

Article

Does Fun Matter? Using Chatbots for Customer Services

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Abstract: Chatbots are widely used in customer services contexts today. People using chatbots have their pragmatic reasons, like checking delivery status and refund policies. The purpose of the paper is to investigate what are those factors that affect user experience and a chatbot's service quality which influence user satisfaction and electronic word-of-mouth. A survey was conducted in July 2024 to collect responses in Hong Kong about users' perceptions of chatbots. Contrary to previous literature, entertainment and warmth perception were not associated with user experience and service quality. Social presence was associated with user experience, but not service quality. Competence was relevant to user experience and service quality, which reveals important implications for digital marketers and brands of adopting chatbots to enhance their service quality.

Keywords: chatbot; online customer services; customer satisfaction; electronic word-of-mouth

1. Introduction

A chatbot refers to a chatting robot which is a communication-stimulating computer program designed to counterfeit smart communication in a text or speech [1]. It is a machine or software which interacts with a human (i.e., a user) to serve as a virtual assistant to answer a number of user questions [2]. Chatbots can serve multiple purposes, such as customer service, provision of social and emotional support, information and entertainment [3]. Since the outbreak of the COVID-19 pandemic in 2021, numerous companies have been using chatbots to answer customer questions because of the increased demand for contactless interactions with customers and a limited human presence for providing customer service. With the help of artificial intelligence (AI) and natural language processing, chatbots are designed as 'Conversational Agents' (CA) to deliver services similar to human customer services agents [4]. Their popularity is due to the advantages in service effectiveness, cost savings and improved customer experience [5]. Companies increasingly adopt chatbots to assist or even replace human customer service agents during service encounters [6]. Chatbots can be made consistent in agent training and expertise and remain unaffected by heterogeneous human performance [7]. Moreover, chatbots can even help with answering questions twenty-four hours a day, seven days a week. They offer multiple benefits to the companies in terms of convenience, 24/7 availability, immediate responses and cost reduction [8]. If consumers need to speak to real humans, they might need to wait until the staff are back at work. The chatbots often provide AI services first, and consumers have to interact with the AI agent passively [9]. Needless to say, the pandemic has accelerated the popularity of chatbots to provide customer services. Adopting chatbots in answering customer enquiries has become a trend. Therefore, the purpose of this paper is to investigate what factors would affect the user experience with and the service quality of chatbots. It also discusses the formation of electronic word-of-mouth (eWOM) about the brand or company via chatbots, because eWOM is exceptionally significant nowadays given the widespread use of social media. By knowing how chatbots influence the eWOM, the brand or company can formulate its digital strategy to utilize the use of chatbots so as to enhance their service quality as well as brand. As of now, only limited research has examined the relationship between chatbots' attributes, their service quality, and users'



Citation: Wut, T.M.; Chan, E.A.-h.; Wong, H.S.-m. Does Fun Matter? Using Chatbots for Customer Services. *Informatics* **2024**, *11*, 94. <https://doi.org/10.3390/informatics11040094>

Academic Editor: Antony Bryant

Received: 30 September 2024

Revised: 14 November 2024

Accepted: 22 November 2024

Published: 27 November 2024



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experience. No previous study has been conducted to discuss the mediating effect of users' experience and service quality in the context of chatbots to provide customer service. The mediating role of service quality and users' experience in influencing a brand's eWOM has rarely been examined. Understanding how customers' perceptions and attitudes towards chatbots can provide important implications for companies and brands in enhancing chatbot designs, functionalities and user experiences [10].

In this digital era, customers spend more time on digital platforms, and companies are also investing more resources in digital services so as to satisfy customers' needs. While a chatbot is considered a digital assistant to replace human manpower to provide digital customer services, knowing consumers' perceptions about the chatbot experience is essential for companies to develop their service strategies. Therefore, the specific objectives of the research are (1) to identify factors influencing the formation of the user experience and the service quality of chatbots; (2) to analyze the influence of chatbot attributes on user satisfaction while examining the mediating roles of the chatbot user experience and perceived service quality; (3) to rationalize how user satisfaction with a chatbot is formed; and (4) to explain the formation of electronic word-of-mouth of using chatbots. By understanding these interacting relationships, marketers can develop appropriate digital marketing strategies by using chatbots so as to enhance the eWOM of the companies and brands. Valuable insights about the chatbot attributes can also help marketers maximize the benefits of adopting chatbots in providing the customer service of the companies and brands.

The paper consists of an introduction section describing the research background, problem statement, research objectives and the importance of this research. A literature review section consisting of the rationale behind the development of the hypotheses and our proposed conceptual framework will be provided. The research methodology section explains the data collection, sampling and questionnaire design. In the later section, findings, discussions and conclusion will be illustrated.

2. Literature Review

The literature review covers research related to the perceptions of chatbots, attitudes toward chatbots, and the theoretical background of the development of the hypotheses.

2.1. Perceptions and Attitude Towards Chatbots

A number of studies have investigated the impact of chatbots on customer satisfaction in different industries. Chatbots can enhance customer satisfaction by providing immediate feedback to enquiries, customized and personalized interactions and readily available support [11]. The chatbots customized to provide automatic customer response can reduce operational costs, improve efficiency and reserve human customer service agents to handle more complicated customer enquiries [10].

Other research focuses on the adoption of the chatbots which are shown in Table 1. However, the relationship between chatbot attributes, the service quality of chatbots and users' experience has not been explored in the previous literature. How the users' experience and the service quality affect customer service in the context of chatbots is lacking. The influence of chatbots' service quality and users' experience in shaping a brand's eWOM has rarely been examined. This research fills these gaps by looking at the relationship between chatbots' attributes, service quality, users' experience, service satisfaction and eWOM in the context of chatbots.

Table 1. Studies relating to adoption of chatbots.

Research Title	Authors	Purpose
Chatbot service usage during a pandemic: fear and social distancing	[12]	When the service situation is utilitarian (hedonic) in nature, customers' contamination fear influences their chatbot usage.
The acceptance of chatbots in an enterprise context—a survey study	[13]	Intrinsic motivation of the employees has a strong positive influence on the intention to use enterprise bots more than external influences.
Adoption of AI-based chatbots for hospitality and tourism	[14]	Perceived ease of use, perceived usefulness, perceived trust, perceived intelligence, and anthropomorphism are predictors of intention to adopt chatbots.
Intention to use analytical artificial intelligence (AI) in services—the effect of technology readiness and awareness	[15]	Impact technology readiness, awareness and customer attributes influenced the intention to use Chatbots.
Attitude and behavior towards chatbots	[6,16–18]	Language style and name [16], conversation skills [17], visual cues like a human figure [18] and time orientation of the customers [6] affect attitude and behavior toward chatbots.
Enhancing customer satisfaction with chatbots: the influence of communication styles and consumer attachment anxiety	[8]	Social-oriented communication style can be beneficial in enhancing service satisfaction for highly anxiously attached customers.
The impact of chatbots on customer service performance	[19]	This research develops and tests a conceptual model for customer service quality and performance in the context of chatbots. Six independent studies indicate a strong main effect of customer satisfaction, service costs, intention to reuse services, word-of-mouth, and customer loyalty on chatbot service quality.
Banking with chatbots: the role of demographic and personality traits	[10]	The behavioral intention and use behavior of chatbots were investigated against the individuals' age, gender and personality type. Users confirmed that being an extrovert has significant implications for intentions to use chatbots in the banking industry.
Understanding the attitude and intention to use smartphone chatbots for shopping	[20]	Attitude toward chatbots was affected by the perceived variables of usefulness, perceived ease of use, perceived enjoyment, price consciousness, perceived risk and personal innovativeness. Younger population is more innovative and perceives chatbot technology for mobile shopping to be more useful and enjoyable.

2.2. Applications of Chatbots in Different Sectors

Amazon is the largest online shopping platform in the United States, with the most visitor traffic in 2023, and has a market share of 37.6% [21]. It also provides excellent customer services to allow consumers to track their shipping status, arrange refunds and replacements, cancel orders and so on. Furthermore, consumers can also chat with its 'messaging assistant' 24 h a day, which provides customized responses to solve the issues and enquiries of the consumers instantly at any time. Taobao.com is also a popular online retail platform in China. Consumers usually use Taobao.com to purchase daily necessities, clothes and electrical appliances without leaving home. When consumers have enquiries about the goods, they can instantly click a button to contact the chatbots any time in that day. After they purchase their goods, consumers can have a chat with the chatbots of Taobao.com to ask for the status of their order or other questions about their order.

The Hong Kong and Shanghai Bank Corporation (HSBC) is one of the world's largest banking and financial services organizations and serves around 41 million customers worldwide in 60 countries [22]. Its adoption of chatbots, known as virtual agents, also provides benefits to the bank and its customers. They can answer customers' enquiries instantly and perform account servicing functions such as checking account balances, requesting refunds, performing account-specific requests and providing answers to frequently asked questions. Apart from the wide application of chatbots in online shopping platforms, chatbots are also

changing the banking industry to cut a lot of the workforce that provides customer services to the customers.

In terms of the usage in the public sector, the Hong Kong SAR Government also uses chatbots. The website 1823.gov.hk usually handles enquiries, compliments, suggestions and receives complaints about any areas of government services [23]. In 2019, the Hong Kong government launched the chatbots to answer simple public enquiries [23]. The chatbot at 1823.gov.hk is called ‘Tammy’. People can ask for assistance such as applying for government allowances, driving licenses, permits or identity cards and passports.

2.3. Development of Hypotheses

2.3.1. Competence

In social cognition theory, warmth and competence have been considered as the two fundamental dimensions for inferring others’ intentions and abilities [8]. Chatbots’ competence is considered as perceived intelligence, skillfulness and capability [24]. In [3], 68% of participants used chatbots for enhancing productivity. Ease, speed and conveniences of using chatbots to provide assistance and access to information were highlighted in their study. Therefore, it is believed that if a chatbot is competent, the user experience may be better, as it solves the customer’s problems instantly. The perceived service quality of a chatbot is higher in relation to whether the user expectation from using the chatbot is met. A human-like response could have a similar effect [25]. Therefore, the following hypotheses H1 and H2 are proposed:

H1. *Perceived chatbot competence associates with user experience.*

H2. *Perceived chatbot competence associates with service quality of the chatbot.*

2.3.2. Entertainment

Apart from providing information and feedback to customer enquiries, chatbots can also provide entertainment and deliver engaging content to users [26]. Entertainment is also considered as the motivation for chatbot usage [3]. As noted in the previous research, the chatbot user experience is affected by the hedonic attribute of the chatbots, i.e., the entertainment value of chatbots. As long as the users feel that the chatbots are stimulating and contribute to happy feelings and make them engaged, they have a better user experience with the chatbots [27]. Users are concerned about the entertainment value of using chatbots, i.e., the fun of using chatbots. Some users even use chatbots to kill time. Therefore, if users find some fun when they interact with chatbots, it could then contribute to their user experience and service quality as well. Therefore, we hypothesize that perceived chatbot entertainment associates with user experience, which, as with the perceived service quality of chatbots, affects the user satisfaction with chatbots.

H3. *Perceived chatbot entertainment associates with user experience.*

H4. *Perceived chatbot entertainment associates with service quality of chatbots.*

2.3.3. Social Presence

The Social Response Theory (SRT) asserts that humans unconsciously perceive the systems as social actors even though they realize the machines are ‘cold’, without feelings, motives and intentions [28]. Humans are likely to apply social rules to anthropomorphic systems under the assumption of SRT [8]. Humans tend to experience a sense of ‘social presence’ when they are interacting with chatbots [4]. ‘Social presence’ can be used to describe the extent in which a chatbot is perceived as ‘another person’ during the interaction [18]. Users also quoted social and relational motivations for using chatbots when they feel lonely and have no one to talk to [3]. This perceived social presence of chatbots may be associated with a user’s chatbot experience. If someone perceives a higher social presence when interacting with chatbots, that person may have a higher sense of emotional closeness and

social connection with the technology [29]. This higher sense of emotional closeness and social connection may be associated with better user experience with chatbots. Therefore, the following Hypothesis 5 is proposed:

H5. *Perceived chatbot social presence associates with user experience.*

Furthermore, social presence is important for enhancing and boosting social interactions while users are interacting with chatbots. Higher perceived social presence also associates with consumers' continuous use of the technology [30]. The social presence conveys sociability and warmth, which positively influences users' intention to use chatbots. When a user has a higher intention to use chatbot, it also implies the user has higher satisfaction. Higher satisfaction was due to the higher perceived service quality of the chatbot. Therefore, the following Hypothesis 6 is proposed:

H6. *Perceived chatbot social presence associates with service quality of chatbot.*

2.3.4. Warmth Perception

'Warmth' represents being friendly and caring as well as understanding others' feelings [31]. It has been found that adding human attributes to chatbots can enhance positive user experiences and foster social and emotional connectedness [16]. Consumers trust human beings more than chatbots for tasks that require the warmth experience [32]. Reference [33] also suggested that individuals perceive that chatbots do not truly understand the feelings of users like humans; therefore, it is important to have emotional interaction with chatbots. Communication style is the most easily controlled factor for the chatbots' human-like development [34]. The communication style of chatbots includes 'warmth experience', which emphasizes the feelings of friendliness, helpfulness and trustworthiness [6,24]. Owing to the lack of social and emotional value of chatbots' homogenous delivery of service, warmth perception becomes crucial in affecting consumers' experience with chatbots [35]. References [31,36] also confirmed that warmth perception contributes to higher customer satisfaction. It has been found that warmth perception could improve the user experience and perceived service quality of chatbots [8]. Chatbots that can understand and respond to emotional cues effectively, such as expressing empathy, often lead to positive user experiences [10]. Warmth perception, therefore, may influence the user experience with chatbots, as it overcomes the deficiencies of service homogeneity in chatbots. At the same time, warmth perception may also influence the users' perception of the service quality of chatbots. Therefore, the following Hypotheses 7 and 8 are proposed:

H7. *Perceived chatbot warmth perception associates with user experience.*

H8. *Perceived chatbot warmth perception associates with service quality of chatbot.*

2.3.5. Mediating Role of Chatbot User Experience

Chatbot experience refers to the overall interaction between the user and the brand [37]. User experience is known as a 'person's perceptions and response resulting from the use of a product, system or service' [38]. The user experience with chatbots describes how smoothly and satisfying a user feels when interacting with chatbots [39]. Better user experiences with chatbots which are seamless and satisfying will constitute higher satisfaction with the service [25,40]. Reference [41] explained the user experience to be made up of ease of use, convenience, personalization, and emotional satisfaction. Reference [37] considered the user experience to be affected by the convenience and efficiency of using chatbots. User satisfaction could be enhanced if the chatbot is easy to use and time-saving. Chatbots are then regarded as important to optimize the customer experience journey and thus enhance overall satisfaction [42]. Therefore, Hypothesis 9 is proposed as follows:

H9. *Perceived user experience associates positively user satisfaction with chatbots.*

2.3.6. Mediating Role of Chatbot Service Quality

Service quality is defined as the consumer's evaluation of the overall excellence or superiority of the service they have experienced during the interactions [43]. Service quality is defined by its ability to answer enquiries from users, resolving issues, and providing support [44]. In the context of chatbots, service quality is composed of various areas such as accuracy of the response, response time, user-friendliness, personalization, and overall effectiveness [37]. Due to the nature of a chatbot, its homogenous provision of a high quality of services makes it unlike a human, who can feel frustrated or tired. Higher perceived service quality also results in higher customer satisfaction because customers' expectations are met or exceeded [25,45]. The service quality of chatbots is a key factor determining users' satisfaction and behavior [46]. Therefore, Hypothesis 10 is proposed as follows:

H10. *Perceived service quality associates positively with user satisfaction with chatbots.*

2.3.7. Electronic Word-of-Mouth (eWOM)

Within the proliferation of social media in the digital world, the power of eWOM cannot be underestimated. Consumers nowadays spend tremendous amounts of time on the Internet, and eWOM is influential and immersive. The eWOM is defined as the process by which users share their experiences and opinions about some experience on social media, websites and forums [47]. Reference [48] conducted a study about the eWOM, which is considered an important channel for sharing opinions, recommendations and experiences about products and brands via social media, review platforms or other websites. The user experience with chatbots can also positively affect service satisfaction [37]. Users with positive experience with service agents are more likely to share their experiences through eWOM channels [37]. Therefore, more highly satisfied customers may be more likely to share eWOM about the product or brand in the eWOM channels. When customers have favorable interactions with chatbots, they feel satisfied, which may lead to positive word-of-mouth [49]. While brands try to use chatbots to replace the service agents, the customer satisfaction with chatbots may lead to eWOM, as social media is the most easily accessible platform to share feelings and opinions. That is, if users have higher satisfaction using chatbots, they are more likely to share their experience and opinion through online channels like social media [37]. Thus, we have Hypothesis 11 listed as follows:

H11. *Higher satisfaction leads to more positive electronic word-of-mouth (eWOM).*

3. Conceptual Framework

Based on the above hypotheses, the four chatbot attributes of 'entertainment', 'social presence', 'competence' and 'warmth perception' would affect user experience as well as the perceived service quality of chatbots. The user experience and perceived service quality of chatbots would affect users' satisfaction with chatbots, which eventually contributes to the electronic word-of-mouth about the chatbots and the brand. The following conceptual framework (Figure 1) has been developed as follows:

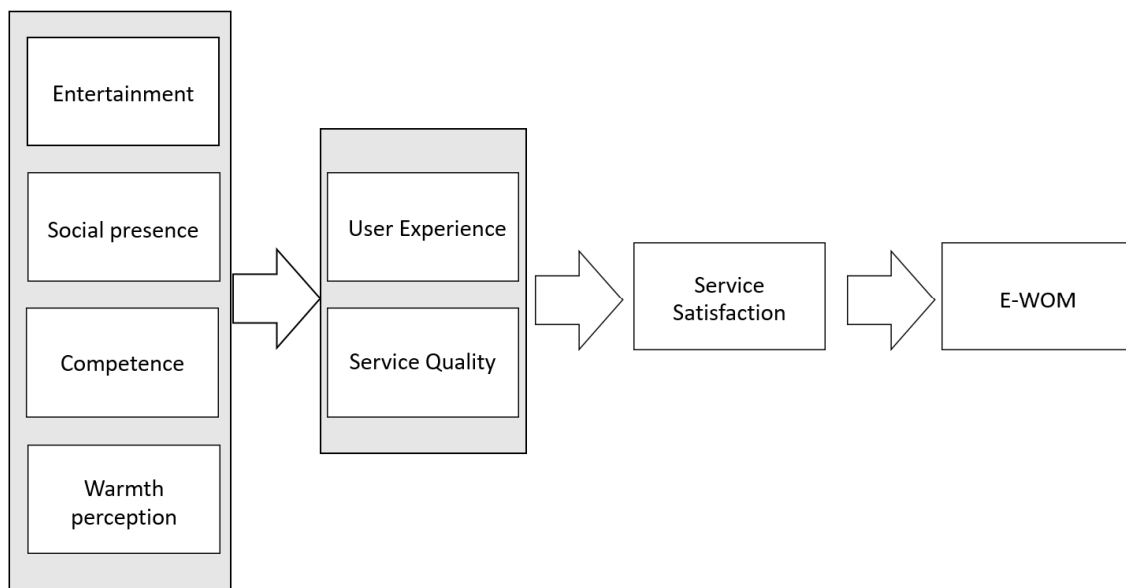


Figure 1. Proposed conceptual framework.

4. Methods

Ethical approval (RC/ETH/H/261) was obtained from the research committee before the start of the study. A survey was conducted in July 2024 to collect responses in Hong Kong about the perception of chatbots. In order to be qualified for the study, respondents were asked whether they had encountered a chatbot during an online purchase. A total of 193 responses were received, and 158 were qualified for our analysis; 35 respondents did not have a chatbot experience, which is a reasonable number, since not all the people in Hong Kong have internet buying experiences. A total of 61% of respondents are female; 39% are aged below 30, 20% are aged between 31 and 40, 27% are aged between 41 and 50 and 15% are above age 51. Most of the respondents work in professional services (34%), followed by retailing and marketing (10%) and tourism (6%). Almost half of them (43%) work in a big corporation and 28% of respondents have more than ten years working experience; 25% work at entry level, 16% work at a supervisory management level and 20% work at a middle management level. All constructs have been used on the online chatbot studies with good reliability and validity. Chatbot service quality, user experience, and electronic word-of-mouth come from [37]. Entertainment, social presence, competence and service satisfaction come from [25]. Warmth perception comes from [8]. The partial least squares structural equation method was used as the analysis tool.

5. Results

All the indicators' loadings are greater than the 0.708 threshold. The AVE is greater than 0.50 (Table 2). This means the construct has good reliability in our measurement model.

Table 2. Validity and reliability of measurement model.

Scale and Item	AVE	Composite Reliability	Cronbach's Alpha
Competence (COM)	0.806	0.954	0.940
Entertainment (ENTER)	0.900	0.964	0.944
User experience (EXPERIENCE)	0.776	0.945	0.928
Service satisfaction (SATISFACTION)	0.910	0.976	0.967
Social presence (SOCIAL)	0.834	0.952	0.934
Chatbot service quality (SQ)	0.719	0.953	0.944
Warmth perception (WARM)	0.653	0.879	0.813
Electronic word-of-mouth (WOM)	0.790	0.918	0.870

Table 3 (below) shows that the constructs of our measurement model have good discriminant validity (Table 2, above).

Table 3. Discriminant validity of the model.

	COM	ENTER	EXPERIENCE	SATISFACTION	SOCIAL	SQ	WARM	WOM
Competence (COM)	0.765							
Entertainment (ENTER)	0.579	0.598						
User experience (EXPERIENCE)	0.693	0.676	0.737					
Service satisfaction (SATISFACTION)	0.544	0.620	0.665	0.607				
Social presence (SOCIAL)	0.464	0.408	0.626	0.683	0.434			
Service quality (SQ)	0.529	0.593	0.616	0.507	0.799	0.441		
Warmth perception (WARM)	0.421	0.368	0.732	0.550	0.360	0.514	0.408	
Electronic word-of-mouth (WOM)								

The hypotheses testing result is shown in Table 4.

Table 4. Hypotheses testing result.

Path	Hypothesis	Path Coefficient	t-Statistic	p-value	Support
Competence -> User experience	H1	0.193	2.317	0.021 *	Yes
Competence -> Service quality	H2	0.292	3.448	0.001 **	Yes
Entertainment -> User experience	H3	0.149	1.637	0.102	No
Entertainment -> Service quality	H4	0.013	0.133	0.894	No
Social presence -> User experience	H5	0.337	3.702	0.000 ***	Yes
Social presence -> Service quality	H6	0.157	1.435	0.151	No
Warm presence -> User experience	H7	0.145	1.729	0.084	No
Warm presence -> Service quality	H8	0.148	1.359	0.174	No
User experience -> Satisfaction	H9	0.469	6.317	0.000 ***	Yes
Service quality -> Satisfaction	H10	0.385	5.065	0.000 ***	Yes
Satisfaction -> electronic word-of-mouth	H11	0.521	6.896	0.000 ***	Yes

Note: $p < 0.000$ ***, $p < 0.01$ **, $p < 0.05$ *.

The hypotheses testing results are shown above in Table 3. Out of eleven hypotheses, six hypotheses were supported.

Figure 2 shows the structural model.

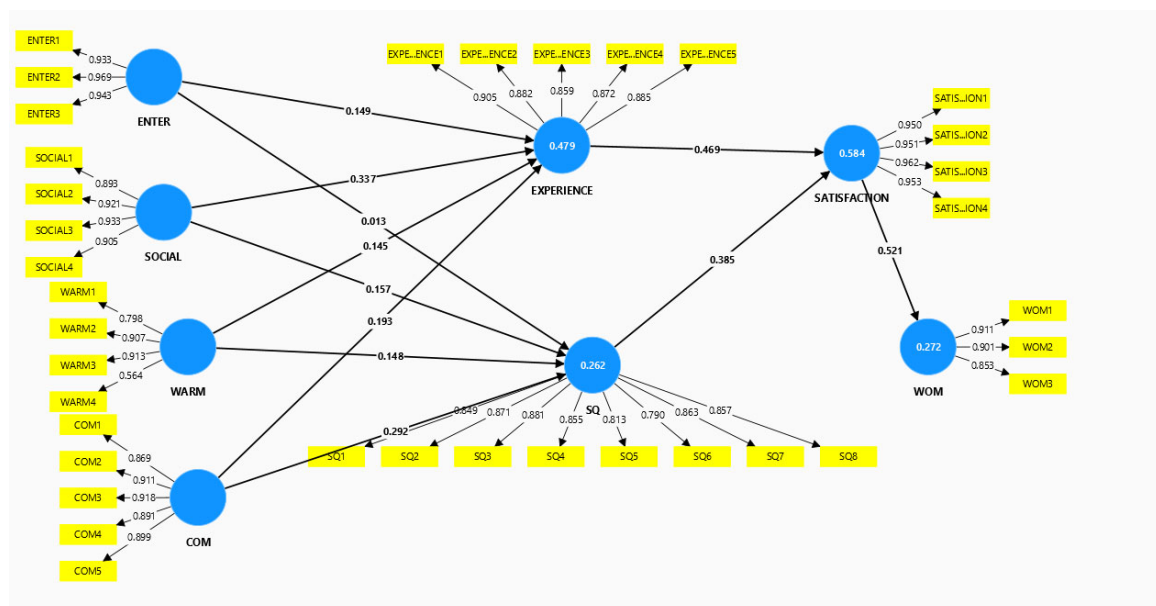


Figure 2. Structural model. Key: ENTER: Entertainment; SOCIAL: Social presence; WARM: Warm presence; COM: Competence; EXPERIENCE: User experience; SQ: Service quality; WOM: Word-of-mouth.

6. Discussion and Conclusions

6.1. Discussion

Our study sheds light on the determinants of user experience and the perceived service quality of chatbots and their role in shaping user satisfaction as well as electronic word-of-mouth. Most of the hypotheses are supported.

In our study, 'Entertainment' and 'Warmth perception' were not associated with user experience and service quality. However, it was found that the required warmth of a task reduces the consumer acceptance of AI service [32], which is contradictory to our study, which found that 'warmth perception' does not relate to user experience or perceived service quality of chatbots. It is noticed that the research sample was drawn from the Hong Kong population. Hong Kong people are more 'efficiency-oriented' when compared to other nations. Therefore, they are less concerned about the 'entertainment' and 'warmth perception' of the chatbots. There could be several causes for Hong Kong people not placing so much emphasis on chatbots being warm and entertaining. First, Hong Kong people tend to be practical-oriented, given their fast-paced and efficiency-driven culture. People using chatbots have their pragmatic reasons, like checking the delivery status and arranging refunds. Hong Kong people are concerned more with chatbots' competence in providing accurate information and prompt assistance rather than entertainment or warmth. They do not mind about how fun the chatbot is, as they focus more on its ability and functions.

'Social presence' was associated with user experience but not the perceived service quality of the chatbots. This finding is consistent with the finding of [29] that a higher sense of the perceived social presence of chatbots is associated with a better user experience. When consumers consider chatbots as 'another person', they will have a higher sense of emotional closeness and social connection with this technology. The social presence would convey the sociability and closeness which enhance the users' experience with chatbots, thus positively influencing their intention to use the chatbots. Nevertheless, this perceived social presence does not associate with the perceived service quality of chatbots. It can be explained that users do not evaluate the service quality of chatbots based on their social presence; that is, social presence is not considered one of the evaluation attributes of chatbots. As chatbots are used to assist companies or brands to provide customer services, customers interacting with chatbots simply look for answers and solutions to their problems. The perception of chatbots being 'another person' is not significant in influencing their evaluation of the chatbots' performance.

On the other hand, 'Competence' is considered to be an important attribute influencing user experience and perceived service quality of chatbots. 'Competence' is operationalized in our research as a chatbot's intelligence, skillfulness, capability, efficiency and effectiveness. While chatbots are used to provide customer services in many industries after the pandemic, they are expected to answer some enquiries about 'Frequently Asked Questions' (FAQs), order tracking, product return, reservations or even to transfer to human customer service agents when necessary. A chatbot acts as a human employee, to offer solutions and interact with customers [50]. Hence, its quality of service is evaluated based on how competently it can solve customers' enquiries and problems, but not based on its warmth perception, entertainment and social presence. The implication is straightforward that the perceived service quality of chatbots is solely based on the perceived competence of the chatbots.

The moderating roles of user experience and service quality of chatbots obviously affect users' satisfaction with chatbots. It is consistent with previous literature that a better consumer experience and higher perceived service quality would lead to higher customer satisfaction with chatbots [51]. Better user experience with chatbots would lead to higher customer satisfaction because the customers' expectations from using chatbots are met. With the latest development of chatbots, chatbot interactions can be monitored and analyzed to identify areas for improvement, which enables companies to enhance the role of chatbots to provide 24/7 services to the customers. The chatbots' natural language processing (NLP) enriches understanding of the customers' intentions and contexts, which enables them to engage in natural, human-like conversations with the customers. If the enquiries are beyond their

capacity to handle, their automatic transfer to a human customer service agent also provides immediate responses to customers. Therefore, the role of chatbots can be considered as the gatekeeper to filter out all frequently asked questions which can be automatically answered by chatbots. Only the complicated enquiries or out-of-scope enquiries would be diverted to the human service agents which can enhance the effective use of companies' resources. Chatbots should not entirely replace human interactions [52], but should be considered as an additional customer service programme to supplement with frontline employees. Their roles should be complementary, rather than substitutional [53].

It is still believed that 'warmth perception' or 'entertainment' do not associate with any user experience of chatbots and their perceived service quality, since [32] observed that most people still prefer humans over AI when a task requires intensive feelings or emotions. It is inconsistent with a previous study that found that required warmth is an important attribute which influences consumer acceptance of AI. Chatbots should not be manipulated to replace humans with tasks demanding emotional engagement and empathy, especially in the service industry, which has high demands for emotional interaction and understanding. Instead, they should be adopted to supplement humans to further assist in solving customers' challenging problems and brand complaints. For example, chatbots could be used at the beginning stage of customer services to save customers' time for some 'frequently asked questions'. Nevertheless, chatbots could filter the most human-demanding enquiries to human service agents so that they can spend more time to answer a customer-in-need by offering the most appropriate and efficient services. In that case, chatbots could be used to enhance the quality of customer service by providing prompt and accurate feedback instead of replacing the human service agents.

Where the positive word-of-mouth is concerned, when customers are satisfied with chatbots, they are likely to talk up the chatbots, recommend the chatbots to friends and promote positive word-of-mouth related to chatbots. Eventually, the word-of-mouth of the brands will also be initiated and widely spread out over social media.

This study provides a better understanding by measuring the mediating effect of the chatbot user experience and service quality in the relationship between chatbot attributes and service satisfaction. It suggests that 'competence' is a key contributor to users' experience and service quality while 'entertainment' and 'warmth perception' do not contribute significantly to them. The emphasis from previous literature on the warmth and fun value of chatbots is not applicable in the Hong Kong context.

6.2. Managerial and Social Implications

Our study also provides various managerial contributions to digital marketers in helping them build their strategies to enhance eWOM for their companies and brands. We suggest the marketers should emphasize strengthening the competency of the chatbots by enhancing their intelligence, skillfulness, capability, effectiveness and efficiency. This can enhance their perceived service quality and user experience, ultimately leading to increased users' satisfaction and electronic word-of-mouth. 'Competence' is the major appeal of adopting chatbots in a brand or company so as to support the human customer service personnel.

Moreover, chatbot users' experience and perceived service quality determine users' satisfaction, which also affects the eWOM of the use of chatbots, and so the brand or company as well. It confirms the importance of using chatbots in a customer service context to affect user experience and the importance of the perceived quality of chatbots. Companies have to employ chatbot designers to make sure the chatbots are competent to provide feedback and information to the customers-in-need. Companies must also employ resources to constantly update the database of the chatbots to ensure they can solve customers' problems effectively. Training should also be provided to allow employees to utilize the conversation between chatbots and customers in order to assist customer efficiency and effectiveness when they are directed to human service personnel. Nevertheless, companies have to incorporate the use of chatbots in the customer service journey.

Next, the brand manager should consider offering incentives for chatbot users to share their user experience over social media to enhance the company's or brand's image through positive word-of-mouth. Finally, the brand managers must closely monitor the users' satisfaction with chatbots; as the customers' needs and wants are dynamic, their perceptions of them may change over time. 'Competence' is the core attribute affecting users' experience and perceived service quality of chatbots. Therefore, close and periodic monitoring of the machine competence is crucial to develop an efficient and effective customer service system.

6.3. Theoretical Contributions

This research confirms that 'warmth perception', and 'entertainment' do not influence users' satisfaction and eWOM regarding chatbots, while 'competence' plays a significant role. The finding also confirms that the relationship between a good user experience and high service quality of chatbots would lead to users' service satisfaction, which would eventually result in higher brand loyalty via eWOM. Finally, chatbots' user experience and perceived service quality successfully mediate the relationship between chatbot attributes and eWOM. The research further contributes to the academic literature by confirming the factors influencing chatbot users' experiences and satisfaction. The influence of 'competence' is stronger than 'entertainment' in shaping users' experience and satisfaction. Consumers' adoption of new technology still relies on the competence of the application or software.

6.4. Conclusions

Contrary to previous literature, entertainment and warmth perception were not associated with user experience and service quality in using chatbots for customer services. Social presence was associated with user experience, but not service quality. Competence was relevant to user experience and service quality.

Since Hong Kong is also in its preliminary stages of employing chatbots in providing customer services, many Hong Kong residents are not aware of this development. Their understanding of chatbots and their perceptions are still preliminary. Longitudinal research should be employed to monitor their perception change at different stages of chatbot development so as to develop an effective digital marketing strategy for customers.

The data collection was conducted by convenience sampling, because the exposure to chatbots in Hong Kong is not mature. The people experiencing chatbots are usually younger and more educated, and their expectations of interacting with chatbots could be different. Other sampling methods, such as systematic sampling or stratified sampling, could also be considered for enhancing representativeness. Moreover, the people using chatbots are usually innovators in technology who are usually students, educators, professionals in technology fields, or businessmen. These people are more educated and willing to try new technology. The sampling should also target these groups of individuals, who are willing to use chatbots. Finally, different demographic groups may rate their satisfaction with chatbots differently too. Reference [54] found that younger users and female users rated the conversations with chatbots more favorably. Therefore, it is worthwhile to examine how individuals' demographic characteristics and personality traits would influence their adoption and expectations of using chatbots, so that the brand manager can develop their chatbot strategy based upon their brand's target market.

Author Contributions: Conceptualization, T.M.W.; methodology, T.M.W.; formal analysis, T.M.W.; software, T.M.W.; validation, T.M.W.; investigation, T.M.W.; resources, T.M.W.; data curation, T.M.W.; writing-original draft preparation, T.M.W.; writing-review and editing, T.M.W.; visualization, T.M.W.; supervision, H.S.-m.W.; project administration, E.A.-h.C. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Institutional Review Board Statement: This study was approved by the research committee of College of Professional and Continuing Education (RC/ETH/H/261), 30 August 2024.

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: The raw data supporting the conclusions of this article will be made available by the authors on request.

Conflicts of Interest: The authors declare no conflicts of interest.

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