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#### AI-POWERED CUSTOMER SERVICE: IMPACT OF CHATBOTS ON CUSTOMER SATISFACTION AND RETENTION

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<p><b>Nazia Batool</b> Lecturer, Department of Business Management, Economics and Commerce University of Baltistan, Skardu <a href="mailto:nazia.batool@uobs.edu.pk">nazia.batool@uobs.edu.pk</a></p>	<p><b>Abstract</b></p> <p><b>Purpose</b> - The purpose of this study is to investigate the ways in which Customer Satisfaction mediates the relationship between Chatbot Service Quality and Customer Retention.</p> <p><b>Design/methodology/approach</b> - The analysis was conducted on data collected from 173 respondents across 28 service sector organizations in Gilgit-Baltistan. Regression analysis was employed to examine the validity and dimensionality of the study variables.</p> <p><b>Findings</b> - The outcomes suggest that Chatbot Service Quality is essential for predicting Customer Retention. Customer Satisfaction serves as a mediator between Chatbot Service Quality and Customer Retention.</p> <p><b>Research limitations/implications</b> - The data were restricted to a cross-sectional design within the Gilgit-Baltistan setting, making it potentially unsuitable for generalization across Pakistan. Moreover, the sample size is smaller in comparison, yet the results are not negatively impacted.</p> <p><b>Originality/value</b> - There is currently insufficient study conducted in Pakistan on the relationship between Chatbot Service Quality and Customer Satisfaction. This study represents a thorough investigation into how Customer Satisfaction affects the connection between Chatbot Service Quality and Customer Retention.</p>
<p><b>Keywords:</b></p>	<p>Chatbot Service Quality, Customer Satisfaction, Customer Retention, Gilgit-Baltistan Pakistan</p>

### Introduction

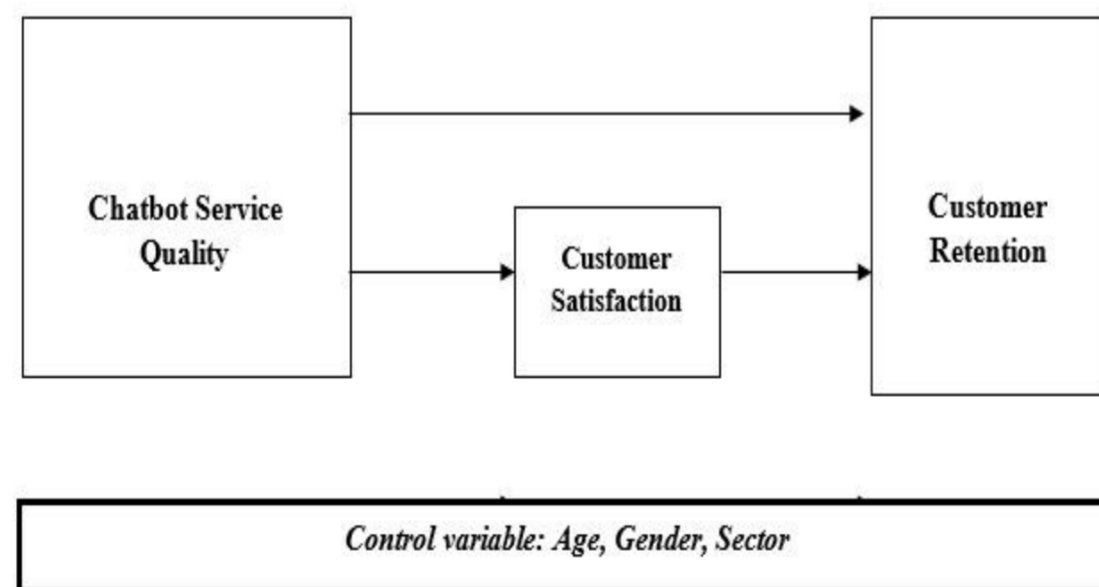
AI-powered chatbots have revolutionized customer service in recent years by offering interactive, automated support around the clock. These systems, which are driven by machine learning, natural language processing (NLP), and conversational interfaces, provide businesses with flexible and affordable ways to manage basic questions, schedule appointments, and resolve typical problems. Understanding the impact of chatbots on customer happiness and retention has become a major priority for both academics and professionals as businesses increasingly use them in a variety of sectors. (Sidlauskiene et al., 2023; Hsu et al., 2023).

The numerous characteristics of chatbot interactions tend to impact customer satisfaction, which is frequently described as a user's experience of task success, usability, and emotional pleasure. According to empirical research, users appreciate chatbots that are informative, responsive, and dependable, and that express a level of simulated empathy via their conversational tone or linguistic signals. The impact of these service quality dimensions on quick satisfaction assessments varies, however, depending on the complexity of the task and the emotional setting (Hsu et al., 2023; Ruan, 2022).

Whether or not a customer decides to repurchase, continue using, or stay loyal to a brand is determined by chatbot-driven satisfaction but is also influenced by other things. such things as trust, perceived utility, and effective management of mistakes or escalations. For example, chatbots that are proficient at handling service recovery—such as, "I'm sorry for this inconvenience..." followed by precise troubleshooting measures—boost trust and entice customers to stick with the brand. On the other hand, misinterpreting client intent or making awkward handoffs to live agents can erode trust and result in attrition (Li, 2023; Ranieri et al., 2024).

Recent large-scale research and meta-analyses highlight the fact that hybrid service models, which combine AI automation for regular duties with well-coordinated human escalations for difficult or emotional situations, are effective. controversial topics—achieve a good compromise between operational efficiency and the client experience. When compared to completely automated or totally human-driven methods, these arrangements often result in greater satisfaction and improved retention rates (Tran, 2021; Ranieri et al., 2024).

Despite the obvious possibility, significant gaps persist. The precise chatbot design elements that most consistently improve retention across various demographics and settings are unknown. These features include multimodal interaction, adaptive escalation logic, empathetic language framing, and personalization algorithms. By empirically examining how trust, perceived utility, and conversational quality collectively impact consumer happiness and retention intent in actual chatbot settings, this research fills that need.



**Figure 1: Research Model**

### Literature review:

#### Chatbot Service Quality:

In AI-powered service interactions, the quality of chatbot service has proven to be a key factor in determining client happiness. According to researchers, factors like reliability, responsiveness, and informational value influence how users perceive the quality of chatbots (Hsu et al., 2023). Additionally, studies have shown that empathy Additionally, personalization improves service quality by promoting emotional connection, even in automated encounters (Chaves & Gerosa, 2021). Additionally, customers' assessment of



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chatbot quality is significantly impacted by how simple it seems to use and how natural it sounds in conversation (Patrício et al., 2020). In addition to facilitating problem-solving, high-quality chatbots are also able to engage in more natural conversation. but also aid in the development of trust and loyalty (Gnewuch et al., 2018). In contrast, poorly designed chatbots that are unclear or fail at service recovery might lower perceptions of service quality and hinder acceptance (Ruan, 2022). Modern research integrates technical, functional, and relational components into multidimensional frameworks for chatbot service quality (Gursoy et al., 2019). The body of research collectively identifies chatbot service quality as a crucial determinant of client satisfaction, retention, and lasting brand interactions (Hsu et al., 2023).

### **Customer Satisfaction:**

The degree to which a product or service satisfies or surpasses consumer expectations is represented by customer happiness, which has long been regarded as a fundamental component of marketing and service research (Oliver, 1999). Since it has an impact on long-term company success, it is seen as a major factor in customer loyalty, favorable word-of-mouth, and repurchase intentions (Anderson, Fornell, & Lehmann, 1994). According to experts, satisfaction is influenced by service quality, trust, and perceived fairness in consumer interactions in addition to product quality and value (Fornell et al., 1996). Usability, responsiveness, and dependability are all major factors in client happiness in online environments (Szymanski & Hise, 2000). Moreover, satisfaction is frequently associated with emotional engagement, in which happy encounters strengthen brand connection (Chitturi, Raghunathan, & Mahajan, 2008). In competitive digital markets, it is an important concept because recent research has highlighted its role in mediating the relationship between customer retention and service quality (Homburg, Koschate, & Hoyer, 2006).

### **Customer Retention:**

Reichheld & Sasser (1990) and others have demonstrated that customer retention, which is a company's capacity to keep its current clients, is far less expensive than attracting new ones. Through repeat purchases, lower marketing expenses, and referrals, retained consumers are frequently more profitable (Negassa & Japee., 2023). Experts highlight that retention is significantly impacted by which, taken together, lowers the chance of defection via customer satisfaction, trust, and switching costs (Gustafsson, Johnson, & Roos, 2005). Perceived service quality, relationship links, and emotional connection to the brand are other factors that contribute to retention in service environments (Fullerton, 2003). In addition, digital business models emphasize the significance of customer experience management, personalization, and loyalty programs in boosting retention (Kim, Park, & Jeong, 2004). Recent research places retention as a mediating factor between satisfaction and business performance, highlighting its strategic value in competitive markets (Verhoef, 2003).

**H1:** Chatbot Service Quality has a significant positive effect on Customer Retention

**H2:** Chatbot Service Quality has a significant positive effect on Customer Satisfaction

**H3:** Customer Satisfaction has a significant positive effect on Customer Retention

**H4:** Customer Satisfaction mediates the relationship between Chatbot Service Quality and Customer Retention

### **RESEARCH METHODOLOGY:**

Data was collected from a variety of Gilgit Baltistan services sector customers. Participants in the data collection were selected using convenience sampling techniques. Besides hard copy techniques, data was acquired using WhatsApp, Facebook, and email through Softcopy online.

The surveys included a secret letter that explained the study's purpose to the respondents. It also informed participants that their responses to this survey would be kept private and anonymous. Their response is solely utilized for academic purposes. A total of 200 surveys were administered, with 180 of them being returned, and 173 of those being helpful. The response rate for usable data was 86.5%. According to the gender breakdown in Table 1, there is a little male majority, with 93 participants (53.75%) being identified as male and 80 participants (46.24%) as female. This suggests a fair representation of both genders, which guarantees a variety of viewpoints in the sample. Most respondents were single (110 people, or 63.58%) in terms of their marital status, while 83 respondents (47.97%) were married. This indicates that the majority of the people surveyed were unmarried. The majority of respondents, numbering 83 persons (47.97%), were between the ages of 18 and 25, according to the age distribution. The 41–60 age range had the second-highest representation, with 47 respondents (27.16%), followed by 43 respondents (24.85%) in the 26–40 age group. The study group's younger orientation

is evident in the fact that none of the subjects were older than 60. The sample, which is more representative of younger and single people overall, shows a fair balance between genders.

### Measures

Ten questions from the study on Customer Satisfaction (Yin et al., 2025) were utilized to assess the quality of chatbot service. Eight of the items were derived from the study on Customer Satisfaction, which served as the foundation for the evaluation. the mediating variable (Fornell & Larcker, 1981). A 5-point Likert scale, where 1 indicates strong disagreement and 5 indicates strong agreement, was used to rate all study variables. 5 denoting a great deal of agreement. Cronbach's alpha measured the dependability of Chatbot Service Quality, which was (0.799). The items were rated on a scale of 1 to 5. Likert scale, with 1 representing Strongly Disagree and 5 representing Strongly Agree. The Customer Satisfaction Cronbach alpha had a reliability of (0.811). Table 1: Sample Distribution Characteristics

**Table 1: Distribution and Characteristics of Sample**

Variable	Categories	No	(%)
Gender	Male	93	53.75
	Female	80	46.24
	<b>Total</b>	173	100
Marital Status	Signal	110	63.58
	Married	83	47.97
	<b>Total</b>	173	100
Age	18-25	83	47.97
	26-40	43	24.85
	41-60	47	27.16
	Over 60	0	0
	<b>Total</b>	173	100
<b>Total</b>		<b>173</b>	<b>100</b>

customer retention (dependent variable). Eight factors were used to evaluate customer retention (Zeithaml et al, 1996). Using a Likert scale ranging from 1 to 5, where 1 represents "Strongly Disagree" and 5 represents "Strongly Agree," each product was given a score. The dependability The Cronbach alpha for Customer Retention was (0.808).

Controlling variable / Controlling element According to a previous study conducted in 2023, age, gender, and sector were the variables that were controlled in the research. The variables in the study were coded as follows: Age (1 = under 25 years, 2 = 26–30 years, 3 = 31–40 years, 4 = 41–50), gender (1 = male, 2 = female), and age (1 = 18–20 years, 2 = 21–30 years, 3 = 31–40 years, 4 = 41–50 years, 5 = 51–60 years, and 6 = over 60).

### RESULTS

To address the variation in Customer Retention based on the demographic variable studied in this research, one-way ANOVA was used. The average value of Customer Retention, as shown in the One-Way ANOVA findings (refer to table 2), did not vary significantly across Gender, Age, or Sector.

**Table 2: One-way ANOVA**

Sources of variation	CR	
	F statistics	p-value
Gender	.311	.746
Age	1.888	.155
Sector	.899	.444

R= Customer Retention  
 Statistical Tools: Means, standard deviation, correlations, Reliabilities and multiple regression analysis also using SPSS 22 version.

### Results

**Table 3: Means, Standard deviation, correlation and Reliabilities**

	Mean	SD	1	2	3
<b>CSQ</b>	3.77	0.77	(0.799)		
<b>CS</b>	3.88	0.88	0.562**	(0.811)	
<b>CR</b>	3.59	0.90	0.633**	0.811**	(0.808)

**CSQ**= “Chatbot Service Quality”, **CS**= “Customer Satisfaction”, **CR**= “Customer Retention”

As shown in Table 3, there is a strong, positive relationship between the Quality of Chatbot Service and Customer Retention (0.633,  $p = .000$ ), which supports hypothesis 1. In addition, the positive relationship between Chatbot Service Quality and Customer Satisfaction (0.562,  $p = 0.000$ ) supports hypothesis 2. Customer Retention has a positive association with Customer Satisfaction (0.811,  $p = .000$ ), which lends credence to hypotheses 3 and 4.

### Regression Analysis:

The Baron and Kenny mediation condition (1986) was used in this investigation. Regression analysis was used to ascertain the variable primary effect and mediating effect. The findings of the regression analysis are presented in Table 4. The results demonstrate that the quality of the Chatbot Service has a substantial and extremely favorable influence on customer retention ( $\beta = 0.888$ ,  $R^2 = 0.277$ ,  $p = .000$ ). Considering the pronounced beneficial and noteworthy influence of Chatbot Service Quality on Customer Satisfaction ( $\beta = 0.799$ ,  $p = .000$ ), hypothesis 1 was accepted. With  $p = .000$ ,  $R^2 = 0.222$ ) Hypothesis 2 has been confirmed and accepted. The conclusion also demonstrates that Customer Satisfaction has a substantial and favorable impact on Customer Retention ( $\beta = 0.816$ ,  $R^2 = 0.944$ ,  $p = .000$ ). Therefore, hypothesis 3 is accepted.

**Table 4: Regression Analysis**

Predictor	Customer Satisfaction			Customer Retention		
	B	R <sup>2</sup>	▲R <sup>2</sup>	B	R <sup>2</sup>	▲R <sup>2</sup>

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**Direct effect**

CSQ	0.799***	0.222	0.220***	0.888***	0.277	0.278***
-						
CS				0.816***	0.944	0.945***

**Indirect effect**

CSQ X CS				0.288***	0.888	0.889***
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N = 173. CBQ = Chatbot Service Quality, CS = Customer Satisfaction

\*=p < .05. \*\*= p < .01. \*\*\*= p < .001. ns = not significant

The results from the mediating regression analysis shown in Table 3 suggest that Customer Satisfaction functions as a mediator between Chatbot Service Quality and Customer Satisfaction ( $\beta = 0.288$ ,  $R^2 = 0.888$ ,  $\Delta R^2 = 0.889$ ,  $p = .000$ ). Thus, Hypothesis 4 is supported. This research investigates the connection between Chatbot Service Quality and Customer Retention, with Customer Satisfaction acting as a partial mediator.

**Discussion:**

The results of this study prove that chatbot service quality significantly boosts both customer satisfaction and retention. The regression analysis shows that consumers view trustworthy, quick, and user-friendly chatbot interactions as boosting their satisfaction, which then results in greater retention intents. Furthermore, the mediation study validates that Customer Satisfaction somewhat mediates the connection between Chatbot Service Quality and Customer Retention, therefore stressing its need of as a pathway by means of which loyalty is driven by service quality. These results fit with previous research in service management indicating that digital service quality promotes trust, satisfaction, and long-term consumer relationships. Significantly, the non-significant variations in retention across demographic features including gender, age, and industry show that universal value is placed in the quality of chatbots across various Segments of customers in the Gilgit-Baltistan service industry.

**Managerial Implications:**

The study offers compelling proof for service sector managers that spending on chatbot technology can greatly improve client experience and loyalty. Making interactions for chatbots precise, reactive, and sympathetic will not only raise satisfaction but also foster long-term retention. To maximize client engagement, managers should give top attention to ongoing upgrading of information databases, integration of personalization features, and continuous refinement of chatbot algorithms. Moreover, organizations have to prioritize customer pleasure since it mediates the link between chatbot service quality and retention, therefore guaranteeing that chatbot services are very consistent with what clients anticipate. Doing so helps companies cut churn, boost brand loyalty, and get an edge in the ever more digital service environment.

**Limitations and Future Directions:**

Although it makes important contributions, the research has several drawbacks. First, the findings' applicability to other areas or sectors is constrained by convenience sampling and a concentration on Gilgit-Baltistan. Second, the cross-sectional design limits the capacity to show causal links between chatbot service quality, customer satisfaction, and retention. Self-reported survey responses might also have response bias or social desirability applied to them. Future research should correct these flaws by using probability sampling techniques, carrying out longitudinal studies to record behavioral changes over time, and using mixed-method approaches to get more knowledge of consumer



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experiences. Furthermore, more thorough knowledge of how chatbot service quality affects customer behavior worldwide may be obtained by broadening the investigation across several cultural and industry settings.

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