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## Investigating the factors of customer experiences using real-life text-based banking chatbot: a qualitative study in Norway

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### Abstract

In recent times, banks have increasingly started using chatbots to offer round-the-clock customer service. However, customers experience with this type of technology is not well understood. The aim of this study was to get an in-depth understanding of factors affecting customer experience with a banking chatbot. Eight participants interacted with a real-life banking chatbot to complete a simple task (order a credit/debit card) and a complex task (apply for a housing loan). Semi-structured interviews were then conducted to examine chatbot-related factors (ease of use, miscommunication errors and human-likeness) and user-related factors (perceptions, future behaviors). The findings indicate that the human-like factors like a human personality, use of emojis, willingness to help, and polite communication style, have a positive impact of customer experience with banking chatbots. The chatbot's ability to understand questions was a critical factor. Miscommunication errors have negative impact, especially when the task is a simple one. Takeaway from this study is that banks should inform customers about the limits of the chatbot's abilities. In addition, they should communicate that the chatbot is safe to use for complex tasks. Successful development and implementation of chatbots for customer service require a customer centric approach from banks.

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## 1. Introduction

The banking industry, a front-runner in adopting technology advancements, is deploying chatbots to deliver contextual information to their customers [1]. Chatbots are algorithms designed to hold a conversation with a human [2]. These are conversational agents (CAs) which communicate with users via chat or speech interfaces and perform basic tasks such as search and question answering, are among the most popular artificial intelligence (AI) applications today [3]. General-purpose text-based chatbots can basically converse about any topic, while domain-specific text-based CAs are limited to specific domains, users, or tasks [4]. For customer service, organizations predominantly use text-based chatbots in short-term interactions [5]. A recent report found that 31% of organizations have already implemented chatbots in their customer service efforts or plan to do so in the near future [6]. Many other industry sources have similarly proposed that chatbots will become an important part of customer service in the foreseeable future [5].

An increasing number of financial firms are introducing chatbots as one of their services [7]. For example, Bank of America introduced a chatbot named Erica in 2017, through which customers could receive notifications, account balance information, advice on saving money, and assistance with bill payments and transactions [8]. Since chatbots are well suited to handle such repeat service queries, firms need to understand the impact of using chatbots on customer experience, especially from the customers' perspective [9-11]. The impact of the use of such technology on overall customer experience is less researched, [1] with a few qualitative in-depth studies [12]. Drawing from previous studies, the aim of this research is to perform an in-depth analysis of chatbot-related factors (ease of use, miscommunication errors and human-likeness) and user-related factors (perceptions, future behaviors) on customer experience, with regards to the use of a banking chatbot in Norway. We also use a daily banking chatbot with suits the repeat nature of short-term service requests. This study therefore contributes to the need for in-depth knowledge on customer experience regarding the use of text-based banking chatbots.

The rest of this paper is organized as follows. The literature review is presented in section 2, and the methodology is described in section 3. Section 4 presents the study results, and a discussion in section 5, followed by a concluding comment in section 6.

## 2. Literature review

Chatbots are increasingly becoming a prioritized channel for customer service [13, 14]. For example, a recent study with managers in South-Korean financial firms, found that one of the main influencing factors for implementing chatbots was to improve customer experience [8]. Thus, it is important to study customers' experiences with chatbots, which is of relevance to both practitioners and researchers [1, 15]. Customer service is defined as a multidimensional construct focusing on a customer's cognitive, emotional, behavioral, sensorial, and social responses to a firm's offerings during the customer's entire purchase journey [16]. Research on chatbots and customer experience has highlighted a host of factors that have an impact on customer experience [1, 9, 12, 14]. Based on these studies, we have categorized the relevant dimensions (for the banking context) into chatbot-related factors (ease of use, miscommunication errors and human-likeness) and user-related factors (perceptions, future behaviors).

Ease of use is a strong indicator for acceptance of any technology [17]. Research has demonstrated that customers usually have predetermined expectations regarding how easy or difficult it will be to use certain technologies [18, 19]. Ease of use has previously been evidenced as an important factor on the intention to use chatbots [14, 20, 21]. For banking chatbots, customers should perceive chatbots as being easy to use, thus removing a potential barrier towards its use. If the consumers perceive using chatbots to be difficult, their experience of using it may be affected negatively [1]. Thus, ease of use is included as one of the main chatbot-related factors in this study.

Communication failure due to the chatbots' difficulties with handling natural language are to be expected [22]. These failures could be due to linguistic parsing issues, failure to understand the user's actual intent, or simply misunderstanding of idioms of the language [23]. A chatbot is likely to have problems recognizing and understanding users' requests, and consequently, it will not provide the right answers [24]. Therefore, miscommunication errors in human-chatbot interaction are quite commonplace [25]. It is found that errors have a significant negative impact on multiple dimensions that influence overall evaluations and usage intentions of conversational agents [26, 27]. However, some researchers have found that the ability to resolve miscommunication and customer expectations during

actual interactions might alter such effects [5, 25]. Thus, to improve conclusions made about such effects, participants will interact with a real-life banking chatbot to investigate the impact of miscommunication errors on customer experience.

The “human-likeness” attribute of chatbots have been discussed thoroughly in literature [27-30]. Humans tend to apply human-like attributes and traits to nonhuman agents, and this also steers their perceptions of them [28]. Such attributions may result in consumers overestimating a chatbot’s abilities and subsequently being disappointed or frustrated when those expectations are violated [25]. There are a few ways to humanize online chat agents. The first is the use of visual human-like figures (visual cues), second is to use human-associated names or identities (identity cues), and the last way is to mimic the use of human language (conversational cues) [31]. Social conversational cues can be a fundamental trigger for generating a better experience for customers when compared to chatbots that only provide neutral information [32]. The use of humanizing cues is likely to have a positive impact on customer experience. However, this effect can be reversed due to contextual influences [12, 29]. Because the chatbots are developed to interact with humans through natural language, the conversation is the main focus of the interaction. Therefore, this study focuses on a real-life, text-based banking chatbot that will utilize use of conversational cues to understand the impact of human-like attributes on customer experience.

End user evaluations of chatbots are needed since there is limited literature about chatbot experiences from the perspectives of the end users [9-11]. A host of chatbot literature has examined user-related factors. These can be divided into user perceptions [e.g., 13, 31] and behaviors [e.g., 7, 33]. However most studies only a select few studies examine both user-related factors [12], therefore we decided to include both customer perceptions and behaviors to get a more holistic understanding of these factors on customer experience when using a banking chatbot.

### **3. Methodology**

#### *3.1. Data collection*

The Norwegian population is relatively advanced in terms of mobile internet and smartphone usage, and Norwegian service providers are fairly advanced in implementing chatbots for customer service [13]. Therefore, the Norwegian context is valuable for the purpose of this study. The chatbot used in this study was a text-based banking chatbot (based on a conversational AI platform) that is used by many Norwegian banks today. Eight millennials from Norway were recruited for the interviews. These were all users that had previously interacted with chatbots for customer service. These participants were ideal informants as chatbots have touted as one of the factors driving the growth of chatbots, since they tend to prefer indirect forms of communication [8]. To ensure that all participants had recent experiences with the banking chatbot, they were invited to interact with the banking chatbot beforehand by performing two specific tasks. The first task was to order a debit card, as this was a common request and a relatively simple task. The second task was more complicated as it required participants to apply for a house loan. The participants were asked to formulate these questions in their own language to increase ecological validity [25]. Interviews started after the participants had finished interacting with the chatbot.

All the participants were given a consent form to sign before the interview started. They were provided with information about the study and terms for participation. Before the interviews started, participants were also reminded not to disclose personal information. The interviews were recorded, upon the participants' explicit consent, and transcribed. All the interviews were conducted in Norwegian. The quotes from participants were translated to English by the first author.

The interviews were conducted based on a predefined interview guide inspired from previous qualitative studies on the use of chatbots for customer service [5, 13, 34]. The semi-structured interviews included open-ended questions on the following topics:

1. The customer’s recent interaction with the chatbot
2. Chatbot-related factors affecting customer experience with the chatbot
3. User related factors (perception): perceived benefits and challenges of using the chatbot
4. User-related factors (behavior): future usage of chatbots

### 3.2. Data analysis

The transcribed data was examined using a thematic analysis [35]. Coding themes were identified, combined and applied to code the data. These themes or codes are consistent phrases, expressions, or ideas that were common among research participants [36]. Based on this, a set of factors relevant to customer experience with banking chatbots was established for analysis.

## 4. Results

### 4.1. The consumer's recent interaction with the chatbot

At the beginning of the interviews, the participants were asked to reflect on their experience with the chatbot. Five participants reported that the overall experience was good. The words that almost all the participants first mentioned was that the chatbot was easy to use and helpful. As in the following statement: *"The chatbot was very easy to use and helpful. I got the help that I needed when asking about a housing loan. It presented links so that I could fix the problem myself. The experience was overall good."*

The participants were asked to reflect on how they experienced the help given by the chatbot. Some of the participants mentioned that the chatbot was more like an assistant than an agent. This was because the chatbot only helped the user to the relevant form or information on the website. Five participants mentioned that this did not negatively affect the experience because it was expected. For example, as in the following: *"It (the chatbot) helps me on the road, but it does not help me to get to the destination, if that makes sense. That is why I experienced the chatbot to be more like an assistant than a human agent. It was just like expected. Nothing more and nothing less."* This was confirmed by other participants who felt that the chatbot had limited capabilities. For example, as in the following: *"I am the type of person that googles or looks through the website before I contact customer service. That is why when I contact customer service I haven't found an answer to my problem. I want more information than what can be retrieved from the website. However, I think the chatbot can be useful for those who do not search themselves."*

Five participants were customers that did not want to search for the information themselves and liked to be referred to the relevant information. Three participants did not see value in using the chatbot. However, they saw the purpose of having a chatbot that redirected them to the relevant information on the website for those that need it.

### 4.2. Chatbot-related factors affecting consumer experience with the chatbot

The participants were asked to reflect on factors that affected their experience. The participants were also asked to reflect on how easy the chatbot was to use, communications errors, and human-likeness. We detail these in the following.

All of the participants had used chatbots before and were familiar with the general user interface. Five participants reported that the chatbot was easy to find and use. These participants mentioned that the chatbot was meant for inquiries that can be answered through information sites and for questions that users can formulate in a short and simple way. *"My perception of chatbots is that they can only give you information that is already available on the website. You have to write the questions in keywords. So, it is easy to use for simple questions. This was confirmed further by the experience with this chatbot. It was a positive experience as it helped me save time."* Three participants who perceived the chatbot as difficult had a negative experience using the chatbot. *"I'm not too fond of chatbots because they can never help me. I had the same experience with this chatbot. So, the experience was bad."* Ease of use had an impact on the customer experience of all participants. Five participants perceived the chatbot easy to use and had a positive experience. The others perceived it to be difficult and had a negative experience.

The chatbots' ability to correctly understand questions was seen as a critical factor affecting customer experience. Six participants experienced communication errors when asking for a debit card. All the participants experienced some kind of miscommunication error when applying for a loan. For example, in the following report, two respondents wrote longer messages to the chatbot and wanted to explain the whole problem in one message: *"When I was ordering a card, I would like to write the same way as when talking to a human. The chatbot did not understand the message, and I had to rewrite it all to make the chatbot understand. I was not happy about it, and it left me feeling irritated."*

*The chatbot should be able to find keywords in my sentence, even if it is long.*” Six participants felt it was inconvenient and time-consuming trying to guide the chatbot to what you were asking. As in the following report: *“When I asked my question about ordering a new card, the chatbot presented a lot of alternatives. This was confusing because I had already explained my problem. I felt that the chatbot did not listen to me. It just presented me with many answers because of the keyword card.”* The participants had a negative experience towards errors connected with ordering a new debit or credit card, as the request was perceived to be simple. All participants positively perceived the chatbot’s ability in trying to understand questions regarding house loans. The participants saw these questions as more complicated. As in the following report: *“I tried to write my questions in a short and simple way when asking for a housing loan because this is more complicated. The chatbot did not understand and tried to present me with alternatives to try to help it understand. I was also given the choice to talk to a human agent, and then I experienced the chatbot to have failed. However, that was okay. It is a robot. I liked that it tried to understand me.”* Six participants reported that communications errors regarding the simple task gave a bad experience. However, the participants that experienced communication errors when asking for a house loan did not consider the experience to be bad.

The chatbots willingness to help were seen as a key factor affecting customer experience. Seven participants felt that the chatbot genuinely wanted to help them. *“The chatbot gave me good answers in the end and helped me with my questions. I kind of expected it to be able to do that, but it was a good experience when it did. I felt that the chatbot wanted to help.”* The chatbot’s personality was reported to be important based on their experience with the performed task in this study. Seven out of eight participants liked that the chatbots had a human personality. The participants noted that the chatbot did communicate in a polite and human-like manner and that this enhanced the experience. Seven respondents were positive that the chatbot used emojis. Emojis are digital smiley faces. They explained that when using emojis, they felt that the chatbot was more human and cared about them. *“The use of smileys made me like the chatbot. It made me feel like the chatbot cared. Today if you do not use any emojis, you feel like the person is mad at you. So, the emojis made the experience better.”* One of the participants, however, argued against the potential benefit of human likeness in chatbots. The participant stated that providing a chatbot with a personality is not necessary because it does not affect the experience of the chatbot. *“I know that I am talking to a robot, so it is stupid that is trying to act like a person.”* Seven participants reported that the chatbot was more human-like than expected. Three participants said that it was expected that the chatbot would have some human-like features resembling a human service agent. However, seven participants were positively surprised by how the chatbot managed to deploy warmth and empathy in the conversation and this enhanced the experience.

#### 4.3. Perceived benefits of using the chatbot

The participants were asked to reflect on what were the benefits of using a chatbot for them. All participants reported that the main benefit of customer service chatbot is the opportunity for fast help. Participants specifically mentioned the quick response of chatbots. For example: *“[...] it is really great that you get a fast response and that you do not have to search for the information yourself. I also liked that you could see that the chatbot was writing. It felt like the chatbot was on the case.”* Almost all of the participants mentioned that you could get access to customer service without talking to a human agent and with no waiting time. They did experience the chatbot as a faster option than contacting a human agent, but only for very simple inquiries. *“[...] I like that you do not have to talk to a human. I don't particularly appreciate talking to humans about small things. Also, you can chat whenever you need it, and there is no waiting time.”* Two participants also reported an appreciation for how the chatbot remained on the website while they clicked the links. This is exemplified in the following quote: *“I liked that the chatbot did remain on the site when I pressed the links. If I had further questions by filling out the form, the chatbot would still be able to help me.”*

#### 4.4. Challenges with the chatbot interaction

The main challenge with chatbots for customer service, mentioned by five participants, was that the chatbot was not intelligent enough. Five participants also noted a problematic issue that the chatbot could not execute the action for them. The chatbot could only redirect them and they had to execute the action themselves. As reflected in the following quote: *“My experience with the chatbot has taught me that it is very simple. Today, I expect more of*

technology. So that the chatbot cannot help with a simple request as ordering a card is problematic for me.” The experience with the chatbot made all the participants skeptical of using it for more complex cases. The reason for this was because the current iteration of the chatbot was not “intelligent enough”. As reflected in the following participant quote: “I do not trust that the chatbot will give me the best advice when it comes to complicated issues like a loan. It is not intelligent enough.” Most respondents reported that they did not want to write personal information to the chatbot as they did not trust it. Three participants liked that they had to fill out a form to order a new card because they did not want to give the information to the chatbot.

#### 4.5. The factors affecting future use of chatbot

Towards the end of the interview, the participants were asked about factors which in their view, could affect their future use of the chatbot. The most critical factor for future use, mentioned by six of the participants, was seen as the chatbot's ability to understand the questions. For chatbots to be frequently used, they need to understand the questions and to help the customers. This view is reflected in the following user quote: “If the chatbot can understand my question straight away and help me, I will use the chatbot more.” The participants were asked to suggest improvements for the chatbots for customer service. Almost all of the respondents were ready to have a more intelligent chatbot to increase future usage. They mentioned that they want the chatbot to execute the action for you regarding simple questions like ordering a card. This view is reflected in the following user quote: “The time has come for the chatbot actually to help me. It would be great if the chatbot can order a card for me instead of redirecting me to a form. I will probably use the chatbot again for simple things, but it needs to be smarter for me to use it more.” Other participants confirmed this. As in the following report: “I want to write the whole problem, not just keywords. A solution can be a little information guide before you talk to the chatbot. Or just make the chatbot smarter.”

## 5. Discussion

The aim of this study was to get an in-depth understanding of factors affecting customer experience with a banking chatbot. Regarding ease of use, the majority of participants found the chatbot easy to use, which overall created a positive experience. This is consistent with previous literature that has examined the impact of ease of use on customer experience of using a chatbot [1]. However, all the participants were digitally-native millennials. The chatbot may not be easy to use by someone who is not familiar with the technology.

The participants mentioned miscommunication errors such as incorrect information being presented, general errors, and suggestions of irrelevant information by the chatbot. The participants had to rewrite the questions to get the chatbot to understand. This had a negative impact on customer experience. This aligns with previous literature which demonstrates when chatbots encounter problems identifying and understanding users' requests, they do not provide the correct responses, having a negative impact on the overall experience [24, 25, 27]. The participants experienced more errors for the complex task when compared to the simple task. However, they were more tolerant of errors and viewed the chatbot in a positive light when it tried to understand their questions. This could be because users may hold fairly accurate expectations concerning the capabilities of chatbots for customer service [5]. The participants have lower expectations from the chatbot regarding complex tasks, and are thus, more forgiving.

Nearly all participants appreciated the human-likeness of the chatbot (using conversational cues). They felt that the text-based chatbot was more human (compared to their previous experiences with chatbots) because of the way the chatbot communicated with the participants. A possible reason for this was that use conversational cues, specifically emojis, produced a feeling of human-likeness. This is in line with some prior research [31]. Most of the participants mentioned the use of emojis was an essential factor for a better customer experience. The participants reported that if the chatbot was not using emojis, they would experience the chatbot as impersonal and less empathic. Overall, this finding supports research that has confirmed the positive impact of human-like attributes of chatbots [7, 27].

Almost all participants reported that the main reason for using the chatbot was fast help (with no waiting time) and without talking to a human agent, which corresponds with previous literature [8]. Participants perceived the chatbot to be more like an assistant than an agent and liked the fact that the chatbot referred them to the relevant source of information. Akin to previous research, participants had realistic expectations about the abilities of the chatbot [5], and the current abilities of the chatbot did not adequately meet their expectations [8]. Almost all participants reported that they would like to have a more capable chatbot to increase their future usage. Most of participants did not trust

the chatbot with personal information. This is in line with some previous studies that demonstrate the importance of trust on chatbot usage behaviors [7, 13].

## 6. Concluding comments

The implication for practice would be to inform customers about the chatbot's limitations. This will help manage customer expectations and help provide them with tips and hints on how to communicate with the chatbot. For example, to encourage the use of short sentences. This is especially relevant for people that have less experience in chatbot interaction. The findings in this study show that conversational cues are important for making the chatbot more human. The results show that the use of emojis by the daily banking chatbot had a strong impact on customer experience. Thus, the use of emojis as conversational cues should be encouraged to improve customer experience, especially for digitally native populations. Additionally, banks might consider investing in a more advanced chatbot. This will encourage the use of chatbots for complicated cases and reduce the negative impact of basic errors experienced during human-chatbot interaction.

The main limitation of the study is that sample size was relatively small, and the participants were millennials. Future studies could expand on the findings of this study with more participants and different demographic samples. This study used a text-based chatbot, future studies could replicate this study with more advanced chatbots and/or voice based chatbots. Our study utilized conversational cues, future studies could examine the impact of identity cues or visual cues or a combination of such factors. In addition, future research should fully examine the impact of the use of emojis by the chatbot.

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