. Manage.	Service robots; Robotics; AI; Artificial intelligence; Service encounter; Chatbot; Conversational agent	2
2022	Fan, H; Han, B; Gao, W	(Im)Balanced customer-oriented behaviors and AI chatbots' Efficiency-Flexibility performance: The moderating role of customers' rational choices	J. Retail. Consum. Serv.	Artificial intelligence chatbots; Customer-oriented behavior; Efficiency-flexibility ambidexterity; Rational choice theory; Polynomial regression	0
2022	Fan, H; Han, B; Gao, W; Li, WQ	How AI chatbots have reshaped the frontline interface in China: examining the role of sales-service ambidexterity and the personalization-privacy paradox	Int. J. Emerg. Mark.	Sales-service ambidexterity; AI chatbots; Customer experience; Personalization-privacy paradox; Polynomial regression	0
2022	Goncalves, GS; Ribeiro, TDS; Teixeira, JEV; Costa, BK	The deployment of chatbot to improve customer service in higher education institutions during COVID-19	Int. J. Innov.	Chatbot; Higher education institutions; Covid-19; Service marketing	0

2022	Huang, YS; Dootson, P	Chatbots and service failure: When does it lead to customer aggression	J. Retail. Consum. Serv.	Service failure; Customer aggression; Chatbot; Disclosure; Coping; Customer participation	0
2022	Jenneboer, L; Herrando, C; Constantinides, E	The Impact of Chatbots on Customer Loyalty: A Systematic Literature Review	J. Theor. Appl. Electron. Commer. Res.	chatbots; trust; satisfaction; commitment; customer experience; loyalty; service quality; digital marketing; information quality; privacy	1
2022	Jeon, Y	Let me transfer you to our AI-based manager: Impact of manager-level job titles assigned to AI-based agents on marketing outcomes	J. Bus. Res.	Artificial intelligence (AI); Natural Language Processing (NLP); Chatbot; Customer representative; Customer manager; Heuristic judgment; AI-driven marketing outcomes	1
2022	Jiang, K; Qin, ML; Li, SR	Chatbots in retail: How do they affect the continued use and purchase intentions of Chinese consumers?	J. Consum. Behav.		0
2022	Jones, CLE; Hancock, T; Kazandjian, B; Voorhees, CM	Engaging the Avatar: The effects of authenticity signals during chat-based service recoveries	J. Bus. Res.	Retailing; Customer Service; Loyalty; Satisfaction; Service Recovery; Chatbot; Avatar	0
2022	Kim, T; Jo, H; Yhee, Y; Koo, C	Robots, artificial intelligence, and service automation (RAISA) in hospitality: sentiment analysis of YouTube streaming data	Electron. Mark.	Robot; Artificial intelligence; Sentiment analysis; YouTube; Streaming data; Hospitality	3
2022	Kwangsawad, A; Jattamart, A	Overcoming customer innovation resistance to the sustainable adoption of chatbot services: A community-enterprise perspective in Thailand	J. Innov. Knowl.	Overcoming innovation; Resistance behaviors; Sustainable adoption; Chatbot services; Community enterprise; Innovation-decision process	0
2022	Lee, CT; Pan, LY; Hsieh, SH	Artificial intelligent chatbots as brand promoters: a two-stage structural equation modeling-artificial neural network approach	Internet Res.	AI chatbot; Human-AI interaction; Social support; Interactant satisfaction with communication; Affective attachment; Purchase intention	0
2022	Lee, M; Park, JS	Do parasocial relationships and the quality of communication with AI shopping chatbots determine middle-aged women consumers' continuance usage intentions?	J. Consum. Behav.		0
2022	Lin, XL; Shao, B; Wang, XQ	Employees' perceptions of chatbots in B2B marketing: Affordances vs. disaffordances	Ind. Mark. Manage.	Chatbot; B2B marketing; Affordance; Disaffordance; Effectiveness; Discomfort	1
2022	Lou, C; Kang, HJ; Tse, CH	Bots vs. humans: how schema congruity, contingency-based interactivity, and sympathy influence consumer perceptions and patronage intentions	Int. J. Advert.	Brand communication; schema congruity; interactivity; sympathy; competence; AI	4
2022	Marikyan, D; Papagiannidis, S; Rana, OF; Ranjan, R; Morgan, G	Alexa, let's talk about my productivity: The impact of digital assistants on work productivity	J. Bus. Res.	Digital assistant; Artificial intelligence; Digitalisation; Satisfaction; Job engagement; Productivity	2
2022	Miao, F; Kozlenkova, IV; Wang, HZ; Xie, T; Palmatier, RW	An Emerging Theory of Avatar Marketing	J. Mark.	avatar; artificial intelligence; behavioral realism; chatbot; form realism; human-computer interaction	15

2022	Mostafa, RB; Kasamani, T	Antecedents and consequences of chatbot initial trust	Eur. J. Market.	Artificial intelligence; Chatbot initial trust; Customer engagement; Chatbot usage intention; Chatbot trust	3
2022	Mozafari, N; Weiger, WH; Hammerschmidt, M	Trust me, I'm a bot - repercussions of chatbot disclosure in different service frontline settings	J. Serv. Manage.	Chatbots; Chatbot identity disclosure; Service criticality; Chatbot failure; Trust; Customer retention	9
2022	PHAM, TMN; PHAM, TNT; NGUYEN, HPT; LY, BT; NGUYEN, TL; Le, HS	An Application of RASA Technology to Design an AI Virtual Assistant: A Case of Learning Finance and Banking Terms in Vietnamese	J. Asian Financ. Econ. Bus.	Virtual Assistant; Natural Language Processing; Vietnamese; Natural Language Understanding; Finance and Banking; Smart Classroom	0
2022	Ruan, YY; Mezei, J	When do AI chatbots lead to higher customer satisfaction than human frontline employees in online shopping assistance? Considering product attribute type	J. Retail. Consum. Serv.	Customer satisfaction; AI chatbots; Human FLEs; Product attribute type	0
2022	Shin, D; Al-Imanmy, S; Hwang, Y	Cross-cultural differences in information processing of chatbot journalism: chatbot news service as a cultural artifact	Cross Cult. Strateg. Manag.	Chatbots; Cross-cultural study; Chatbot news; Cultural dimension; Heuristic systematic process; Trust; Chatbot journalism; Cultural algorithms	0
2022	Song, MM; Xing, XY; Duan, YC; Cohen, J; Mou, J	Will artificial intelligence replace human customer service? The impact of communication quality and privacy risks on adoption intention	J. Retail. Consum. Serv.	Human-computer interaction; Chatbots; Computers as social actors; Communication quality; Privacy risks	4
2022	Weiler, S; Matt, C; Hess, T	Immunizing with information - Inoculation messages against conversational agents' response failures	Electron. Mark.	Conversational agent; Chatbot; Inoculation messages; Elaboration likelihood model; Customer service	1
2022	Zhou, YY; Fei, ZY; He, YQ; Yang, ZL	How Human-Chatbot Interaction Impairs Charitable Giving: The Role of Moral Judgment	J. Bus. Ethics	Charitable giving; Human-chatbot interaction (HCI); Artificial intelligence agents; Moral judgment; Communication style	1
2022	Zhu, YM; Zhang, JM; Wu, JF; Liu, YY	AI is better when I'm sure: The influence of certainty of needs on consumers' acceptance of AI chatbots	J. Bus. Res.	Artificial intelligence; Chatbots; Certainty of consumer needs; Perceived effectiveness; Search products; Experience products	0

All documents were last updated on August 23, 2022

Appendix V. Interview guide

The following questions are useful to orient the conversation according to the type of user you are in front of without compromising the freedom of expression that could arise during the conversation.

Instructions

Type of interview: one-to-one semi-structured interviews

Target actors: service providers and user companies

Time needed: from 30 to 60 minutes

Themes covered: General remarks, Customer experience, Customer engagement, Customer journey, Future directions

Provider perspective	**Companies perspective**
General remarks ● How would you define conversational agents? ● Why did you decide to develop conversational agents? ● Can you give me an explanation of how conversational agents work? ● What are the main requests of your customers? *Customer experience observations* ● What features do you offer to companies? ● In your opinion, how do conversational agents improve the end customer experience? ● Could you point me to some exemplary cases in which you have drawn and generated a seamless experience for the end customer? *Customer engagement observations* ● Is the conversational agent capable of having a real conversation or does it only answer a pre-set of drawn questions? ● In your opinion, do conversational agents generate engagement in customers'	*General remarks* ● What is the reason that led you and your company to choose and implement a conversational agent to manage customer relationships? ● How does the chatbot position the company ahead of its competitors? ● What are the main requests you made to the service provider in the development phase? ● How long have you been implementing this technology? ● Is the customer satisfied with its use? *Customer experience observations* ● In your opinion, what is the enrichment of the offer deriving from the use of a conversational agent in customer relationships? ● What actions does the conversational agent perform autonomously? ● In your opinion, do these actions create or improve the customer experience? If so, how do they do it? ● Could you point me to some exemplary cases in which you have drawn and generated a seamless experience for the end customer?

relationships? If so, how do they do it? ● Does the use of chatbots also provide the possibility for your customers to promote a customization of the offer? *Customer journey observations* ● How are conversational agents implemented? ● What channels can they handle? ● Considering that the customer interacts with the company at different points in their journey, in your opinion for which moment is it most used? ● Have chatbots been integrated with other external services in order to improve the value proposition? *Future directions* ● Based on your experience (also thanks to analysis tools), are you able to affirm that this technology is satisfactory for user companies? If so, what are the advantages it brings? ● What future advances are in the pipeline in technology development?	● Based on the results obtained so far, can you say that the customer generated or increased a sense of loyalty towards the company? *Customer engagement observations* ● Is the conversational agent capable of having a real conversation or does it only answer a pre-set of drawn questions? ● In your opinion, do conversational agents generate engagement in customers' relationships? If so, how do they do it? ● Does the use of chatbots also provide the possibility for your customers to promote a customization of the offer? If so, how do they do it? *Customer journey observations* ● How are conversational agents implemented? ● What channels does the conversational agent manage in your company? ● Considering that the customer interacts with the company at different points in their journey, for what moments does conversational agent offer its contribution? ● Have chatbots been integrated with other external services in order to improve the value proposition? *Future directions* ● Based on your experience (also thanks to analysis tools), are you able to affirm that this technology is satisfactory for your end customers? If so, what are the advantages it brings so far? ● What do you think are useful future advances in technology development? ● What would you like a conversational agent to do? ● In terms of enrichment and cross-selling, do you also believe in a future use perspective that the chabot can also allow further development of company sales?