TALLINN UNIVERSITY OF TECHNOLOGY
School of Business and Governance

Swapnil Kasar

USE OF CHATBOT IN CUSTOMER SERVICE TO IMPROVE EFFICIENCY IN INDIAN FINTECH INDUSTRY.

Master's thesis

International Business Administration,
Management

Supervisor: Tarmo Koppel, PhD.

I hereby declare that I have compiled the paper independently and all works, important standpoints, and data by other authors have been properly referenced, and the same paper has not previously been presented for grading.
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Swapnil Kasar ……
(signature, date) Student
code: 214166TVTM
Student email address: swapnil1123@gmail.com

Supervisor: Tarmo Koppel, PhD: The paper
conforms to requirements in force

……
…… (signature, date)

Chairman of the Defence
Committee: Permitted to the
defence
……
…… (name, signature,
date)

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ABSTRACT

This thesis investigates the use of virtual assistants, often known as chatbots, as a transformational tool in the field of customer service. In a quickly changing business environment, organizations are constantly looking for new methods to improve customer experience and operational efficiency. This study looks into how virtual assistants can play an important part in reaching these two goals.

Furthermore, as the study investigates how virtual assistants optimize resource allocation, streamline customer interactions, and enable service teams to tackle more complicated tasks, efficiency maximization is a prominent subject throughout this research. The interaction of technology, human agents, and customer happiness is investigated, offering light on the synergy between automated and human-driven service delivery.

The study uses a quantitative analysis method and data is collected through structured questionnaires. Questionnaire was answered by 198 respondents from India who have used chatbots in the past for their customer service needs. In results chapter data analysis is being done with the help of pearson's correlation coefficient method and independent sample t-test was performed.

The usage of virtual assistants, when strategically included into customer service, can actually drive efficiency maximization, leading to improved customer experiences and cost-effective operations, according to the thesis' findings. The results show that for the majority of issues, there is no discernible difference in opinions between the chatbot users and traditional customer service users. Nonetheless, there are notable differences in the perceptions of dynamic question replies by Chatbot users and traditional customer service customers. The research yielded useful insights and conclusions that can assist businesses, legislators, and academics in maximizing the potential of virtual assistants in the ever-changing field of customer service.

Keywords: Virtual Assistant, Chat-Bot, Customer Servicing, Efficiency Maximization, Automation, Customer Experience, Natural Language Processing, Machine Learning.

INTRODUCTION

Chatbots have emerged as valuable tools in customer servicing, allowing businesses to efficiently handle customer inquiries and provide quick responses. This technology utilizes AI-based software to automate communication and transaction management with customers, reducing time-to-response and increasing customer satisfaction. By employing machine learning and natural language processing, chatbots can handle routine tasks and queries, relieving customer care executives of repetitive duties. Chatbots can be implemented as interactive machine-to-human conversation systems, providing efficient customer service (Research Scholar in CSE Dept, Acharya Nagarjuna University, Guntur (Andhra Pradesh), India. et al., 2019). Furthermore, chatbots have the potential to replace human frontline employees and boost productivity. By leveraging AI and NLP, chatbots can provide accurate and reliable information to customers, regardless of their cultural backgrounds and diverse service expectations. They can engage in small talk and colloquial speech, enhancing user comfort (Hsu & Lin, 2023).

In addition to straightforward interactions such as reservations or product returns, more complex customer inquiries that require an understanding of the conversational context can be addressed by sophisticated chatbots. When they can't resolve an issue, they can escalate it to a human agent, ensuring customer satisfaction is not compromised. However, adoption and acceptance of chatbot technology in handling customer care services is impacted by several factors. One of which is service quality, traditionally defined as the customer's assessment of the overall excellence or superiority of the service experienced. In order to establish competitive advantages, companies are increasingly optimizing their service quality. This is especially true in the case of e-services and e-commerce, where the implementation of chatbots offers promising opportunities for improvement (Misischia et al., 2022). Studies have shown that service quality is a key factor in successful information system adoptions and affects customer behavior (Hsu & Lin, 2023).

So far many scientific papers have talked about the significance of chatbots in the business context. But the necessity to investigate the elements impacting customer acceptability of chatbots in the financial services industry has arisen from the poor consumer adoption rates of chatbots, especially in technologically advanced nations (Sugumar & Chandra, 2021). Businesses are actively looking for ways to grow their operations and improve customer service

by implementing new technologies, like chatbots (Chung et al., 2020). Particularly, the use of chatbots in e-services is becoming more and more popular these days, offering a potential new approach to enhance customer support In actuality, they are meant to serve as company representatives, helping customers online with informational requests, problem-solving, and advice—all while avoiding the lengthy contact center lines that frequently leave customers unhappy (Holzwarth et al., n.d.; Zumstein & Hundertmark, n.d.).

Any organization's success in using and integrating chatbots is largely dependent on how well consumers accept the technology (Ramachandran, 2019). Though a small percentage of clients are unfamiliar with chatbot technology and for some important activities it won't be an ideal way to answer customer queries, chatbot can be examined as an immediate resolution for repetitive and simple issues. Organizations carefully consider whether to deploy AI technology and how it will contribute to the strategic growth of the company, given the significant expenditures involved (Chung et al., 2020). Customer satisfaction is mostly driven by customer service in the case of Indian fintech companies. Consumers can contact customer service teams with questions about paperwork, payments, or general information, and the teams will respond via email, IVR, or in-person customer care assistance.

Research objective is to look at how the adoption/acceptance of a chatbot can affect customer service efficiency in the Indian fintech business and to find out customers' confidence in chatbot usage, how relevant the resolution provided by chatbot was and if the data of the customers was protected during the interaction.

Research problem of this research is related to the current business environment where customer service teams spend a lot of their time addressing repetitive customer queries or basic explanations about the products and service offered by the organization and how automated technology such as chatbot, alleviate these challenges to enhance operational efficiency of customer service teams.

I think there should be an alternative to resolve repetitive queries using technological advancements instead of hiring additional manpower if the customer service volume increases.

The research attempts to answer the following research questions:

1. What is the efficacy (time and accuracy) of solving customer queries through chatbot?

2. What is the scalability of the solution to address a huge volume of customer queries with limited resources?

3. Why would chatbot help to improve customer service efficiency if implemented in customer service?

The primary significance of the study's findings is the effectiveness of the chatbots, which might be beneficial for start-ups and small businesses alike. Additionally, information about how clients view virtual assistants can help government agencies find and fix flaws in their technology and business ecosystem while also advancing the field. The justification for the exclusive use of the quantitative approach of analysis in this study is provided in the second chapter. Customers who have previously utilized chatbots for customer assistance are asked to complete a questionnaire, which is used to collect data.

There are three chapters in the thesis. The goal of the first chapter is to give the reader the definitions and categories connected to chatbots that organizations will need to comprehend the background. The purpose of the second chapter is to explain the sample and study design. It tells the reader about the limitations and reliability of the data analysis process as well as the choice of research method. The objective of the final chapter is to examine the information acquired and draw conclusions from it. It will give the reader suggestions for additional research as well as a brief synopsis that highlights the key findings of the study.

1. LITERATURE REVIEW

This section is inclined to provide the reader with the necessary theoretical background in order to understand the basis of use of chatbots for efficiency maximization in customer service. Also, it gives an overview of key theoretical concepts about customer service, chatbots as well as scientific articles on a similar topic which provides a rationale for the structure and format of this study.

1.1. Customer Service, Service Quality and its relevance in Chatbots

In today's corporate environment, customer service is essential. It has a big impact on how loyal and satisfied customers are. Providing excellent customer service should be a top priority for organizations in order to increase client satisfaction and loyalty.

Fornell, who highlights that customer pleasure is essential in building customer loyalty, is one of the most important sources for comprehending the significance of customer service (Forneil, n.d.). Building solid relationships with clients and offering them prompt, courteous, and efficient service are both essential components of quality customer service. It also means promptly attending to any complaints from clients and addressing their difficulties. From the standpoint of the customer, service quality is defined as an impression and an all-around subjective assessment of the service during the interactive service delivery process (Dabholkar et al., 2000). In the past, companies saw customer service as an expense center, but as time went on, they began to see customer service as a way to set themselves apart from rivals [14]. A fundamental framework for comprehending the quality of service to clients is provided by the SERVQUAL model, which includes the elements of assurance, empathy, tangibles, responsiveness, and consistency. These factors are still essential for providing outstanding client experiences (Parasuraman & ZelthamI, n.d.). Studies have consistently shown that customer satisfaction and service quality are related. Increased client pleasure from higher-quality services eventually affects consumer loyalty. This relationship underlines how crucial it is to uphold strict standards for service quality (Anderson & Sullivan, 1993).

In order to meet customer expectations, businesses should focus on problem-solving and the implementation of advanced technologies, such as chatbots. These chatbots, powered by artificial intelligence, have the potential to improve customer service efficiency and reduce costs

(Hsu & Lin, 2023).

Table 1 demonstrates determinants of service quality which shows customer's view of service quality

Determinants of Service Quality

Determinants of Service Quality
RELIABILITY involves consistency of performance and dependability. It means that the firm performs the service right the first time. It also means that the firm honors its promises. Specifically, it involves: - accuracy in billing; - keeping records correctly; - performing the service at the designated time.
RESPONSIVENESS concerns the willingness or readiness of employees to provide service. It involves timeliness of service: - mailing a transaction slip immediately; - calling the customer back quickly; - giving prompt service (e.g., setting up appointments quickly).
COMPETENCE means possession of the required skills and knowledge to perform the service. It involves: - knowledge and skill of the contact personnel; - knowledge and skill of operational support personnel; - research capability of the organization, e.g., securities brokerage firm.
ACCESS involves approachability and ease of contact. It means: - the service is easily accessible by telephone (lines are not busy and they don't put you on hold); -waiting time to receive service (e.g., at a bank) is not extensive; - convenient hours of operation; - convenient location of service facility.
COURTESY involves politeness, respect, consideration, and friendliness of contact personnel (including receptionists, telephone operators, etc.). It includes: - consideration for the consumer's property (e.g., no muddy shoes on the carpet); - clean and neat appearance of public contact personnel.
COMMUNICATION means keeping customers informed in language they can understand and listening to them. It may mean that the company has to adjust its language for different consumers-increasing the level of sophistication with a well-educated customer and speaking simply and plainly with a novice. It involves: - explaining the service itself; - explaining how much the service will cost; - explaining the trade-offs between service and cost; - assuring the consumer that a problem will be handled.

CREDIBILITY involves trustworthiness, believability, honesty. It involves having the customer's best interests at heart. Contributing to credibility are: - company name; - company reputation; - personal characteristics of the contact personnel; - the degree of hard sell involved in interactions with the customer.
SECURITY is the freedom from danger, risk, or doubt. It involves: - physical safety (Will I get mugged at the automatic teller machine?; - financial security (Does the company know where my stock certificate is?; - confidentiality (Are my dealings with the company private?;
UNDERSTANDING/KNOWING THE CUSTOMER involves making the effort to understand the customer's needs. It involves: -learning the customer's specific requirements; - providing individualized attention; - recognizing the regular customer.
TANGIBLES include the physical evidence of the service: - physical facilities; - appearance of personnel; - tools or equipment used to provide the service; - physical representations of the service, such as a plastic credit card or a bank statement; - Other customers in the service facility.

Table 1: SERVQUAL model of service quality

Source: (Parasuraman & ZelthamI, n.d.)

AI chatbot services are both a novel form of service delivery and a cutting-edge service approach. Traditional online virtual avatars, which are supported by actual human customer care, are not the same as AI chatbots. AI chatbots are anthropomorphic, representing a new species, but they are more intelligent than humans in areas like information storage, processing speed, and learning capacity. It briefly lags below humans in certain areas, like emotional intelligence (Chen et al., 2022). When interacting with a company that provides a good or service, a client looks for a few different factors that determine the quality of the service, as indicated in Table 1. Even though AI chatbots lack a human touch, they can function incredibly well in some situations. For instance, they can provide customers with 24 hour accessibility and dependability by completing tasks on schedule. This also holds true for a few other situations, such as comprehension and getting to know the customer, responsiveness, and communication. According to a number of factors, including response time, perceived ease of use, accuracy, data privacy and security, language compatibility, and dynamic query answer, this study will demonstrate how users see adopting chatbots.

The verb "chatting" with the noun "robot" are combined to form the portmanteau word "chatbot." A chatbot is a conversational software system that simulates human communication abilities to engage in chat conversations with users. Natural language processing is the foundation for their programming, which enables them to communicate in real time while offering guidance, assistance, or just engaging in conversation. Since artificial intelligence is now widely used in e-services, as was previously said, chatbots are also growing in popularity and recognition in the customer care industry. In the e-commerce space, chatbots are most frequently used for sales (41%) and support (37%) tasks. In actuality, it is frequently ineffective to browse a large website since the necessary information or answers are either absent or hard to obtain. Unresolved questions therefore necessitate contacting customer support, which is mostly linked to lengthy wait periods and rigid work schedules. Above all, this irritates customers, who become dissatisfied with the relevant business. However, the main reasons why customers argue against internet shopping are the absence of assistance, social contact, and individual guidance. Therefore, the ideal way to increase conversion rates and draw in new customers is to combine conventional customer care with the ease of online buying. This is precisely what chatbots can offer: a more practical, engaging, and distinctive replacement for conventional customer support (Misischia et al., 2022).

1.2. Customer service in the digital age

The digital age is distinguished by extraordinary business environment change velocity and seamless communication among value chain actors (Lee, n.d.). The internet's and mobile phones' ubiquity allows consumer to interact with digital material, which provides the cornerstone of transformative behaviors and customer preferences. Customers' changing habits are prompting banks to expedite their digitalization transformation processes through the use of cutting-edge technology (JiAng & Taşkin, 2022). Consumers have more control over how, when, and where services are delivered because of digital servitization, which uses digital technology to create new options for value creation and revenue output (Manser Payne et al., 2021). Advanced digital technologies are the primary engine of organizational innovation and new potential for value development. Consumers' tastes have altered significantly from traditional retailing to online purchasing and mobile commerce (m-commerce), and service interactions between the company and consumers have also changed dramatically (Lee, n.d.). The use of information system provide businesses with the interaction and analytical capabilities

they need to manage worldwide commercial connections and organizations. Technology may be viewed as an operating resource capable of integrating, collaborating, and accessing other resources; consequently, technology integration is a vital component of value co-creation. Nowhere is the power of technology to evolve together and transform service delivery more clearly than in AI. When clients sense a benefit from the exchange of AI resource interactions, this coevolution may modify how value is gained in mobile banking (Manser Payne et al., 2021). Understanding and addressing specific consumer requirements has been a critical feature for businesses seeking a competitive advantage. Companies align their operations and applications with the customer notion. Companies' duties to their stakeholders and consumers are growing. More than 70% of the investment services industries, such as banking, insurance, and real estate, are based on information technologies. A robust information and communication network is necessary to compete in international markets (Demirel, 2022). Artificial intelligence helps banks to swiftly analyze vast amounts of financial data and recommend personalized actions for individual banking customers for best financial performance. Consumers value the bank's capacity to deliver dependable service, with consistency and precision in all financial transactions. AI service delivery, like self-service terminals, can decrease service discrepancies that may arise in customer-employee interactions. Beyond self-service terminals, AI may provide an even better customer experience since the AI may learn what specific consumers want in their banking encounters. As a consequence, consumers may view AI applications to improve the value of present bank service offering. In recent years, artificial intelligence (AI) has emerged as a significant tool for combating cybersecurity threats. For example, AI is capable of detecting unauthorized usage of a customer's account and intervening to reduce financial risk with minimal effort on the customer's behalf (Manser Payne et al., 2021). Businesses today have a knowledge base based on big data on their customers' demands, preferences, habits, and even emotional states. The old idea of good-quality customer service provided by cheerful salespeople has become the bare minimum for attracting client attention. Customers now expect personalized services that cater to their preferences, wants, and lifestyles. Customers' service preferences vary based on the sort of assistance required, personal knowledge of the product or service under consideration for purchase, and even psychological qualities. Many technologically aware clients examine numerous information sources on the Web and frequently know far more about the many features of the interesting product or service than pleasant shop salespersons. Busy professionals and housewives like to shop as little as possible without the intrusion of store staff. As the number of one-person homes grows, these clients place a high importance on convenience, efficiency, affordability, and time control (Lee,

n.d.).

For decades, the customer service industry has been working to improve consumers' self-help choices, particularly through customer websites. Despite the fact that self-service tools have been constantly enhanced and expanded, the number of users contacting service providers via channels requiring the treatment of service requests has remained high. This seeming paradox is due, in part, to users' conscious use of omnichannel techniques, which may include both self-service via consumer websites and communication via phone or chat (Nordheim et al., 2019). The commercial press lauds self-service channels for their enormous potential to boost company productivity while lowering service delivery expenses. By converting from an onsite to an online transaction, the cost of a banking transaction, for example, can be decreased from 1.15 US dollars to merely 2 cents. Customers have become "active contributors" in service delivery rather than a "passive audience" as a result of the development of such technology-based self-service channels. Mobile banking is shifting the customer interaction away from dealing with people in person and towards technology-mediated, consumer-centric services. This shifts the roles of digital technology, financial institutions, and end users in the value generation and service delivery process. Furthermore, mobile banking technologies, particularly those involving the capture, storage, and analysis of consumer data, are encouraging banks to include artificial intelligence (AI) into their digital and mobile platforms. Chatbots, which engage with consumers in an auditory or written style, to more complicated, problem-solving services, such as personalized investment guidance and fraud detection, are examples of AI banking services available on mobile devices (Manser Payne et al., 2021). These days, there are a lot of chatbots accessible. For instance, the insurance firm "FWD" in Singapore has introduced Faith, an AI that can answer questions about the business's products and operates around-the-clock to handle travel insurance claims. Users may get the amusement and social networking they need via chatbots like Mitsuku, Jessie, and Humani. Four categories were established by some academics to categorize the many ways that chatbots engage with users. (i) uninteresting, when a chatbot just uses one word to answer and occasionally repeats the same or similar phrases; (ii) alternative vocabulary, where a chatbot may provide a wider range of responses to the same question; (iii) building a relationship in which topics and language can switch between casual and professional, and a chatbot can control the conversation's flow by offering impromptu details or cracking a joke; and (iv) becoming more human-like as it gains expertise and applies prior knowledge to communicate in more nuanced and meaningful ways (Sugumar & Chandra, 2021)..

Scholars have noted that clients in service environments must accomplish a variety of tasks, ranging from relatively easy, repetitive jobs to more complicated and challenging duties (ETH Zürich et al., 2015). Transformation helps organizations to more quickly direct market requirements; it also facilitates collaboration in information exchange. Digital transformation is applied equally to service system operations, as well as to internal and external customers. Digital transformation is portrayed as a solution to organizational efficiency and effectiveness issues. The growing worldwide population has necessitated the digital transformation of organizations (Demirel, 2022). Self-Organized digital clients in the revolutionary digital ecosystem have expectations, which have been well defined by the greatest forward-thinking digital natives such as Apple, Amazon, and Uber. It altered client behavior and increased the variety of engagement choices. Digital clients prefer digital service channels over traditional voice-centric contact center interactions. There is a demand for personalized, rapid, and consistent contact and engagement experiences across numerous platforms. It is now the standard to provide a consistent, seamless interactive experience across numerous channels such as inbound calls, IVR, walk-ins, mobile apps, portals, chatbots, social networks, and social emails. Customers who self-organize anticipate the ability to select several channels rather than just one fixed dedicated channel (Shrivastava, 2017).

1.3. Role of chatbots in customer service

The employment of chatbots in place of front-line human personnel serving consumers is growing in the retail and service sectors. By 2025, they are anticipated to be the primary driver of 95% of online customer support interactions. The market for chatbots is now estimated to be worth USD 17.7 billion, but by 2026, it is expected to grow to USD 102.29 billion. Chatbots enable businesses to streamline customer care interactions and provide services at a lower cost without sacrificing customer value. For instance, Lego introduced Ralph, a chatbot, to help consumers browse through its product line and choose the ideal present (Y.-S. (Sandy) Huang & Dootson, 2022). The customer service industry has been improving consumer self-service choices, especially through customer websites, for decades. Nevertheless, despite constant advancements and expansions in self-service choices, a significant number of customers continue to contact service providers via channels that necessitate human service request handling (Nordheim et al., 2019). Chatbots simulate human interactions by utilizing AI and machine learning (ML). Chatbots are able to comprehend and communicate with humans as a result of AI. ML enables chatbots to learn continuously through interactions with customers. AI

chatbots have transformed human-driven service interfaces into today's technologically-driven ones. Chatbots can initiate business interactions by replying with consumers, for example. They are distinguished from workers by particular attributes. For example, chatbots are always learning using machine learning algorithms and have a limitless amount of memory. In terms of customer experience, cost savings, and service efficiency, chatbots are seen to offer a lot of promise for customer support. The digitization of service providers is crucial for their survival in a market driven by technology, and chatbots may be a part of this process. Through 2025, the chatbot market is anticipated to increase at an annual pace of over 25% (Nordheim et al., 2019). While humans are restricted in their ability to perform such activities fast due to their backgrounds and learning capacities, these tasks are completed by them in a fraction of a second (Agnihotri & Bhattacharya, 2023). Improved customer service optimization may save time and money while also improving the customer experience, according to research studies and users of chatbots (Mogaji et al., 2021). A gradual shift wherein chatbots are mixed with human agents in different ways to meet operational or marketing objectives may be motivated by consumer fear of chatbot service, even though completely automated customer service may be the end goal for most organizations. Even though chatbots have been around since the 1960s, a fresh wave of their acceptance in commercial customer support applications is being driven by significant advancements in artificial intelligence and natural language processing. Critical advantages over human customer care provided by chatbots include scalability, 24/7 on-demand availability, and cheaper costs at scale. It makes sense that businesses have a strong incentive to switch from using human customer support representatives to artificial intelligence chatbots (D. Huang et al., 2024).

Businesses are using chatbots, an emerging digital marketing tactic, more frequently in an effort to keep up with the rapidly evolving digital service industry. Five key purposes of chatbots interaction, amusement, trendiness, customisation, and problem-solving—were found by focusing on the marketing industry. These functions may also be seen as those of chatbots that pertain to customers. Based on these, a research was carried out, and the results showed a favorable association between them and the correctness and trustworthiness of the chatbot's conversation as well as between the latter with the satisfaction of customers. A crucial component of offline service to customers that is thought to be virtually nonexistent in the digital age is social interaction. When it comes to customer guidance, customers typically place a high value on a salesperson's kindness, helpfulness, and reliability because they want to feel appreciated, get helpful advice, and be supported during their purchasing process while having

a nice chat. As a result, the chatbot must exhibit traits that are as close to those of a human agent as feasible if the goal is to improve customer-chatbot interactions. Emotions are another element that is intimately linked to human relationships. Additionally, users may experience a range of emotions from chatbots. Negative feelings can result from unmet expectations, and these feelings are frequently linked to communication breakdowns (Misischia et al., 2022). The rise of AI-driven customer support might automate the processing of service requests made via chat, which is presently handled by customer support agents. Because chat agents can handle several inquiries at once, service providers view chat as the ideal avenue for customer assistance. It was recently projected that by 2025, artificial intelligence (AI) programmes would manage 95% of all customer contacts, including live phone and internet chats (Nordheim et al., 2019). Studies have begun to look at the effects of chatbot use on business outcomes with an emphasis on customer service by identifying chatbots' characteristics and functions, since chatbots have emerged as a cutting-edge method of consumer interaction. For instance, consumers' experiences are enhanced by chatbots' anthropomorphic qualities, which include perceived humanness and partner involvement (Wang et al., 2022). The customer-firm connection may be strengthened by introducing a new customer service channel that provides worthwhile advantages to clients. This might also raise customer satisfaction, loyalty, and positive word of mouth, all of which could boost the company's success in the financial markets. Artificial intelligence (AI)-enabled technologies, such as chatbots and voice assistants, can improve customer satisfaction by streamlining and expediting service interactions and promptly and effectively attending to consumers' psychological and intellectual demands (Fotheringham & Wiles, 2023). The increased interest in chatbots is mostly due to major advances in computing technology and the widespread usage of smartphone messaging apps. Chatbots may connect with humans in a variety of ways, including text, picture, and voice. Text-based chatbots are typically used on corporate websites, where customers may get answers to basic questions, such as FAQs, or download documents. Image-based algorithms are used to search for items on ecommerce platforms like Lazada and Amazon. While voice-based programmes such as Alexa and Siri operate as virtual voice assistants offering user-requested information (Sugumar & Chandra, 2021).

In reality, a chatbot is constantly available to provide help around-the-clock anytime it's necessary to contact the business or obtain assistance. Its disposition stays constant, apart from the human experience of stress and exhaustion, consistently exhibiting compassion and consideration for clients. To sum up, chatbots can ensure a prompt response to every inquiry in

real-time, irrespective of the need for a FAQ, details about a particular product, a pricing, or a contact, such as for a complaint or refund. The chatbot's operational guidelines affect its capacity to carry out these decision-making duties with a reduced mistake rate and provide customized solutions that take the user's preferences into account. Actually, the latter can use a pattern-matching technique to evaluate the incoming text and find the words, phrases, and sentence structures. This makes it possible to not only react to customers in a methodical manner but also to feel their emotions, anticipate their conduct, and pinpoint their preferred products. After being gathered, this information is instantly saved and utilized for future talks. By leveraging their artificial memory, chatbots may really record a history of conversations to which they can resort in order to provide more personalized and fulfilling replies. Furthermore, chatbots assist organizations in better understanding consumer behavior patterns so they may modify, reconsider, and optimize decision-making processes. This is achieved by compiling customer data on a massive scale. As a result, there are two categories of effects of chatbots on businesses: Chatbots alter how businesses interact and communicate with their clients on the one hand, but they may also have a significant impact on and alter how clients engage with each other. However, a chatbot should only ever aim to assist its user in achieving higher overall pleasure, since this is seen as one of the cornerstones to a business' success from a customer care standpoint (Misischia et al., 2022).

1.4. Previous research and case studies on chatbots in customer service

Research has been done related to chatbots in customer service in the past and one of them is related to model of trust in chatbots in for customer service done by Cecilie Bertinussen Nordheim, Asbjørn Følstad2 and Cato Alexander Bjørklifor customer support is influenced by perceived reliability, expertise, and empathy.

The chatbot system's design and functioning, particularly its capacity to offer accurate and useful replies, can have an influence on trust. Transparency and transparency regarding the chatbot's limitations might impact trust, since consumers may be more trusting if they understand what the chatbot can and cannot accomplish. Personalization and customization elements that enable the chatbot to adapt to specific user demands and preferences can boost trust. Trust in chatbots can be influenced by the existence of human-like traits such as natural language processing and conversational ability. Previous interactions and experiences with chatbots can influence trust, since positive experiences tend to boost trust while negative ones

tend to lower it (Nordheim et al., 2019).

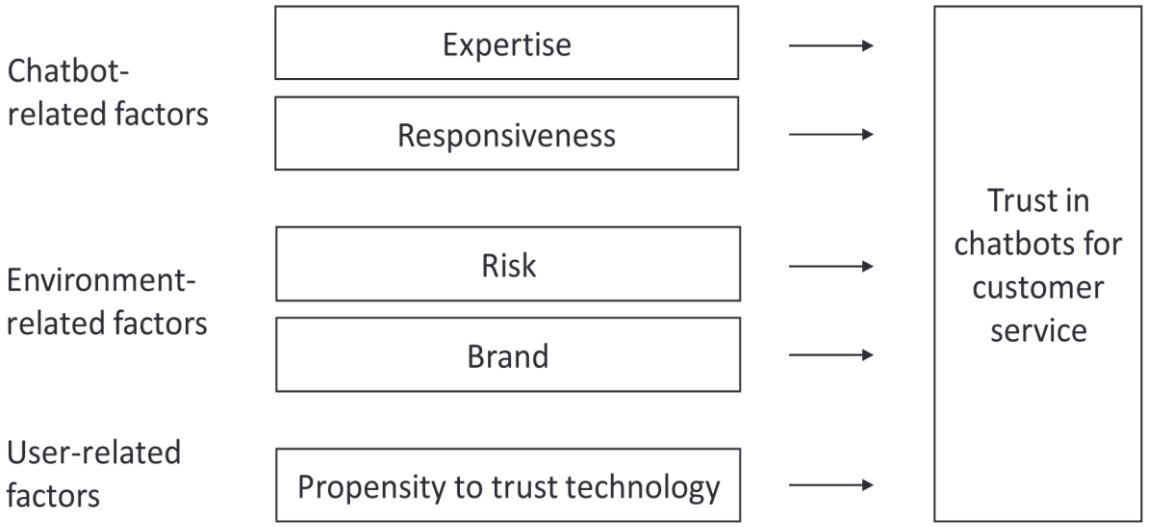

Figure 1: Users' initial trust model in chatbots for service

Source: (Nordheim et al., 2019)

Figure 1 divides factors affecting trust of users chatbots into three categories: chatbot-related factors, environment-related aspects, and user-related factors.

Chatbot-related factors: The most significant component for user confidence in chatbots is expertise, followed by reactivity. Other variables such as usability, predictability, human-likeness, and the absence of marketing are deemed less significant and are not included in the first model.

Environmental factors: Risk and brand are important in the first trust model. While reputation and complementarity are taken into account, they are not prominent enough to be included.

User-related factors: The key user-related factor is an individual's proclivity to trust technology.

During the study most participants had minimal expertise with chatbots and had only tested them 1-3 times. While most consumers are still new to chatbots, it will almost certainly be required to reproduce this type of study and revise the original trust model after chatbots have become ubiquitous technology. This study is somewhat constrained because it only looked at the Norwegian market and a small number of chatbots. Given the features of this industry, particularly its maturity in terms of general mobile technology adoption as well as chatbot applications, insights from this market are likely to be applicable to similar markets. The study does not investigate the cultural or demographic aspects that may impact chatbot trust, which

may be key considerations in understanding user impressions (Nordheim et al., 2019).

Research conducted by Sut Ieng Lei, Haili Shen, Shun Ye says that the interaction experience and desire to reuse of chatbot users and instant messaging users with human conversational agents, discovering that IM users scored higher than chatbot users in terms of communication experience, attractiveness of the conversational agent, and trust. The report also highlights predictors of chatbot/IM adoption and recommends that practitioners properly mix chatbot and human resources to provide the best customer service possible. This study also says, when compared to chatbot users, instant messaging users scored higher in terms of communication experience, attractiveness of the conversational agent, and trust. Through task attraction and social attraction, media richness and social presence influence trust and reuse intention. The perceived task appeal determines users' confidence in conversational agents. Customers' perceptions of the conversational agent's skill are positively connected to their appraisal of the communication environment, which ultimately influences their propensity to reuse chatbot/IM. According to the report, practitioners should successfully integrate chatbot and human resources to provide the best customer support, as consumers still prefer to communicate with human conversational agents. The study gathered data from four continents over the internet, which might bring biases and limits in terms of sample representativeness and cultural variations. The study focuses solely on the tourist and hospitality industries, which may restrict the findings' applicability to other businesses or situations (Lei et al., 2021).

Another research done by Iwona Lupa-Wójcik aims to identify respondents' attitudes regarding chatbots in the context of customer service and to assess the possibilities for their use from the perspective of users. The study looks at the recognizability of chatbots among respondents, the frequency of communication between respondents and chatbots, and respondents' impressions of chatbots. Over half of those polled believe that chatbots are a better answer than helplines and can eventually replace them. Chatbots, according to students, are the future of customer service. Research says, chatbots have a lot of promise in customer service since they are user-friendly and useful. The function of chatbots in this industry should expand, which might benefit the brand/company's image (Iwona Lupa-Wójcik, 2019).

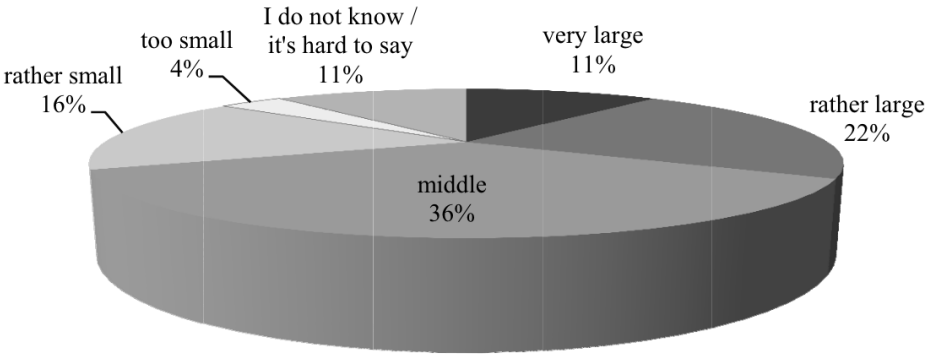

Figure 2

Source: (Iwona Lupa-Wójcik, 2019).

According to the research, figure 2 shows the extent at which respondents managed to settle their query via chatbot on the website. Every third responder indicated that he or she was able to fix their situation to a medium degree (36%), while (22%) - really substantial. This would suggest a favorable appraisal of the company's suitability for this type of client service.

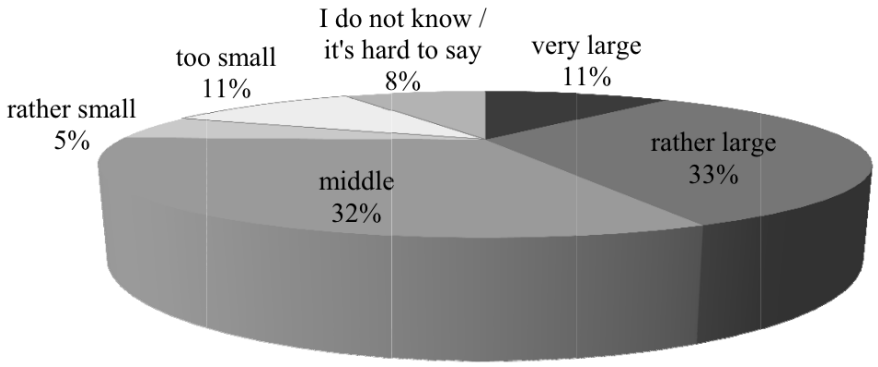

Figure 3

Source: (Iwona Lupa-Wójcik, 2019).

Figure 3 shows every third respondent indicated that things were handled to a greater or lesser level (32%) or medium (32%). The overall usefulness of chatbots on messenger is also rated well. This demonstrates that respondents think chatbots on websites and chatbots in messenger are beneficial for customer service. Respondents had a generally positive attitude towards customer care chatbots, viewing them as beneficial and user-friendly. Chatbots have the ability to boost a brand's or company's image when used in customer support, also they are viewed as a viable alternative to existing customer care contact channels such as helplines. Despite being

frequent Messenger users, students are unaware of chatbots in this communicator, they were still unfamiliar with chatbots. The study's findings support the notion that chatbots should play a larger role in customer service, indicating a promising future for their growth in this field (Iwona Lupa-Wójcik, 2019).

Study by Adam et al., 2021 shows the foot-in-the-door approach and expressed anthropomorphic design signals have a considerable influence on user cooperation with chatbot requests for service feedback. User cooperation with chatbot demands is increased by both anthropomorphism and the desire for consistency. The influence of anthropomorphic design signals on user compliance is mitigated by social presence. AI-powered chatbots can be programmed to increase user compliance and satisfy consumer expectations in customer care encounters (Adam et al., 2021).

Another study on chatbot says consumer satisfaction with chatbot-based customer support is favorably influenced by information and service quality. Users' continued desire to use chatbots is significantly predicted by reported enjoyment, perceived utility, and perceived ease of use. The requirement for human contact moderates the impact of perceived ease of use and perceived usefulness on satisfaction. Satisfaction with chatbot e-service is a significant driver and predictor of consumers' continued interest in chatbots. Chatbots should improve the quality of their information and services to increase customer happiness. To satisfy digital users, digital technology services such as chatbots might be integrated with human support professionals (Ashfaq et al., 2020).

1.5. Process efficiency in customer service and chatbots

The third wave of management is known as business process management, or BPM. Business process management is characterized as a standard that enables businesses and personnel to concurrently and continuously develop, refine, and improve business processes. The organization's collection of operations is managed and enhanced in a never-ending cycle of efficiency and optimization through quick and effective procedures. It links customer service, workflow management, systems and technology, and process review. BPM adds values, norms, concepts, influences, hegemony, and culture that determine whether business initiatives succeed or fail, according to the Association of Business Process Management Professionals. BPM models direct businesses' strategies by formalizing actions, protocols, standards, growth

techniques, and strategies, as well as by optimizing the performance and activities of the organization, including customer service process efficiency. Process management is also dynamic, meaning it is a collection of live information and statistics that can learn, adapt, and alter to suit any kind of business. However, each piece of data is still unique and may be personalized. Businesses increasingly have to deal with major changes in market and corporate structure as one of the difficulties of digital transformation. Organizations achieve new heights of efficiency in their business operations as a result of the changing needs and expectations of consumers, who want higher quality products and services at faster speeds of service and delivery (Andrade & Tumelero, 2022). Corporate business process optimization and leadership across discrete systems such as ERP, CRM, and SCM as well as the entire integrated network is referred to as business process management. In addition, the assignment of a BPM-System entails the systematic coordination and execution of business operations (Paschek et al., 2017).

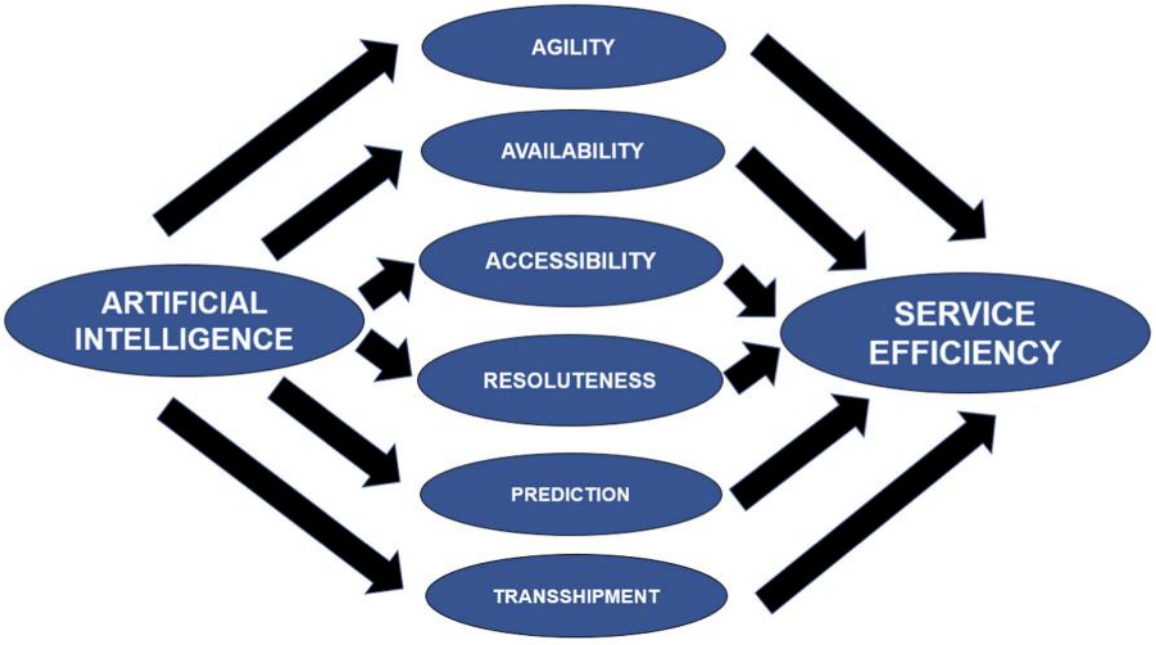

Figure 4: AI and service efficiency

Source: (Andrade & Tumelero, 2022)

Study conducted on increasing customer service efficiency through artificial intelligence chatbot by Andrade & Tumelero, 2022 shows that the AI chatbot answers the most basic and commonly requested queries for the majority of responders. Its goal is to assist as many clients as it can, answering questions about credit cards, for example. Interviewees stated that virtual assistants begin with a more limited scope of services and work their way up to greater complexity as problems are resolved. They accomplish this by building databases, providing

information back to the customer, and enabling future usage. Additional features for client engagement are gradually introduced. Drawing on the aforementioned, Figure 4 illustrates how AI chatbots enhance customer service effectiveness by highlighting the primary connections between the analytical categories. An attendant with rapid and uninterrupted interaction across several channels and platforms, the AI chatbot is an easy-to-use initial service layer. The primary contribution of the AI chatbot is to optimize the utilization of hardware and software resources, hence increasing the processing capacity of the data gathered from client interactions. According to study participants, the usage of AI through chatbots improves service efficiency since they are faster, more efficient, aggressive, and more functional than traditional customer support. It functions with flexibility, accessibility, and availability around-the-clock, seven days a week. Depending on the predicted lag time, the virtual assistant can convert some human calls that took longer than twenty minutes into quick and productive exchanges in a matter of seconds. Like a well-designed FAQ, the AI chatbot responds to the most often asked questions and addresses the most common problems. Its goal is to assist as many people as possible by providing strong, confident responses. By predicting customers' intentions and will through the use of AI chatbots and analytics, the organization is able to better comprehend consumer expectations and provide better customer service. Call center wait times have decreased thanks to AI chatbots, freeing up human attendants to handle more complicated problems and provide a more effective level of service. In addition to being easily accessible and useful, the AI chatbot serves as a first line of support. It is a fast, capable operator that is available to assist customers on the platforms and channels of their choice. It can also filter and route complex calls to a human assistance specialist. Furthermore, in cases where a client seeks human assistance, in encounters that the virtual assistant is unable to resolve, or in situations where the degree of confidence in the chatbot's response falls short of expectations, the AI chatbot may be sent to contact centers, relationship centers, and specialized teams. In these situations, the AI chatbot acknowledges its limits, makes a recommendation, or routes the call to the permanent or contract worker at the most specialized service channel, including agencies, managers, specialized teams, contact centers, or relationship centers (Andrade & Tumelero, 2022).

From all above points it can be said that chatbots are a good way to service customers but it’s not applicable in all scenarios, success of the chatbot depends on multiple parameters and there is a possibility of change in adoption of AI technology in different demographics. It is important to understand the relevance of certain parameters while servicing the customers, and accordingly assign the tasks to AI chatbots which would provide accurate and timely solutions

to customer queries. This study will analyze the relevance of chatbots in the Indian market for customer servicing needs of the consumers. This thesis has adopted a method of survey questionnaire to collect primary data from the users of chatbots vs users of traditional customer service.

2. RESEARCH DESIGN AND METHODS

2.1 Respondents and Data Collection

This chapter of the thesis will discuss the research strategy and methodology utilized to accomplish this thesis. The researcher was able to send survey questionnaires to 110 randomly selected former users of chatbots for customer service purposes for this study. In addition, 88 randomly selected users of traditional customer care channels (email, branch service, telephone call) were given a survey questionnaire in order to answer their product or service-related queries. Survey-based approach was considered appropriate for this study because it provided a methodical way to collect quantitative information from a huge sample size. Surveys, as opposed to focus groups or interviews, provided standardized answers from all participants, allowing for statistical analysis and quantitative insights into the study issue. Also it was time efficient to collect data from the desired set of people within a short period of time and because responders could remain anonymous, more truthful and objective answers were encouraged. Because of their anonymity, participants may freely voice their thoughts and the social desirability bias is reduced, resulting in a more accurate depiction of their experiences and impressions.

The survey was sent to respondents from various cities in India based on the city size i.e. tier 1 metropolitan cities, tier 2 - medium sized cities and tier 3 - small sized cities. The age distribution was chosen at random but it was ranging in between 19 - 71 years of age bracket in case of chatbot related survey and it was ranging in between 20 - 42 years of age in case of traditional customer service related survey. The questionnaire could be filled out anonymously and the respondents were assured that the responses will be kept confidential and will be used only for the research purpose.

Respondents were sent the online survey questionnaire with the objective to understand what they feel about the usage of chatbots for customer service vs the traditional channels of service.

Web survey approach was used by using self-administered questionnaire distribution, survey was rolled out using the tool LimeSurvey. Web surveys' computerized nature encourages experimentation and streamlines data collection, resulting in—for better or worse—more research publications in a shorter time frame (Couper & Miller, 2008). The duration to complete

the survey was approximately 5 minutes and survey questions were divided into two (2) sections. Survey responses were stored in the LimeSurvey database and the same was exported in the form of spreadsheet for further analysis. To make the replies appropriate for the statistical analysis, the responses were reorganized; in this instance, the average of user response to the questions pertaining to the relevant variables was taken into consideration.

2.2 Structure of Survey Questionnaire

Survey questionnaire was divided into two sections as explained below:

Section one (1): was focused on respondent information collection namely age, gender, location, country.

Section two (2): was focused on collecting the data related to eight (8) variables related to usage experience of chatbot or traditional customer service channels. The eight (8) variables are derived from the determinants of service quality as shown in Table 1 by (Parasuraman & ZelthamI, n.d.). The variables which were analyzed in section two are given in the table below and the table also shows to which determinant of service quality they are related to:

Sr. No.	**Variable**	**Description**	**Service Quality Determinant (Parasuraman & ZelthamI, n.d.)**
1	Resolution time	Survey had two questions related to time taken by chatbot or service person to respond or to provide resolution to the query	Responsiveness
2	Perceived ease of use	Survey had two questions related to how easy it was to reach out to the service person/access chatbot. How was the interaction experience of navigation or usage	Tangibles/Access
3	Accuracy	This shows the chatbot/service person was able to understand the query accurately and provided the correct resolution. There were four questions related to this in the survey	Reliability

4	Data privacy and security	In survey for chatbot there were three questions and for traditional service there were two questions related to how the experience in terms of confidentiality of personal data and security during the interaction with chatbot/service person was	Security
5	Language Support	Two questions focusing on linguistic abilities of service person/chatbot in survey	Communication/ Courtesy
6	Dynamic query response	This variable helps to analyze the response of service person/chatbot to open ended or random queries. Survey had three questions related to this variable	Competence
7	Overall Experience	This helps to analyze overall interaction experience of user with service person/chatbot, one question was focusing on this in the survey	All service determinants as mentioned in the Table 1
8	General Feedback	Open ended feedback collection from the user to understand open ended feedback	All service determinants as mentioned in the Table 1

Table 2: Research variables variables

Source: Author (2023)

The 5-point Likert scale was used to answer the questions (1: Strongly Disagree, 2: Disagree, 3: Neutral, 4: Agree, 5: Strongly Agree). To acquire open ended feedback from survey respondents, one question was left open-ended. The language of the questionnaire was English. The questions were divided into categories and analyzed by averaging the responses. As a result, each category represents a variable. In case of unstructured data collection for the variable general feedback, open text responses shared by users are grouped together based on their relevance for the analysis and it is presented in the form of a table in the results chapter. Each question was designed to ask about the opinion or experience of users regarding each variable in section two of the questionnaire.

2.3 Descriptive Statistics

This questionnaire poll included Indian respondents. Stakeholders provided an entire set of 198

responses, that includes 110 respondents who used chatbots in the past and 88 who used traditional customer service - both the sample groups are separate and independent. Table 3 displays basic descriptive information about the target groups.

	Stakeholder Group					
	Chatbot users			**Traditional customer service users**		
Age	Median - 31	Min - 19	Max - 71	Median - 24	Min - 20	Max - 42
Age Distribution	Below Median - 52	Above Median - 49	Unknown - 9	Below Median - 45	Above Median - 38	Unknown - 5
Gender	Female - 39	Male - 62	Unknown - 9	Female - 58	Male - 25	Unknown - 5
City/Location*	Tier 1 - 46	Tier 2 - 14	Tier 3 - 37	Tier 1 - 30	Tier 2 - 2	Tier 3 - 50
*Tier 1 - Population above 5 million, Tier 2 - Population within 1 million - 5 millions, Tier 3 - population below 1 million						

Table 3: Descriptive analysis of target groups

Source: Author (2023)

An independent sample t-test was used to evaluate differences in subgroup means. Furthermore, the variance homogeneity was assessed using Levene's F test, with $p<0.05$ regarded as statistically significant.

2.4 Pearson's Correlation

Pearson's correlation is a statistical approach for determining the direction of a linear connection between two variables. To graphically represent the relationship between data pairs, a graphical scatter diagram is utilized. The correlation coefficient will range between -1 and 1 to assess the strength and direction. When the result is positive, it indicates that both data sets have a propensity to rise or decrease simultaneously. When the value is negative, it indicates that the data pairs have a propensity to rise or decrease in opposing directions. The closer the values are to zero, the weaker the relationship between the two variables. The closer the values are to - 1 or 1, the stronger the linear association between the two variables (Kirch, 2008). Correlation coefficients that are below ± 0.4 signify a weak correlation. Correlation coefficients between ± 0.4 and ± 0.6 signify a moderate correlation. Correlation coefficients above ± 0.6 signify strong relationships (Isaac, 2018). A Pearson product-moment correlation coefficient was conducted

to evaluate the relationship between chatbot and traditional customer service variables using SPSS 29.0.

The reason for selecting Pearson's correlation for the analysis is because all the variables are quantitative and normally distributed, also there are no outliers in the data set.

Pearson's correlation coefficients are calculated using the following formula:

$$r_{xy} = \frac{\sum x_i y_i - n\bar{x}\bar{y}}{(n-1)s_x s_y} \quad (1)$$

where
r_{xy} - Pearson's correlation coefficient - number of observations
$\bar{x}$ - arithmetic mean of all x_i
$\bar{y}$ - arithmetic mean of all y_i
s_x - standard deviation for all x_i
s_y - standard deviation for al

3. RESULTS

3.1 Descriptive statistics and independent samples t-test

The assessment of (A) speed of first response showed no statistical significance between the past users of chatbot with respect to users of traditional customer service channel t(166) = -.49, p = .619.

The t-test comparing (B) the perceived ease of use resulted in t(166) = -.280, p = .780, The score given by chatbot users being statistically significantly different from the traditional customer service users.

Code	Variable	Subsample	
		Chatbot users	**Traditional* customer service users**
A	Speed of first response	0.804	0.818
B	Perceived ease of use	0.832	0.824
C	Accuracy	0.812	0.836
D	Data privacy and security	0.836	0.832
E	Language Support	0.844	0.814
F	Dynamic query response	0.664	0.831
G	Overall Experience	0.812	0.864
* Traditional customer service refers to all service channels except chatbots, for example email, telephone service, branch service etc.			

Table 4: Descriptive statistics, assessed score (0–1) of chatbot and traditional customer service variables (mean values of subgroups)

Source: Author's calculations (2023)

The t-test examining accuracy (C) yielded a t-value of -0.151 with a p-value of 0.388. Interpretation of the test was there is no significant difference in perceived accuracy between the two groups.

The t-test resulted in a t-value of -0.86 and a p-value of 0.880 for (D) data privacy and security.

This demonstrates that there is no substantial difference in views of data privacy and security between Chatbot and traditional customer service customers.

The (E) language support t-test yielded a t-value of -1.01 and a p-value of 0.312. There is no substantial variation in the two groups' perceptions of linguistic help.

The t-test comparing (F) dynamic query response resulted in a t-value of -7.227 and a p-value less than 0.001. This demonstrates that there is a considerable difference in how Chatbot users and traditional customer service consumers perceive dynamic question answers. The difference is statistically significant (p 0.001).

The (G)overall experience t-test yielded a t-value of -1.720 and a p-value of 0.087. Although the p-value (0.087) is significantly higher than the normal significance criterion of 0.05, there is no significant difference in overall experience evaluation between the two groups.

These findings indicate that there is no significant variation in views between the two stakeholder groups for the majority of factors. However, the key finding is related to dynamic query response abilities of chatbots compared to traditional customer service channels, it has significant variations in how chatbot users and traditional customer service consumers perceive dynamic question answers.

3.2 Pearson's Correlation

The analysis reveals the key factors influencing chatbots or customer service variables. Below are some details around the representation of the correlation matrix:

- **AG = Age**
- **GN = Gender**
- **CT = City**
- **LA = Language**
- **A = Speed of first response**
- **B = Perceived ease of use**
- **C = Accuracy**
- **D = Data privacy and security**
- **E = Language Support**
- **F = Dynamic query response**
- **G = Overall Experience**

	AG	GN	CT	LA	A	B	C	D	E	F	G
AG	1										
GN	.15*	1									
CT	-0.01	-0.04	1								
LA	.21**	0.06	.18*	1							
A	-0.02	-0.13	-0.07	-0.14	1						
B	-0.05	-0.15	-0.15	-.18*	.76**	1					
C	0.00	-0.11	-.16*	-0.15	.77**	.84**	1				
D	0.02	-0.02	-.27**	-.22**	.62**	.73**	.77**	1			
E	0.01	-0.05	-0.10	-.22**	.61**	.58**	.59**	.59**	1		
F	-0.10	-.21**	-0.05	-.23**	.44**	.48**	.46**	.42**	.26**	1	
G	-0.15	-0.11	-.17*	-.35**	.57**	.69**	.68**	.60**	.40**	.57**	1

Table 5: Correlations matrix

* Correlation is significant at the 0.05 level (2-tailed)

** Correlation is significant at the 0.01 level (2-tailed)

Source: Author's calculations (2023)

Age:

- There are no significant correlations with other variables in the matrix and Age.

Gender:

- Gender has a weak positive correlation (.15) with Age.

City:

- There are no significant correlations with other variables in this matrix and City.

Language:

- Language has moderate positive correlation (.21) with Age.
- There is a weak positive correlation (.18) with the City.

Speed of first response:

- Speed of first response has weak negative correlations with several variables: Gender (-0.13), City (-0.07), Language (-0.14), Perceived ease of use (-0.02).

Perceived ease of use:

- There are Moderate positive correlations with Accuracy (.76) and Data privacy and

security (.77).
- Perceived ease of use has weak negative correlations with other variables: Gender (-0.15), City (-0.15), Language (-0.18), Speed of first response (-0.02).

Accuracy:
- Accuracy has strong positive correlations with Perceived ease of use (.84) and Data privacy and security (.84).
- There are weak negative correlations with other variables: Gender (-0.11), City (-0.16), Language (-0.15), Speed of first response (0.00).

Data privacy and security:
- Data privacy and security has shown strong positive correlations with Perceived ease of use (.77) and Accuracy (.77).
- Also there is Moderate negative correlation with Language (-0.22) and weak negative correlations with other variables: Gender (-0.02), City (-0.27), Speed of first response (-0.22), Language Support (-0.22), Dynamic query response (-0.23).

Language Support:
- Language support has moderate positive correlations with Data privacy and security (.59).
- There are weak negative correlations with several variables: Gender (-0.05), City (-0.10), Language (-0.22), Speed of first response (-0.22), Dynamic query response (0.26).

Dynamic query response:
- Dynamic query response has weak positive correlation with Language Support (0.26).
- Also there is weak negative correlations with several variables: Gender (-0.21), City (-0.05), Language (-0.23), Speed of first response (0.44), Perceived ease of use (-0.10), Accuracy (0.46), Data privacy and security (0.42), Overall Experience (0.57).

Overall Experience:
- Overall experience showed moderate positive correlations with several variables: Perceived ease of use (.69), Accuracy (.68), Data privacy and security (.60), Dynamic query response (.57).
- There are weak negative correlations with other variables: Age (-0.15), Gender (-0.11), City (-0.17), Language (-0.35), Speed of first response (.57), Language Support (.40).

3.3 Perception of users on chatbots replacing human service personnel

Below table shows what chatbot users think about about the problems in chatbot replacing human service personnel:

Sr. No	User Response	No of

		Instances
1	User did not share any response	28
2	Chatbots lacks human emotions/concerns related to human emotions	23
3	Concerns related to increase in unemployment in future due to chatbots	14
4	User feels there is no issue with chatbot replacing human agents	11
5	User feels there will be problem with ability to resolve random (open ended) issues/queries	10
6	User feels it will be great if chatbot will replace human service team	6
7	User did not like the experience of interacting with chatbot	5
8	User feels there will be concerns related chatbot understanding the issue/query	4
9	User feels chatbot can be used to handle simple queries	2
10	User feels chatbot replacing human service team would help in increasing the productivity of customer service	2
11	Other - user response is not clear	2
12	Chatbot implementation would lead to increased resolution time of complex customer queries	1
13	User feels it will be complete chaos to interact with chatbot instead of traditional customer service team	1
14	User feels initially interaction with chatbot becomes difficult for user	1

Table 6. General feedback from chatbot users

Source: Author's calculations (2023)

The responses received about the possible issues customers anticipate if traditional customer care is replaced by AI chatbots give insights into a wide range of concerns and perspectives. Here's a breakdown of the user responses:

Twenty-eight (28) consumers did not express specific criticism or concerns about the replacement of traditional customer support with AI chatbots. This might indicate a lack of opinion or apathy in the subject. Twenty-three (23) users raised worry about the emotional

component of conversations, stating that chatbots may not effectively grasp or treat human emotions. Chatbots' lack of empathy or emotional understanding might be a serious concern for these users. Fourteen (14) respondents are concerned about job losses or rising unemployment if AI chatbots replace human customer service representatives. This is a widespread problem across numerous businesses when it comes to automation and AI. However, eleven (11) respondents are at ease with the thought of chatbots replacing human operators and see no issues with the move. They may regard chatbots as effective substitutes. Ten (10) users voiced worries about the chatbot's capacity to manage unanticipated or difficult situations that were not expressly coded, highlighting concerns about AI chatbot adaptability and problem-solving abilities.

Sr. No	User Response	No of Instances
1	User did not share any response/do not have any opinion about chatbot implementation over traditional customer service team	53
2	Do not have any issue or problem with chatbot implementation	32
3	User feels chatbots lacks human emotions or they are concerned about chatbot lacking human emotions	1
4	User feels overall we can't expect 100% resolution from chatbots - we would need human intervention	1
5	User feels chatbots are not user friendly	1

Table 7: General feedback from traditional customer service users

Source: Author’s calculations (2023)

In the case of traditional customer service users, fifty-three (53) consumers either did not submit any comment or claimed to have no opinion about the usage of chatbots in place of traditional customer support professionals. This might indicate a lack of interest or knowledge about the issue among these people. Thirty-two (32) respondents stated that they had no issues or problems with the usage of chatbots in customer support positions. This suggests approval or neutrality towards incorporating chatbots into customer support operations. One (1) user raised concern about the emotional side of chatbots, implying that they lack human feelings. This is consistent with a widespread fear that AI-powered systems would be unable to adequately empathize or understand emotions. One (1) user emphasized the limitations of chatbots in giving comprehensive solutions and urged that human assistance be required for specific

concerns or scenarios. This indicates an appreciation of AI technology's existing limits. One (1) user indicated displeasure with chatbot usability, indicating possible usability flaws or challenges encountered while dealing with them.

4. DISCUSSION AND CONCLUSION

This thesis's discussion part offers a chance to evaluate and assess the study's results in light of the literature review. In order to give a thorough grasp of the study conclusions and add to the body of knowledge already known in the area, the ramifications of the findings will be examined.

Customers who self-organize anticipate the ability to select several channels rather than just one fixed dedicated channel (Shrivastava, 2017). This study is focused on comparing chatbot efficacy of chatbot with traditional customer service channels, the results shows that chatbot services are one good addition to service channels for customers to get their query resolution on time. The study's main findings are significant because they demonstrate how effective chatbots may be, especially for tiny and start-up firms. Furthermore, by learning more about how customers see virtual assistants, government organizations may advance the sector and identify and correct weaknesses in their business environment and technology. Study also provides the rationale for this sole use of the quantitative method of analysis. By addressing the research problem, aim, and questions, the study sought to provide insights into the efficacy of chatbot for customer service compared to traditional customer service. The results were obtained through a survey questionnaire sent to 198 respondents, out of which 110 were users of chatbot in the past and 88 customers used traditional customer service for their servicing needs. All the customers to whom the survey was sent were past users of fintech products in India; it is advisable to exercise caution while generalizing these findings to the entire population of India as study was mainly focusing on Indian fintech customers.

As per (Parasuraman & ZelthamI, n.d.) With its components of assurance, empathy, tangibles, responsiveness, and consistency, the SERVQUAL model offers a basic framework for understanding the quality of service given to clients; these elements are still necessary to deliver exceptional customer experiences. Based on that this study focuses on the eight (8) variables which are crucial to deliver great service to the customers. The variables analyzed are speed of first response, perceived ease of use, accuracy, data privacy and security, language support, dynamic query response, overall experience and general feedback from the customer. Despite a exception of variable dynamic query response, customers felt on all other variable chatbot is good way to cater their service requirements, these parameters involved speed of first response which involved time taken to acknowledge the receipt of the query and time taken for query

resolution, perceived ease of use in terms of navigating on the chatbot platform, accuracy of chatbot response and understanding the query correctly, data privacy and security in terms of verifying user identity and keeping the critical data field confidential, language support by making available language options as well as command over the language of the conversation, and overall experience of chatbot interaction to resolve the query. In case of dynamic query response respondents felt traditional customer service was a better way to resolve their queries.

Improving customer-chatbot interactions requires the chatbot to have characteristics that are as similar to those of a human agent as is practical. Another factor that is closely related to human interactions is emotions. Furthermore, consumers may feel a variety of emotions when interacting with chatbots (Misischia et al., 2022). The way the chatbot is built and operates, especially in terms of its ability to respond with relevant and timely information, might impact users' confidence. Expertise is the most important factor, followed by responsiveness, in determining user confidence in chatbots (Nordheim et al., 2019). Comparing results with the previous studies on chatbots shows that chatbot had expertise to solve the queries as well as it was similar to human service agents in terms of responsiveness, but the lacking factors were user empathy and concerns related to human emotions.

Critical advantages over human customer care provided by chatbots include scalability, 24/7 on-demand availability, and cheaper costs at scale. It makes sense that businesses have a strong incentive to switch from using human customer support representatives to artificial intelligence chatbots (D. Huang et al., 2024). Because chatbots are quicker, more aggressive, more efficient, and more functional than conventional customer assistance, using AI to create chatbots enhances service efficiency. It runs seven days a week, 24 hours a day, with flexibility, accessibility, and availability. The virtual assistant may turn some human calls that took longer than twenty minutes into efficient conversations in a matter of seconds, depending on the anticipated lag time. The AI chatbot answers the most often requested queries and deals with the most typical issues. Its objective is to help as many individuals as it can by offering resolute, certain answers. The AI chatbot is helpful and approachable, and it also acts as a first line of assistance. The AI chatbot may be sent to contact centers, relationship centers, and specialized teams in situations where a client requests human assistance, in interactions that the virtual assistant is unable to handle, or in circumstances where the level of confidence in the chatbot's response falls short of expectations (Andrade & Tumelero, 2022). Artificial intelligence (AI)-enabled technologies, such as chatbots and voice assistants, can improve customer satisfaction

by streamlining and expediting service interactions and promptly and effectively attending to consumers' psychological and intellectual demands (Fotheringham & Wiles, 2023). This research shows users have confirmed that time taken for resolution of the query was less as well as interaction with chatbot faster, natural and easier compared to traditional customer service executives. It is also evident from the responses of the survey that users feel that chatbot is not capable of understanding and handling dynamic random queries raised, in such cases author recommends that chatbot could be used to handle repetitive nature of queries as well as FAQs to answer questions related to products and services offered by the company.

The primary objective of this study was to offer a substantive response to the set of research questions.

1. What is the efficacy (time and accuracy) of solving customer queries through chatbot?

2. What is the scalability of the solution to address a huge volume of customer queries with limited resources?

3. Why would chatbot help to improve customer service efficiency if implemented in customer service?

The study's findings for the first research question indicate that a variety of factors influence users' perceptions of using chatbots rather than traditional servicing channels for addressing their customer service requirements. Time and accuracy are two factors from which consumers' trust in chatbots to provide the proper answer to their inquiry at the appropriate moment may be derived. If we look at the t-test results, we notice that, when time was the study parameter, the users of chatbots demonstrated trust in both the first response time and the resolution time of the raised query. They also rated the chatbots' speed at which they acknowledged the query and how quickly they resolved it in comparison to human agents. Regarding accuracy, users have rated chatbots and traditional customer service representatives nearly equally on factors such as accurately comprehending the query, responding quickly after recognising the problem, offering the appropriate solution, and having in-depth knowledge of the company's goods and services. This demonstrates that, when it comes to factors like accuracy and on time performance, chatbot users are just as at ease as traditional customer service professionals.

User responses indicate that people are just as comfortable with chatbots as they are with

traditional customer support channels when it comes to the second research question, which is about the scalability of chatbot solutions. This implies that chatbots can easily tackle the same questions that a traditional human resources department would be able to. Indeed, chatbots outperform human support teams in several areas, such as perceived ease of use, data privacy and security, and language support. Thus, it can be concluded that, with the exception of the varied dynamic inquiry response, chatbots are just as successful at answering customer inquiries as human support representatives. The author believes that similar queries may be redirected to chatbots for resolution, in the same way we can grow traditional human service channels by adding additional executives to handle the huge amount of customer support requests. This justifies the scalability question.

Regarding the third study question, which asks how chatbots might increase customer service efficiency, it has been mentioned that chatbots provide consumers with experiences that are comparable to those of traditional human support teams. According to user feedback responses, some users think that implementing chatbots will improve customer service. The author thinks that repetitive and straightforward questions can be directed to the chatbot rather than the human support team for resolution. Chatbots are meant to serve as company representatives, helping customers online with informational requests, problem-solving, and advice—all while avoiding the lengthy contact center lines that frequently leave customers unhappy (Holzwarth et al., n.d.; Zumstein & Hundertmark, n.d.). This will assist in releasing some of the human support team's capacity and enhancing the chatbot's AI model over time to enable it to tackle increasingly complex requests. As shown in figure 5 the author suggests that one option would be to maintain chatbots as the initial level of customer support; in cases where chatbots are unable to respond to sophisticated, erratic, or dynamic inquiries, the author suggests routing the queries to more traditional customer support channels. Improved customer service optimization may save time and money while also improving the customer experience, according to research studies and users of chatbots (Mogaji et al., 2021). Study results provide us a clear picture of the scope of improvement in traditional customer service processes. This will benefit consumers in two ways: first, it will assist to continuously support them with their basic and frequent questions; second, it will free up conventional service teams to fully concentrate on more complicated instances, which, if left untreated, may result in subpar customer care.

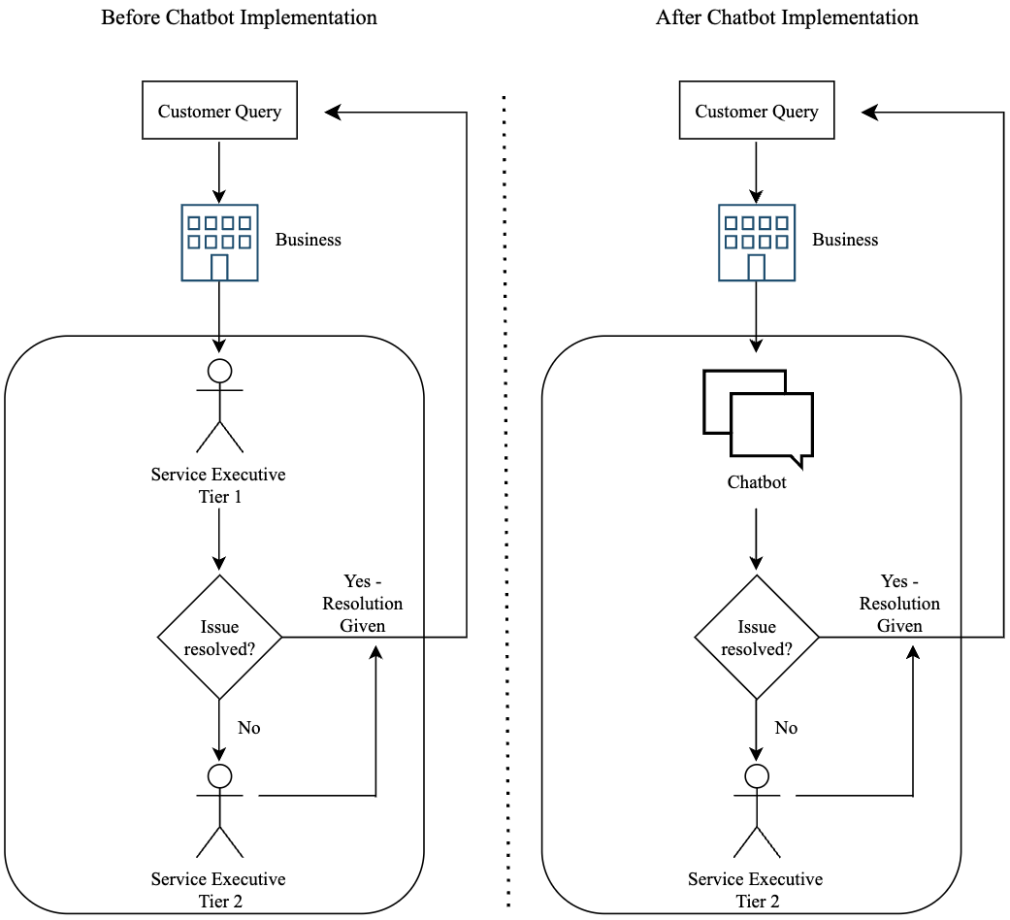

Figure 5: Proposed efficiency improvement using chatbot

Source: Author's recommendation

While a number of respondents believe that the use of chatbots would greatly improve customer service, some believe that they lack empathy and human feelings. Some of them worry that since the human services people will be somewhat replaced, there may be unemployment problems. A small number of consumers disliked the chatbot experience, believing that using this kind of solution would be chaotic and may increase the time it takes to resolve customer care queries.

One of the notable contributions of this research is the comprehensive understanding and gained insight into the motivations of chatbot users in using the technology over the traditional customer service channel. This highlights the need of chatbots as a technology solution for the companies to serve more customers. Study not only focuses on positive aspects of the solution from user point of view but also focuses on the drawbacks or limitation of the chatbot as a solution which is incapability to handle random queries of the customers. Overall, the research

emphasizes the need of collaborative approach which involves use of chatbots and customer service to provide complete solutions for fintech users for their repeated and complex queries, this also states that the use of chatbot can help to increase capacity of traditional service channels to handle dynamic queries.

Regarding limitations, it's possible that the thesis concentrated on particular features or aspects of chatbots in the Indian fintech sector, leaving out other possible fields in which chatbots may be utilized to increase productivity. The thesis might not have addressed every sub-sector or service offered by the fintech business because of its size and the wide range of services it covers. Also, offering chatbot services in a variety of languages and dialects is difficult because of India's heterogeneous linguistic landscape. It's possible that these issues and how they affect the effectiveness of customer service were not sufficiently covered in the thesis. In specific areas or among particular demographic groups, chatbot usefulness or acceptance may be impacted by cultural differences or communication style preferences. These cultural variations may affect participant reactions and have an impact on study outcomes through differing views, attitudes, and social conventions. Additionally, communication gaps and linguistic subtleties impact understanding and data accuracy. Biases in the sample representativeness may affect the validity and application of the findings. This research involving 198 respondents consumer groups may have hindered the research's capacity to generalize its results to the fintech sector as a whole, also the responses shared by users might have created bias towards the chatbot or traditional customer service channels. Study talks about the efficiency improvement as a whole but it does not state by what amount the efficiency will be improved by using chatbots as a solution.

In conclusion, several future study options are suggested based on the research findings, which might help in better understanding of factors impacting the efficiency improvement in customer service for the fintech industry. Furthermore, future researchers may look at the actual impact on the customer service efficiency in quantifiable terms when chatbot is implemented. Also further investigation on product segments can also be done to understand the adoption of chatbots by different customers using various products.

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APPENDICES

Appendix 1. Survey questionnaire

Variable name	Questionnaire for chatbot users	Questionnaire for those who used traditional service
Age		
Gender		
City/Location		
Country		
Response time/TAT	1. Chatbot response time was lower than human agent response time 2. Compared to a human agent, do you feel chatbot took less time for your request resolution?	1. Customer service team responded to my query quickly 2. Do you feel the service person took less time for your request resolution?
Perceived ease of use	1. Communicating with chatbot was natural, easier and faster than Service Person 2. Chatbot platform was easier to navigate	1. Communicating with service person was natural, easier and faster 2. It was easy to reach out/access human customer service team
Accuracy	1. Chatbot understood my query correctly 2. Chatbot responded to my query promptly 3. Chatbot provided correct resolution to my query 4. Chatbot had extensive knowledge about the products offered by the company	1. Service person understood my query correctly 2. Service person responded to my query promptly 3. Service person provided correct resolution to your query 4. Service person had extensive knowledge about the products offered by the company
Data privacy and security	1. Chatbot verified my identity before providing resolution to my query 2. The critical data field like loan account number/ amount were partially hidden during the interaction with chatbot 3. I have been notified that I was talking to a chatbot and not real person	1. Service person verified my identity before providing resolution to my query 2. Service person ensured confidentiality of critical data fields like loan account number, document number, amount etc

Language Support	1. In which language did you interact with chatbot? 2. I agree chatbot sentences were linguistically/grammatically correct	In which language did you interact with Service team I agree that service team demonstrated a strong command of the language we employed during our interaction
Dynamic query response	1. Chatbot answered my random queries as an open text question 2. Chatbot was able to understand the open text questions accurately 3. Chatbot was able to answer unexpected queries/questions	1. Service person answered my random queries as an open text question 2. Service person was able to understand the open text questions accurately 3. Service person was able to answer unexpected queries/questions
Overall Experience	1. Rate your experience of interacting with chatbot	1. Rate your experience of interacting with human service team
General Feedback	What problems do you see when human Service Persons will be completely replaced by chatbots/robots?	What problems do you see when the human Service team will be completely replaced by chatbots/robots?

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