Artificial Intelligence's Effect on the Customer Service Industry

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Introduction

In recent years, Artificial Intelligence (AI) has transitioned from a niche technological

innovation to a household technology, significantly reshaping industries worldwide. With the

advent and popularization of AI-powered tools that facilitate human-like interactions, such as

ChatGPT, the customer service sector is undergoing a profound transformation. This paper will

primarily focus on AI chatbots, defined here as "automated programs used to communicate with

humans through text or chat exchange," used in the customer service industry specifically

(Ashfaq et al., 2020 pg.2). One study determined that 88% of customers "had a first-hand

experience and chatted with a bot [in 2023]," and 62% of customers would use an online chatbot

versus waiting for a human representative to address their customer service needs (Fokina,

2023). This data indicates a growing acceptance and practical utility of AI chatbots in customer

service, even in its relative infancy.

As the popularity of customer service AI chatbots grows, questions arise about how this

will affect the customer service industry from the customer's, businesses', and customer service

associate's perspectives. My analysis will address the question: How will AI chatbots affect the

customer service industry? This paper will examine the current impact of AI chatbots on

customer service and offer predictions for their future integration. Through my research, I have

found that AI chatbots enhance customer service efficiency and customer satisfaction for certain

types of tasks, although they present challenges that need to be resolved. I will first introduce the

methods used to conduct my research and the framework used to view my research question. I

will then discuss the results of my research and conduct a literature review. This will provide

insight into the current state of AI chatbots, show benefits and concerns of using AI chatbots, and

illuminate how customers and businesses have reacted to this integration. Following the

presentation of my results, I perform an analysis of AI's impact on efficiency of customer

service, ethical considerations of using AI chatbots in customer service, and discuss effects

deployed AI chatbots have had for businesses. I will then provide a broader discussion of my

predictions for the future of AI chatbots in customer service.

Methods

In my analysis of AI's growing use in the customer service industry, I use various

secondary sources, such as Muhammad Ashfaq et al. publication modeling users' satisfaction

and continuance intention of AI-Powered Service Agents, Mariem Bouhia et al. publication

regarding privacy concerns of chatbots, AI Index 2023 annual report, Salesforce customer report,

and various articles and websites that gather AI statistics and information (Ashfaq, 2020; Bleu,

2024; Bouhia, 2022; Fokina, 2023; Maslej, 2023; Salesforce, 2019; Yuen, 2022). I also use

primary sources, including an IBM Watson Assistant page, press releases from governmental

organizations, direct data reports from various companies, and Yingzi Xu et al. study on task

complexity and usage intentions regarding AI chatbots (AI Customer Service Chatbot, 2023;

Brady, 2019; Comm100, 2024; European Parliament Press Release, 2023; Nahra, 2024; The

United States Government, 2023; Xu, 2020). This approach provides discourse of the literature

surrounding AI's integration, while also incorporating insights from specific case studies. To

begin, I examined sources illustrating the current state of AI in the customer service field, and I

also present readers with sources that reveal both customers' and business' sentiments towards

deployed AI customer service chatbots. I then delve into case studies, such as the IBM Watson

AI product, to concretely present the current state of AI.

Statistics and studies are used to demonstrate how AI can improve user experience and satisfaction as well as improve customer service efficiency for businesses. However, other sources also discuss concerns conflicting with those exact benefits. I also present a number of sources arguing this integration comes with strong ethical considerations, possibly perpetuating existing biases and discrimination in AI chatbots servicing.

I hope to show readers the current state of AI in customer service, explain its potential, and discuss its dangers. I will use the Social Construction of Technology (SCoT) framework to investigate the adoption and integration of AI-powered chatbots within various business sectors. The SCoT framework posits that technological innovation and development are not solely the outcomes of technical ingenuity but are significantly shaped by social processes, including the interactions and negotiations among different user groups. In my use of this framework, businesses, customers, and customer service agents represent different social groups. The customers' and customer service agent's sentiments of deployed AI chatbots, coupled with a study of how the business reshaped or reinforced their customer service decisions with AI, will provide an interesting discussion on how human action has shaped the integration of AI into the customer service field.

Moreover, by employing the SCoT framework, my research delves into the negotiation processes between these social groups and the technology itself. I will investigate how these negotiations result in technological stabilization. This will include exploring instances of policies made for this emerging technology, where differing social groups may have conflicting views on the role and implementation of AI chatbots. This analytical lens allows me to explore the multifaceted interactions between technological development and societal factors. Specifically, businesses that have integrated AI chatbots into their operations, customers who use these AI

chatbots, and customer service associate who work with the chatbots are examined as distinct

social groups, each with its unique set of dynamics and interactions with technology

Results

      AI in customer service is spreading rapidly. In fact, 23% of customer service companies

are already using AI chatbots according to a report done by Salesforce (Salesforce, 2019 pg. 17).

Moreover, it was found that "31% of customer service companies planned to start using them

within the next 18 months" (Bleu, 2021). This adoption is expected, as copious benefits stem

from integration of AI chatbots into a business ecosystem. A main incentive for businesses to

adopt customer service chatbots is the 24/7 response availability, especially when managing

customer queries on multiple platforms. On facebook messenger alone there are approximately

300,000 chatbots operating, allowing companies to respond to queries nearly instantaneously

(Bleu, 2024). Along with virtually limitless availability, studies have shown that the effectiveness

of chatbots is promising, with data supporting that chatbots can handle full conversations around

70% of the time (Comm100, 2024). The ability of AI chatbots to resolve queries effectively often

hinges on the complexity of the tasks they are assigned. Despite this variability, a substantial

volume of queries can be handled by AI chatbots and therefore reduce the workload for human

agents. Furthermore, as the technology advances it is expected the amount of queries resolved

effectively by AI will also increase.

      The adoption of AI chatbots offers benefits beyond elevating the customer service

experience. Many companies provide tools that simplify the development and integration of

customer service chatbots, making this technology increasingly accessible to a wide range of

businesses for less upfront cost and lower operational costs. To this end, it is estimated that the

widespread use of chatbots could result in annual savings of approximately $11 billion across healthcare, banking, and retail sectors (Yuen, 2022). This financial incentive complements the availability and improvements in customer interactions provided by AI chatbots.

Any disruptive technological advancement also comes with many drawbacks. A prevalent concern of AI chatbots involves data privacy and cybersecurity (Maslej et. al., 2023 pg. 206). A study conducted in 2018 demonstrated that customers' "interactions with [AI chatbots] lead them to develop concerns about their personal privacy," which potentially causes suspicion towards the company employing the chatbot (Bouhia et. al., 2022 pg. 1). This study asserts that the main privacy concerns are influenced "primarily by creepiness, followed by perceived risk and the need for privacy" (Bouhia et. al., 2022 pg. 3). The perceived creepiness of chatbots can often be attributed to the unsettlingly human-like responses these machines generate. Realizing that one is conversing with a machine, not a human, can sometimes create unease. Additionally, consumers often express heightened data privacy concerns when using AI chatbots for sensitive tasks that involve sharing personal information, which is a common requirement in customer service interactions. Another widely spread concern is a perpetuation of biases and discrimination through the algorithms used to train the deployed language models. The fruition of this concern could not only lead to a negative customer experience, but also have lasting effects by reinforcing dangerous stereotypes.

One prevalent suite of AI tools is IBM Watson, a tool that allows businesses to "build customer service chatbots infused with generative AI," and is deployed to more than 100 million users across a multitude of industries (*AI Customer Service Chatbot - IBM Watsonx Assistant*, 2023). One company that employed IBM Watson for customer service is Vodafone, a multinational telecommunications company. In partnership with IBM, Vodafone deployed an

AI-powered virtual agent chatbot that reinvented their customer service experience, called TOBi. After deploying this chatbot, Vodafone's CMO Iris Meijer shared that "TOBi has helped 3.4 million UK customers in one financial year," showcasing its extensive reach and effectivness (Brady, 2019). At the time the IBM article was written, TOBi was resolving 70% of all customer inquiries, and led to a 70% cost reduction per chat. This case studies provides a real world example of an AI-powered chatbot resulting in all the expected benefits my research suggested, highlighting the potential for significant operational benefits.

However, as these chatbots become more integrated into daily customer service operations, predictions suggest that, "85% of all customer interactions will be handled without a human agent"(*AI Customer Service Chatbot - IBM Watsonx Assistant*, 2023). While this shift promises substantial cost savings for businesses and reduces wait times for customers, it also raises concerns about the future role of human customer service agents. The potential displacement of jobs due to AI integration necessitates careful consideration and planning to balance technological advancements with ethical and employment impacts.

Analysis

The results of my research suggest that AI will completely change how customer service is handled, and has already made strides to do so. The expected benefits of an AI chatbot have been proven to work on a large scale, and enterprise-level tools that create custom customer service chatbots have been successfully dispersed throughout the market. The advantages of integrating AI-powered chatbots into business operations are so substantial that the overwhelming majority of all sized companies already have, or plan to add, chatbots in their customer service suite (Fokina, 2023).

Incorporating SCoT into my analysis of AI chatbots in customer service reveals how this technology is shaped by and shapes different social groups. Businesses, customers, and customer service agents are all social groups that interact with the technological artifact of AI chatbots. Businesses drive this AI integration to reduce costs and enhance servicing efficiency where they can. Simultaneously, as chatbots become more accepted and effective they increasingly shape the technological ecosystem within these businesses. For instance, AI chatbots warrant a redistribution of tasks that compels business to reevaluate workforce skills and job designs.

Moreover, customer interaction with these chatbots and their feedback often drives decisions to further develop chatbots. These interactions frequently lead to adjustments in the chatbot's functionalities and use cases to better meet customer needs. For example, Yingzi Xu et al. performed a study suggesting customers may express frustration over chatbot's responses with complex queries, possibly leading to businesses prioritizing problem-solving capabilities over processing speed for chatbots (Xu et al., 2020). Overtime, the exposure to customer service chatbots will influence customer service expectations that consumers hold, thereby setting a new industry standard for customer service.

Customer service agents also play a crucial role. Their expertise in handling customer service interactions inform the development of these tools. Furthermore, agent's feedback on the effectiveness of these tools can lead to enhancements and different focus points in chatbot development. The integration of AI chatbots also influences the roles of the human agents. As routine inquiries are increasingly delegated to chatbots, agents can be expected to address complex and sensitive issues more often. This shift can lead to an increased skill set required for customer service roles, and possibly less customer service positions available across the industry.

By examining the reciprocal influences among involved social groups and AI chatbots, dynamic interactions are made evident. As each group adapts and responds to changes in technology, they will also continue to redefine and reshape the trajectory of AI integration. This integration is in its infancy, so the end result is not clear. However, I believe as AI chatbots evolve to better handle human interactions, this integration will improve customer service and enhance the quality of customer service experiences.

A significant advantage is that AI chatbots enable queries to be addressed at any time of day around the world, an asset that greatly enhances their utility and is hard to match for the same cost with human agents. Although not every customer service interaction handled by AI currently results in resolution, research shows that appropriately integrating AI into customer service can improve customer experience overall. Yingzi Xu et. al. conducted a study "to compare [AI chatbot] effectiveness with that of traditional online human customer service systems" that emphasizes the importance of task complexity (Xu et al., 2020). Their findings reveal that "AI customer service systems are perceived to have a greater problem-solving ability and increase usage intention for low-complexity tasks, but human customer service systems are perceived to have a greater problem-solving ability and increase usage intention for high-complexity tasks"(Xu et al., 2020). Furthermore, the study highlights cost efficiency of AI, estimating that the average cost of human customer service operations are $10.72 per interaction, while only $2.10 per interaction for an AI-based service. This suggests that AI chatbots not only reduce the cost of customer service for businesses, but also effectively manage simpler tasks as evidenced by increased customer usage intentions. However, the study also indicates that human interaction remains indispensable for more complex tasks. Therefore, AI chatbots serve as a

complement rather than a replacement for human agents in the current landscape of customer service technology.

While this integration holds promise, it is crucial to proactively address any emerging issues so that development maximizes benefits and minimizes drawbacks. The technical concerns of AI, such as data privacy and lack of effectiveness, can be mediated by software development and teams reinforcing the algorithms and learning models that the chatbots rely on. Businesses already report that cybersecurity and personal privacy are among the top 3 AI risks that they are actively taking steps to mitigate (Maslej et. al. pg 207). In addition, worldwide legislation is being pushed for secure and private AI tools. Organizations like the Global Partnership on Artificial Intelligence (GPAI) play a crucial role in facilitating international collaboration and sharing best practices, fostering AI regulations that are effective and widely implemented (*Global Partnership on Artificial Intelligence, 2023)*. However, the ethical considerations need to be focused on to ensure biases do not slip through the cracks of code reviews and product tests.

To examine the potential of AI chatbots in perpetuating biases, it is instructive to consider the case of Tay, Microsoft's Twitter-based chatbot. Launched in 2016, Tay was designed to "pick up its lexicon and syntax from interactions with real people posting comments on Twitter, " and was meant to be an experiment in conversational AI technologies (Shwartz, 2019). However, it only took a few hours for inappropriate twitter comments to completely corrupt Tay's tweets. The chatbot was "barraged with antisocial ideas and vulgar language" that was quickly mirrored in its responses (Schwartz, 2019). Because of the numerous "racist, sexist, and anti-semetic tweets generated by the bot" it was removed within 24 hours of its release (McGregor, 2016). The case of Tay offers a stark warning about the potential for AI chatbots to

perpetuate societal biases, which could lead to dangerous outcomes for businesses that use this technology. It also emphasizes how prejudices and discriminatory ideas, if not adequately addressed and filtered in development, can infiltrate AI systems. Such a situation for customer service chatbots would compromise the integrity and effectiveness of AI-driven service solutions, and negatively affect a business's public perception. Early conversational AI experiments serve as cautionary tales for developers to implement robust ethical guidelines and bias mitigation strategies to safeguard against such exploitation.

Artificial Unintelligence, by Meredith Broussard, provides 3 main points that can be used to offer guidance for the future of integrating AI with customer service. Firstly, Broussard claims that the "intelligence" of a machine is simply training to perform a specific task and machine learning must adhere to computational limits that render the service less effective than believed (Broussard, 2018 pg. 19). This point speaks to the ongoing development needed to be done in order for a successful integration of AI into any industry, but especially customer service which revolves around customer interaction.

Secondly, Broussard claims that AI is not the solution to everything, and she points out that many problems in the real world are too unpredictable to be solved by AI (Broussard, 2018 pg. 29). This point brings up interesting considerations of what type of inquiries AI chatbots should be expected to handle when adopted into a suite of customer service tools. For example, many low-level customer inquiries, such as transaction questions or website navigation, could be handled by AI chatbots with appropriate training. However, human customer service agents should never be replaced during more sensitive and complex inquiries, and thus developers can save time and resources knowing that certain inquiries will not be handled by a chatbot. For instance, in the finance industry there is often a department in customer service called "estates"

that deals with inquiries involving closing an account for a deceased loved one. Human agents should always address such inquiries, as discussions involving late loved ones demand the emotional intelligence and empathy that cannot be effectively replicated through training.

The third point Broussard claims is that the integration of AI into human industries must result in humans and machines working together, rather than machines supplanting human workers (Broussard, 2018 pg. 39). This point should be focused on when companies begin to integrate AI-powered chatbots into their business ecosystem to mitigate the amount of workers that are displaced. Businesses should do their best to launch initiatives that do not un-employ those customer service agents but rather enhance their productivity with AI.

Discussion

The integration of AI into the customer service industry is a dynamic process that encompasses various social, economic, and ethical dimensions. As the SCoT framework emphasizes, this integration of technology is not developed in isolation, but there exists a feedback loop where the societal context shapes this integration of AI, and AI in turn shapes the societal context. Relevant social groups, including businesses, customers, customer service agents, and government regulators, play pivotal roles in shaping AI customer service technologies. For instance, business leaders prioritize efficiency, cost-effectiveness, and scalability, which drives the adoption of AI. Furthermore, delivering a positive customer experience requires AI solutions to be personalized, accurate, and swift, while also safeguarding user privacy. To meet these expectations, companies must strategically allocate resources to develop and refine AI technologies. This investment ensures that deployed chatbots exceed the

expectations shaped by the customer, and ultimately enhances customer satisfaction and trust in the service.

The ethical regulations for AI in customer service are arguably more crucial than for other applications of AI due to the intimate nature of customer interactions and the sensitivity of the typical data involved. As such, it is important that "ethics play a crucial role in guiding the development of AI"(Yerushalmi, 2024). With AI becoming increasingly prevalent across various business sectors, it is vital that companies proactively advocate for responsible principles. However, business priorities can sometimes lead to decisions that do not fully align with ethical standards, and internal company initiatives may fail to consider diverse cultural contexts. To ensure that AI development remains ethical, regulatory bodies worldwide are advancing governmental policies. For example, the European Parliament recently approved the first Artificial Regulation Proposal, which aims "to promise the uptake of human-centric and trustworthy AI and protect the health, safety, fundamental rights and democracy from its harmful effects"(European Parliament Press Release, 2023; Yerushalmi, 2024). Following this proposal, the "European parliament adopted that AI Act," on March 13, 2024, which is considered the world's first legal framework for AI (Nahra et al., 2024). Among other requirements, "it provides EU-wide rules on data-quality, transparency, human oversight and accountability"(Nahra et al., 2024). The introduction and subsequent approval of legislation for AI in Parliament demonstrates a clear recognition of the ethical risks associated with AI deployment. Lawmakers are actively working to ensure that the technology does not perpetuate biases.

Like Europe, the United States government recognizes the ethical risks of an ever growing landscape of AI in business operations. The White House has created a blueprint for an AI Bill of Rights, and five principles have been identified by the White House Office of Science

and Technology policy. These five principles include "(1) safe and effective systems, (2) algorithm discrimination protections, (3) data privacy, (4) notice and explanation, (5) and human alternatives, consideration, and fallback"(The United States Government, 2023). Many of these principles directly address the primary concerns of AI chatbots highlighted in this paper, paving the way for a future where such concerns are systematically addressed by law. This legislative progress, along with other worldwide AI initiatives, reflects a significant shift towards embedding ethical considerations into AI development, underscoring the critical role of internal cooperation and comprehensive legal frameworks in safeguarding the future of this technology.

The SCoT framework highlights that AI chatbot technology in customer service is continuously shaped through a dynamic process involving various stakeholders. While businesses strive for efficiency and customers demand privacy, regulators ensure that these technologies adhere to ethical standards. These interactions, such as businesses increasing AI involvement and governmental bodies recognizing dangers and deriving new policy, often lead to technological adaptations that align with societal values and legal standards, showcasing a complex interplay of technology and social strucutre. Engagement with customers also plays a pivotal role in the integration of AI chatbots. Transparent communication about how AI is used, the data it collects, and the privacy measures in place is essential in building trust and maintaining positive customer experiences. Additionally, providing customers with easily accessible avenues to provide feedback on AI interactions can help businesses monitor AI performance and ensure it meets user expectations and ethical standards.

The future of AI in customer service straddles a fine line between innovation and ethical responsibility. While AI chatbots offer remarkable advantages that have been realized in real world deployed chatbots—including scalability, efficiency, and availability—their widespread

adoption also raises critical concerns. Privacy, bias, and the potential displacement of human workers require thoughtful consideration and proactive management as these technologies continue to be developed and integrated into business ecosystems. The discussion around AI's role in customer service proves to not just be about technological feasibility but also about fostering a future where technology serves humanity ethically and responsibly, enhancing human customer service agents rather than replacing them. As such, navigating the complexities of AI integration into customer service will necessitate a collaborative approach, keeping in mind business, ethics, customer, and worker perspectives, ensuring that technological advancements align with societal values and contribute positively to the customer experience.

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