International Journal of Science and Research (IJSR)
ISSN: 2319-7064
SJIF (2020): 7.803

Human-Chatbot Interaction and its Future in Customer Service

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Abstract: ***Chatbots are widely used in customer service and are designed to help customers access information or get assistance from a service provider more easily. They use natural language responses to deliver relevant information, just like a customer service representative. For chatbots to be more widely accepted there is a need to understand feedback-based user experiences and on that basis, design future customer service based chatbots should be designed. In order to understand what users expect from their chatbots, an online questionnaire study was conducted with 126 participants who had recent, relevant chatbot experiences. The results show that most users prefer interacting with a chatbot that was more professional, polite, smart and direct with answers. The overall trust of a chatbot depended upon the design of the user interface, personalization and the brand image, with most users opting for chatbots with an option to resort to human customer service representatives as their service preference. Furthermore, it was found that the performance of a chatbot could be linked to the service provider's brand image. On the basis of these findings, implications for theory and practice and new avenues for future research were suggested.***

Keywords: chatbot, user experience, customer service, user interface, human-chatbot interaction

1. Introduction

There has been a substantial increase in the interest over engagement concerning conversational user interfaces for customer services, which can be seen from the surge in service providers exploring and implementing text-based chatbots as a first line of support for customers coming in with their requests to obtain information (e.g., product details) or assistance (e.g., solving technical problems). This nature of chat services has transformed customer service into a two-way communication with significant effects on user trust, satisfaction and repurchases [17]. The successful uptake of chatbots may enable more efficient service provision [11], and may help us deduce the possibility of a complete chatbot takeover in customer service, thereby replacing human chatbot services.

Customers nowadays have a variety of choices and so they are getting more knowledgeable and demanding. The main power lies with the customer. Therefore, companies have realized that they need to treat their customers with care. Chatbots are seen as promising by service providers [25]. They allow an efficient interaction with users on private messaging platforms and virtual assistants, and they can be considered as a potentially efficient and enjoyable means of accessing content and services [27]. A broader uptake of chatbots will depend on whether it can provide users with pleasing experiences to increase the likelihood that they will become a regular chatbot user and increase their reliance on them [24]. It will also depend upon how useful and valuable do customers perceive them as [12]. In short, the increased usage of chatbots will depend upon the strengthening of user experience.

Considering the rising importance of customer service in

people's lives, it would be obvious to presume that user experience would be a prioritized research topic in the literature on customer service based chatbots. However, in-depth insight into user experience and user motivation for such chatbots is limited, which is quite problematic since the development of chatbots heavily depends on it.

To address this research gap, a questionnaire study was done with 126 chatbot users who have had experiences with customer service based chatbots to gain a good insight into the user expectations, the trust levels and how a chatbot experience might influence the image of the company. In doing so, the research gap has been narrowed and it helps close the aforementioned limitation in previous research and adds on the existing and emerging body of knowledge on human-chatbot interaction and user experience to guide future chatbot development initiatives.

The paper is structured as follows: first, a background on chatbots for customer services and related studies on anthropomorphic design cues, user interface and trust and human-computer interaction is presented. Based on this, the research questions, study method and an overview of the key findings are brought forward. Lastly, a discussion on the findings and its implication in future customer service is done, while pointing out the study limitations and suggesting future work.

2. Background

2.1 Chatbots for Customer Service

The emergence of chatbots in several fields, especially customer service, is a notable achievement in the ascent of artificial intelligence in people's lives. To understand the utility of chatbots in customer service, it is important that chatbots and customer service are separately understood first.

Chatbots can be understood as machine agents with whom

users can interact through natural language dialogue, by text or voice [4]. MIT professor Joseph Weizenbaum developed the first chatbot ELIZA in 1966, and the first conversation was conducted by matching the pattern recognition of sentences with corresponding answers. It had been done through natural language processing (NLP) and artificial intelligence (AI). Needless to say, chatbots have evolved since then and are closer to mimicking human behavior and attitude than before. The entire chatbot market has witnessed a meteoritic rise, especially since smartphone penetration was activated and voice based chatbots from companies like Google, Microsoft and Amazon came into effect. Apple's Siri, Microsoft's Cortana, and Google's Google Assistant are a few famous chatbots currently.

Chatbots have their own unique and important benefits. Chatbots can make labor cost-saving with decreased delay in query response in comparison to conventional human customer services [8]. However, it may also generate additional costs like installation or maintenance, and may cause employees or customers to complain about imperfect services. As more and more research on chatbots and its application in customer service is done, the better chatbots will be designed and a higher rate of acceptance will be seen among users. The efficiency of chatbots is heavily dependent on user experience and user behavior. User experience and the design of chatbots have been addressed later in the paper.

Customer service on the other hand, has been key to service-based companies. With the uptake of the internet, customer service has gradually, but steadily transformed from being personal and dialogue-based to being automated and self-service oriented. Customer service can be defined as the provision of information and assistance to the users of a service provider [4]. They might be designed to strengthen users' engagement with the service provider and increase the company revenue by creating a positive brand image or simply provide users with information or help [26]. The performance of customer service representative, whether automated or human, is closely associate to user experience [10], and a poor performance would likely lead to dissatisfied users and reduced customer loyalty [21].

While chatbots could be the answer to service providers' long sought desire to reduce customer service through automation and self service technologies, it is more or less a tradeoff between cost and quality, at least till the time chatbots reach the levels of human customer services. In fact, insensitive use of automation and self-service technologies could cause the users to perceive the company as opaque, while also reducing customer service representatives' abilities to empathize with users [6]. This can be both constructing and damaging to customers, helping and disorientating simultaneously. This clearly indicates that despite the availability of self-service options, they still need to be some form of assistance from customer service personnel [4].

2.2 User Experience and Trust in Chatbots

The wider acceptance of chatbots in customer service is highly dependent on how positive the user experience is and how far can users trust them. The chatbot must understand the user and if possible, provide some sort of personalization in order for the user to connect better and keep a positive mindset towards future conversations. Generating better user experiences is about understanding users' needs. The main reason behind customers interacting with chatbots is productivity, followed by entertainment, social purposes and an interest in chatbots as an interface or novel technology [6]. Zamora et al. [18] found that users of conversational agents including chatbots mainly saw them as a means to help with administrative and simple, practical needs like scheduling, using reminders and providing information updates. However, it also mentioned that users' interests could be seen as a possible means to fulfill their emotional or relational needs. Users also have their own preferences. It was seen that users preferred chatbots whose personas reflected productivity and engagement [14].

There are several researches that brought out important conclusions. For example, after discovering some difficulty for users to properly understand and interact efficiently with voice-based chatbots, Luger and Sellen[9] suggested playing as a useful entry-point for learning about chatbot features and efficient interactions. Porcheron[22] also mentioned that real-world context introduces challenges to the human-chatbot conversations and they frequently lead to breakdowns in chatbot interaction. However, even if they do fail to provide adequate answers, it isn't necessarily detrimental to user experience as long as the chatbot manages to offer an easy path for following up the enquiry with human customer service representatives [4].

According to the Social Response Theory [7], individuals are biased automatically as well as subconsciously perceiving computers as social actors, even when they know that machines don't hold feelings or intensions. This is also known as computers-are-social-actors (CASA) paradigm. Anthropomorphism is the attribute associated with human-like characteristics, behaviors and emotions to non-human agents, and in this case [23], chatbots. It helps increase users' sense of control over unknown agents and making its actions more predictable, and thereby, making the conversation more satisfactory [13]. Therefore, the more anthropomorphic characteristics a chatbot has, the more competent it seems to the user [19] and there is where the focus should lie on. It was also found that users preferred a text chatbot over an avatar chatbot since the latter imperfectly imitated a human, making the users physically aroused and triggering a more intense emotional reaction than the former [19].

The better the user experience, the greater is the trust placed on the chatbot. There are several factors that affect the trust in chatbots for customer service. Fǿlstad and Bjǿrkli [1] categorized these factors into those concerning the chatbot and those concerning the service context. Amongst those concerning the chatbot included interpretation and advice, human-likeness and self-presentation and professional appearance. The interpretation of users' questions is of primary importance in customer service and can shape user experience. The presence of human characteristics and having some kind of personal and relational flair to the style

of communication can enhance trust in chatbots, especially in situations characterized by deteriorating reliability in the information provided by the chatbot [16]. The honesty of a chatbot in regards to its limitations in combination with its appearance and self-presentation is the key to generating user trust. Amongst the factors concerning the service context included the brand and security and privacy. The brand image of the service provider and its privacy assurance is also seen to be important while developing trust in the users.

However, one thing must be kept in mind that different users have different needs, so user experience is subjective. Building on user experience and feedback and cultivating trust, is the way forward to creating a healthier environment for greater chatbot adoption in customer service.

2.3 Human-Computer Interaction and Chatbot Design

Human-computer interaction (HCI) is a multidisciplinary field of study focusing on the design of computer technology and in particular, the interaction between humans (users) and computers [22]. HCI incorporates several disciplines including computer science, cognitive science and human factors and engineering [22]. Studies on HCI have played a large role in the designing of conversational agents and chatbots. Chatbots are an interesting case in human-computer interaction (HCI), since they interact with the users through a natural language process. In fact, they serve as a great example of the implementation of state-of-the-art consumer oriented artificial intelligence that simulates human behavior [19]. However, they also are an interesting area of research for their patterns of human and non-human interaction as well as successful and unsuccessful interactions, and establishing social relationships and bonds [19].

HCI facilitates in the designing of chatbots through research and feedbacks based on user experience to create a more meaningful interaction between the user and the chatbot. Users seem to be more interested in the how a chatbot presents itself through dialogue, rather than its appearance and persona [2]. Design for chatbot represents a transition from the design of visual layout and interaction mechanisms to the design of conversation [3]. In the design of such natural language interfaces like chatbots, the designer repertoire of graphical and interaction mechanisms will be greatly reduced. Here, design for usability involves suggesting to the user what they may expect in the service and adequate interpretation of their response. HCI's application here helps understand what the user needs and how they may be best served [3]. The best way to facilitate HCI is by allowing users to express themselves directly and naturally, by speaking, typing or pointing [19].

Several articles and researches have put forward their suggestions and inputs on as to what factors need to be considered in designing chatbots, and how should they be approached. It all begins with understanding user motivations and their needs. Chatbots need to be designed for both guiding the user towards attainable goals and providing acceptable responses in case there is a conversational breakdown [3]. Also, even if the chatbot is unable to provide adequate answers, it is important that it at least offers an easy alternative path for following up with the enquiry, which maybe through human customer service representatives [2]. Since chatbots still relatively new in world of customer service, it is important that the chatbot reflects efficiency and sensitivity toward users, since they hold realistic expectations from them [2]. The better the useful and usability, the healthier will be the response.

Another important part of the interaction is transparency. It is better to disclose to customers that they are interacting with a non-human interlocutor [20] and must be informed of the chatbot's features and limitations [1]. Users also need to be convinced about the genuineness of their privacy and data security [1]. That needs to be shown as the top priority. The competence of chatbots is directly linked to its anthropomorphic qualities. It has been concluded that more a chatbot was perceived as inhuman; the less competent it seemed to users, and the more human it was perceived, the more competent it seemed [19]. Therefore, the focus while designing a chatbot should be to achieving greater human likeness through anthropomorphism by indicating certain qualities like identity, small-talk, and empathy, which have a positive effect on user compliance [20]. Such characteristics needs to be perceived as pleasant, playful or evocative [5]. Even dynamic response delays have been perceived to be more human-like and have a greater social presence than a chatbot sending near-instant response, leading to a greater level of satisfaction with the overall interaction [28]. A chatbot's textual appearance has been found more compelling and important to an interaction is several studies, and therefore, dialogues must be designed as carefully as the user interface.

Between a text chatbot and an avatar chatbot, it has been shown that users had a more pleasant interaction with the text chatbot than the avatar chatbot, since the avatar chatbot failed to live up to the greater expectations of the user with its slightly unnatural voice and an animation that unsuccessfully imitated a human [19]. Therefore, it can be said that unless an avatar successfully imitates a human, service providers must stick of text chatbots.

Speaking from the service provider's point of view, chatbots should be scalable, and should be able to accommodate the exceptional high volumes of inbound contacts associated with them. Also, despite the high flow of contacts, it should be able to process hundreds of requests per minutes, if not thousands, without comprising in its qualities. The final big need is that chatbots need to fit right in the existing infrastructure in place, integrating with all the business rules and complying with the required security checks and privacy [13].

However, it must also be noted that user experience is variable and subjective. This brings in the need for personalization to remove any biases and cater better to the user's needs. The designing of chatbots must be based on user experience and feedbacks to strengthen chatbot uptake in general population, including those who aren't comfortable with advanced technology.

3. Problem Definition

The body of research on the user experience for customer service based chatbots, as well as their initial perception and expectation of their interaction, provides a good starting point to understanding how chatbot user experience if formed and effect it has on user behavior and its future interactions.

However, there is a lack of studies that try to understand what qualities and how much of them are preferred by the user, and if there is an acute need for personalization. This gap in current knowledge limits researchers and practitioners understanding the changes required in designing chatbots and how they can make it better for the human to converse with.

Furthermore, we need to check which attributes of a chatbot make it more user-friendly and interactive. These will be human qualities that the chatbot needs to demonstrate up to a particular extent in the interaction. Also, it is important to understand how a chatbot's conversational qualities and user interface affects the service employing them, in both positive and negative interactions.

For this purpose, three research questions were developed:
RQ1: How do users see chatbots?
RQ2: What human qualities are expected to be seen in a chatbot and to what extent?
RQ3: How does a chatbot's performance shape the image of the service providers and its future usage?

Existing research on chatbots suggest that the more human the chatbot seems, the better the interactions would be (anthropomorphic qualities). The participants will likely want the chatbot to be professional and solve their query properly, or at least provide a path for the user to get assistance from. However, they may vary depending upon user experience and expectations. Furthermore, user experience should be explored with regards to the importance of chatbot self-presentation as well as its potential for emotional engagement with the user.

4. Methodology

To gain insight into human-chatbot interaction in the field of customer service, it was necessary to gather data from a sample of participants who had recent, real-world experiences with customer service based chatbots. Only such participants would be able to help predict the average user experience and help solve the problem situation.

For this purpose, a questionnaire study through Google forms was done.

4.1 Participant Recruitment

The primary requirement for the participants to take part in the study was that they would need to have had a recent conversation with a customer service based chatbot. Since chatbots are still not widely in common use, the strategic distribution of the link to the form was important to this study. It was distributed mainly amongst high school and college students and working professionals who might are better technologically oriented. The distribution was done through social media platforms like Instagram and WhatsApp and professional platforms like LinkedIn. The participants were not compensated for their participation.

4.2 The Chatbots

Chatbots from two service providers were used, and participants who haven't interacted with a customer service based chatbot before had to interact with it to get a proper understanding of how chatbots like them work. Both chatbots provided information and assistance in response to enquiries about the service provider's offerings and benefits. Both chatbots greeted the users similarly: by providing a brief welcome message and information about the chatbot, and then welcoming the user to state their enquiry in free text. That enquiry is then interpreted by the chatbot as corresponding to one of the several thousand possible intents available in the chatbots, and the corresponding answer is provided to the user accordingly. To get an answer, the user often needs to respond to a series of follow-up questions by selecting between the options of a branched dialogue tree. The user also have to give his basic information like name, email-address and mobile number, for a possible follow up from a human customer service representative for a possible purchase. Both chatbots ended conversations by asking a time slot for a demo request for their product, and provided the user with means to connect with a human customer service representative then and there.

One of the chatbots had a human-like name, female gender and a female avatar. The other robot simply had a name, no gender and a robot avatar.

Both chatbots didn't have a specific country-based consumer market, and the interaction was done in English.

4.3 Study Material

The questionnaire consisted of 16 questions, with one of the questions having 6 sub-parts including a free text question. Most questions were multiple choice questions, related to the changes they would like to see in a chatbot and how their experience would be like. The other questions concerned participant demographics (age group, profession), and the frequency of their interaction.

Some questions were pretty straightforward like the rating of their previous experiences with chatbots and how much trust would they place on a chatbot to answer their query. Some questions were specific and the asked for a specific option. Some questions were based on the user's expectations built upon their recent, previous interactions. The participants weren't required to give in a very detailed answer about their

experiences and their problems since that would clearly reflect in the way they would answer the question, "Go on and put how much of each characteristic you would like to see in a CHATBOT DEALING IN CUSTOMER SERVICE."

The dataset wasn't filtered based on experience as even the ones with minimal experience have realistic expectations while interacting with a chatbot. In fact, such users may help us better understand user expectations since their interaction with chatbots are likely to more honest and full of expectations than regular chatbot users since regular users have probably familiarized themselves with chatbots and now can interact with them easily since they know better how they'll behave. However, those with lesser experience will have more genuine expectations and how they would want their chatbot to behave and answer their query.

5. Results

The questionnaire had two sections: the basic demographic details and the research questions. While understanding the participant sample is key in understanding user expectations, the bulk of the research is based on the research questions

5.1 The Participant Sample

The sample consisted of responses from 126 participants. Of these, 68.3% (86) of the participants belonged to the age group 15-18 years old, 27% (34) of them were 19-30 years old, 4.8% (8) from the 31-60 age group and none from the under 15 and over 60 age groups. Most participants were students (88.9%), while the rest of them were working professionals (11.1%). When asked on how many times the participants have interacted with chatbots, nearly half of the participants (62) stated that they have interacted with chatbots 1-5 times, 26.2% (33) stated that they have interacted between 5-10 times, 8.7% (11) reported that they have interacted between 10-30 times and the rest 15.9% (20) were regular chatbot users. The sample primarily consists of students and relatively new chatbot users, which will aid in figuring the genuine expectations of the user who haven't interacted before or rarely interact, which will likely be the case when chatbots will be widely used in customer service.

5.2 User Interactions with Chatbots

The first research question asked participants to rate their chatbot experiences from 1-5 i.e., from bad to extremely good. The most common response was 4/5 which is very good (60), followed by 3/5 which is good (47) and some (12) found chatbots very satisfactory and extremely good, which is 5/5. The rest (7) had poor or bad experiences, reporting a 1/5 or a 2/5. Therefore, it can be said that most interactions were positive and good (94.4%).

For the next question, the participants were asked to compare the importance of the design of the user interface and the conversational ability of the chatbot, or claim both to be equally important. Most (64) thought that the design of a chatbot's user interface was as important as that of its conversational ability. However, many (61) also believed that a chatbot's conversational ability was more important than the design. When it came to those who preferred the design to be the more important quality in a chatbot, only one person agreed so. The conversational ability of a chatbot does seem to be the more important factor here since only one favored the user interface's design over it, while many settled for both.

The next question was based upon the social response theory [7], and in a sharp contrast to the theory's findings, most users (71) did not expect the chatbot to behave like a human, while rest (55) agreed to having had expected the chatbot to behave like a human i.e., possess human-like qualities. Here, the CASA paradigm seems to fall.

5.3 User Expectations and Chatbot Performance

When asked about the participants' preference on chatbot response time, most (91) said they would prefer an immediate response it saves time and they can put forward their next request faster. Only a few (9) preferred a dynamic response delay mimicking human chat speed, while the rest (26) stated that it would depend upon their situation.

Most users (58) preferred being informed before their conversation that they are interacting with a chatbot. Interestingly, (47) stated that they wouldn't mind not being informed about who's on the other side, as long as the chatbot's responses and response time resembles that of a human. The rest (21) wouldn't bother even if they weren't told that they were interacting with a chatbot.

Since conversational breakdowns are common in human-chatbot interaction, especially in the form of dissatisfactory answers or no answers at all, participants were asked if they would mind if that would happen. Exactly half of them stated that it would be fine as long as they provided with an alternative approach t get their answer from a different source. Some (47) were more generous and patient and said they wouldn't respond negatively, while the rest (14) said they would.

Participants were then asked to rate from 1-5 on how they expect the chatbot to reply to their query. Most of them expected an okay (53) and a semi-satisfactory (51) answer, which is 3/5 and 4/5 respectively. Only a few expected very disappointing (4), disappointing (10) and perfectly satisfying (8) answer, which is 1/5, 2/5 and 5/5 respectively. Most participants had average expectations from chatbots.

Since customer service representatives often have to deal with the pricing of their services and products, negotiations might be possible in such cases. Most participants (67) didn't want to negotiate prices with a chatbot, while some said it would depend upon the company or the service provider (51) and the rest (8) responded affirmatively. Therefore, most of them responded in a dilemma or negatively.

The participants were next asked to choose between a text chatbot and an avatar chatbot. Most of them chose the text chatbot (74), some chose the avatar chatbot (31) and some put a condition that the audio and facial representation must be human-like (18). A few (3) were okay with either of the two and had no preferences.

5.3 User Desired Chatbot Characteristics and Future Interactions

An attempt to link chatbots with the service provider's brand image is made by asking the participants if they would keep a poor image of their service provider if they chatbot failed to perform satisfactorily. Most of them were unsure and stated it as a possibility (72), some said they wouldn't (33) and the rest said they will (21). Conversely, when asked if a satisfactory performance would enhance the service provider's image, most participants said it would (71), some said maybe (42) and a few said no (13). This shows that a positive performance is more compelling than a negative one.

Also, previous chatbot experiences seem to influence participants' future interactions, with several saying that it would definitely affect them (45), some saying it might have a possible influence (44) and the rest saying it won't (37). Here, the numbers are very close and so the possibility of an influence could go either way.

The next set of questions were special questions, asking the participants how much of each of the qualities given, would they like to see in their interaction with a customer service based chatbot. Those qualities were politeness, wittiness and humor, professionalism, smartness, directness with answer and interactivity. Participants had to rate them from 1-5, depending how less or how more of those qualities would they like to see in them. At the end of this set, an open box was given for the users to fill it in with characteristics of their choice that wasn't mentioned.
Most participants reported that they wanted their chatbot to be extremely polite (52) or very polite (60), that 5/5 and 4/5 respectively. Rest (14) wanted their chatbots to be moderately polite (3/5). However, none of the participants went for rude or just polite which was quite obvious and expected. When it came to wittiness and humor, the responses were quite even for those who wanted very witty (39) which is a 4/5, or moderately witty (38) answers from the chatbot which is a 3/5, while some (21) desired borderline witty answers which is a 2/5. Very few here went for the extremes, with only 4 rating a 1/5 or no wittiness in answer and 24 rating a 5/5 or a very witty chatbot which a developed sense of humor.

When it came to professionalism, most participants wanted a highly professional chatbot (80) and gave a rating of 5/5, while some rated 4/5 wanting a very professional chatbot (29), some wanted a moderately professional chatbot (24) with a 3/5 rating and the rest (13) wanted a casual chatbot with a 2/5 rating. No participant wanted a very casual chatbot. Most participants also favored extremely smart chatbots (67), followed by very smart chatbots (37) and smart chatbots (18) with ratings of 5/5, 4/5 and 3/5 respectively. Therefore, professionalism and general smartness of a chatbot are must-qualities for a satisfied interaction.

Chatbots were also expected to very direct with their answers with 87 participants rating 5/5, 27 rating 4/5, 10 rating 3/5 and the rest (4) rating 2/5. This can be connected with a chatbot's efficiency and was quite expected. When it came to the last quality, i.e. interactivity, most participants wanted their chatbot to be very inquisitive and ask a lot of questions with 64 of them giving a rating of 5/5, 37 giving a 4/5, 18 giving a 3/5 and the rest (7) rating either a 2 or 1 out of 5.

In the open box section, the biggest desire rather than quality was personalization (3), where the chatbots should be adaptive. One participant accounted,

"*Adaptability to reply based on previous user queries*."

Some (3) also suggested that they need to be emotionally intelligent, with one participant reporting,

"*A chatbot should be customer friendly. It should be capable of autonomous reasoning. The chatbot should be able to infer customer personality traits and respond to the customer accordingly*."

Some (3) commented on the importance of the user interface and one participant wrote,

"*Should have a concise and sense of flow of conversation. Should be engaging and have a simple UI. Should also seem to be trustworthy from the appearance and chat mannerism to make one feel open to submitting personal information*."

Another participant accounted for the importance of a name and personalization,

"*A chatbot with an assigned name and one which greats a person and asks for their name and later addresses them with that name adds a touch of personalization (although minimum effort is required to be put in for such a simple development)*"

One participant indicated the double verification and supervision of an interaction,

"A indication to showcase that message sent are double verified by the company employee"

One called out for a chatbot failing mechanism in case of a conversational breakdown,

"If chatbots are unable to give a solution for a customer's query , they should always have an alternate way to solve the problems of their customers and not leave them with no solution to their problem."

Another participant highlighted her discomfort with chatbot speed and efficiency and addressed it,

"Should be a little fast while speaking especially while in calls. Recently, I was asked to press few buttons in order to reach the customer care service. However, by mistake I pressed some wrong numbers and then I had to continue the same long process again and also wait and listen the entire inbuilt words of the chatbot."

The last three questions in the questionnaire were asked to determine the future uptake of chatbots in customer service. The first question was user's trust about security. Most participants said that they would only confide with their personal information if they trusted the service provider (68), referring to the brand image. Many of them said no (56) and only a few said yes (2). When asked about what sort of customer service they would prefer, most of the participants preferred chatbots with an option to resort to human customer service representative in case of conversational breakdown or dissatisfied request (99). Only 5 participants wanted an only chatbot based service while the rest (22) preferred human customer service representatives.

The last question was a casual subjective question, asking the participants by when do they expect chatbots to completely take over customer service. There was no conclusive answer, with some expecting that to happen by 2030 (44), some by 2050 (24), and some even saying that will never happen (19). The rest (39) presented no assumptions.

6. Discussion

6.1 User Experience and Chatbot Interactions

Based on the results of the questionnaire study, there are several interesting and expected results of several aspects of human-chatbot interaction. Starting with the general user experience with chatbots, most interactions were either 'very good' or 'good,' which means the general uptake of chatbots amongst customers is pretty satisfactory. However, when we tally this with user trust upon chatbots, we see that most users placed 'moderate trust' and 'good trust' upon them, but only a handful placed 'very high trust' on chatbots to solve their query. Therefore, users are most likely take to chatbots if their questions are simple and straightforward. If their questions are more complex and demand a detailed, comprehensive answer, they will most likely turn to human customer service representatives.

In this study, there was interesting contradiction to the Social Response Theory [7], where the most users claimed that they didn't expect the chatbot to behave like a human. However, since the theory also states that most users expect chatbots to behave like humans unconsciously, their response might have be quite different if they weren't informed that they were interacting with a chatbot before. The reports might also vary if a larger sample of chatbot users were taken.

Users also don't seem to complain in case a chatbot fails to answer their question directly as long as they are provided with an alternate method to get their queries answered. This brings backs up the report [4] that users are looking for productivity and efficiency while interacting with a chatbot.

An important observation for service providers in this study is that a lot about user trust comes from them and builds with the chatbot. Users are more likely to develop a positive image of them due to chatbot's positive performance than develop a negative image due a poor performance. This can be accredited to the fact that users know they are interacting to the non-human conversational agent and hence, a positive interaction is more effective than a negative one. Users are also more likely to share their personal information if the service provider seems trustworthy to the customer or the chatbot has convinced them satisfactorily that their privacy and security are their top priorities beside assistance.

The outcome of any chatbot interaction has a huge role to play in future possible interactions in customer service. Most users are likely to hold onto their previous experience, which may be positive or negative. Therefore, the efficiency of current chatbots forms the perceptions of a chatbot user, affecting their future interactions and expectations.

As this study is based on questionnaire's response data, it cannot be ruled out that a chatbot's appearance may affect user experience in ways the participants haven't been able to acknowledge or recall. Nevertheless, it is clear that chatbot efficiency and brand image are the two most important factors affecting user experience and trust.

However, the trust in chatbots came in question when the participants were asked if they would prefer chatbots over human representatives. Most of them preferred a tiered approach where the users wanted a human representative as a backup. Very few preferred the conventional approach of human representatives keeping control while even lesser was the number when preferences of chatbots taking over were seen. Several of them also believed that chatbots would never be able to completely take over customer service in the future, while most of them optimistic about it and believe that might happen by 2030 or 2050. Therefore, it can said that even though chatbots are improving and will continue to improve, there are still a few years ahead of us when it comes to a complete chatbot control over customer service.

6.2 User Expectations from Chatbots

This questionnaire also focuses on the qualities that the participants would like to see in their chatbot through. Those qualities were politeness, wittiness and humor, professionalism, smartness, interactivity and directness with answers.

There were several clear qualities that the participants wanted in their chatbots. Politeness, directness with answers, smartness and interactivity were a must in their chatbots. The only quality that got received mixed responses was wittiness and humor, where the range was very even from 'no wittiness' to 'very witty'.

However, they most important part of this response was the need for personalization. Several participants in the open box wrote that they wanted chatbots to correctly interpret and analyze user's requirements and behavior and accordingly give out a response. They need to be 'emotionally intelligent' and respond based behavioral data to get satisfactory results. Personalization also comes with adaptability, as highlighted by one of the participants, and they must conveniently solve simple queries.

This approach needs to be customer-friendly and should have a smooth flow of conversation. This will also help the users feel more comfortable and secure, even while submitting their personal information. This therefore connects user interface and user trust, and so more reliable the chatbot seems, the better will be the interaction and building of trust.

These expectations are crucial in improving user experience. The better they are satisfied, the greater is going to be the uptake of chatbots in customer service. Chatbots having human qualities or are very human-like definitely seem to be winning a user's trust and in turn, the conversations will be more productive and satisfactory for the consumers.

6.3 Implications for Development of Customer-Service Based Chatbot

The main contribution of this study is the findings already presented and discussed. On the basis of this contribution, possible implications for theory and future chatbot development and designing can be drawn.

6.3.1 Implications for Theory

- **The top priority of a chatbot should be to resolve the enquiry efficiently.** The prime reason why users use chatbots in customer service is being served, and the entire purpose of usage will be squashed if the chatbot doesn't give the user the desired response to their enquiry. Efficiency is the foremost quality that is required in a chatbot.
- **Personalization is the way forward.** The more user-specific the chatbot is, the greater is the satisfaction. Therefore, chatbots must have great space for personalization and the user must feel that the chatbot actually cares about them.
- **The brand image can influence a chatbot interaction or be influenced by a chatbot's performance.** The trust of users in chatbots is dependent on the service provider's brand image, including the trust in confiding personal information. Users are also likely to let go of any negative interaction based on the brand image. Conversely, a chatbot's performance could also affect the service provider's image.
- **As long as chatbots do not reach the efficiency and emotional intelligence of humans, human customer service representatives are to stay.** While they are highly likely to take over within a few decades owing to the growth in artificial intelligence, that will not happen now, especially when the enquiry involves negotiations. However, they are replacing human representatives in a large numbers, with only few retaining their roles of supervision or assistance.
- **It is best to inform the users that they are interacting with a non-human agent.** This realistically reduces expectations and helps users understand the limitations and features of the chatbot they are about to interact with, since chatbots currently cannot mimic humans satisfactorily enough.

6.3.2 Implications for Future Development and Designing of Chatbots

- **The prime focus in the designing of a chatbot should be its conversational ability.** Since the main part of interaction is the conversation itself, the way a chatbot responds to them is more important than the design of the user interface itself. The better the conversation, the more satisfied the customer is. The chatbot should be able to interpret the user's enquiry and needs to present the relevant response. It needs to be direct with their answers and assist them without delay.
- **A backup to a chatbot's service in case of an enquiry failure is necessary.** As long chatbots do not reach the level of efficiency of human customer service representatives, chatbots need to have a failure mechanism. In case of conversational breakdown, human customer representatives should take over the conversation from then and there, so that there is lesser inconvenience and dissatisfaction. Therefore, chatbot need to be supervised.
- **Chatbots must possess more human qualities to seem more competent.** Human qualities like politeness, professionalism, smartness, wittiness and humor are some important qualities they need to possess. Even giving them a name and face could help them look more humanlike. They need to seem genuinely curious and ready to help, similar to a human customer service representative.
- **Emotional Intelligence of a chatbot is highly appreciated.** If a chatbot can analyze a customer's behavioral pattern and respond accordingly, it will add a touch of personalization, making the user more comfortable and the interaction more satisfactory.
- **Users should be informed that they are interacting with a non-human agent.** This realistically reduces expectations and helps users understand the limitations and features of the chatbot they are about to interact with, since chatbots currently cannot mimic humans satisfactorily enough.
- **Text chatbots are a better fit to customers than avatar chatbots.** Since avatar chatbots are seen as more unnatural and different from humans due to their failure in perfect imitation, customers prefer interacting to text chatbots, where the only concern would be their conversational ability.

7. Limitations and Future Scope

Important limitations include the inability to manipulate the chatbots that participants had interacted with. The study

context was also limited to users in particular market (India). While the study sample is large enough, it is possible that the findings could have affected by the study context.

Another limitation is that user experience is a subjective phenomenon, and it also affects user behavior. Different users will have different needs. Hence a strong correlation between chatbot user experience and chatbot user behavior would be very beneficial. Such studies can combine large-scale questionnaire studies with data collection on user behavior.

However, what can be seen as a strength is that new, recent chatbot users are a part of our participant sample, which provide us with a more honest, original feedback as to user expectations and trust. Despite this, the study couldn't manipulate user experience like it could be done in a classical experience. Hence, the insight on personalization and casual relations between a chatbot and a user is limited. Future research testing emotional relations and the extent of personalization required for greater satisfaction based on these findings would be an interesting continuation of the study.
Future research could also begin on the theoretic and practical implications discussed with respect to the designing and development of chatbots. This could be seen as the first step to understanding how and when chatbots will take over customer service and help service providers deal with the growth of their business.

8. Conclusion

In this paper, a study related to human-chatbot interaction has been presented. The study was conducted as a questionnaire survey, where user interactions and their expectations from customer-service chatbots were gathered and understood in an content analysis. The analysis allowed the detailing of the chatbot qualities and attributes which could help improve user experiences and facilitate greater uptake of chatbots in customer service. This is a relevant contribution to chatbot research and practice, as it suggests the improvements in a chatbot's design which could generate positive user experience.

The study's findings also help in the prediction of how a chatbot can completely take over automated customer services, and the basic requirements that the chatbots need to possess in order for that to happen.

As an early study of human interactions with chatbots specific to customer service, this study has limitations, as discussed above. Nevertheless, the present findings can serve as a useful steppingstone for future research and development in the direction of customer service based chatbots.

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