

The Impact of AI-Based Chatbots on Customer Satisfaction

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Abstract

The study analyzes the impact of AI-based chatbot on customer satisfaction and its acceptance in Pakistan. The quantitative research design was adopted, and data was collected through a questionnaire. The 140 properly filled questionnaires were included in the study. The data was analyzed using SPSS. It was identified that reliability, understandability, and accuracy are the major elements of AI chatbot that can create an impact on customer satisfaction. Whereas, the majority of people consider the inclusion of AI chatbot ahead of its time. Pakistani society is not willing to accept AI chatbot as there are lingual and technological limitations.

Keywords: AI Chatbots, Customer Satisfaction, Technological Advancements, Pakistani Society.

Introduction

E-commerce has gained rapid popularity with the advent of the internet and the convenience of digital shopping. The problem that arose here was to cater to the needs and demands of customers properly. Owning a properly working service center is an expensive and strenuous job. Therefore, many organizations fail to provide proper customer care, even to loyal clients. The inclusion of Artificial Intelligence (AI) technology in customer care revolutionizes the whole process. AI chatbots are smart enough to deal with customers similar to customer care agents and provide them ligiid solutions. As explained by Mero (2018), The AI chatbot is capable of creating a direct and serious impact on customer care. It provides a two-way communication facility that increases repurchases, loyalty, and satisfaction of customers. Whereas, according to Gnewuch et al. (2018), the inclusion of AI chatbots have become an essential element for gaining customer satisfaction. Despite human-like interactions, there are cases of dissatisfaction that are above the acceptable level (Orlowski 2017). Along with these, few cases also witness a change in customer behavior due to AI chatbot interactions. The unpredictable behavior generated by the AI chatbot can create a significant impact on the user and business.

The technological development in Pakistan is slower the contrary to other Asian countries. Therefore, the launch of AI chatbots is in process or have been initiated by few market-leading brands. However, few

software houses have started selling prepared AI chatbots software at much cheaper prices to launch this service in Pakistan.

Research Objective

The objective of this research is to identify the impact of AI chatbots in Pakistan. The research objective is further divided into different segments mentioned below:

R1: How does customer satisfaction is affected by the usage of AI chatbots?

R2: What are the potential reasons that create an impact on the satisfaction level of customers?

R3: Will customers accept AI-based chatbots as a human replacement in Pakistan?

Novelty of Research

Technological development in Pakistan is slower in comparison to other countries. But recent developments and changing market dynamics are forcing businesses to adopt innovative solutions. The inclusion of AI chatbots is one of these trends. Therefore, this research holds significant novelty for the business and technology sector.

- It will calculate the feasibility and acceptance level of AI chatbots in Pakistan.
- It will identify the main factors that can be improved to increase customer satisfaction in digital shopping.
- It will also provide the societal perception related to AI chatbots.

Research Hypothesis

On the basis of the above-mentioned objectives and novelty, the hypothesis is derived. These hypotheses will cover all the aspects of research and fulfill its objective.

H1: The customers are satisfied with the feature of the AI chatbot.

H2: The Pakistani society will accept chatbot inclusion.

H0: The inclusion of AI chatbots in Pakistani society is ahead of its time and difficult.

Literature Review

Human-Computer Interactions

The computer-human interaction dates back to the invention of computers. The role of this interaction was limited to the screen and was only used to create an attractive user interface. But now this bond is more strengthen, as humans are getting more dependent upon technology. As explained by Elsholz et al. (2019), the latest interaction is text-based, in which machines are behaving like a human and interact with other humans. This human-like behavior pretended by the machines has opened doors to many technologies, including the AI chatbot. Its usage is not only limited to human-customer interaction. It is also installed in vehicles, ATMs, and other general usage machines.

According to the definition provided by Shawar and Atwell (2007), an AI chatbot is a computerized software that can act, behave, and interact with humans. It is considered to be the most effective way of creating a communication bridge with customers, contrary to all other methods. It uses strings of communication to deal with customers, which seems to be similar to talking to a human. This is why it was rapidly adopted by e-commerce companies that are always in search of cheaper and more effective

customer care services (Bhawayuga et al., 2018). Organizations are rapidly adopting this technology, as due to the increasing competition, the only way to stay in the market is for loyal customers. Moreover, an AI chatbot is more efficient and cost-effective than a human customer care setup. However, the leading market brands are using more advance and upgraded Ai chatbots to preserve their market position and dominancy. They generally prefer the Recommended System, which can not only think and behave like humans it also provides suggestions to customers. The suggestion and guidance they provide, increase their market value and demand among customers also. Till now, human-computer interaction seems to be a successful one in developed countries.

Customer Satisfaction Linkage with AI Chatbot

Customer satisfaction is segmented into two different halves; transaction-specific and overall satisfaction. According to Johnson and Fornell (1991), the first type of satisfaction refers to the verification of all the steps involved in the customer journey. Previously, this type is referring to as loyalty of behavioral intention. In comparison, the second type is contrary to the first type of customer satisfaction. As explained by Oliver (1993), this type refers to the emotional response of customers, which arises due to the services being provided to them. Gauging customer satisfaction is significant as it covers many aspects of business and includes different human behaviors.

There are many attempts being made to explain the technological intervention and human reaction to technological usage. The latest study was conducted in 2017 by McLean & Osei-Frimpong, in which they intended to identify the relationship between customer service encounters and the factors that affect customer satisfaction. It was identified that the major factors that impact customer satisfaction are; specific support, the responsiveness of chat, waiting time, ease, and convenient usage. Moreover, service chat language, empathy, reliability, comprehension, and information quality are also the major factors that significantly impact customer satisfaction. These factors are important to any business when directly dealing with customers. Therefore, identifying the factors that affect customer satisfaction is worthy enough.

Theoretical Explanation

The theory which explains the interaction and possible reaction of humans to AI chatbots is social response theory. According to Nass et al. (1994), social response theory is used to brief the behavior of human beings in any certain situation. The interaction of humans with AI can be termed anthropomorphism. This term refers to the behavior generation in humans when interacting with machines. The social response theory elaborates the human and AI interaction as completely social and bias. Humans are biased towards the machine as they are aware of the fact that it can not generate human-like feelings or emotions. Despite all the efforts to make AI depicted like humans, its acceptance is hurdled by the stigma. The social actors of the society, that is, humans, create a psychological barrier that inhibits them in using AI chatbots. However, this perception is shifting rapidly, as people are considering AI technology as part of their society. To cater to this issue, companies are using the title 'Customer Agent' for the AI chatbot. The agent is anchored with a human representative and can create an impact on the customer's mentality.

The advanced version of the AI chatbot uses possessing cues to make the interaction normal for humans. The usage of natural language, interactivity, and turn-taking depicts it as humans, and real human shows their social behavior and attribution. The machine has to use major elements of human society that reflect their feeling, such as; gender, ethnicity, personality response, and stereotypes when interacting with humans. Moreover, the nonverbal cues of physical appearance, social connections, family relations, and other motor characteristics were also found in this interaction (Eyssel et al. 2010). These elements are properly used in AI chatbots can make it a successful business intervention.

AI Chatbot in Pakistan

The slower technological advancements in the country have hurdled AI inclusion in the e-commerce industry of Pakistan. The government is now taking major steps to localize this technology and support its widespread usage. Pakistan's Presidential Initiative for Artificial Intelligence & Computing (PIAIC) is the best example of it. The project was launched by the sitting president of Pakistan with the core objective of bringing technological revolution to the country. Along with the government, a number of local startups are also working on providing AI chatbot services at reasonable rates. The notable ones are; FiveRivers Technologies, the Company of Intelligent Systems and Networks Research (CISNR), Automation, and 10Pearls. These organizations are focused on a number of services like; chatbot, logo development, data mining, bot creation, automation, sustainability, and economic growth (Ambreen, 2019). However, the issue of its acceptance remains stagnant. Therefore, proper research is required to measure the acceptance level of AI chatbots in Pakistani society. Along with this, its an impact on the existing customer segment of the brands.

Methodology

A quantitative research design was used to measure the impact of AI chatbots on customer satisfaction. Using this design will help in identifying the dependent and independent factors and putting them adequately in the equation. Moreover, data collection is more convenient in this method due to the controlled environment. Other than that, data can be extracted and calculated from a large sample size by applying this technique. Furthermore, it provides conclusive results which support in determining the accurate factors that can be held responsible for a particular thing.

The philosophy used to structure the research is positivism. This is because it addresses facts that are obtained from observation, and quantifiable data is considered factual and legitimate. The philosophy supports the cause of reaching multiple social segments and collecting primary data from the sources. Moreover, this research philosophy complies with our research design, as it demands quantitative data for extracting results. Further segmenting the approach deductive approach was used. This is because other approaches are limited to elaborate the philosophies and theories that do not directly involve humans.

The data was collected by using a 14 elements questionnaire. The questionnaire was divided into three main segments, which are: demographic information of the sample, the impact of AI chatbot on customer satisfaction, and acceptance of AI chatbot in Pakistani society. The sample size was 150, and the snowball sampling technique was used. The questionnaire was divided into sample size by means of personal contact and then distributed to others. An equal number of participants were selected from four provinces (Sindh, Punjab, KPK, and Balochistan) of Pakistan. See the following Table1, which elaborates the questionnaire in detail.

Table 1: Elements of questionnaire to be asked by the sample

Dimension	Measure	Items
Customer Satisfaction	Service Quality	The chatbot provides me right solution for my problems
		I can easily communicate in English with the chatbot
	Speed of response	I get the response on time
	Understandability	I found it friendly and supportive
	Accuracy	I feel that it understands me well
It is more useful than human chat		
Chatbot Acceptance in Pakistan	User satisfaction	I am satisfied with the quality of AI chat
		I am satisfied with the amount of time consumed by

		the AI
	Reliability	I can easily understand the level of English that is used by AI
	Societal perception	It is a misfit for society
		The chatbot inclusion is ahead of its time for our society

The questionnaire was distributed among 150 people belonging to different provinces. The inclusion criteria for the research was: age limit from 18 to 35 years. Must be graduated or enrolled in any higher education program in a reputable university, and they must have experience of online shopping. Whereas the exclusion criteria were: individuals above or below the age limit mentioned in the inclusion criteria should not have a higher education degree and have never attempted online shopping.

For data analysis, SPSS software was used. T-test, chi-square, and Cronbach alpha were the main test run on the data collected from the sample. All the ethical considerations were considered while conducting the research (Stainton & Iordanova, 2017). No individual was forced or bribe to fill the questionnaire.

Results

The result obtained from the calculation of the collected data is presented in a tabular and pictorial manner. Table 2 explains the frequency of samples from different provinces, as per the inclusion criteria.

Table 2: Percentage of responses from each province

Province	Frequency	Percentage (%)
Sindh	35	25.0
Baluchistan	35	25.0
Punjab	35	25.0
KPK	35	25.0
Total	140	100%

Total 150 questionnaires were distributed, out of which 140 were included in the study. The rest were excluded due to improper filling and not meeting eligibility criteria. Moreover, the difference in education was also visible. The majority of respondents were either enrolled or have bachelor's degrees.

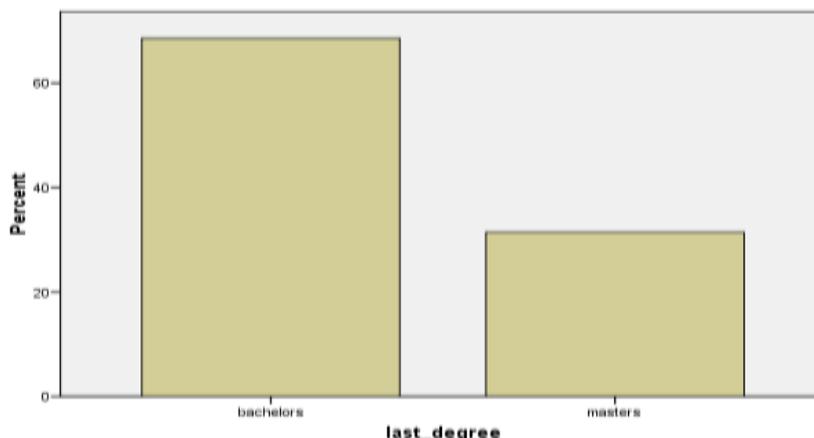


Figure 2: Education level of respondents

The multiple elements that can create an impact on customer satisfaction were identified by using the t-test. See table 3, which explains the outcome of the t-test.

Table 3: T-Test for customer satisfaction

t-test for Equality of Means												
Elements	t		df		Sig. (2-tailed)		Mean Difference		Std. Error Difference		95% Confidence Interval of the Difference	
	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper
Service Quality	-16.864	108.000	.000		-.72477	.04298	-1.00344	-.87751				
Response Time	-29.532	138	.000		-.94048	.03185	-.72014	-.52476				
Understandability	-12.646	97.000	.000		-.62245	.04922	-.92269	-.74855				
Accuracy	-19.131	72.000	.000		-.83562	.04368	-.95454	-.82074				
	-26.367	88.000	.000		-.88764	.03367						

It is visible that service quality and response time are the major elements that can impact customer satisfaction. Whereas, the efficiency of communication was ranked as the least effective factor in the series. Moreover, regression analysis was also calculated of the data collected from the sample. Here are the results of the regression analysis.

Table 4: ANOVA test

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	25.012	4	6.253	89.720	.000
Residual	9.409	135	.070		
Total	34.421	139			

Table 5: Coefficients of Regression

Unstandardized Coefficients		Standardized Coefficients		t		Sig.	
B	Std. Error	Beta		B	Std. Error		
.114	.103			1.103	.272		
-.597	.059	-.600		-10.134	.000		
6.98E-017	.096	.000		.000	1.000		
.891	.087	.746		10.275	.000		
.649	.056	.600		11.672	.000		

The chatbot acceptance in Pakistan was calculated by t-test and chi-square if the values. See the following results of t-test and chi-square.

Table 6: t-test for chatbot acceptance in Pakistan.

t-test for Equality of Means												
Elements	t		df		Sig. (2-tailed)		Mean Difference		Std. Error Difference		95% Confidence Interval of the Difference	
	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper
User Satisfaction	-22.131	93.000	.000		-.84043	.03797	-.91583	-.76502				
	-19.298	99.000	.000		-.79000	.04094	-.87123	-.70877				
Reliability	-19.298	99.000	.000		-.79000	.04094	-.87123	-.70877				
Societal Perception	-17.528	105.000	.000		-.74528	.04252	-.82959	-.66097				

Table 7: Chi-Square Test for customer satisfaction

Tests	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	31.034(b)	1	.000		
Continuity Correction	29.018	1	.000		
Likelihood Ratio	31.905	1	.000		
Fisher's Exact Test				.000	.000
Linear-by-Linear Association	30.812	1	.000		

Table 8: Chi-Square for societal perception

Tests	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	13.681(b)	1	.000		
Continuity Correction(a)	12.285	1	.000		
Likelihood Ratio	13.305	1	.000		
Fisher's Exact Test				.000	.000
Linear-by-Linear Association	13.584	1	.000		

It is visible from both the tests that acceptance of AI chatbots in Pakistan is low. People as a society are not willing to accept a machine as a customer representative.

Conclusion and Discussion

The research was aimed to identify the factors that impact customer satisfaction while using AI chatbots. It was identified that; service quality and response time are the major elements that can impact customer satisfaction. The majority of the people when communicating with the customer car wants rapid reply for their queries. Along with this, an appropriate solution to their problems is also required by the customers. Therefore, it can be concluded that AI chatbots launched in the country will not impact customer satisfaction negatively. The two most demanded elements are present in the AI Chatbot. However, moving forward, it was also identified that. As a society, AI Chatbot is not acceptable. This can be due to multiple reasons. The first and foremost reason is the lingual barrier. The majority of people in the country are not able to communicate in English, which that much fluency which shows their resilience towards AI chatbots. Other than that, the lack of technological advancements and interaction with the people also hurdles the widespread and adequate usage of the technology in the country.

Future Recommendation

This research was limited in terms of its sample size. The data was collected only from the educated people belonging form a specific age range. In future researches, this should be broadened, and people of every age that are included in e-commerce customer segment should be included. Moreover, including the lingual barrier as a major element of not accepting the AI chatbot is necessary to be researched. This will provide a clear picture of the AI chatbot future in our country.

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