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Examining Customer Experience in Using a Chatbot

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ABSTRACT

While the use of artificial intelligence and chatbots is increasing, studies of customer experiences in using chatbots remain rare. This article explores the experience of customers before, during, and after their interaction with a chatbot to determine what aspects draw their attention when interacting with the chatbot. It identifies potential problems customers face when using a chatbot from different points of view, specifically those of a chatbot developer, a chatbot buyer, and a customer. This study focuses on VX, a chatbot from a leading telecommunications company in Indonesia, and uses interviews of fourteen customers, identified personas, and individual customer journeys to analyze interactions. The personas revealed five types of needs: two basic ones for information and transactions, and three others for security, entertainment, and complaints.

KEYWORDS

Chatbot, Customer Experience, Customer Journey Map, Moment of Truth, Kano, Persona

INTRODUCTION

Artificial Intelligence (AI) is a technology that will influence the future of many organizations. Schwab (2016) even predicts that AI will help top management make decisions in the future. Sixty-two percent of customers are open to the use of artificial intelligence if it improves their experience (Salesforce, 2019). However, only 33 percent encounter artificial intelligence in everyday use, a relatively low level (Salesforce, 2019).

A technology based on AI and often found in daily use is the chatbot. Chatbots are a technology that integrates modelling language and machine-generated computational algorithms to mimic informal chats between human users and computers, using natural conversational language (Shawar & Atwell, 2005). Today, customers are ready to accept chatbot technology (Morgan, 2017). Chatbot's capabilities include self-consciousness, purity, humor, emotional quotient, intelligence quotient, memory, self-learning, and charisma (Wei, Yu, & Fong, 2018). The advantages of chatbots for companies are that they can answer routine questions from customers about products or services through an automated customer service process (Almansor & Hussain, 2020), record much customer data (Lasek & Jessa; 2013, Morgan, 2017), give personalized responses and recommendations, meet customers' demand for 24/7 availability (Morgan, 2017), increase the conversion rate (Lasek & Jessa, 2013), provide accurate

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and credible communications, and increase customer satisfaction (Chung et al., 2018), and deliver faster responses and higher levels of service performance (Xu et al., 2017). However, former studies have identified several weaknesses of chatbots, such as failing to provide competent communication (Chung et al., 2018), failing to understand conversation as a human does (Lasek & Jessa, 2013), and being capable of manipulating human behavior (Creed & Beale, 2013).

Recently, many customers have been forced to migrate to online platforms to shop. In Indonesia, online shopping has increased from 4.7 percent before to 28.9 percent during the pandemic (Hutauruk, 2020). Despite the many advantages to businesses, online shopping also increases customer demand for 24/7 availability and fast response times. Chatbots can be one of the solutions to meet this demand. The use of chatbots in the marketing sector is widespread, given its potential (Fryer et al., 2019). In fact, luxury fashion brands have adopted chatbots as their e-service agents (Chung et al., 2018). However, studies on the success of chatbots, especially in relation to brand, are still limited.

Just like human service agents, chatbots basically function as representatives of a brand. Therefore, chatbots must also have certain characteristics expected of human service agents, such as being polite, helpful, and trustworthy (Chung et al., 2018), and saving time, giving advice, and simplifying purchasing procedures for customers (Holzwarth et al., 2006). In many ways, customer interactions with e-service agents are similar to those with human agents and can influence purchasing decisions (Holzwarth et al., 2006). However, customer interactions with chatbots have their own characteristics. Hill et al. (2015) compared the differences in communication that take place between humans and between humans and chatbots. They found that customers communicate with the chatbot longer, but that the messages are shorter, and that customers use profanity more frequently. Mimoun et al. (2017) found the effect of individual characteristics on customer e-productivity. Chung et al. (2018) studied the impact of the chatbot's communication abilities on customer satisfaction and found a significant effect. Ciechanowski et al. (2019) explored differences in user reactions in interacting with text-based and an animated-avatar chatbots. Fryer et al. (2019) also compared human-human and human-chatbot interactions as a student's partner in learning a language. The study found that success depended on the initial interest of the students in language. All of those studies focused on a specific aspect of customer interaction with chatbots.

This paper offers another point of view on the interaction between customers and a chatbot. It explores the customer experience before, during, and after their interaction with the chatbot of a single company. This approach explores what aspects draw customers' attention when interacting with the chatbot as a whole. Interaction with the chatbot becomes one of the critical touchpoints, or moments of truth, within their customer journey. Focusing on the entire interaction helps to identify opportunities for improvement in the development of chatbots. This approach is important because of the expected growth in the use of chatbots, both by companies and by chatbot users. The global market for chatbots is expected to increase at an annual rate of 27.3 percent over the next seven years (NASDAQ OMX's News Release Distribution Channel, 2020). In Indonesia, there was a 33 percent increase in new subscribers, when a local bank began to use chatbots to serve customers (Purnama, 2018). Further investigation showed that the chatbot could understand 82 percent of the terms used in customers' questions. In the telecommunications sector, chatbots can reduce agent workload by up to 80 percent within eight months of launch (Purnama, 2018).

This study was carried out in four stages. The first stage explored customer experience problems in using a chatbot from three perspectives, those of the chatbot developer, the chatbot buyer, and the chatbot end user. The results were then used to explore further by identifying touchpoint elements and moments of truth. Finally, the study proposed opportunities to improve customer experiences when using a chatbot.

THEORETICAL BACKGROUND

Customer Experience

Customer experience is a subjective internal response by the customer to any direct or indirect contact with a company (Meyer & Schwager, 2007). Another definition is a multidimensional construction that focuses on customers' cognitive, emotional, behavioral, sensory, and social responses to company offers (Lemon & Verhoef, 2016). Technology is rapidly changing the nature of service, customers' service framework, and customers' relationships with service providers (Van Doorn et al., 2016). Therefore, it is necessary to map the customer experience so that researchers can understand every interaction and experience viewed from the customer's perspective (Peppers & Rogers, 2016). The customer journey map can be used as a structured visualization tool that aims to understand customer wants, needs, and expectations at each stage of the interaction (Peppers & Rogers, 2016).

There are five types of experience in strategic experiential modules (SEM): sense, feel, think, act, and relate (Schmitt, 1999). The experience types can be divided into several elements (Musa et al., 2015). The elements of sight, sound, touch, taste, and smell are classified as the sense type. Positive and negative feeling elements are classified as feel. The elements of settings, recommendations, products and services, animals, information, imagination, and website are classified as think. Interaction with animals, revisiting intention, sharing experiences, and taking photos are classified as act. Elements of animal conservation, social life, and souvenirs are classified as relate.

The type of experiences can be used as a variable and divided into several sub-variables in the context of gamers (Sheu et al., 2009). Apart from the five types of experience, there are other variables, such as loyalty. Image design and sound effect design are sub-variables of the sense variable. The sub-variables emotional delight and psychological relaxation fall under the feel variable. The sub-variables brainstorm, difficulty, and challenge are part of the think variable. Quality of service and safety-related services are part of the act variable. Interaction and interpersonal relationships and sense of fulfillment are all parts of the relate variable. The sub-variables repurchase desire, public praise and recommendation desire, and cross-purchase desire are included under the loyalty variable. SEM, the variables, and the associated variables can be seen in Table 1.

In this study, the attribute emotional delight is included in the feel type. The settings, information, and recommendation attributes fall into the think type. The attributes of experience sharing, and revisiting intention are included in the act type. While relate was not included in this study, it basically expresses how the four types of experience connect with something outside the individual.

One way to describe customer experience is by visualizing it as a map. Before mapping, the first thing to do is to identify the persona. Personas can be defined as characters that help researchers produce solutions that focus on specific goals and provide insight into how different roles can overlap so that they can be improved and create efficiency in workflows (Baker, 2017). In making personas, proto-persona variations can be used to represent actors in a value chain (Kalbach, 2016). Proto-personas can be created by dividing a box into four quadrants, each of which contains one of the following elements: names and sketches, demographic and psychographic characteristics, behaviors and actions, and needs and pain points.

In general, the elements contained in a customer journey map include actions, goals, emotions and thoughts, moments of truth, and touchpoints (Kalbach, 2016). It should be noted that the use of elements in the customer journey map can differ depending on the purpose of the service design visualization. Doing so ensures that it provides a useful perspective on the characteristics and objectives of the customer journey map (Følstad & Kvale, 2018). Touchpoint elements in this study were seven touchpoint elements, as stated by Stein & Ramaseshan, (2016). There are seven touchpoint elements: technology, customer-customer interaction, communication, atmospheric, employee-customer interaction, process, and interaction with products. In this study, the employee was represented by the chatbot.

Table 1. Guidelines for behavioral and action, needs and pain points variations

Experience Type (Schmitt, 1999)	Sub-variables from Sheu et al. (2009) Case: Online Game	Sub-variables from Musa et al. (2015) Case: Zoo
Sense	Image design	Sight
		Sound
		Touch
	Sound effect design	Taste
		Smell
Feel	Emotional delight	Positive feeling
	Psychological relaxation	Negative feeling
Think	Brainstorm	Settings
		Recommendations
		Products and service
		Animals
	Difficulty and challenge	Information
		Imagination
		Website
Act	Quality of service	Interaction with animals
		Revisiting intention
	Safety-related services	Experience sharing
		Photo taking
Relate	Interaction and interpersonal relationships	Animal conservation
		Social life
	Sense of fulfilment	Souvenirs

Kano Model

The Kano model divides the attributes of a product or service to clarify difficult-to-see customer requirements by classifying the customer requirements into groups and placing each of them on a chart (Bilgili & Ünal, 2008). The graph has an x-axis and a y-axis. The x-axis represents the level of fulfillment of customer needs or describes the product's performance or function. The y-axis represents the level of customer response to a product or service (Rotar & Kozar, 2017).

The Kano model classifies customer requirements into three categories: basic or must-be, one-dimensional or performance, and attractive or excitement. The indifferent and reverse requirement categories are identified later (Tontini, 2007). Determining a product or service's quality attribute can be accomplished either quantitatively or qualitatively. For the qualitative approach, one can use either the traditional Kano Model or the force-choice classification method (Violante & Vezzetti, 2017).

METHODS

Data Collection

To gain a better understanding of users' experiences with chatbot, this study initially explored the perspectives of chatbot developers, chatbot buyers, and chatbot end users. An interview template

was developed based on five types of experiences, called structural Strategic Experiential Modules (SEMs): sense, feel, think, act, and relate (Schmitt, 1999; Sheu et al., 2009; Musa et al. 2015). In this study, sight represented sense; emotional delight represented feel; settings, information, and recommendation represented think; and sharing experience and re-consumption represented act. This study did not include relate, which measures the connection between individuals and something outside. All participants were asked about each attribute of the experience type, except for sight. Only the buyers and the end users were asked about sight.

As a result of the interviews, the study identified problems faced by customers who interacted with chatbots. In order for the study to be more specific, it focused on VX, the chatbot used by one of the leading telecommunications companies in Indonesia. Some of the services provided by VX include information on the customer's remaining internet quota, the nearest point-of-service kiosk, other products and services the company offers, as well as information on bonus redemption and purchasing of products or services. VX can be accessed through social media and the corporate application.

The company identifies its chatbot with an avatar having the following characteristics:

1. Physical characteristics: Female, with long curly hair, white skin, charming lips, and a tall and slender body shape.
2. Communication style: Understand a simple local language, talk simply and casually, but politely.
3. Personality and behavior: Cheerful, friendly, caring, empathetic, and patient (not aggressive in starting conversations).

In order to get rich information about customer experience using chatbots, this study conducted qualitative research by using interviews. Participants were offered three alternatives of synchronous communications: telephone, video call, and multichannel web conferencing meeting rooms. Face-to-face interviews were not feasible because of the pandemic.

The most critical aspects in data collection through interviews are the suitability of the research design and the participants' preferences regarding access and availability (Salmons, 2014). Also, each type of data collection technique has its own strengths and weaknesses (Opdenakker, 2006). To overcome the weaknesses of the telephone, the completed document was sent back to the participant through e-mail or text-based messages. To lessen distractions during a video call, the list of questions was sent to the participant before the interview. In using multichannel web conferencing meeting spaces, the participant was required to agree and understand how to use the method. At the end of each interview, researchers made a summary, and the participants confirmed its accuracy to ensure the validity of the data.

The data collection procedure consisted of three stages (Creswell & Creswell, 2017). The following is an explanation of each step applied in this study.

Step 1: Identify participants who meet the criteria of the research objectives.

The company had conducted demographic research on 4,293 chatbot users and profiled them in terms of age, gender, and customer spending. Customer spending was the costs incurred by the customers in using the company's services every month. Of customers served by the chatbot, 71 percent were 18-35 years old, 26 percent were 36-45 years old, and 2 percent over 45 years old. In addition, 77 percent of the respondents were male, and 81 percent spent more than IDR50,000.

Therefore, most of the participants in this study were assumed to be between the ages of 18 and 35 and to spend more than IDR50,000. However, researchers decided to include a number of respondents aged 36-45 years, because the percentage of customers in that age range is quite large. The study expected to provide new insights that could improve the chatbot's performance in the view

of customers. In addition, because women tend to feel uncomfortable with technology (Geffen and Straub, 1997; Tarhini et al., 2014), it is hoped that this study will gain more input from the perspective of female consumers.

Step 2: Identify number of participants.

The method used in this study was quota sampling by using the largest percentage of a category as the criterion. The study also used judgmental sampling in determining the participants from each category. The number of participants required in this study follows Charmaz (2006, in Creswell & Creswell, 2017), where data collection ceases if new data does not provide new insights. This technique was considered suitable for exploratory research like that carried out in this study. Therefore, the researchers did not determine the number of participants at the beginning of this study.

Step 3: Determine the type of data to be collected.

Researchers gathered data for three purposes: identifying personas, developing customer journey maps, and designing chatbot improvements.

Table 2 provides the questions for identifying personas. In addition, researchers gathered demographic data, such as age, customer spending, gender, frequency of chatbot use, and method used to access the chatbot.

The second group of data helped to map the customer journey in using the chatbot. The elements in the customer journey map may differ depending on the purpose of the visualization. However, it must provide a useful perspective on the user's experience (Følstad & Kvale, 2018). General information contained in a customer journey map includes actions, goals, emotions, pain points, touchpoints, interaction channels, and moments of truth (Kalbach, 2016). Stein & Ramaseshan (2016) identify seven elements of touchpoints: atmosphere, technology, communication from the company, processes, interactions between employees and customers, interactions between customers and customers, and interaction with the products/services. In this study, data to be collected included actions, goals, emotions, pain points, touchpoints, channels, and moments of truth from customers who use chatbots. In addition, actions were events that started in any pre-use, use, or post-use stage (Lin & Zhang, 2011).

In addition, customer experience scenarios were arranged for the data collection. Scenarios can provide a total or holistic view of the customer experience (Zomerdijk & Voss, 2010). As mentioned before, the experience encompassed aspects of sense, feel, think, act, and relate (Schmitt, 1999). The scenarios were developed based on the interviews of chatbot developers, chatbot buyers, and chatbot end users.

The third group of data focused on improving the chatbot. The Kano model served as the framework in developing improvement priorities. Researchers employed the force-choice classification

Table 2. Guidelines for behavioral and action, needs and pain points variations

No.	Elements	Question Guideline	Objective
1	Behavior and actions	What kind of services are you usually seeking while using the chatbot?	To find out what interactions are most often carried out by customers who use chatbots.
2	Needs	What kind of needs do you want to meet through the chatbot's services?	To find out customer's needs when using the chatbot's services.
3	Pain points	What difficulties did you encounter when using the chatbot's services to fulfill your needs?	To find out customer difficulties when using the chatbot's services.

method, which allows for the classification of existing and non-existent attributes and has no technical limitations regarding the number of attributes being analyzed (Violante & Vezzetti, 2017). However, this method required a complete list of customer attributes in various Kano categories (Shen, Tan, & Xie, 2000). This comprehensive approach is useful for identifying attributes that fall into the must-be and attractive categories because they are considered unspoken qualities (Shen et al., 2000). What remains is the classification of the moments of truth to determine priorities for improvements. Therefore, all moments of truth served as customer attributes. At this stage, the participants from the former stage were interviewed again.

There are two steps to differentiate categories into more discrete levels in the force-choice classification method (Shen et al., 2000). To ensure that participants understand the questions, the authors provided a brief explanation of the Kano model before the interview. In this study, participants were allowed to ask about this explanation. In addition to categorizing moments of truth into Kano categories, researchers also asked whether the participants saw potential problems at each moment of truth.

The results were then discussed with the company that owns the VX chatbot and with the chatbot developer to explore possible solutions and to consider their priorities from both the company's and customers' point of view. In the end, this study proposed solutions to improve the customer experience in using the chatbot.

All data collected from the interviews were recorded with participants' knowledge. Researchers analyzed the data thematically, using personas and customer journey maps for guidance. They categorized the data into several groups and then carried out the data analysis in these groups based on the similarities and differences in characteristics that can illuminate persona characteristics that may not have been previously identified (Jain et al., 2019). The researchers then transformed the pattern-obtained results into a leaner group and selected results based on priority strategic objectives (Jain et al., 2019).

RESULTS

Identifying Personas

Table 3 provides a summary of the issues related to customer experience with chatbots, based on interviews with the developer, the buyer, and the end users.

Researchers then used the identified problems for generating scenarios. The scenarios were then used for interviewing users of VX. In addition, researchers explored problems faced by the participants

Table 3. The results of SEM

No	SEM Attribute	Identified Problems
Sense	Sight	The interface on the cell phone is not attractive
Feel	Emotional delight	The response given by the chatbot is not very satisfying
Think	Settings	The security system is weak because it uses a one-time password (OTP)
	Settings	Using the chatbot is not practical
	Settings	There is little opportunity to provide feedback for the improvement of the chatbot
	Information	The chatbot cannot solve the problems
Act	Experience sharing	Users do not know how to use the chatbot
	Revisiting intention	Users lack an awareness of the benefits of chatbots
	Revisiting intention	Users lack interest in using other similar services

outside those listed in the scenarios. Ultimately, researchers interviewed fourteen customers. The characteristics of the participants appear in Table 4.

From the table above, researchers generated personas for the chatbot users. They concluded that information and transaction needs were two of the basic features that the chatbot should fulfill, which all participants mentioned. Therefore, these two features were the core benefits of chatbot usage, which all of the personas should desire.

Other than these two needs, three additional needs emerged from the interviews—security, entertainment, and complaint submission. These three needs formed the basis for generating personas for customers, labeled security keepers, entertainment hunters, and complainers. The detailed characteristics of these three personas were as follows (Table 5):

Mapping the Customer Journey

Researchers then mapped the customer journey of each persona. The map followed the real customer journey and was not based on a predefined framework (Følstad & Kvale, 2018). The action stages used in this study were adopted from Lin & Zhang (2011). Each customer journey consisted of pre-usage, usage, and post-usage stages.

The pre-usage stage is a customer activity for finding information to meet their needs, which leads to trust in using the chatbot. The usage stage consists of customers' activities when interacting with the chatbot. The customers' emotions during this stage were recorded. The post-usage stage represents the willingness of the participants to fill in an evaluation form that appeared on the screen.

Table 6 presents a summary of the main differences in the customer journey map of the three personas.

From more than thirty-one touch points, researchers categorized twenty-three as a moment of truth. A moment of truth in this context is a touchpoint that determines whether the customer will use the chatbot VX or not.

Prioritizing Improvements

The Kano model helped researchers identify priorities among moments of truth from the customers' point of view. Of the twenty-three moments of truth, twelve were categorized as basic, seven were one-dimensional, two were attractive, and two were indifferent (Table 7). Researchers then discussed these results with the staff of the company owning VX, who were responsible for monitoring and improving VX. The staff was also responsible for communicating with the chatbot developer. The results of this discussion are summarized in Table 7 in the priority for improvement column.

DISCUSSION

Chung et al. (2018) and Zarouali et al. (2018) have concluded that the study of virtual service agents is still limited, although it plays a role in influencing purchasing decisions, and more companies are using chatbots. Previous studies have studied several aspects of customer experience in using a chatbot in shopping online, such as communication quality (Chung et al., 2018), the role of avatar (Holzwarth et al., 2006), the conversation that takes place between humans and the chatbot (Lasek & Jessa, 2013), individual characteristics and productivity (Mimoun et al. (2017), the usability of a chatbot's prototype (Pricilla et al., 2018), and the association of cognition and affection when using a chatbot with the related brand (Zarouali et al., 2018), and the relationship between individual characteristics and customer e-productivity (Ciechanowski et al., 2019). This study contributes to improving understanding of the overall customer experience in using a chatbot through social media and the corporate application.

The chatbot for this study was VX, a chat-based virtual assistant owned by an internet provider in Indonesia. VX is represented by an avatar in the form of an attractive woman. Using an avatar can increase customer satisfaction, encourage a positive attitude, and increase purchase intention. In

Table 4. The characteristics of the participants

Elements	Characteristics of Participants	Number of Participants
Demographic Factors		
Age	21	6
	22	4
	23	1
	25	1
	26	1
	36	1
Customer spending (IDR)	200,000	2
	150,000	6
	115,000	1
	100,000	2
	75,000	1
	70,000	1
	60,000	1
Gender	Female	9
	Male	5
Chatbot use frequency (per month)	Once	1
	Twice	6
	Three times	4
	Four times	2
	Five times	1
Chatbot accessed through	Provider Application	5
	Social media	9
Behavioral and action, needs and pain points		
Needs	Getting information about the services	14
	Buying services	14
	Playing games	1
	Troubleshooting	3
	Submitting a complaint	4
	Getting information about entertainment	5
Pain points	Security code sent by the chatbot was not received	3
	Not all promotion programs accessible through the chatbot	1
	Information provided by the chatbot was incorrect	3
	Took a long time to refresh the options on the chatbot application	2
	Access key to the chatbot was difficult to see	1
	Long waiting time to connect with human agent for complaints	3
	Problems with the language used by the chatbot	2
	Too many options provided by the chatbot	1
	Error when clicking certain buttons	3
	Incomplete information provided by the chatbot	3
	The chatbot did not understand the problem	4
	The chatbot was slow to respond	3

Table 5. The personas of customers using VX

No	Name of persona	Sketch	Demography and Psychography characteristics	Behavior and Actions	Needs and Pain Points
1	Mutiara		22 years old; monthly spending IDR150,000; uses VX twice a month	Access information in the application safely	Check information about products and services provided Buying services Felt unsafe because security code was not accepted
2	Rina		26 years old; monthly spending IDR150,000; uses VX three times a month	Access information in the application about bonuses and entertainment	Looking for convenience in accessing the services Focused on receiving the assistance on bonus and lifestyle menus
3	Irfan		36 years old; monthly spending IDR115,000; uses VX three times a month	Focus on receiving assistance on their problems	Indifference

Table 6. The main differences in the customer journey map among personas

No	Name of persona	Pre-usage phase	Usage phase	Post-usage phase
1	Mutiara	Looking for practicality in accessing the service	Focuses on being able to access chat rooms to get security codes on social media channels.	Tends to respond well to questions about customer satisfaction. Will recommend the service
2	Rina	Looking for convenience in accessing the service	Focuses on receiving assistance on bonus redemption and lifestyle menus	Tends to be reluctant to respond to questions about customer satisfaction
3	Irfan	Looking for quick responses to get help	Focuses on receiving assistance on their problems	Is indifferent

addition, choosing an avatar in the form of an attractive woman is also appropriate because VX is a chatbot for low-engagement products (Holzwarth et al., 2006). Pricilla et al. (2018) also concluded that users perceive a female avatar as friendlier. The use of an avatar can also increase the entertainment value of a chatbot (Holzwarth et al., 2006). According to Chung et al. (2018), entertainment is one dimension that a virtual service agent can fulfill. However, more research must be done to see the effectiveness of avatars. Mimoun et al. (2017) found that the physical appearance of an avatar did not attract the attention of the audience. Ciechanowski et al. (2019) concluded that complex animated avatars can have negative psychological effect on users.

This study identified two basic needs (information and transactions) that should be fulfilled by the chatbot. It also identified three other needs that became the differentiators among three personas, namely security keepers, entertainment hunters, and complainers. The two basic needs were also identified by Pricilla et al. (2018). However, Pricilla et al. (2018) excluded the entertainment from their consideration in designing their chatbot personality. Moreover, the security is a common concern

Table 7. The priority of the proposed design improvements

No.	Timeline	Moment of truth attribute	The customers' priority for improvement (Kano result)	The company's short-term priority for improvement
1	Information about VX	Find out information independently from social media or company's mobile application	Moderately basic	Yes
2		Information from word-of-mouth	Moderately attractive	No
3		Information given by the company	One-dimensional	Yes
4	Accessing VX's chat room	Layout and design appearance	Very basic	No
5		Warm greeting	Moderately basic	Yes
6		Available features and facilities	Very basic	No
7		Waiting time for security code	One-dimensional	No
8	Receiving VX's help	Assistance provided based on the entered keywords	Moderately basic	Yes
9		Information about the company's services	Moderately attractive	No
10		Waiting time for connection to human agent if needed	One-dimensional	Yes
11		Personal services given by VX	One-dimensional	No
12		Bugs when receiving services from VX	One-dimensional	Yes
13		Promotion of core products	Very basic	Yes
14		Promotion of entertainment products	Indifferent	No
15	Confirming service choices and transactions	Ease of use for payment methods	Very basic	Yes
16		Bugs when confirming choices and transactions	Very basic	No
17		Ease of transaction	Very basic	No
18		Self-confirmation for selected transactions and services	Moderately basic	No
19		Self-confirmation for selected products	Very basic	No
20	Receiving the product/service packages	Waiting time for activation	One-dimensional	No
21		Bugs when receiving packages	One-dimensional	No
22		Offering other possible assistance	Indifferent	No
23		Other possible assistance based on the entered keywords	Very basic	No

for chatbots, for two reasons: their access channel and the ability to get hold of the personal data they store (Cahn, 2017). Also, it is recommended to add a feature to the chatbot as a channel for providing feedback.

Through further exploration of the customer journey of each persona, researchers identified twenty-three moments of truth, of which eleven were basic and seven were one-dimensional. Good performance in these two categories is important to fulfill the basic functions of a product or service, and the related performance attributes can proportionally increase customer satisfaction. However, the company cannot prioritize all attributes for improvement in the short term. In addition, despite

its advantages, VX improvement was still not a priority at the company in the short-term. Hence, this study prioritized only the eight most important attributes.

Among the eight attributes, four are related to the company's own efforts. It must increase its outreach efforts to customers about the existence of VX. Even though a chatbot accomplishes many tasks, customers must sometimes receive assistance from human agents as the last resort, and the company must strengthen its service in this area to avoid long wait times. The company should also undertake promotion channel integration so that customers are not confused because they have difficulty finding the desired promotion on VX.

The other four attributes were related to other parties. Collaboration with financial institutions is essential to improve payment methods. Debugging, changing greetings, and keyword recognition in VX are all related to efforts by chatbot developers. Debugging to prevent unwanted or unexpected responses is an important function for the interaction of humans with any technology.

Greetings at the initial stage of use often determine whether customers continue to use the technology. Therefore, attracting customer attention is very important at this stage. Moreover, Lasek and Jessa (2013) find that greetings from a chatbot, as a human communication strategy, can trigger the user to respond in the same way. Additionally, greetings fell into the basic Kano category. To improve the initial greeting, researchers proposed two solutions: user interface redesign to set VX language options and optimization of the VX database capacity.

For the first solution, the language type setting could be displayed at the beginning of the chat with VX. For the second solution, the designer could reduce the language model database because there is a limited database capacity related to language training and keywords from third parties. This solution also relates to the enhancement of keyword recognition by VX. Researchers recommended pruning to reduce memory overhead by removing all words deemed insignificant according to a selected threshold (Jurgovsky et al., 2016).

In addition, researchers proposed that features that fall into the Kano indifferent categories be removed. The presence of the indifferent attributes does not have any impact on user satisfaction, and their removal would increase memory capacity for language training and keywords from third parties.

This study provides input in prioritizing chatbot performance improvements, such as layout and design appearance, availability of features and facilities, accuracy of service provided, ease of use, bug removal, and database capacity for keywords and languages. This improvement will enhance the efficiency of customer's effort in completing their tasks, as one of significant advantage of using a chatbot (Mimoun et al., 2017). In addition, this study also confirms former studies that interaction is also a priority to improve customer experience when using chatbots (Chung et al., 2018; Mimoun et al., 2017), such as greetings. However, this study has several weaknesses. First, the researcher did not explore further things that could affect the customer experience, such as what the participants liked to greet, and the customer's response to the avatar. Second, the number of participants involved in the study was limited, so generalizing the results to other contexts should be done with caution. These limitations are an opportunity for further research in the future.

CONCLUSION

Chung et al. (2018) found that studies of e-service agents remain rare. This study tries to fill the gap by investigating customer experiences in using VX, a chatbot used by a leading telecommunications company in Indonesia. It identifies potential problems faced by customers in using a chatbot from the points of view of a chatbot developer, a chatbot buyer, and an end user. It identifies nine potential problems: the attractiveness of the user interface, security, practicality, channels for giving feedback, solutions and responses given by the chatbot, how to use the chatbot, benefits of the chatbot, and interest in other similar services. Interviews of fourteen customers identified personas and customer journey maps in using the chatbot. Analysis of the personas revealed five types of needs: information, transaction, security, entertainment, and complaints. The customer journey maps identified twenty-

three moments of truth, though not all can be improved in the short term. Therefore, this study also identified priorities for improvement based on the customers' and the company's points of view. The results were eight attributes for improvement, consisting of four attributes related to the company's own efforts and four related to other parties. For the company, this study recommends increased efforts to inform customers about the existence of VX, to strengthen human agents, and to promote channel integration. With respect to the chatbot provider, the study recommends improving greetings, eliminating bugs, and optimizing the capacity of the VX language database.

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