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IMPACT OF CHAT BOTS IN CUSTOMER SERVICES "A RESEARCH IN BANKING SECTOR"

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ABSTRACT

Chatbots are artificial intelligent systems that helps customers to solve their queries and respond accordingly. It is virtual assistant that engages 24x7 customer experience, where customers feel like they are having a humanlike conversation which helps them to get rid of the issues they are facing.

Chatbots are easily scalable to manage customer requests with instant responses and boost customer satisfaction. After conducting literature review, the GAP is to improve the interaction of AI based customer acquisition through user compliance and feedback.

Hence, the purpose of the study is to recommend the use and awareness about the chat bots for all the customers who can avail the personalized executive from banks for free of cost. The motive of chatbots is to help the banks to save on the customer service costs by speeding up the response time and answering most of the routine questions. Data is collected through empirical research and primary survey that includes the questionnaire in which 100 people were targeted. Our study offers to main contributions to research by providing a novel perspective on the nascent area of AI based customer acquisition in customer service context. AI powered conversational bots, or chatbots, will have the ability to know customers better than humans and automate most customer services interactions.

Keywords: Artificial Intelligence, Customer Service, Chatbots, Banks.

INTRODUCTION

In day to day life, everybody uses the facility of banks and their services which is very essential. Many customers faces problems in various procedures, processes and to access services related to it. The banks have gained the competitive advantage by creating direct accountable customer service environment, growth in volume of banking services, geographical spread of operations and customer demand for faster responses, improve control and have increased the use and dependency of technology.

Customers have issues about various banking services related to deposits, transfer of funds, opening a Demat Account, mutual funds, instant loans, Debit, and credit card related issues. This results in unnecessary crowd in banks for solving the minor problems. Many times, banks face such kind of problems by solving the repeated queries of customers. This leads to wastage of time and the banking staff might get frustrated most of the time. Money as well as manpower gets wasted at the service counters for the repeated enquiries. So, this would degrade the efficiency and effectiveness of the staff.

Hence, chatbots comes into pictures and has a role in saving the cost and the time of staff as well as the customers.

The main purpose of study is to evaluate the level of customer satisfaction, customer loyalty and retention with adequate quality services, solving the security issues, ease of responsiveness, assurance of services and coping up with the effectiveness and efficiency of using the chatbot service of Banks in India.

LITERATURE REVIEW

The banking Industry has been one of the earliest adopters of chatbots in its operations. Chatbots are sophisticated computer programs designed to interact with customers in a similar manner as humans. As a result they help banks to enhance customer satisfaction by answering a host of their queries within seconds. State Bank of India (SBI) is the largest public sector banking services provider in the country. To deliver effective banking services, the bank capitalizes on artificial intelligence.

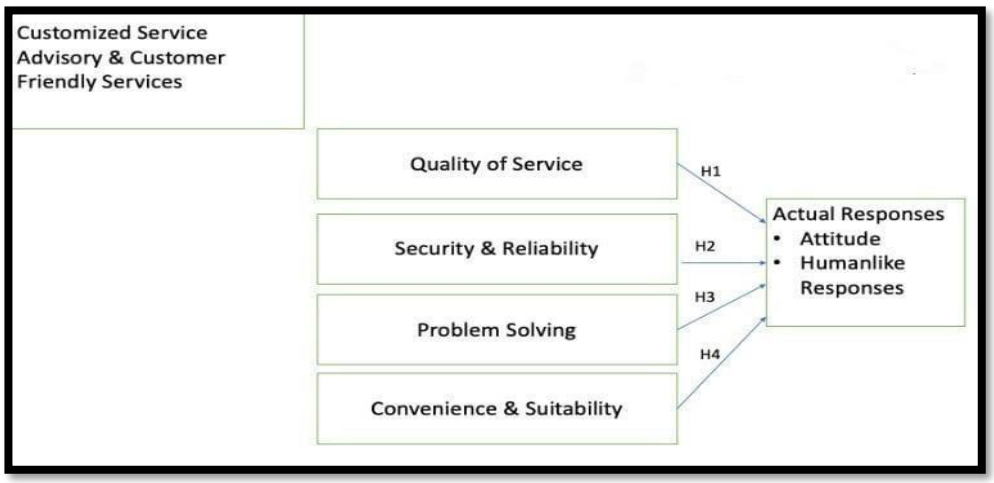
SBI Intelligent Assistant (SIA), an AI-powered smart chat assistant, addresses customer enquiries instantly and helps them with everyday banking tasks like a human does. Developed by an AI banking platform Payjo, this smart chat assistant is equipped to handle nearly 10,000 enquiries per second or 864 million in a day, which is almost 25% of the queries are processed by Google each day.

S. Sarbabidya, T.Saha, (2020) explains that chatbot is an emerging, smart and immediately adoptable technology that shows it is very beneficial in rendering various customer services such as one-to-one conversations, responsive customer service through 24/7/365 availability, which is supported by M. Adam, M. Wessel, Benlian, (2020) says that chatbot is the system designed to communicate with human users by means of natural language often based on artificial intelligence. , Nguyen, Tung, (2019) had analysed an experiment at a case company for using chatbots for customer support which was utilized to evaluate the potential effects of chatbots on the operation of support for customers. Another author named E. Ojapuska,(2018) explains about the impact that chatbot has on customer engagement and also how chatbots differ from other communication channels that are also used to increase customer engagement. Gupta. A, Sharma. D, (2018) explains all about the customer's attitude towards chatbots in the banking industry of india including TAM model. Motivations pertaining to entertainment, social and relational factors, L.N.Michanel, 2018 shares insights that are designed and implemented for a SMS Chatbot- based virtual assistant to hotel guests. Also, Petter Bae Brandtzaeg and Asbjorn Folstad, 2017 explains that why people use chatbots which had shown it has helped users to obtain timely and efficient assistance.

Through these research papers it can be concluded that customers need the full support in order to enjoy the services fully. It has been seen that it is not just respond but self- learn to improve itself thereby increasing not just the quality of customer service but also reducing the human load. Since, AI- based customer acquisition have increasingly popular in various settings and potentially offer a number of time and also the cost- saving opportunity. Thus a great idea to increase the use of chatbots. Also, it helps in improving consistency.

RESEARCH METHADOLOGY

1. ANALYTICAL FRAMEWORK



2. Variables

A. Quality of Service- Quality of Service stands out to be an independent variable. It is determined by the ease of queries without compromising the quality. The relationship between quality of service and actual response is extremely good. Quality is one of the major factors into the attitude of the customers.

B. Security & Reliability- This factor makes sure that the customers feel secure to share their personal information with chatbots to solve their problems, where security means safeguarding the data shared which will make it reliable to use. Hence, the need in transparency of security is to extract the actual responses.

C. Problem Solving- This factor basically solves almost every issue which a customer might raise. There exists a strong relationship between problem solving and actual response. This can be done by interacting with the customers in a natural language which solves the problem easily.

D. Convenience & Suitability- Earlier people used to stand in queues to avail the banking services, AI is changing dynamically. Now the customers can solve their queries while sitting at their place rather than visiting the banks that would free them from inconvenience and leads to convenience and suitability in terms of time and cost.

E. Actual Response/ Attitude- Actual Response is determined by the frequency of the human-like responses provided by the chatbots to the customers.This factor shows that the customer will be satisfied with the responses. Actual Responses means the correct response provided and it must look like a real person. It provides responses based on the combination of pre-defined scripts and machine learning application. But actual response is a dependant variable and it depends upon many factors like Quality of Service, Security & Problem Solving.

F. Extraneous Variables- Customized Services, Advisory and Customer Friendly Services are the Extraneous Variables.

3. OBJECTIVES & RESEARCH QUESTIONS

The prior research conducted in the area of impact of chatbots on customer services in Banking Sector which indicates that the quality of services, security, convenient and sustainability, problem solving are major factor customers look for, Therefore, the present study was conducted based on the following objectives :-

- To assess impact of quality of services on the Actual Responses in chatbots.
- To assess the impact of security & reliability on the Actual Responses in chatbots.
- To assess the impact of problem solving on Actual Response in chatbots.
- To assess the impact of conveniency and suitability on Actual Response in chatbots.

4. HYPOTHESIS OF THE STUDY

Based on the literature review and considering the factors following hypothesis were formulated-

- **H1**- There exists a positive relationship between quality of services and actual response in chatbots in banking sector.
- **H2**- There exists a positive relationship between security and reliability and actual response in chatbots in banking sector.
- **H3**- There exists a positive relationship between problem solving and actual response in chatbots in banking sector.
- **H4**- There exists a positive relationship between convenience and suitability and actual response in chatbots in banking sector.

5. SAMPLE PLAN

The data were collected from (N=100 respondents) respondents including students, working professionals and senior citizens in New Delhi during the month of March to April. The survey was conducted using a Likert scale-based questionnaire ranging from Strongly Disagree = one to Strongly Agree = five. All the statements completely worded and before and after the survey the author has clearly explicit the objectives of the analysis to any or all the respondents. The Respondents were selected using the judgemental sampling as the bank couldnot share the information about the use of chatbots due to the rules and regulations.

During the final statistical analysis data, a screening method was used where there was no irrelevant data and all the 100 responses were taken in consideration to be used in the analysis. Thereby the raw data gathered were aggregates according to the dimensions under the study and Exploratory Factor Analysis (EFA) test was performed using the SPSS 27.0 Version, that helped in identifying the impact of chatbots on customer services in Banking Sector.

DATA INTERPRETATION & ANALYSIS

TABLE 1

Statistics

Gender

N	Valid	100
	Missing	0
Mean		1.51
Median		2.00
Mode		2
Std. Deviation		.502
Skewness		-.041
Std. Error of Skewness		.241
Kurtosis		-2.040
Std. Error of Kurtosis		.478

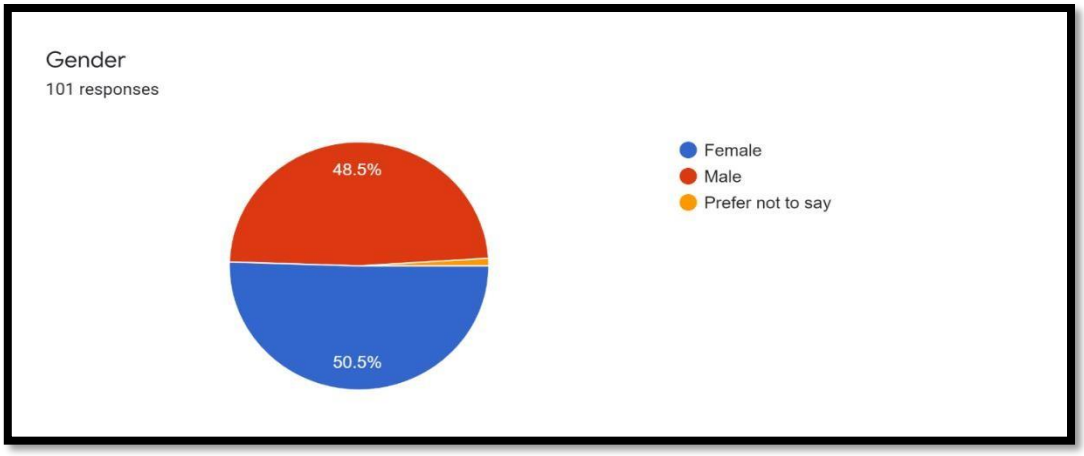
Skewness in general needs to be 0, so in our data gender reports -0.041, which states that data is symmetrical.
Kurtosis is -2.040 which shows that the data is platykurtic.

1. DEMOGRAPHIC TEST

TABLE 2

Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	49	49.0	49.0	49.0
	Female	51	51.0	51.0	100.0
	Total	100	100.0	100.0	



There was almost the 50-50 ratio of the gender with males 49% and females 51% respectively.

2. CORRELATION-

TABLE 3

Correlations

		Customized Services	Actual Response
Customized Services	Pearson Correlation	1	.678**
	Sig. (2-tailed)		<.001
	N	100	100
Actual Response	Pearson Correlation	.678**	1
	Sig. (2-tailed)	<.001	
	N	100	100

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

Correlation between Customized services and Actual response is 0.678, which shows the good correlation.

TABLE 4

Correlations

		Actual Response	Quality of Service
Actual Response	Pearson Correlation	1	.695**
	Sig. (2-tailed)		<.001
	N	100	100
Quality of Service	Pearson Correlation	.695**	1
	Sig. (2-tailed)	<.001	
	N	100	100

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

Correlation between Actual response and Quality of service is 0.695 that shows the moderate correlation.

TABLE 5

Correlations

		Actual Response	Convenient and Suitability
Actual Response	Pearson Correlation	1	.424**
	Sig. (2-tailed)		<.001
	N	100	100
Convenient and Suitability	Pearson Correlation	.424**	1
	Sig. (2-tailed)	<.001	
	N	100	100

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

Correlation between Actual response and Convenient and suitability is 0.424, which shows the correlation is weak.

TABLE 6

Correlations

		Actual Response	Becomes more reliable
Actual Response	Pearson Correlation	1	.469**
	Sig. (2-tailed)		<.001
	N	100	100
Becomes more reliable	Pearson Correlation	.469**	1
	Sig. (2-tailed)	<.001	
	N	100	100

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

Correlation between Actual response and reliability is 0.469, which shows the weak correlation.

TABLE 7

Correlations

		Actual Response	Solves Problem Quite Easily
Actual Response	Pearson Correlation	1	.645**
	Sig. (2-tailed)		<.001
	N	100	100
Solves Problem Quite Easily	Pearson Correlation	.645**	1
	Sig. (2-tailed)	<.001	
	N	100	100

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

Correlation between Actual response and problem solver is 0.645, which shows the moderate correlation.

TABLE 8

Correlations

		Actual Response	Security with personal information
Actual Response	Pearson Correlation	1	.647**
	Sig. (2-tailed)		<.001
	N	100	100
Security with personal information	Pearson Correlation	.647**	1
	Sig. (2-tailed)	<.001	
	N	100	100

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

Correlation between Actual response and security issues is 0.647, which shows the moderate correlation.

TABLE 9

Correlations

		Actual Response	Cusotmer Friendly Service
Actual Response	Pearson Correlation	1	.686**
	Sig. (2-tailed)		<.001
	N	100	100
Cusotmer Friendly Service	Pearson Correlation	.686**	1
	Sig. (2-tailed)	<.001	
	N	100	100

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

Correlation between Actual response and customer friendly services is 0.686, which shows the moderate correlation.

3. Regression model-

TABLE 10

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.835[a]	.698	.675	.690	1.696

a. Predictors: (Constant), Cusotmer Friendly Service, Convenient and Suitability, Solves Problem Quite Easily, Security with personal information, Becomes more reliable, Customized Services, Quality of Service

b. Dependent Variable: Actual Response

In the regression model, 67.5% of change in the dependent variable is explained by these independent variables- customized services, quality of service, convenience and suitability, ease to understand, problem solver, security, advisory and customer friendly services.
Hence, model is a good fit.

TABLE 11

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	101.151	7	14.450	30.381	<.001[b]
	Residual	43.759	92	.476		
	Total	144.910	99			

a. Dependent Variable: Actual Response

b. Predictors: (Constant), Cusotmer Friendly Service, Convenient and Suitability, Solves Problem Quite Easily, Security with personal information, Becomes more reliable, Customized Services, Quality of Service

1. **COEFFICIENTS**-

TABLE 12

Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.	Collinearity Statistics Tolerance	Collinearity Statistics VIF
1	(Constant)	-.104	.220		-.474	.637		
	Customized Services	.200	.080	.207	2.507	.014	.481	2.077
	Quality of Service	.250	.090	.250	2.769	.007	.401	2.491
	Convenient and Suitability	-.027	.075	-.027	-.365	.716	.591	1.693
	Becomes more reliable	-.057	.084	-.054	-.682	.497	.529	1.891
	Solves Problem Quite Easily	.292	.073	.296	4.024	<.001	.608	1.644
	Security with personal information	.205	.075	.213	2.752	.007	.545	1.834
	Cusotmer Friendly Service	.134	.097	.133	1.384	.170	.353	2.831

a. Dependent Variable: Actual Response

y= a + bx1 + x2 + x3+ error
y= -0.104+0.207 customized services +0.250 quality of services -0.027 convenient suitability

-0.054 reliability +0.296 problem solver +0.213 security + 0.133 customer friendly.

2. COLLINEARITY-

TABLE 13

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions: (Constant)	Customized Services	Quality of Service	Convenient and Suitability	Becomes more reliable	Solves Problem Quite Easily	Security with personal information	Cusotmer Friendly Service
1	1	7.429	1.000	.00	.00	.00	.00	.00	.00	.00	.00
	2	.127	7.638	.14	.07	.09	.14	.10	.00	.04	.05
	3	.116	8.000	.07	.00	.02	.03	.01	.79	.04	.01
	4	.082	9.507	.45	.04	.01	.09	.25	.11	.14	.02
	5	.077	9.810	.08	.18	.20	.01	.01	.02	.45	.10
	6	.072	10.167	.18	.63	.00	.05	.00	.03	.26	.06
	7	.057	11.420	.03	.04	.00	.65	.63	.03	.04	.00
	8	.040	13.686	.05	.02	.68	.04	.00	.02	.02	.77

a. Dependent Variable: Actual Response

There is no problem in multi-collinearity.

TABLE 14

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	.89	4.88	2.53	1.011	100
Residual	-1.671	1.962	.000	.665	100
Std. Predicted Value	-1.620	2.323	.000	1.000	100
Std. Residual	-2.422	2.844	.000	.964	100

a. Dependent Variable: Actual Response

CONCLUSION & FINDINGS

Customer is an excellent evaluator in any industry The present study analyses the factors influencing the impact for chatbots in banking sector. An intensive literature review suggests the scope and acceptance for chat bots is increasing. The important factors on that the impact for chatbots relate to the quality of services, customized services and problem solving.

Regression model shows that the model is significant and independent variables (factors considered in the paper) - customized services, quality of services, convenience & suitability, reliability, problem solver, security and customer friendly, explain the dependent variable (Actual response)by 67.5%. Banks and credit unions are deploying AI-powered chatbots to modernize the AI customer experience and remove friction from everyday banking. Thus it would motivate customers to interact with a consumer acquisition rather than a human. Thus, it is potential to conclude that customers in Banking industry are keen to adopt the chatbots as a result to curiosity, convenience, and technology advancement. As a result, it may be deciphered that bank should start testing and deploying AI, chatbots as a crucial tool to entice and interact with the purchasers. Also, chatbots have abundant potential in the arena of maintaining and updating the customer database. They can also enhance the quality of communications and interactions with the customer. This makes it worthwhile for the banking firms to be prepared for this shift.

On the other hand, Chat bots are receiving increasing acceptance and a spotlight from the customers as well. Henceforth, it is very important for the banking industry to shift towards this advancement of chatbots.

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