



Research paper

# Chatbots Vs Human Agents: A Comparative Study of Customer Satisfaction in the Financial Services Industry in Sri Lanka

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KEYWORDS	ABSTRACT
Artificial Intelligence Chatbot Human Agent Customer Satisfaction	The use of Artificial Intelligence (AI) in customer engagement has drastically altered the operating reality of Sri Lanka's banking industry by enhancing customer service speed and access, but customer satisfaction level is a key marker for analyzing AI service effectiveness compared to human interaction. The study utilizes a quantitative cross-sectional methodology to analyze and compare customer satisfaction levels between the two service delivery mediums. A structured survey was developed and randomly administered to 520 banking customers in Sri Lanka about their experiences according to the five dimension of the SERVQUAL Model (reliability, responsiveness, assurance, empathy, and tangibles). The results suggest that AI powered chatbots are typically consistent and efficient in performance. However humans are regularly rated higher in areas requiring emotional intelligence and connectivity which contributes positively to customer satisfaction. As discussed in the study the constructs predicted by the theoretical frameworks; Technology Acceptance Model (TAM), Expectation Confirmation Theory (ECT) and Social Presence Theory (SPT) identified these variables. The regression results indicated statistically significant difference in satisfaction levels and perceived effectiveness; human agents were rated more positively overall. These outcomes highlight the need for a hybrid service method that utilizes AI's efficiency as well as the relational and emotional abilities of humans. The outcomes provide practical advice to Sri Lankan financial institutions that want to improve customer experience with a hybrid strategy that allows for the right combination of automation and human effort in digital banking services.

## 1. Introduction

The undertaking of amalgamating artificial intelligence (AI) into the service sector has accelerated the global implementations of customer interaction. More recently in the banking sector, AI technology will increasingly be used to incorporate customer service tools such as chatbots, virtual assistants, and automated telephone hotlines, all aimed to enhance operational efficiency, service engagement, and cost reduction in overall service



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delivery (Chatterjee et al., 2020). These intelligent systems offer real-time service, consistent responses, and 24/7 service availability which are essential attributes in competitive service environments (Marques et al., 2021).

In the context of the Sri Lankan financial sector, it has notably transformed into digitalization and COVID-19 helped to further change its path towards digitalization and implement AI-enabled customer channels that endless banking firms have begun to adopt. Some of the largest banking institutions have implemented AI chatbots on digital platforms such as websites and banking apps to provide answers to any routine questions, complete transactions, and alleviate the administrative workload on human customer service counterparts (Central Bank of Sri Lanka, 2022). However, once the technology establishes a comprehensive application of service systems, customer outcomes are compared with those of human outcomes and discussed as to whether customer service expectations are being fulfilled or matched at identical satisfaction levels.

Customer satisfaction, a key measure of performance in service marketing, is defined by customers' perceptions of the quality of their experiences in service interactions (Zeithaml et al., 2006). Comparing AI and human-mediated service delivery yields differences across empathy, personalization, and contextual sensitivity of interactions. Human agents are typically better able to perform emotional responsiveness and adapt verbal communication to match the customer's emotional state and tone (Van Doorn et al., 2017). AI-mediated service could be viewed as more efficient and consistent in responding quickly to service inquiries with consistency, especially to remove the emotional context from these interactions; however, AI tools often lack the emotional intelligence to differentiate complex or sensitive issues that could impact overall user experience (Grewal et al., 2021).

When examining the adoption of AI chatbots in Sri Lanka's banking industry they are employed with uncertainty if the machine and human agent can really effectively meet their customer expectations. We know that these technologies help with operational efficiency; we have only anecdotal evidence about their impact on customer satisfaction. In the absence of empirical evidence there is little evidence-based decision making for financial institutions to use in designing and implementing service delivery solutions.

Although existing research has addressed AI in customer services (Ameen et al., 2021; McLean & Osei-Frimpong, 2019), there is a gap in empirical research about AI and the Sri Lankan banking sector.

Consequently, the overall aim of the present study is to evaluate and compare customer satisfaction associated with AI chatbot services versus human agents within the banking industry in Sri Lanka. The objectives of the research are: (1) to evaluate customer satisfaction levels associated with the AI based chatbot services, (2) to evaluate customer satisfaction levels associated with human agents, and (3) to compare satisfaction levels between AI chatbot services and human agents.

## 2. Literature Survey

### 2.1 Type of Customer Service (AI-Based Bots vs Human Agents)

Customer service has seen significant transformation as a result of the introduction of artificial intelligence into the ways in which organizations interact with their customers. AI-based chatbots are increasingly taking over in meeting the needs of customers for standard queries and providing assistance at wherever they are, around the clock (Huang & Rust, 2018). These automated response systems dramatically improve efficiency by significantly reducing the time needed for customer queries and leading to substantial reductions in service expense (Grewal et al., 2021).

AI systems are often criticized for falling short on providing empathy and delivering customized responses to customers. AI bots lack the ability to draw upon real-life experience and judgment or to respond flexibly during emotionally challenging interactions (Van Doorn et al., 2017; Lu et al., 2020).

The SERVQUAL model is still a popular tool for assessing service quality in situations like this. It evaluates service performance, across five dimensions, such as, reliability, responsiveness, assurance, empathy, and tangibles (Parasuraman et al, 1988). In the banking space, the SERVQUAL dimensions have a significant role in customer satisfaction and are related closely to perceptions of trust and loyalty.

Recent empirical studies are continuing to detail the comparative effectiveness of using AI bots instead of agents in service environments. McLean and Osei-Frimpong (2019) conclude that AI based chat interfaces enhance service speed, and efficiency, but human interactions are perceived as more favorable since they provide greater relational connection and trust. Ameen et al. (2021) confirm that customers can be more demanding for service encounters with human than AI bots, especially in high touch environments like banking where the sensitivity and confidentiality of the information requires a greater degree of emotional intelligence and discretion.

## 2.2 Customer Satisfaction

Customer satisfaction is essential to analyzing service delivery and is considered important in building customer loyalty in the long run. Satisfaction is usually a post-consumer judgment where customers evaluate the meeting or exceeding of their expectations by the product or service (Oliver, 1997). Within the area of service marketing, satisfaction overlaps with perceived quality of service, value, and relation (Zeithaml et al., 2006).

Satisfaction, in the case of digital banking, may be based on not only the effort spent in remedying the customer issue, but on the quality of the service experience service. Parasuraman et al. (2005), found that responsiveness, assurances and empathy are main service characteristics associated with customer satisfaction. Comparison of AI-enabled service platforms as opposed to human-mediated service channels show that satisfaction is conditioned by both functional effectiveness and relational closeness. For instance, Xu et al., (2020) show that while AI bots tend to be rated positively for speed and accuracy, your experience in service delivery may suffer as human empathy isn't typically part of the service interaction.

What differentiates human customer service representatives in banking sectors is their ability to compensate for any process weaknesses with personalized touch points and relational qualities. Yet when customers experience an inconsistency between their service needs and the one they receive, especially in technologically the customer's expectations are either not met or exceeded resulting in higher levels of satisfaction with the overall customer experience (David & Chariton, 2019).

## 3. Theoretical Review

A well-established theoretical framework supports sound empirical research in marketing and service management. In this study of customer satisfaction in Sri Lanka's banking sector, we examine the impact that customer service delivery mode (AI-based chatbots or human agents) has on satisfaction outcomes, and focus specifically on the role of language as a mediator. There are a number of well-known theoretical frameworks which help conceive and interrelate all of the variables we have considered here. We highlight (and not exhaustively discuss): the Technology Acceptance Model (TAM), which explains user acceptance of technological interfaces, Expectation Confirmation Theory (ECT), which explores how satisfaction outcomes match expectations, Social Presence Theory (SPT), which explores perceptive interpersonal warmth and sociability of communication; and Communication Accommodation Theory (CAT), which studies the ways people adjust language use for the purposes of communication and, often, relational outcomes (and maybe perceived customer satisfaction).

### 3.1 Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM) is a relatively well-known theoretical framework often used to study users' behavioral intention to adopt new forms of technology. TAM suggests two main determining factors of user acceptance: perceived usefulness and perceived ease of use (Venkatesh & Davis, 2000). In this study, the above-mentioned AI-driven customer service bots are a new technical interface that is increasingly being used in retail banking.

It is our hypothesis that in accordance with TAM, when customers feel that AI-enabled services were user-friendly, and effective in helping them with their service-related issue, they will be more likely to accept that service technology and feel satisfied with it. By contrast, when AI-enabled services are thought to be too mechanical, unemotional, or unable to help with, seemingly complex or emotionally-laden issues, potential users may be less willing to engage with the service technology and withhold satisfaction. While human service agents are better positioned to develop a relational trust and dial the emotional content of a conversation, through the use of takes of thoughtfulness and empathetic communications, these facts reinforce the value of an exploratory and comparative look at satisfaction in various forms of service delivery as part of a changing digital banking system.

### 3.2 Expectation Confirmation Theory (ECT)

Expectation Confirmation Theory (ECT) provides a useful perspective on customer satisfaction, suggesting that satisfaction is achieved through judgements about service performance relative to expectations. If the service outcome is consistent with or exceeds customer expectations, then customers achieve confirmation and satisfaction. If perceived performance falls short of expectations, then disconfirmation occurs, leading to dissatisfaction and/or negative evaluations of the experience (Oliver, 1997).

Moreover, this approach to understanding satisfaction is particularly relevant for the current study which conceptualizes customer satisfaction as the primary outcome variable. In the respective, study customers who will engage AI-based chatbots or a human service agent, will in all likelihood have expectations related to attributes such as speed of response, empathetic interaction, and language appropriateness. ECT provides a usable conceptual framework for evaluating customer satisfaction with comparison of service outcomes through alternate service channels within the context of banking in Sri Lanka.

### **3.3 Social Presence Theory (SPT)**

Social Presence Theory (SPT) addresses the level of psychological and emotional presence communicated by a media. Specifically, social presence conveys how users perceive the presence of others in an interaction. Feeling a high level of social presence produces high feelings of interpersonal warmth, empathy, and trust in others, which is essential for customer satisfaction in service-based contexts (Gefen & Straub, 2003).

In this case, humans customer service agents are, of course, better at communicating a higher social presence level than AI bot. Humans introduce tonal variation, emotion, and context in service encounters that are more personal and relational than robots can create. AI-based chatbot customer service can process vast amounts of information and respond to its users instantly, yet they do not have the emotional intelligence of a human and lack the spontaneity needed to establish an interpersonal connection. Absent this fast-paced human-like responsiveness, customers may perceive less engagement and experience diminished service during service encounters.

Consequently, SPT is an interesting justification for why human agents frequently offer a higher value particularly in emotional and high-importance contexts, such as banking scenarios where empathy is much needed, and social signals are critically relevant. Collectively, the theoretical framework underpinning this study draws from multiple perspectives: TAM and SPT describe how the method of service delivery (AI versus human) affects customer experience, while ECT describes the relationship between expectations and perceived performance which influence satisfaction.

## **4. Methodology**

### **4.1 Research Design**

This study utilized a quantitative research design in order to examine differences in customer satisfaction for AI-based chatbots compared to human service agents within the banking sector in Sri Lanka. Cross-sectional survey method was used to collect time specific data from customers in order to reflect their immediate perceptions and experiences. The design also allowed for systematic comparisons between satisfaction levels between two different service delivery options. The study was also interested in questioning the mediating effect of language utilized during the interaction which could affect the quality of the customer experience and consequent satisfaction.

### **4.2 Population and Sample**

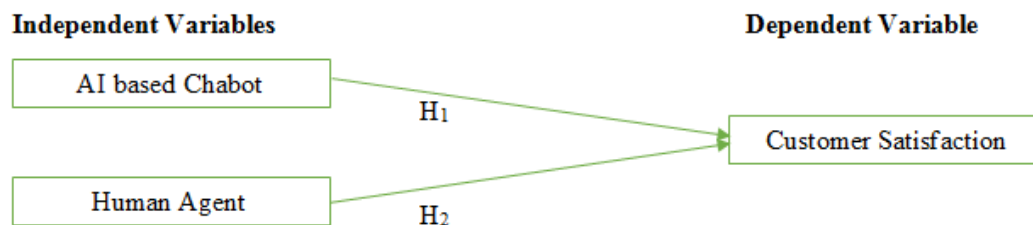
This study's target participants were customers of Sri Lankan banks who have interacted with AI-driven chatbots or human agents in customer service. Due to the rapid digitization of banking and financial services over the past few years, a large percentage of the banking customer base has interacted with AI-based customer service platforms.

To be representative and reduce selection bias, participants were drawn from customers by using a simple random sampling technique from commercial banks'. The sampling frame was set up to include customers who have interacted with AI-related chat services or human service agents in the last 6 months to ensure currency and relevance of participant responses. The sample size of 520 respondents was suitable for achieving statistical validity, and based on a 95% confidence level with a 5% margin of error which also supported utility of reliability and generalizability of the study findings to a broader banking population in Sri Lanka.

### **4.3 Conceptual framework and Hypotheses Development**

The conceptual framework explores customer satisfaction with reference to the banking industry in Sri Lanka by comparing AI-based chatbots and human agents. The framework makes a number of hypotheses to assess the effectiveness of these alternative service mechanisms based on efficiency, empathy and relative service quality.





**Source:** Adopted and Modified from Xu et al., (2017); Gnewuch et al., (2017)

Chatbots certainly have some advantages when talking about their quick response time and the fact that they are available 24/7. This is definitely a solid foundation for the customer experience, as it is the meeting of expectations in terms of effort and response time that plays a significant role (Gnewuch et al., 2017). A human service agent, on the other hand, is placed in a unique position that requires the use of a specific set of emotional competencies and skills. The specific competencies addressed here are competency in interpersonal skills, empathy, the desirability of experience, and many more (Shankar et al., 2003). According to a previous study, customer experiences varied greatly with different service delivery methods (Xu et al., 2017). Drawing upon the literature and research objectives, this study proposes the following hypotheses:

**H<sub>1</sub>:** There is a significant level of customer satisfaction with AI-based chatbot services in the Sri Lankan banking sector.

**H<sub>2</sub>:** There is a significant level of customer satisfaction with human agent services in the Sri Lankan banking sector.

**H<sub>3</sub>:** There is a significant difference in customer satisfaction between AI-based chatbot services and human agent services.

#### 4.4 Instrumental Design

The main data gathering tool was a self-administered structured questionnaire that was structured to be consistent with the variables in the study. The questionnaire was structured into three sections. Section 1: Demographic Information: This section collected demographic information about the respondents, including age, gender, education, frequency of interaction with banks, and preferred language, in order to describe the sample and allow for analysis within sub-regions. Section 2: Independent Variables--AI Bots vs. Human Agents - This section asked respondents to describe their customer experiences from AI-based chatbots as compared to human service agents by using a number of Likert scale items. They would evaluate how easy the service was to use, how effective the service was, and how personalized the service encounter was. Section 3: Dependent Variable-Customer satisfaction was measured with a number of Likert scale items, measuring perceptions of satisfaction, service quality, and whether the respondent planned to continue to use the service in the future. All constructs used existing validated scales with slight adaptations to reflect the Sri Lankan banking context (Davis, 1989; Venkatesh & Davis, 2000).

#### 4.5 Data Collection Procedures

Data was collected in a mixed-method distribution method using online distribution (using tools such as Google Forms) and paper distribution (face-to-face at selected bank locations) to be inclusive and more accurately represent the sample. We presented the questionnaire in both Sinhala and Tamil to accommodate the diverse population of Sri Lanka, in order to enhance participation and lower language-based response bias. Respondents were given an introduction with an explanation of the study's purpose and we obtained informed consent for participation. Ethics were maintained and adhered to in the data collection process. All respondents were assured confidentiality and anonymity. They were told that they would participate voluntarily and that it would be possible to withdraw from the study at any time, without penalty. Data collection took roughly four weeks, and we sent reminders to non-respondents to maximize response rates and ensure there was high data quality to analyze.

#### 4.6 Data Analysis Techniques

The data that were collected were analyzed with the Statistical Package for the Social Sciences (SPSS), and included a systematic, multi-step process: Descriptive Statistics - The demographics of the respondents as well as their experiences with AI-based chatbots and customers service agents were summarized using measures such means, standard deviations, and frequency distributions. Inferential Analysis - The relationship between type of customer service (AI-based bots vs. human agents) and satisfaction were analyzed through multiple

linear regression analysis to determine the predictive strength and direction of influence of each independent variable on the dependent variable.

Reliability and Validity - Cronbach's Alpha were calculated for each of the constructs in order to assess the internal consistency of the measurement instruments. A threshold value of 0.70 or higher was deemed acceptable to signal satisfactory reliability. Finally, previously validated measures were as well as previously published validated scales, to support content and construct validity of the instrument.

## 5. Data Analysis and Presentation

### 5.1 Demographic profile of respondents

The final dataset includes responses from 512 individuals, representing a well-balanced and demographically representative sample of the population for studying customer satisfaction in the Sri Lankan banking sector. The gender split is relatively equal, with 52%, 46% and 2% male, female, and no disclosure, respectively; thus, allowing for relevant gender comparisons in satisfaction perceptions. According to the demographic table, 48% of respondents are in the 26 - 35 age groups, promising digitally literate generations who have interacted with both traditional and AI-enhanced banking services.

Moreover, a qualified sample of participants is reinforced by the excellent educational attainment where 65% of participants have completed undergraduate studies or superior and 71% of participants are in employment, indicating a financially active population that ultimately expect higher services. In fact, 89% of respondents reported previous hands-on experience interacting with both AI based chatbots and human agents. 63% stated they have interacted with customer service at least once per month. Hence, the elements mentioned above characterizes the sample as knowledgeable and has the potential to offer angle and comparative insights; therefore, building an empirical ground to assess service delivery mechanism and customer satisfaction.

### 5.2 Validity and Reliability

To check the reliability of the measurement scales, Cronbach's alpha ( $\alpha$ ) was calculated for each construct. In accordance with the guidelines indicated by Nunnally (1978), a value of 0.70 or greater was considered acceptable in the context of social science research. In this study, the alpha coefficients all fell between 0.80 and 0.89 across all dimensions of the SERVQUAL model and the customer satisfaction scale indicating a number of reliable measurement scales with a high degree of internal consistency. These results confirm that the items examined in the construct are reliably measuring the intended latent variables.

Moreover, the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy returned a value of 0.91 which exceeds the recommended minimum of 0.60 (Kaiser, 1974), indicating that the samples were adequate to conduct a multivariate analysis of factor structures. The results support 0.91 directly (highest measure of adequacy) as the KMO measure of sampling adequacy exceeded the accepted threshold. Further, the Bartlett's Test of Sphericity revealed a statistically significant result ( $p < .001$ ), indicating that the correlations between the items were sufficiently high to perform exploratory factor analysis. Together, these results support the instrument's validity and reliability to measure constructs in the study.

### 5.3 Objective Wise Analysis of Data

The objective-specific quantitative data analysis methodically examines customer satisfaction with both AI-based chatbots and human agents in Sri Lanka's banking sector. The analysis, using the SERVQUAL framework, examines satisfaction levels associated with each service type around five dimensions: reliability, responsiveness, assurance, empathy, and tangibles. These aspect form a consistent framework for comparing quality perception and satisfaction across AI supported and human supported customer contexts.

**Table 1** Descriptive Mean for Service Modalities and Customer Satisfaction

Constructs	Mean – AI Based Chatbot	Mean – Human Agents
Reliability	3.62	4.12
Responsiveness	3.58	4.05
Assurance	3.50	4.08
Empathy	3.33	4.22
Tangibles	3.89	3.76
Customer Satisfaction	3.55	4.18

The descriptive statistics on chatbot service experience indicates a moderate level of satisfaction from customers, with an overall satisfaction mean of 3.55 out of 5 on a Likert scale. The highest rated SERVQUAL dimensions were tangibles ( $M=3.89$ ), followed by reliability ( $M=3.62$ ); which indicates that respondents valued the chatbot's usability, their visual layout, and their consistency in service encounters. However, the empathy dimension had the lowest rating ( $M=3.33$ ), which reflects the drawback of AI systems that are unable to recognize and respond to the emotional states of customers appropriately. This aligns with past research (e.g., Xu et al., 2017), that can demonstrate AI technologies struggle to provide emotionally intelligent service.

Conversely, the responses regarding interaction via human agent provided a higher level of customer satisfaction, with an overall human interaction mean score of 4.18. The empathy dimension was the highest rated SERVQUAL dimension ( $M=4.22$ ), followed closely by reliability ( $M=4.12$ ) and assurance ( $M=4.08$ ). These results are consistent with prior literature (e.g., Shankar et al., 2003), indicating the emotional and psychological significance that human interactions provide. The high rating obtained in the empathy dimension implies, that human agents are much more capable in shaping responses, listening, and attending to customer concerns about their service experience - this contributes to increased satisfaction in service settings.

As we statistically examined the difference in satisfaction between the two service modalities, we used a paired-sample t-test. The difference in the mean satisfaction difference score was statistically significant ( $t = 13.78$ ,  $p < 0.001$ ), with human agents being more satisfying ( $M=4.18$ ) than chatbots ( $M=3.55$ ). The large  $t$  and very small  $p$  values mean the difference we observed is legitimate, and we cannot consider it to be random variation. Thus, these results provide strong empirical support for Hypothesis 3, recognizing the essential role of humans in enhancing customer satisfaction. In a small, relationship-oriented culture such as Sri Lanka, it is even more sharply focused on the human connection in customer service, where empathy, trust, and personalization matter more than the service commodity itself. Thus, while chatbots are convenient for handling forgettable day-to-day routine transactions, they should only be used for straightforward service requests that do not contain any complexity, multiple stakeholders, emotional focus, life challenges, or sensitive issues.

#### 5.4 Model fit Measures

**Table 2** Model Fit Measures

Type of Service	R <sup>2</sup>	F - Value	P Value
AI Chatbot	0.63	66.14	<b>0.000</b>
Human Agent	0.71	97.52	<b>0.000</b>

The model fit statistics demonstrate the robustness and explanatory power for selected regression models analyzing customer satisfaction with AI-based chatbots and human agents in Sri Lanka's banking sector.  $R^2$  values for chatbots ( $R^2=0.63$ ) and human agents ( $R^2=0.71$ ) indicates the models account for a significant share of variance in customer satisfaction with the chatbots and human agent banks, indicating a good to strong fit of observed data to the model. The F-statistics for both the chatbot model ( $F=66.14$ ) and human agent model ( $F=97.52$ ) were significant, confirming the strength and predictive power of the models.

According to these findings, while both service modes are shown to significantly impact customer satisfaction, human agents account for greater share of explained variance likely through their ability to demonstrate emotional intelligence and communicate on a personal level. In contrast, AI chatbots, mainly, performed stronger on reliability and operational efficiency dimensions, which account for sensible portion of customer satisfaction but not to the greater share as represented by humans. Overall, AI agents and human agents have different but complementary roles within banking customer service.

#### 5.5 Hypotheses Testing

This part contains information from hypothesis testing that focused on three hypotheses developed in the literature review. Two separate multiple linear regression analyses were conducted to investigate how service quality influences customer satisfaction in interactions with chatbots and human agents. One multiple linear regression analysis was performed for users that interacted with a chatbot, and the second for users that interacted with a human agent. In both analyses, the independent variables were the five facets of the SERVQUAL model and customer satisfaction was the dependent variable.

**Table 3** Regression Coefficient - Standardized Beta

Dimensions	AI Chatbot	Human Agent	Sig.
Tangibles	0.19		0.000
Reliability	0.21		0.000
Responsiveness	0.16	0.18	0.000
Empathy		0.31	0.000
Assurance		0.26	0.000

$H_1$  is supported. Service quality influences customer satisfaction in chatbot interactions, most noticeably in service reliability, visual design, and speed of response. This study's findings support those of Gnewuch et al. (2017), who discovered that the efficiency of chatbots impacts functional satisfaction critically.

$H_2$  is supported. The human agent service quality constructs all produced a consistently strong and positive effect on customer satisfaction, particularly in the dimensions of empathy, assurance, and responsiveness. These results support previous research that emphasized the human ability to create emotional connections and trust through the service interchange (Parasuraman et al., 1988; Lemon & Verhoef, 2016).

An Independent Samples t-test was conducted to test hypothesis three ( $H_3$ ) by comparing mean customer satisfaction scores for AI-based chatbot users against human agent users.

**Table 4** Group Statistics

Variables / Source	Mean	Std Deviation	t- Value	Sig.
AI Chatbot	3.54	0.72	10.89	0.000
Human Agent	4.21	0.58	15.04	0.001

The results indicate a statistically significant difference in average customer satisfaction scores between groups with the understanding that  $H_3$  has been supported by the analysis; satisfaction levels differ significantly based on service delivery; service delivery by human agents is rated significantly more favorable than aggregating service interactions delivered by chatbots. The results are consistent with Shankar et al. (2003), who positively associated human empathy to service quality.

The analyses suggest all three of the proposed hypotheses are supported. It is clear that satisfaction levels do differ between service delivery via AI-powered social media chatbots and human representatives of the service provider, as customers with a preference for human interaction are rated more satisfactory services experience in person for face-to-face interaction or through traditional customer service channels such a voice (telephone). It is clear service quality supports satisfaction for interactions delivered by human agents and chatbot service delivery settings, however, the various SERVQUAL and service quality dimensions differ. Customers appreciate the speed and consistent nature of service delivery via chatbots, while at the same time human agents are acknowledged for bringing empathy to their delivery of service to customers, including establishing trust relationships. This research provides useful insights in the future strategies of financial institutions in Sri Lanka to segment their services to better meet consumer needs and expectations.

## 6. Discussion

The purpose of this study was to assess and compare customer satisfaction levels with AI-Chatbots and human service agents in the financial service industry in Sri Lanka using SERVQUAL as the guiding framework. The descriptive findings provide meaningful information about how customers view these two types of service channels, with significant discrepancies that relate well with the models developed in service quality literature.

The findings indicate human service agents are significantly better than chatbots across all five SERVQUAL dimensions, with the largest gaps in empathy and assurance. Participants rated human service agents as being especially high, resulting from human service agents demonstrating high levels of empathy, the personalization of service, and emotional sensitivity. Confirming the position of Parasuraman, Zeithaml, and Berry (1988) that empathy and assurance are primary determinants of perceived service quality values, especially in high-contact businesses such as banking.

On the other hand, chatbots generally received moderate ratings for the service quality dimensions, notably performing best in tangibles and reliability. Users valued the simplicity of design and interface for chatbots and consistency in providing accurate information. These findings are consistent with Gnewuch, Morana and Maedche's (2017) work which indicated that efficiency and speed were the main benefits of AI tools to manage routine customer relations.



However, while efficiency and speed were valued strengths, performance was weakest when measuring empathy. Respondents viewed chatbots as not being emotionally responsive and incapable of managing complicated or sensitive interactions. These findings align with findings by Xu et al. (2017) who indicated that the limitations of AI were apparent in capturing the complex emotional cues present in people interactions. This shortcoming is likely amplified in a Sri Lankan context, knowing that communication tends to be indirect and culturally, expectations are around warmth and personal connection (Herath, 2019).

The descriptive analysis indicates that chatbots could be used to support simple, task-oriented dispositions, but problems arose when chatbots failed in the emotional and relational characteristics of service provided by human agents. For financial institutions, recognizing this distinction is extremely important, as it goes to the heart of developing hybrid service strategies that could optimize speed and efficiency of technology and the personal connection of a human service agent, ultimately influencing the long-term experience of customers.

## 7. Conclusion

This study provides tangible support that human agents play a role in creating high levels of customer satisfaction in the financial services sector, specifically in cultural contexts such as Sri Lanka. The study employed a comparative analysis using the SERVQUAL Model, which illustrates that while AI chatbots are efficient and reliable to operate routine tasks, they are not effective in the affective domain of service. The results showed that human agents significantly outperformed chatbots for all dimensions of service quality, particularly in the dimensions of empathy and assurance. While chatbots received high ratings for their tangibles interface features and consistent reliability, they did not create experiences that were personal and meaningful to explicit emotions and feelings. Furthermore, for overall customer satisfaction, customers indicated that their interactions with live agents increased customer experience and satisfaction.

The findings provide additional evidence supporting well-established theories in service quality and demonstrate how AI-based service tools are assessed in South Asian contexts. These findings also support various hybrid service delivery models where automation is used to provide operational efficiency but retains roles, such as consultants with high affective support, the service provided to customers would be significantly enhanced, in terms of trust, empathy, and building long-term customer relationships.

## 8. Practical Implication

Findings from this research have relevant practical implications for banks in Sri Lanka that want to optimize customer satisfaction through effective service delivery. The distinctly discernible gap in customer satisfaction levels between AI-driven chatbots and human agents demonstrates the need for a balanced approach to service delivery aimed at customers. Additionally, banks should not merely consider chatbots as tools for decreasing personnel costs. Chatbots should be recognized as mechanisms that amplify human agents - especially with the more complex, emotionally charged, or high-value interactions. Moreover, the large overall percentage of respondents (89%) indicating they use both service types, and the 63% of respondents indicating an engagement with banking services at least once a month (66% monthly), demonstrates a need to continuously develop both online and offline experiences, as all service context remain relevant to customer satisfaction. Improving customer service training programs to focus on enhanced empathy and active listening when handling customer complaints, but also developing chatbots to be (i.e. improving interface, improving multilingual service offerings, and be culturally competent) will improve customer satisfaction.

Considering improvements to service delivery based on priority, it is imperative that service models connect customer preferences informed by reliable data to ensure they incorporate the preferences of what is evidenced as customer behaviour and expectations. Addressing their expectations not only enhances customer trust and loyalty, but also enhances their competitive position towards banks' being in a high-paced financial service market.

## 9. Limitations and Directions for Future Research

This study provides valuable insights into customer evaluations of AI-enabled chatbots and traditional human agents in the banking sector in Sri Lanka; however, some limitations should be recognised. First, the cross-sectional nature of the research design means that the data represents customers' perceptions at a single point in time, which may not ultimately reflect changes in perceptions or satisfaction as chatbot technology evolves, and customers increase their level of familiarity with them. Second, while the sample of 520 is decent, it may not adequately represent the experiences of people in rural or less affluent communities who may not have as much access or use of digital banking services. Finally, the study relied on self-reported data, and self-reported responses may be affected by biases regarding social-desirability or incomplete recollection.

The research extended only to the banking industry in Sri Lanka, which further limits the application of these findings to industries and countries other than banking in Sri Lanka. To address the limitations in the current study, future studies could employ a longitudinal method to see how customer satisfaction changes over time. Future research could also have a wider sample of people from different geographical locations, in different income levels, and at varying digital literacy levels. Furthermore, using qualitative methodologies like in-depth interviews or focus group studies may contribute to the kindness value of the research by highlighting the other factors that drive customer preferences and perceptions. Lastly, researching across different countries or industries could also develop understanding of how cultural norms inform what customer's desire in AI vs human service, and how to satisfy these desires to offer positive customer experiences. These prospects can contribute to a more fully formed, developing perspective on the interactions between technology, embodied experience through human interaction, and customer experience.

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