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Published in:

Humane Autonomous Technology Re-thinking Experience with and in Intelligent Systems

DOI:

[10.1007/978-3-031-66528-8_2](https://doi.org/10.1007/978-3-031-66528-8_2)

Published: 22/10/2024

Document Version

Publisher's PDF, also known as Version of record

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Please cite the original version:

Caic, M., Ciuchita, R., & Chiorazzo , G. (2024). Help Me Help You: The Dilemma of Collaboration Between Expert Employees and Chatbots. In R. Rousi, C. von Koskull , & V. Roto (Eds.), *Humane Autonomous Technology Re-thinking Experience with and in Intelligent Systems* (1 ed., pp. 15-43). Palgrave Macmillan. https://doi.org/10.1007/978-3-031-66528-8_2

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Help Me Help You: The Dilemma of Collaboration Between Expert Employees and Chatbots

Martina Čaić , *Robert Ciuchita* , and *Giuseppe Chiorazzo*

INTRODUCTION

Research and managerial interest in chatbots, conversational agents that enable interaction between humans and machines through natural language, has rapidly increased since 2010 (Rapp et al., 2021). A Research and Markets (2023) report estimates that the global chatbot market will reach around \$1.25 billion in 2025, an over sixfold increase compared

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R. Rousi et al. (eds.), *Humane Autonomous Technology*,
https://doi.org/10.1007/978-3-031-66528-8_2

to 2016, when it amounted to \$190.8 million. In 2020, the technological research and consulting company Gartner assessed that chatbots have passed the peak of inflated expectations in their hype cycle for artificial intelligence (AI) (Goasduff, 2020). This analysis implies that by 2025 chatbots will reach the plateau of productivity (i.e., the technology will have broad market applicability and relevance) (Gartner n.d.).

While other conversational technologies fueled by AI developments seem to be scaling back (e.g., voice assistants; Latham, 2023), text-based chatbots seem to proliferate. An illustrative example is ChatGPT, the text-based, AI-powered chatbot that has been making headlines since its introduction in November 2022 (Sundar, 2023). Microsoft (2023) announced it was making a multiyear, multibillion-dollar continuation of its investment in OpenAI, the developer of ChatGPT. Amazon will also invest up to \$4 billion in Anthropic, a generative AI start-up that operates the chatbot Claude (Satariano & Metz, 2023).

In this research we focus on text-based chatbots which have become objects of study in different business and management fields, including marketing (e.g., Cronic et al., 2022), information systems (e.g., Ashfaq et al., 2020), human-computer-interaction (e.g., Nguyen et al., 2022), and service management (e.g., Sands et al., 2021). Our review of the business and management literature, mirrored by efforts from other disciplines (see e.g., Rapp et al., 2021 for a systematic literature review with a human-computer interaction focus) shows a concentration on interactions with chatbots in business-to-consumer (B2C) settings and a great focus on technology and its features. However, fewer studies have examined chatbots in business-to-business (B2B) settings (see Kushwaha et al., 2021 and Lin et al., 2022 for notable exceptions) and especially in complex, knowledge-based contexts such as industrial equipment development and manufacturing. Such research is warranted, as illustrated by a recent event study of how investors respond to companies introducing AI chatbots which concludes that B2B companies have more to gain from implementing AI chatbot customer service compared to B2C companies (Fotheringham & Wiles, 2023).

The purpose of this research is to examine the introduction of an AI-powered chatbot in a B2B context through the lens of the People-Process-Technology (PPT; Leavitt, 1964; Schneier, 2009) organization change management framework. This is a parsimonious, yet comprehensive framework that has been employed to study technology deployment in different fields including customer relationship management (e.g.,

Chen & Popovich, 2003), information systems (e.g., Maruping et al., 2019) and tourism (e.g., Chen et al., 2021). We draw on semi-structured interviews with expert employees and business customers who are users of the chatbot. Our qualitative results show two emerging People roles (i.e., *knowledge experts* and *content curators*), two key Processes (i.e., *human-chatbot collaboration* and *efficiency gains*), and two Technology themes (i.e., *troubleshooting tool* and *competence requirement*). In the following, we present a brief literature review of empirical chatbot studies in business and management literature, followed by a presentation of our method, our findings, and a conclusion.

LITERATURE REVIEW

In business and management literature, empirical studies have primarily focused on interactions with chatbots in B2C settings, including online retail (e.g., Li & Wang, 2023; Pizzi et al., 2021; Roy & Naidoo, 2021; Sands et al., 2021), financial services (Adam et al., 2021; Luo et al., 2019), travel and tourism services (e.g., Nguyen et al., 2022; Sheehan et al., 2020), telecommunication services (e.g., Crollic et al., 2022) or transportation services (e.g., Fan et al., 2023). Most of these studies focus on customer (self) service interactions with text-based chatbots (Luo et al., 2019 is an exception focusing on voice-based chatbots making outbound sales calls). Table 2.1 provides an overview of extant literature and highlights empirical contexts, theoretical background, methods, and contributions.

Only a few studies focus on chatbots in B2B contexts. Kushwaha et al. (2021) draw on B2B enterprise social media data to investigate the factors that impact customer experience (CX) in AI-driven chatbot-based interactions. They identify a series of factors relating to, amongst others, flow, system design, privacy/safety, transparency, and trust. Lin et al. (2022) focus on employees who use chatbots to interact with customers in B2B companies and their evaluations of chatbot technology features. Through a survey, they identify the affordances of automatability and personalization influence perceptions of chatbot effectiveness, while null decision-making (i.e., the chatbot's inability to make decisions) leads to discomfort with using chatbots.

While few studies draw on field experiments (e.g., Crollic et al., 2022; Fan, et al., 2023; Luo et al., 2019) most studies employ experimental designs (e.g., Araujo, 2018; Kull et al., 2021; Mozafari et al., 2021) or

Table 2.1 Overview of chatbot-focused empirical studies in business and management literature

<i>Authors</i>	<i>Chatbot</i>	<i>Context</i>	<i>Theoretical background</i>	<i>Method</i>	<i>Contributions</i>
Aranjo (2018)	Virtual agent in Facebook Messenger	Online retail (flowers purchase)	Anthropomorphism; Social presence; Service encounters	Experimental study (students and MTurk workers)	This research contributes to research on anthropomorphic design cues for conversational agents. Results show that using human-like cues (e.g., saying “hello” and “good-bye” and having a human name) had an influence on the emotional connection that consumers feel with the company. Human-like language or names were enough to increase the perception of the virtual agent as being human-like, in terms of both mindless (i.e., attribution of human characteristics to something that is not human) and mindful (i.e., conscious evaluations of being human- or machine-like) anthropomorphism. Finally, adopting an intelligent frame (i.e., a virtual agent powered by artificial intelligence) did not reduce perceptions of mindless anthropomorphism for machine-like agents (i.e., when human-like cues were absent).
Ashfaq et al. (2020)	Text-based chatbot for customer service	Various customer service experiences	Expectation-confirmation model (ECM); Information system success (ISS) model; Technology acceptance model (TAM); Need for interaction with a service employee (NFISE)	Cross-sectional survey (MTurk workers who had interacted with a text-based chatbot)	This study contributes to chatbot acceptance and continuance literature by combining elements from different models (i.e., technology acceptance, information system success, and expectation-confirmation) to examine drivers of user satisfaction. Results show that information quality and service quality positively influence users’ satisfaction, while the need for interaction with an employee moderates the effects of perceived ease of use and perceived usefulness on user satisfaction.

<i>Authors</i>	<i>Chatbot</i>	<i>Context</i>	<i>Theoretical background</i>	<i>Method</i>	<i>Contributions</i>
Chen et al. (2022)	Artificial intelligence (AI) chatbot	Various industries (e.g., hospitality, financial services, healthcare, consulting, retailing, entertainment, and education)	Service quality	Mixed methods for scale development (interviews with managers and consumers and surveys with online platform users)	This research contributes to service quality and information systems success literature by defining the dimensions of AI chatbot service quality (AICSQ) and developing a measurement scale including seven second-order and 18 first-order constructs. The second-order dimensions of AICSQ include semantic understanding, close human-AI collaboration, human-like, continuous improvement, personalization, culture adaptation, and efficiency.
Chung et al. (2020)	Chatbot for the luxury brand Burberry	Online retail (luxury fashion)	Service encounters; e-service quality	Cross-sectional survey (students)	This study contributes to e-service agents and luxury fashion literature by showing that consumer perceptions of a chatbot's marketing efforts in a luxury brand context are affected by the convenience and quality of communication offered by the chatbot.
Crolic et al. (2022)	Text-based chatbot driven by natural language processing (NLP)	Telecommunications and online retail (camera purchase)	Anthropomorphism; Expectancy violation; Customer anger	Five studies (one field study and four experimental studies)	This research contributes to anthropomorphism literature by demonstrating the negative effects of anthropomorphism in a customer service setting. Results show that anthropomorphic chatbots can harm firms (in terms of customer satisfaction with the service encounter, overall evaluation of the firm, and subsequent purchase intentions) when customers interact with them while in an angry emotional state. The explanation for this negative effect is that anthropomorphism may inflate pre-interaction expectations of chatbot efficiency and if those expectations are disconfirmed, an expectancy violation occurs. The implications are that when serving angry customers, it is best to downplay the anthropomorphic chatbots' capabilities.

(continued)

Table 2.1 (continued)

<i>Authors</i>	<i>Chatbot</i>	<i>Context</i>	<i>Theoretical background</i>	<i>Method</i>	<i>Contributions</i>
Fan et al. (2023)	Artificial intelligence customer service and cross-selling chatbot	Transportation services (e-bike sharing)	Ambidexterity; Dual process models; Customer experience	Mixed methods (survey of users of the mobile app, secondary data on conversations with the chatbot and purchase behavior)	This research contributes to literature on AI services and customer experience by examining how different configurations of ambidexterity impact smart experiences and customer patronage. A wider range of ambidexterity is considered (service sales, efficiency-flexibility, and existing-new product selling) and the results suggest that chatbot ambidexterity is not always beneficial for smart experiences. Specifically, a chatbot's ability to provide frontline services that are both efficient and flexible (i.e., efficiency-flexibility ambidexterity) benefits smart experiences and customer patronage. However, a chatbot's ability to provide both customer service and selling (i.e., service-sales ambidexterity) is detrimental to the creation of smart experiences.
Fotheringham and Wiles (2023)	Artificial intelligence customer service chatbots	Firms of various size, R&D intensity, advertising intensity (pharmaceutical and financial services)	Market-based asset theory	Event study, experimental study (MTurk Prime workers) and cross-sectional survey (MTurk Prime workers)	This research contributes to AI marketing literature by examining the effect of launching an AI customer service chatbot on firm value. The results provide evidence that investors respond positively to customer-centric AI implementations that may strengthen customer-firm relationships. Furthermore, differences between B2B vs. B2C service contexts emerge: B2B firms have more to gain from implementing AI chatbot customer service. In addition, examining the interaction between chatbot anthropomorphism and customer type (B2B vs. B2C) shows that investors respond less (more) favorably to anthropomorphized chatbots used in B2B (B2C) customer service roles.
Kull et al. (2021)	Chatbots operating in a mobile setting	Hospitality and financial services	Social categorization; Stereotype content model (warmth and competence); Brand-self distance	Experimental studies (MTurk workers)	This research contributes to AI marketing literature by examining how the tone (warm vs. competent) of the initial message sent by a brand's chatbot impacts consumer-brand connection and engagement. Results show that a chatbot's warm (vs. competent) initial message may bring consumers closer to the brand on whose behalf the chatbot communicates which in turn may increase consumers' motivations to learn more about the brand. However, this effect does not apply to brands that customers have a negative association with.

<i>Authors</i>	<i>Chatbot</i>	<i>Context</i>	<i>Theoretical background</i>	<i>Method</i>	<i>Contributions</i>
Kushwaha et al. (2021)	Artificial intelligence (AI) chatbots on social media	User generated content (UGC) from social media	Flow, Information systems success (ISS) model; Diffusion of innovation (DOI) theory;	Content analysis	This study contributes to customer experience and chatbot design literature by examining the influencing factors of AI-based chatbots for B2B firms. Results show that the customer experience of using an AI-based chatbot is influenced by a series of factors relating to flow, touchpoints, system design and privacy/safety, transparency, and customer trust.
Li and Wang (2023)	Text-based chatbot for customer service	Online retail (return policies)	Language expectancy theory; Parasocial interaction; Brand affiliation	Experimental studies (members of an online survey platform)	This research contributes to chatbot literature by examining how variations in language style (formal vs. informal) impact customer responses. The results show that using an informal language style makes chatbot messages seem more natural which eventually leads to positive service outcomes. That is because an informal language style fosters parasocial interaction which can improve chatbot continuance intentions and brand attitude. Brand affiliation serves a boundary condition: the effect of informal language style on continuance intentions through parasocial interaction was weaker for customers who did not have an affiliation with the brand.
Lin et al. (2022)	Chatbot for customer service in B2B	Various industries (manufacturing, banking/finance, and retail)	Technology affordances and disaffordances;	Cross-sectional survey (panel of marketing employees who use chatbots to interact with their customers in B2B companies)	This study contributes to customer service literature in B2B by examining how technology affordances and disaffordances impact employees' psychological perceptions of and their attitudes toward chatbots. Results show that the technology affordances of automatability and personalization can enhance employee perceptions of chatbot effectiveness, the former stronger for small firms and the latter stronger for medium-to-large firms. Results also show that the technology disaffordances of null decision-making can result in employee perceptions of discomfort with using chatbots, an effect that is stronger for small firms. Finally, results show that both chatbot employee perceptions of effectiveness and discomfort with using chatbots affect employees' attitudes toward the chatbots.

(continued)

Table 2.1 (continued)

<i>Authors</i>	<i>Chatbot</i>	<i>Context</i>	<i>Theoretical background</i>	<i>Method</i>	<i>Contributions</i>
Lao et al. (2019)	Voice-based chatbot making outbound sales calls	Financial services (loan renewal)	Not applicable	Field experiment and cross-sectional survey (customers who have interacted with the bot)	This study contributes to the literature on AI chatbots by examining how the disclosure of a chatbot's machine identity impacts real-life consumer purchases. The results suggest that chatbots that do not disclose they are machines are as effective as proficient workers and four times more effective than inexperienced workers in engendering customer purchases. However, if chatbots disclose their machine identity before the conversation, the purchase rates drop by close to 80%. The consumer behavioral mechanisms that may explain these results include perceiving the disclosed chatbot as less knowledgeable and less empathetic despite the chatbot's objective competence.
Mostafa and Kasamani (2022)	Chatbots in e-commerce	Online retail (various)	Diffusion of innovation (DOI) theory; Theory of acceptance and use of technology (UTAUT); Technology acceptance model (TAM); Trust	Cross-sectional survey (individuals familiar with chatbots)	This study contributes to chatbot literature by examining the antecedents of initial chatbot trust through the combined lenses of the theory of acceptance and use of technology, diffusion of innovation and technology acceptance model. The results show that compatibility, perceived ease of use and social influence drive customers to form an initial trust toward chatbots. In turn, initial trust in chatbots enhances the intention to use the chatbots and encourages customer engagement.
Mozafari et al. (2021)	Text-based chatbot for customer service	Energy services	Attribution theory; Trust; Service criticality; Service outcomes	Experimental studies (members of an online panel)	This research contributes to chatbot-based service delivery literature by examining how consumers react to chatbot disclosure in different types of frontline service settings. The results show that when services are critical for the customer, even if the chatbot can solve the customer's issue, disclosure will negatively impact customer trust. When services are less critical, chatbot disclosure does not impact trust. Importantly, when the customer's issue cannot be resolved, the negative failure effect may be mitigated by chatbot disclosure which acts as an apology. Furthermore, three trust dimensions are examined with the results showing that lower perceptions of the conversational partner's competence and benevolence lead to a loss of trust.

<i>Authors</i>	<i>Chatbot</i>	<i>Context</i>	<i>Theoretical background</i>	<i>Method</i>	<i>Contributions</i>
Nguyen et al. (2022)	Text-based chatbot driven by natural language processing (NLP) (Hello Hipmunk)	Hospitality services (travel planning)	Self-determination theory	Experimental study (students)	This study contributes to information systems research by examining how AI chatbot capabilities implemented in a user interface impact user outcomes. The results show that compared with users interacting with a menu-based interface, users interacting with chatbots with a natural language processing (NLP) interface showed lower levels of perceived autonomy and higher cognitive load, in turn resulting in lower user satisfaction. Furthermore, the effect of perceived autonomy on perceived competence was found to be stronger in the chatbot interface compared to the menu-based interface.
Pizzi et al. (2021)	Artificial intelligence (AI) customer service chatbots	Telecommunications (mobile plan purchase) and transportation (rent a car) services	Reactance theory; Digital service assistance; Anthropomorphism	Experimental studies (market research company panel)	This research contributes to AI acceptance and service-dominant logic literature by examining how consumers react to distinct characteristics of digital assistants. These results show that initiation interacts with anthropomorphism so that if a customer activates a human-like digital assistant reactance is minimized, whereas when a non-human-like assistant activates automatically, reactance is maximized. Reactance in turn triggers a series of consumer evaluations in the decision-making process eventually leading to satisfaction.
Roy and Naidoo (2021)	Text-based chatbot for customer service	Hospitality services (hotel room booking) and online retail (smartphone and business suit purchases)	Anthropomorphism; Social judgment (warmth and competence); Time orientation	Experimental studies (students)	This research contributes to the literature on anthropomorphic design cues by examining design discourse and chatbot conversational styles that may enhance the humanness of chatbots. Results show that when the conversational styles of chat agents were presented as warm (vs. competent), consumers evaluated chatbot interactions as they would personal interactions. However, consumers' temporal orientation is a boundary condition: while present-oriented consumers are more favorable to warm chatbots, future-oriented consumers are more favorable to competent chatbots. Results also suggest a carry-over effect of warmth or competence traits from the chatbot to the brand.

(continued)

Table 2.1 (continued)

<i>Authors</i>	<i>Chatbot</i>	<i>Context</i>	<i>Theoretical background</i>	<i>Method</i>	<i>Contributions</i>
Sands et al. (2021)	Text-based chatbot for customer service	Online retail (laptop purchase)	Social impact theory; Service interactions; Service scripts	Experimental study (MTurk workers)	This study contributes to service scripts literature by examining the role of physical distance in frontline service employee (FSE-) VS. chatbot-customer interactions. Results indicate that when an educational script is employed (e.g., encouraging learning, product information, or information seeking) satisfaction and purchase intentions are higher in customer interactions with FSEs (compared to chatbots). This is explained through the bonds developed through close proximity to a human service agent due to emotion and rapport. However, when an entertaining script is employed (e.g., encouraging playfulness and fun), there are no differences between an FSE and a chatbot regarding outcomes.
Sheehan et al. (2020)	Text-based chatbot for customer service (FlowXO)	Hospitality (hotel room booking) and transportation (travel pass purchase) services	Anthropomorphism; Self-service technologies	Experimental studies (MTurk workers)	This research contributes to chatbot adoption literature by examining the role of chatbot (mis)communication in driving adoption intent. The results suggest that a chatbot that is humanlike enough to identify potential miscommunication performs as well as a completely error-free chatbot and is better than a chatbot that has no contextual awareness of errors. These results are explained by elicited agent knowledge, an antecedent of anthropomorphism. Furthermore, anthropomorphism is more positively related to adoption when the consumer's need for human interaction is high.
This study	Text-based chatbot for B2B customer service	Industrial equipment (Heat, ventilation, and air conditioning [HVAC] applications)	People – Process – Technology framework	Semi-structured interviews (expert employees and business customers)	This research contributes to B2B customer service literature by examining the employee perspective when a chatbot is introduced as a new customer support channel. The results show that organizational actors are seen as knowledge experts and content curators, while the non-human actor (i.e., the chatbot) is perceived as a troubleshooting tool that must be competent rather than warm. Expert employees realize the relevance of human-chatbot collaboration for both AI advancement and improved organizational efficiency, however, they worry about how the reliance on a chatbot may erode their sense of worth and identity as knowledge gatekeepers.

cross-sectional surveys (e.g., Ashfaq et al., 2020; Mostafa & Kasamani, 2022) to collect data. Some studies focus solely on chatbot interactions: e.g., Crolic et al. (2022) show that when customers enter a chatbot interaction in an angry emotional state, chatbot anthropomorphism (i.e., a human-looking avatar with a name and personal information) has a negative effect on the customers' satisfaction with the service encounter. Other studies focus on comparing chatbot interactions with human interactions: e.g., Sands et al. (2021) find that chatbots should engage with customers in an entertaining manner, while engaging in an educational manner should be left to human customer service agents. A few studies (e.g., Luo et al., 2019; Mozafari et al., 2021) examine chatbot disclosure, or the extent to which companies should specify that the chat customer service agent is not human. For example, Luo et al. (2019) find that, while chatbots perform better than inexperienced workers in a sales context, chatbot disclosure may reduce purchase rates by almost 80%.

One of the main topics of chatbot interaction studied empirically is the extent to which chatbots or specific chatbot features are perceived to have humanlike characteristics (i.e., *anthropomorphism*; Araujo, 2018; Crolic et al., 2022; Pizzi et al., 2021; Roy & Naidoo, 2021; Sheehan et al., 2020). Characteristics that are typically examined include the extent to which the chatbot (feature) is perceived as *competent* and/or *warm* (e.g., Kull et al., 2021; Nguyen et al., 2022), is worthy of *trust* (e.g., Mostafa & Kasamani, 2022; Mozafari et al., 2021) or has *social presence* (e.g., Adam et al., 2021; Araujo, 2018). Kull et al. (2021) for instance study how chatbots initiate conversations on a mobile travel application and respectively a bank's website. They show that when a chatbot employs a warm (as opposed to a competent) initial message, consumer-brand connections and ultimately engagement may be fostered. Mozafari et al. (2021), find that for services that are subjectively determined as very important by the recipient (i.e., highly critical services), chatbot disclosure will negatively impact customer trust even though the chatbot is able to solve the customer's issue. However, when the chatbot fails to deliver the expected service, chatbot disclosure can enhance overall trust. Finally, Adam et al. (2021) show that in a financial service setting, social presence mediates the impact on anthropomorphic design cues (e.g., identity, small talk, and empathy) on user compliance.

Another important topic studied empirically is chatbot acceptance or adoption, with studies drawing on one or multiple dimensions of innovation diffusion theory (DOI; Rogers, 2005), the technology acceptance

model (TAM; Davis, 1989), or the unified theory of acceptance and use of technology (UTAUT; Venkatesh et al., 2012) (e.g., Ashfaq et al., 2020; Kushwaha et al., 2021; Mostafa & Kasamani, 2022). For example, Mostafa and Kasamani (2022) study chatbot e-commerce interactions in a Middle Eastern country and show that compatibility (from DOI), perceived ease of use (from TAM), and social influence (from UTAUT) drive customers to form an initial trust toward chatbots which in turn may drive usage intentions and engagement.

Other topics in extant literature include scale development (e.g., Chen et al., 2021 developed an AI chatbot service quality measurement), chatbot language use (e.g., Li & Wang, 2023 show that an informal chatbot language style in an e-commerce setting nurtures the feeling of parasocial interaction, which may lead to higher continued chatbot usage intentions) or chatbot ambidexterity (e.g., Fan et al., 2023 examined the impact of different configurations of chatbot ambidexterity, e.g., pursuing service and sales at the same time, on customer smart experiences, with mixed results).

METHOD

This study leverages a qualitative approach to explore the changes brought by AI-powered chatbots in a B2B context. In this study, through semi-structured interviews, we employ the PPT framework (Leavitt, 1964; Schneier, 2009) to investigate (1) the changing roles of people, (2) the effects AI-powered chatbots have on the customer-service process and (3) the (dis)empowering role of technology. Qualitative methods were deemed appropriate for gathering informants' data-rich stories aimed at a better understanding of this rather novel phenomenon (Patton, 2014).

Context

The study zooms in on HVAC, a pseudonym for a European developer and manufacturer of equipment for heat, ventilation, and air conditioning industrial applications. The company has been operating for close to a century and currently employs over 40,000 people and does business in more than one hundred countries. HVAC primarily serves original equipment manufacturers (OEMs), distributors and system integrators, but also installers, and end-users.

Table 2.2 Overview of informants

<i>Code</i>	<i>Organizational function</i>	<i>Selection criteria</i>	<i>Gender</i>
E1	Sales Engineer	HVAC employee	Male
E2	Service Technician	HVAC employee	Male
E3	Continuous Improvement Manager	HVAC employee	Female
E4	Customer Service Supervisor	HVAC employee	Male
E5	Internal Technical Support	HVAC employee	Male
C1	Projects Engineer	Business customer	Male
C2	Technical Manager	Business customer	Male
C3	Internal Sales and Technical Support	Business customer	Male
C4	Sales Support Engineer	Business customer	Male

HVAC was a suitable study object for three main reasons. First, HVAC has embarked on a journey to become more customer-centric in its operations. Second, HVAC aims to enhance customer and employee satisfaction by developing and providing advanced digital solutions. Third, HVAC utilizes an AI-powered chatbot aimed at improving customer support on the group's corporate website. The chatbot troubleshoots alarms or fault codes queried by HVAC clients and provides them with the relevant possible causes and remedy steps. When the chatbot is unable to help, it directs its users to their closest HVAC sales and service touchpoint.

Sample

The sampling included the identification of two groups of purposefully selected people: (1) HVAC customer support agents and (2) HVAC business customers experienced in using the chatbot. We employed snowball sampling and asked informants to identify other potential participants fulfilling the criteria to be part of our study (Patton, 2014). The final sample includes nine informants, five HVAC employees, and four HVAC customers (for more details, please see Table 2.2).

Interview Guide

The interview guide was developed to serve as a topic checklist while allowing for flexibility and probing for new directions. One pilot interview was conducted to gather feedback on (a) question clarity, (b) question

sequence, and (c) time management. The final guide contained four main sections. The first section collected general job-related information (e.g., “What falls under your current job role?”) and aimed at gathering a base understanding of the informant’s daily activities, needs, and digital tools used. This section aimed at gaining knowledge about the current support process. In the second section, informants were encouraged to share their experience with the chatbot (e.g., their usage, perceptions, and satisfaction). In the third section, interviewees reflected on the human-chatbot interplay (e.g., “When could chatbots be preferred to humans and vice versa?”, “How can humans and chatbots together improve customer experience?”). Finally, the fourth section focused on future expectations (e.g., the role of chatbots in organization transformation, opportunities, and challenges related to evolving job roles).

Data Analysis

The interviews were collected via Microsoft Teams video calls and lasted an average of 35 minutes. With permission from the informants, all the interviews were recorded and later transcribed verbatim. The data were analyzed using thematic analysis following a process of identifying, analyzing, and reporting repeated patterns (Braun & Clarke, 2006). The thematic analysis was appropriate and well-fitted to use since we were seeking to understand informants’ experiences, thoughts, and behaviors across the data set (Braun & Clarke, 2012). Two authors read and coded the verbatim transcripts independently, following the six steps of thematic analysis (Clarke & Braun, 2017; Kiger & Varpio, 2020), including (i) familiarization with the data, (ii) generating initial codes, (iii) searching for themes, (iv) reviewing themes, (v) defining and naming themes, and (vi) producing the report/manuscript. Throughout the process, the authors had several joint analysis sessions in which they aggregated and further fine-tuned the codes into themes.

FINDINGS

Following the coding process, two themes emerged under each of the elements in the PPT framework. Figure 2.1 depicts the actors in the B2B context (i.e., organizational employees, business customers, end-customers, and the non-human actor–chatbot), as well as the emerging themes under the people, process, and technology pillars. As suggested in

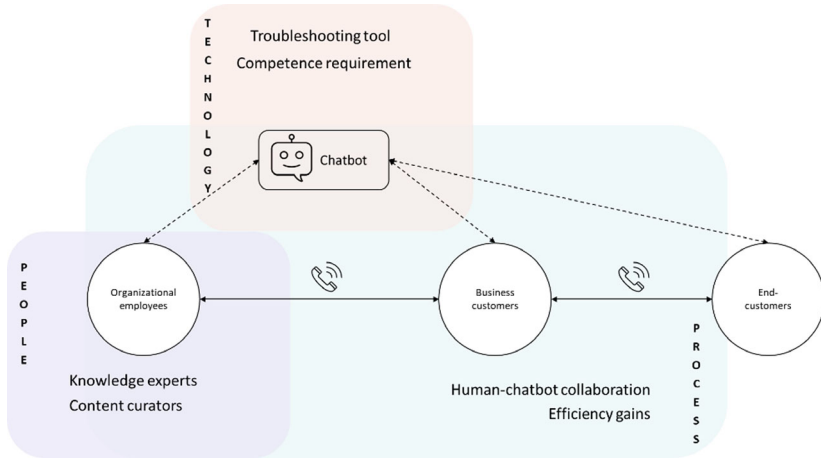


Fig. 2.1 Qualitative analysis themes in the PPT framework

the figure, the chatbot can be utilized by any of the B2B actors, either as a replacement for a phone call or an augmented knowledge base during a phone call with a customer. In this section we elaborate on the emerging themes, starting with the *people* element comprising two roles knowledge experts and content curators; the *process* element including human-chatbot collaboration and efficiency gains; and the *technology* element including troubleshooting tool and competence requirement themes.

People

Under the People component, our analysis uncovers elements affecting people's readiness to collaborate with a chatbot, as well as employees' new organizational roles.

Knowledge Experts

With this theme, we capture the commonly shared views by the organizational employees that they are the knowledge experts, that they have the information "in their heads" and there is no need to rely on a chatbot to help their customers with technical issues. Being both knowledge experts and knowledge keepers is part of their organizational role identity

(Ashforth, 2000; Ashforth et al., 2008). Hence, the collaboration with the chatbot is almost seen as losing professional face.

I support my customer with my **expertise as a technician**, that's my main task here. (E1)

I have used it [the chatbot], but as I told you, it is not my daily tool. And **I already know what is covered in it**. (E5)

I would recommend it [the chatbot] to a customer that is not so familiar with technical stuff, you know maybe some farmers... in general every guy that is **not in daily business in technical stuff**. (E2)

From the business customer side, there is a preference for human experts when dealing with difficult issues and rather technical questions. Organizational employees are perceived as experienced specialists with deep knowledge of potential equipment issues and the troubleshooting process. This finding is in line with previous research (e.g., Larkin et al., 2022) suggesting that people prefer receiving medical and financial risk management advice from their fellow humans rather than AI.

I would say only a little bit [would he use the chatbot] because I've got these engineers who **have the answers up in their heads**. (C2)

I need that little **extra 10% that the real experts have**. So, that's where I need to talk to the experts at the organization. (C2)

If we're physically on site and there's an issue, then I'd **definitely prefer having a person** there rather than just a chatbot [...] because we have come across a problem or a situation that we're not able to solve and it'd have to be a **fairly technically difficult situation**. So, it's unlikely that a chatbot would be able to provide the solution, although, we can be surprised. (C3)

Due to their strong identification with the role of knowledge experts, organizational employees express low levels of readiness to collaborate with the chatbot. They further emphasize that the chatbot might be for less technical, less experienced, and less skilled staff members or end-customers. There is a prevailing stance among both groups of informants that the chatbot is "not for me but for someone else."

Mostly the end customers that are not so technical, **not so familiar with the technical stuff**. This could be a place where the chatbot could assist. (E2)

[...] **for service guys** it [the chatbot] would be a very helpful tool. (E1)

At the moment it would be more **for a basic service engineer**. Or the motor guy who doesn't deal with the organization on an everyday basis. They're the ones who I think would benefit the most. (C2)

I think for **someone who doesn't have quite a lot of support experience**, it is a reasonably good solution. [...] I think from that point of view, it is pretty good for customers to use it. (C3)

Content Curators

The employees are experiencing certain changes to their organizational roles due to the introduction of the chatbot. They are observing a potential transformation toward the role of content curator for the chatbot which requires human-chatbot collaboration (discussed more under the process theme). New tasks that employees are taking over include, for example, training the algorithm by adding technical depth to the chatbot content and continuous updates to and monitoring of the chatbot's database.

I think we need to **update the bot with the right information all the time**. We also need resources, [...] someone needs to take care that **the quality of the bot is insured** because otherwise the customers are getting frustrated so, that needs to be done from our side. (E3)

We can help with how you have to ask the questions. So, I think it's difficult to ask the chatbot the right questions. Maybe it needs a technician to type in or to store the right questions inside the chatbot because if you don't type the right questions to get in, you don't get the correct answers. (E1)

If a customer calls me and he asks for some information **I will write those questions down and send them to a chatbot improvement team**, so they can add that information in the chatbot. So, if there are similar questions coming in the future the chatbot can help them. (E2)

This new role of content curators moves the organizational employees from the frontline to the back office of customer support. It also opens the question of the future role of human actors in AI-powered customer service (e.g., Will organizational employees become AI supervisors rather than the first line of customer support?).

Process

It is crucial that people understand how they fit within the new organizational process and how they can contribute to achieving organizational goals (Sarker & Sarker, 2009). The process is where people and technology come together. Under the process component, the two emerging themes are human-chatbot collaboration and efficiency gains.

Human-chatbot Collaboration

As organizational employees start sharing the customer service frontline with AI-powered agents, human-chatbot collaboration becomes crucial. The emergence of the new organizational role of chatbot content curator calls for process integration and cross-departmental efforts to improve the chatbot quality for enhanced customer experience. As emphasized by E2, there is a need for “*a chatbot improvement team*” in order to keep the content up-to-date and aligned with the organizational mission. Such a team should also cross departmental boundaries, as pointed out in the following quote.

I’m in sales. The guys in service are having different questions than I have. Maybe we have to **join together and see how to make the chatbot better.** (E1)

Business customers also express the need for human-chatbot collaboration for the algorithm to improve and ultimately be adapted by various user groups. This could be achieved through activities such as (i) teaching the chatbot users how to phrase the questions (i.e., prompts), and (ii) relying on a chatbot’s help rather than calling customer service.

[...] if this was a situation where I was talking to a [HVAC] technician over the phone, and they had access to chatbot themselves. [...] they might be able to phrase the questions to the chatbot better than I can. They have previous experience finding the information in the chatbot, so **they know exactly how to phrase the question to a chatbot.** (C3)

Situations where I’m on the phone with a customer, and unable to answer their question and need to find a solution very quickly. It’s a critical situation for the customer. If I was then unable to get onto the help desk or any of the customer support team locally, then **the chatbot would be very useful in finding the information.** Even just **sparing the customer**

support team locally from contacting them—not using up their time, which they could be using to support customers who were not able to find the solution in the chatbot. So yeah, another level for finding the information that you're looking for. **I'm trying to alleviate some of the pressure on the local support team** (C3)

How can **both [the chatbot and employees] complement each other?** Maybe use the same knowledge base so that all the information is coming from one tool. Instead of getting different answers from different sources. (C1)

This collaborative approach assumes co-working with AI-powered agents, rather than being fully replaced by AI (Sowa et al., 2021). Through interactions with the chatbot and utilizing its support, organizational actors enhance the value of AI-powered support.

Efficiency Gains

There is a shared belief among the informants that the organizational processes would be streamlined if the chatbot would be utilized for troubleshooting in less complicated cases. This would improve efficiency both on the employee and business customer side. As emphasized by the employee group, they would have more time to focus on difficult issues and more complicated questions, be more available to help, and overall be more efficient in their job.

So, I guess if chatbot would improve a little bit further, it could be a nice tool to make it **more efficient to work with the customer**. (E1)

I would say it will reduce the number of phone calls. If the customer is using the chatbot for some easy questions that they called us in the past, the chatbot can easily answer. I would say that the easy questions, so uh the chatbot could be **useful to help my daily business**. (E2)

In my job, it [the chatbot] would be useful because if our end-customer could get good answers from the chatbot, it helps me, and **I can take more important and more complicated cases**. (E5)

The customer group perceives efficiency stemming from both their knowledge augmentation and end-customers being able to help themselves without calling for support.

It is just efficient. That is key for efficiency... just knowledge. Like, if you're just curious about how something works instead of trying to figure out where it is in the manual you can throw it up at the chatbot and get some answers quickly. (C1)

It's going to be **fewer calls for us**, I noticed that means that I can focus on other things instead of, you know, having troubleshooting phone calls. (C4)

It [the role of chatbot] could be twofold. It could mean that I have quicker access to a greater knowledge base than what I have available at the moment. So, it could mean that **I can support my customers a lot quicker and more effectively with that greater knowledge base**. From a customer's point of view, it could mean that it could **save them a phone call** having to contact us to find the information. it could mean that they, rather than coming to us for information could quickly look it up in the chatbot. (C3)

By helping the chatbot improve, through continuous updates, resource integration, and monitoring of the quality of provided answers, organizational actors support the realization of efficiency gains in their own customer support processes. These efficiencies are expected from reduced times spent on calls with customers, as well as less frequent calls from customers dealing with simple technical issues.

Technology

Finally, we focus on the technology element, which is the initiator of organizational transformation. While the extant chatbot literature discusses AI-powered technologies as more than just a tool, even suggesting the role of a colleague (Huang & Rust, 2022; Luo et al., 2019), our analysis reveals that the value of the technology in the B2B context comes mainly from its guiding and troubleshooting roles. The two emerging themes under the technology component are Troubleshooting tool and Competence requirement.

Troubleshooting Tool

The main purpose of the studied chatbot is to troubleshoot alarms or fault codes of a product (e.g., the device that controls the speed of an air conditioning motor), and therefore to provide its users with the possible causes

and remedy steps. Our informants propose several elements that constitute the “backbone” of their user experience with the chatbot, including speed (e.g., immediate answers), availability (e.g., available 24/7), and efficiency (e.g., it does its job). From the employee group, the helpfulness of the tool is highlighted through its guiding capabilities which warrant its role as the first touchpoint in the customer troubleshooting journey.

I think it’s really a **helpful tool**, especially when you have an error with a number. Let’s say, when the product tells you I have whatever failure number and then you type it in and then you get a little bit more detailed description of what is the failure about so you can help yourself a little bit easier instead of calling us all the time. (E3)

Let’s say um if you have simple questions. For instance, where to find what’s on our web pages like documents, catalogs, drawings, [...] and then the bot could easily **guide**. (E3)

I’d tell them [the customers] that they can’t always reach me, that I am not always free. If you want **answers at once**, please use the chatbot. (E5)

It’s just like normally the customer has some office hours where they just can reach some support and the chatbot could **help them 24/7**, so this could be a big advantage and improve the customer loyalty. (E2)

In addition to the elements proposed by the employee group, the business customers point out the chatbot’s role in knowledge augmentation.

Yeah, mainly its fault finding or like **programming query that I don’t quite know how to solve**. I’ll go and ask it [the chatbot] if there’s another way. [...] because manuals are thick, and they can take you ages just to find your way through it and find what you’re looking for. While in the chatbot you can just put a couple of keywords in, and you’ll find it straight away. (C1)

If I can’t get hold of anyone at the organization or I’m in the office and I can’t get answers, everyone’s busy here and I haven’t got anyone I can ask. Having that chatbot there is **just another lifeline**. It’s another avenue to explore. (C1)

It’s **the speed** at which you can get your answers from it, which seems to be quicker than having to rifle through a lot of different manuals and catalogs and brochures on and on... grabbing the wrong manual to get the dimensions, for example. So, when you multiply that by the 25 product ranges that the organization has, it gets quite frustrating. It would make my life a little **quicker and easier**. (C2)

I would love to have a tool like that. I can just type something and **get the information straight away.** So, it would be quicker if I had a tool like that. It would **guide me specifically...** what to look at, what to tell the customer to check, what to expect, what to measure, what to read, what parameter to look for, you know, those sort of things... **guide me.** And actually, I could give the customer more ideas [...] So, it's either waiting or having something that guides me and that makes a huge difference. (C4)

Even though not all the informants acknowledge the value of a troubleshooting chatbot in its current state, they envision a future in which AI-powered agents will have a more prominent role and enhanced capabilities.

Competence Requirement

While B2C literature suggests that chatbot's warmth (e.g., characteristics such as sociable, humorous, and warm; Fiske et al., 2007) plays an important role in chatbot's evaluations, our findings suggest the primacy of the competence component (e.g., skillful, intelligent, and practical; Fiske et al., 2007). For example, business customers favor chatbot's direct answers with no space left for chitchat. Furthermore, they appreciate the consistency in the support quality, which is independent of individual employees' skillfulness.

I think it's great, so far, the way it answers is it just comes up with your answer. I don't feel that I need much more interaction with it apart from I need this answer and it says, hey, here's **a black and white answer** ... is that what you're looking for? Brilliant. Thanks very much. (C1)

I think it's more than the knowledge that the chatbot is 24/7 and he's kind of independent of whom you talk to. So, you're getting, you should be getting **a best-in-class response independent of when it is or whom you're talking to.** You know, it's, it's, there are a couple of guys down at [HVAC] and if you get them, you're going to get a brilliant answer. But if they're not there, then maybe the answer is going to be a little bit less than brilliant sort of thing. So yeah, **consistency,** I guess. (C2)

Quick access to support information or even critical information. (C3)

On the other hand, warmth on top of competence is expected from the organizational employees, as they indicate themselves:

I just try **to calm them down by talking to them** and explaining what the next steps are and what our process looks like. (E1)

I give them an overview on how the process looks like and to **avoid any confusion**. (E2)

CONCLUSION

The present research explored how expert employees and business customers in a B2B company react to the introduction of an AI-powered chatbot. We use the PPT framework to analyze and present qualitative findings from semi-structured interviews with these two groups of informants. Table 2.3 includes the emerging themes within the PPT framework across the two informant groups. Our findings show that the people see themselves as knowledge experts and content curators, while the technology is seen as little more than a troubleshooting tool that must be competent, rather than warm. Using the chatbot can lead to efficiency improvements that may spill-over to the end customer, but collaboration between the human employees and the chatbot is still a work-in-progress process.

These findings reflect the specifics of the B2B context that warrant additional research on chatbots beyond the evaluation of technology features (Rapp et al., 2021). Most of the empirical work on humans interacting with chatbots has focused on the consumer or end-user perspective and on comparing chatbot agents with human agents. Very few studies (e.g., Lin et al., 2022) have offered an employee perspective. Our research extends this work in a setting where the employees are technical experts and naturally wary of the chatbot's competence. Moreover, the business customers are technical experts in their own rights and the type of requests they have of customer service are somewhat more complex than the product information searches in B2C studies.

Whether they are aware of it or not, the expert employees find themselves faced with a dilemma. On the one hand, the chatbot can lead to improved efficiency. It may help business customers navigate through simpler issues while allowing expert customer service employees to focus on more serious, complicated, or urgent matters. To facilitate this process, the expert employees can help the business customers formulate better

Table 2.3 Overview of findings

<i>PPT framework</i>		<i>Process</i>			<i>Technology</i>		
<i>Organizational People Roles</i>		<i>Content curators</i>		<i>Human-chatbot collaboration</i>	<i>Efficiency gains</i>	<i>Troubleshooting tool</i>	<i>Competence requirement</i>
Organizational employees	<ul style="list-style-type: none"> - Addressing customer queries via phone - Supporting business customers with their technical expertise - Knowledge gatekeepers - Providing a personalized and emphatic approach - Low readiness for collaborating with a chatbot 	<ul style="list-style-type: none"> - New organizational role - Training the algorithm - Feeding the chatbot with the data - Continuous updates and monitoring of the chatbot "s database - Moving from the frontline to the back office of customer support 	<ul style="list-style-type: none"> - A need for process integration and cross-departmental efforts to improve the chatbot's quality - Helping AI-powered chatbots improve, leads to enhanced organizational efficiency 	<ul style="list-style-type: none"> - Allowing the chatbot to take over less complicated queries, enables human employees more time for critical and complicated issues - Improves employee's efficiency in customer support efforts 	<ul style="list-style-type: none"> - The chatbot is perceived as a tool rather than a colleague - Main benefits derive from its guiding capability, availability, speed, and competence 	<ul style="list-style-type: none"> - Primacy of competence over warmth (emotional sensitivity is reserved for human customer service) - Standardization of customer service (homogeneity in replies) 	

<i>PPT framework</i>					
<i>Organizational Roles</i>	<i>People</i>	<i>Process</i>	<i>Technology</i>		
	<i>Knowledge experts curators</i>	<i>Human-chatbot collaboration</i>	<i>Efficiency gains</i>		
	<i>Content curators</i>	<i>Efficiency gains</i>	<i>Troubleshooting tool</i>		
	<i>Competence requirement</i>				
<i>Business customers</i>	<ul style="list-style-type: none"> - Contracting customer service (i.e., knowledge experts) when faced with difficult technical issues - Preference for human (knowledge experts) over AI-powered support - Trust in human expertise (years of troubleshooting experience, existing rapport, specialized knowledge) 	<ul style="list-style-type: none"> - Teaching the end customers how to ask a chatbot for help (i.e., writing effective prompts) - Relying on the chatbot's help rather than calling customer support (i.e., knowledge experts) 	<ul style="list-style-type: none"> - End customers relying on self-service through AI-powered chatbots reduces the amounts of calls to handle - Knowledge augmentation by AI reduces the time spent with each customer request 	<ul style="list-style-type: none"> - Knowledge augmentation - The chatbot can help with addressing issues where they lack technical knowledge and expertise - The chatbot can guide them in difficult situations and acts as another lifeline (e.g. when human customer service cannot be reached) 	<ul style="list-style-type: none"> - Quick reaction in critical - Responses independent of the customer support channel (homogeneity in replies)

prompts or can provide feedback to the chatbot trainers to ensure the appropriate answers are available. In doing so however, they help the chatbot become a knowledge expert and, given the AI technology advancements, it is only a matter of time before the chatbot evolves from a troubleshooting tool into a competent curator of knowledge. In essence, by collaborating with the chatbot they may in the short-run be eroding their job-related sense of worth (e.g., by actively using the chatbot they signal they are less competent and skilled because that is whom the chatbot is meant for), while in the long-run they may be eroding their role identity as knowledge gatekeepers.

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