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Total Quality Management (TQM) Theory Approach to Online Customer Experience Using Chatbot to Improve Brand-Relationship Quality

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ABSTRAK
Penelitian ini bertujuan untuk menganalisis peran chatbot dalam e-commerce, dengan pengalaman pelanggan daring sebagai mediator, serta pengaruhnya terhadap kepuasan pelanggan dan kualitas hubungan merek. Penelitian ini melibatkan 203 pengguna chatbot sebagai sampel. Hasil penelitian menunjukkan bahwa kualitas sistem chatbot berpengaruh positif terhadap pengalaman pelanggan daring. Namun, tidak terdapat hubungan positif antara pengalaman pelanggan daring dan kepuasan pelanggan. Di sisi lain, kualitas informasi secara langsung memengaruhi kepuasan pelanggan, sementara kualitas sistem dapat memengaruhi kepuasan pelanggan, dengan pengalaman pelanggan daring berperan sebagai mediator. Terakhir, kepuasan pelanggan berpengaruh positif terhadap kualitas hubungan merek.

Kata kunci: kualitas hubungan merek, chatbot, kepuasan pelanggan, e-commerce, pengalaman pelanggan daring

ABSTRACT
This study aims to analyze the role of chatbots in e-commerce, with online customer experience as a mediator, and its influence on customer satisfaction and brand relationship quality. The study involved 203 chatbot users as a sample. The results showed that chatbot system quality positively influenced online customer experience. However, there was no positive relationship between online customer experience and customer satisfaction. On the other hand, information quality directly influenced customer satisfaction, while system quality could influence customer satisfaction, with online customer experience acting as a mediator. Finally, customer satisfaction positively influenced brand relationship quality.

Keywords: brand relationship quality, chatbot, customer satisfaction, e-commerce, online customer experience

INTRODUCTION

Artificial Intelligence (AI) is revolutionizing various aspects of life by automating tasks and enhancing human intelligence. According to a study conducted by Harvard Business Review (2023), AI and automation technologies are widely used in providing services and running business processes that have a direct or indirect impact on consumers and employees. As AI continues to improve its ability to quickly and accurately provide data, its use in everyday life, such as in smart speakers and chatbot, is becoming increasingly prevalent (Diaz, 2023).

AI-powered chatbot have become a valuable tool for e-commerce platforms, assisting customers with their online shopping needs and addressing any issues that may arise (Bhargava, 2023). These chatbot are designed to emulate human conversation and allow users to communicate in a natural language like English (Choudhary & Chauhan, 2023). By delivering prompt and accurate information about desired products, chatbot enhance the customer experience (Rakhra et al., 2021). Moreover, chatbot play a vital role in managing the high volume of messages received through various communication channels (Fitriani et al., 2022). With round-the-clock availability, chatbot ensure that all customer queries are addressed swiftly. Given their ability to reduce operational costs, save

manpower, and boost sales (Adlin et al., 2019; Fitriani et al., 2022), it's no surprise that chatbot are now commonplace in online shopping platforms, helping customers navigate the digital shopping landscape with ease.

Most consumers go through a series of steps before making a purchase or using a service. These typically include gathering information about the product, understanding its functionality, finding out where and when it is available, and seeking recommendations from others (Rita, 2021). This has encouraged businesses to create marketing strategies using *Conversation Marketing* approach. This approach focuses on actively engaging consumers to create deep connections with consumers, enhance customer positive experiences, and build trust (Rita, 2021). This involves actively engaging consumers through personalized, real-time interactions using technology like social media (Mehmet & Clarke, 2016) and AI chatbot (Rita, 2021). Chatbot, in particular, are gaining widespread popularity among businesses as an efficient and effective means of providing information related to their products or services, resulting in a positive customer experience (Nugraha et al., 2022).

A recent survey conducted by Forbes found that 60% of millennials have taken advantage of chatbot services, with 70% of those individuals reporting a positive experience (Arnold, 2018). The study also revealed that customers generally prefer using chatbots over waiting for human agents to respond to their inquiries. This is largely attributed to the challenges faced by customer service, including redundant consumer inquiries and limited time for serving customers. Furthermore, discrepancies in the quality of customer service, such as variations in information and feedback across different channels, can negatively impact e-service quality and harm the relationship between the customer and the brand.

Businesses are increasingly adopting chatbots as a customer service solution due to their ability to provide consistent and informative answers to repetitive inquiries. With 24/7 availability, chatbots can improve customer satisfaction (Adlin et al., 2019; Chung et al., 2020; Magno & Dossena, 2023). By prioritizing system quality and information accuracy, chatbots can deliver a familiar approach when interacting with customers and creating a positive online shopping experience, ultimately playing a crucial role in customer satisfaction and acting as a brand representatives in customer relationship (Chung et al., 2020; Magno & Dossena, 2023; Zarouali et al., 2018)

As technology continues to advance, more studies are being conducted in this field. However, there is a gap in research surrounding the impact of AI chatbot technology on customer satisfaction, particularly in regards to how chatbots influence consumer attitudes towards quality of representative brands (Hoyer et al., 2020; Magno & Dossena, 2023). Additionally, previous studies have failed to examine the relationship between system quality and customer satisfaction, which is the focus of this research. According to Magno & Dossena's findings, there was no significant effect of system quality on customer satisfaction (Magno & Dossena, 2023). However, another study suggests that a chatbot's response time greatly influences customer satisfaction (Chung et al., 2020).

The primary objective of this research is to examine the gap from previous studies, by looking at whether the customer's online shopping experience can play a mediating role in determining chatbots' system quality to their satisfaction levels. Additionally, the study aims to investigate how chatbots' information quality and system quality of chatbots impact customer satisfaction. Furthermore, the research seeks to evaluate the dimensions of extrinsic and intrinsic value of online customer experience in e-commerce and their influence on brand relationship quality. Ultimately, this research intends to address the gaps in previous studies on this subject.

Literature Review

TQM Theory

Total Quality Management (TQM) is an approach technique that many businesses are interested in in achieving a competitive advantage in global competition by utilizing technological reliability (Magno & Dossena, 2023). This is because the TQM approach focuses on developing and applying quality principles in all aspects of business operations, such as improving product and service quality, achieving operational efficiency, and increasing customer satisfaction. TQM used by businesses in innovating, implementing standardization, and making continuous improvements plays a key role in increasing competitiveness (Tasleem et al., 2019). TQM and technology are two important components that support and influence each other, especially in the field of customer service implementing chatbots (Magno & Dossena, 2023). TQM has been widely studied and implemented in businesses engaged in

services and is considered a framework to better understand the basics of quality management in these businesses (Talib, 2020). The implementation of TQM can help businesses gain a competitive advantage in the market. The incorporation of TQM principles can be the basis for designing and evaluating strategies for implementing chatbot technology in improving customer service quality.

Chatbots

This study delves into the potential of Chatbot technology to enhance customer satisfaction. To create a successful interaction between technology and consumers, two objectives must be met: utilitarian and hedonic. Utilitarian goals center around the analytical capabilities of the technology, such as the information provided by the chatbot. Hedonic goals, on the other hand, are focused on the emotional value that consumers derive from using the technology. In this research, utilitarian aspects are identified as information quality and system quality, while hedonic features are related to the online customer experience when utilizing a chatbot (Chen et al., 2021; Hoyer et al., 2020; Magno & Dossena, 2023).

Online Customer Experience

The evaluation of the online customer experience can be done through two dimensions, intrinsic and extrinsic value (Chen et al., 2021). Extrinsic value is the practical results of applying technology, like convenience, time effectiveness, and efficiency (Kokkinou & Cranage, 2013). Meanwhile, intrinsic value is the customer's feelings of satisfaction, including independence, sophistication, confidence, and pleasure felt when interacting with technology (Chen et al., 2021).

System quality is related to the technical capabilities of chatbots, such as usefulness, prowess, adaptability, and timeliness (Trivedi, 2019). It refers to the chatbot's ease of use, ability to interact at all times, ability to follow trends, and speed and accuracy when responding (Magno & Dossena, 2023). If the chatbot does not meet the expected technicalities, it can result in negative customer perceptions. For example, chatbots that take too long to respond can create inconvenience and waste customer time (Chen et al., 2021; Chung et al., 2020), and make customers unhappy because they feel unappreciated (Go & Sundar, 2019). Therefore, hypotheses 1 and 2 state:

H1. The system quality provided by the chatbot has a positive effect on the extrinsic value of the online customer experience.

H2. System quality provided by chatbots has a positive effect on the intrinsic value of the online customer experience

Customer Satisfaction

Numerous businesses believe that customer satisfaction is the key to long-term success and competitiveness (Klein & Martinez, 2023). In general, customer satisfaction is a vital factor for a business and should be the primary focus in marketing and service strategies. Customer satisfaction refers to the pleasure that customers feel after receiving exceptional and satisfying service, in line with their expectations (Joviando & Kurniawati, 2022).

When customers have a pleasant experience shopping online by using an innovative chatbot, they are more likely to recommend the brand or company to others (Chen et al., 2021). Chatbots that meet customer expectations during interaction, such as providing the necessary product information, create customer satisfaction (Sanny et al., 2020). The duration of time when interacting with a chatbot also plays a crucial role in customer satisfaction. Users expect a system that operates quickly, efficiently, and reliably when solving their problems (Chen et al., 2021). Therefore, there is a close relationship between the extrinsic value of customer experience and customer satisfaction. This extrinsic value can affect customer perceptions of product or service quality and overall satisfaction. So, the hypothesis is proposed:

H3. The extrinsic value of online customer experience has a positive effect on customer satisfaction.

Customers' satisfaction with their online shopping experience is deeply influenced by the intrinsic value they perceive from it, similarly to the extrinsic value. Intrinsic value plays a crucial role in shaping customer perceptions and satisfaction (Chen et al., 2021). Chatbots that can interact responsively and efficiently with customers contribute to making them feel happy and valued (Go & Sundar, 2019). This, in turn, increases customers' positive perceptions and satisfaction with a brand

(Chen et al., 2021). Chatbots that provide an intuitive display presentation, smooth navigation, and ease of use tend to create customer confidence in using technology, ultimately leading to increased customer satisfaction. Customers who find chatbots enjoyable to use are more likely to feel satisfied. Therefore, hypothesis is proposed:
H4. The intrinsic value of online customer experience has a positive effect on customer satisfaction.

The quality of information presented by chatbots is crucial for customer satisfaction. The accuracy, validity, relevance, and accessibility of information determine the overall quality of information (Magno & Dossena, 2023). Chatbots must provide accurate and relevant information that meets user needs to create a positive perception of quality of use (Chen et al., 2021; Chung et al., 2020). Customers are more satisfied when chatbots provide quick, relevant, and accessible answers. This increases customer comfort and feelings of value, resulting in higher customer satisfaction (Go & Sundar, 2019; Ng et al., 2020). In summary, the quality of information presented by chatbots plays a significant role in shaping customer satisfaction.
H5. Quality information provided by chatbots has a positive effect on customer satisfaction

Brand-Relationship Quality

Customer satisfaction has been found to be related to brand relationship quality, according to previous research (Kim et al., 2013). Similarly, studies have shown that brand relationships can also impact customer satisfaction (Sintha Dwi Wulandari & Kurniawati, 2022). This means that when customers feel satisfied after interacting with a chatbot during online shopping, it is likely to improve their relationship with the brand (Chen et al., 2021). Brand-relationship quality refers to the brand's ability to establish a strong bond between the seller and the customer through their products or services (Purnasari & Yuliando, 2015). Therefore, customer satisfaction resulting from their experience with a chatbot can have a positive impact on brand-relationship quality. Marketing strategies that focus on enhancing customer satisfaction are likely to improve brand relationship quality, as customer satisfaction is a key factor in forming strong brand relationships
(Chen et al., 2021). Based on this, the hypothesis is proposed:
H6. Customer satisfaction has a positive effect on brand-relationship quality

Mediating Role Online Customer Experience

The effectiveness of a chatbot in providing relevant information has a significant impact on customer satisfaction (Sanny et al., 2020). Positive experiences with an innovative chatbot can lead to brand recommendations, resulting in satisfaction (Chen et al., 2021; Purnasari & Yuliando, 2015). Therefore, businesses must not only ensure that their chatbot system is of high quality, but also strive to provide customers with positive experiences (both extrinsic and intrinsic) during chatbot interactions. This is crucial in shaping customer perceptions of the brand and creating a satisfying experience. Based on this, the hypothesis is proposed:
H7. Online customer experience positively mediates the effect of system quality on customer satisfaction.

METHODS

The data used in this study is primary data collected through online surveys using questionnaires *(cross-sectional)* using five-point Likert scale. The indicators are taken from the research of Magno & Dossena (2023) and Chen et al. (2021). The sample were selected using non-probability purposive sampling techniques and consists of individuals aged between 21 and 40 years. This is because according to Katadata Insight Center (KIC) survey millennials and gen Z, aged between 21 and 40 years, are the most frequent online shoppers and technologically literate (Annur, 2023). The criteria for respondents required them to be consumers who have used chatbots while shopping on e-commerce platforms such as Tokopedia, Shopee, Lazada, Blibli, or Bukalapak, which have the best use of chatbots (Ivosight, 2023). The study uses 203 samples that will be analyzed using the SEM-AMOS analysis method.

Before running the hypothesis testing, it is important to conduct data quality testing. Based on normality testing by examining the kurtosis and skew values. Although the table of normality test results is not displayed, it is still available and can be determined that the data is multivariate and normally

distributed. Table 1 shows the results of the validity and reliability tests of each variable and indicator. All estimated loading factor values for each statement item is > 0.40, so it can be concluded that all indicators are valid. Composite reliability (CR) is used in testing construct reliability. The CR value for each variable is > 0.6 which indicates that all variables have high reliability. Meanwhile, the Average Variant Extracted (AVE) test is used to see discriminant validity (Hair et al., 2019). With an AVE > 0.5 for each variable, it means that the variable has good discriminant validity

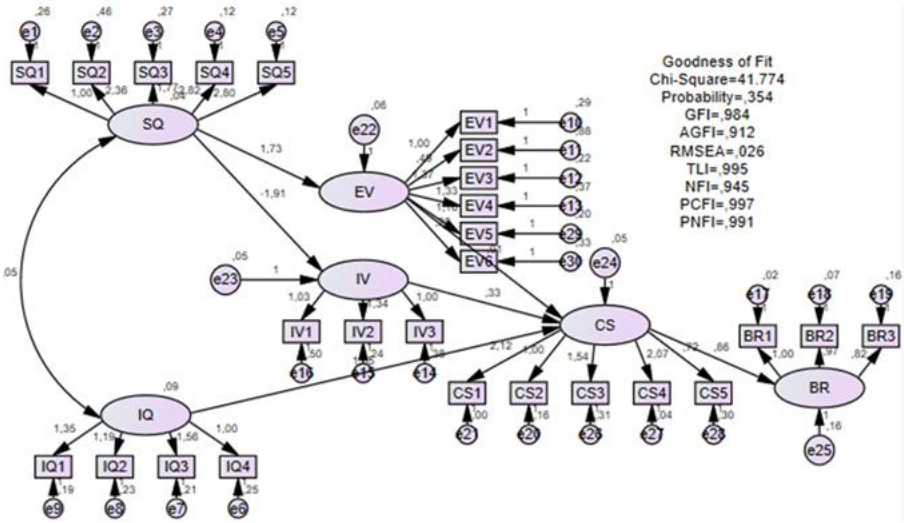
RESULT

The study had initially gathered 204 respondents, but one of them did not meet the criteria. Therefore, the final questionnaire data was based on 203 respondents. It was found that the majority of respondents belonged to the Gen Z age group (21-25 years old) and regularly used chatbots (66.2%). Private employees made up the highest percentage of respondents' jobs (29.9%). Most respondents lived in Jakarta (72.4%) and earned between Rp 3,000,000 to Rp 5,000,000 (39.2%). Out of the top five e-commerce platforms in Indonesia that use chatbots, Shopee was the most popular for shopping (42.2%). Respondents had last interacted with chatbots during online shopping more than a month ago (44.2%).

Table 1
Validity and Reliability Test Result

Variable and Indicators	Loading Factor	CR	AVE
System Quality		0,843	0,524
SQ1: I found it easy to become skillful at using an e-commerce chatbot	0,657		
SQ2: I believe that the e-commerce chatbot is easy to use	0,667		
SQ3: Using an e-commerce chatbot required minimal mental effort	0,556		
SQ4: The e-commerce chatbot was quick in response	0,850		
SQ5: Chatbots from e-commerce are reliable	0,845		
Information Quality		0,818	0,532
IQ1: E-commerce chatbot provided me with the necessary information	0,785		
IQ2: E-commerce chatbot provided responses to queries as I expected	0,794		
IQ3: E-commerce chatbot provided sufficient information	0,712		
IQ4: The information provided by e-commerce chatbot was helpful regarding my questions or problems	0,613		
Online Customer Experience (Extrinsic Value)		0,858	0,504
EV1: The chatbot makes me feel that it is talking to me personally as a customer	0,617		
EV2: The chatbot helps resolve my needs without creating other problems	0,716		
EV3: I feel more comfortable talking with a chatbot than a human	0,776		
EV4: The chatbot makes me feel valued as a customer	0,781		
EV5: I think that a company is innovative if it uses a chatbot	0,744		
EV6: The chatbot helps me gather additional information on goods or services	0,602		
Online Customer Experience (Intrinsic Value)		0,771	0,531
IV1: I like it when the chatbot helps me customize my e-commerce experience to my own liking	0,637		
IV2: I enjoy getting the benefits from using the chatbot with little effort	0,765		
IV3: The chatbot is fun to chat with	0,776		
Customer Satisfaction		0,896	0,641
CS1: I am satisfied with my overall experience using the chatbot	0,998		
CS2: The chatbot did a good job	0,624		
CS3: The chatbot did what I expected	0,660		
CS4: I am pleased with using the chatbot	0,959		
CS5: I am satisfied with the pre-purchase experience of using the chatbot	0,683		
Brand-Relationship Quality		0,886	0,725
BRQ1: This brand says a lot about the kind of person I am	0,952		
BRQ2: This brand's image and my self-image are similar in many respects	0,877		
BRQ3: This brand plays an important role in my life	0,707		

source: processed data



source: processed data

Figure 1
Output Path Analysis

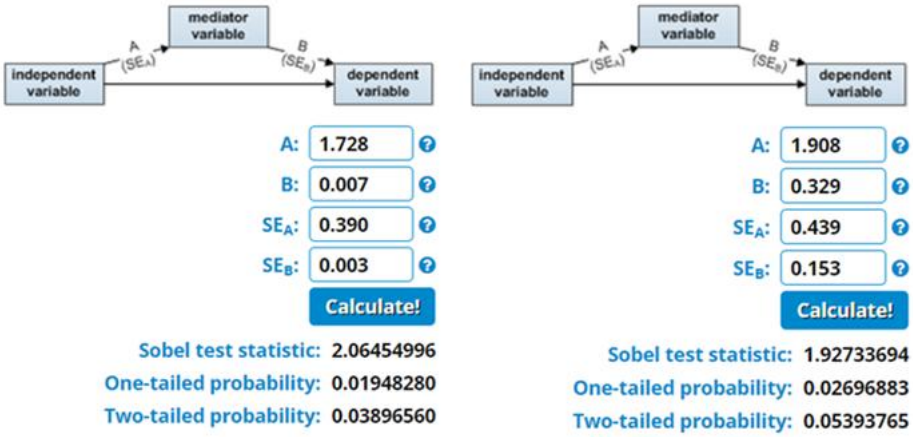
Before proceeding with hypothesis testing, a Goodness of Fit (GoF) test must be performed. Showed in Figure 1. the result of GoF that meets the criteria indicates that the model to be used in this study is feasible and can proceed to the hypothesis testing stage. Table 2 shows the results of hypothesis testing on the six hypotheses proposed. Based on the results of hypothesis testing, it is known that there are four accepted hypotheses H1 (estimate 1.728; p value 0.000), H2 (estimate 1.908; p value 0.000), H3 (estimate 1.050; p value 0.000), and H6 (estimate 0.855; p value 0.000). Meanwhile, two hypotheses are not accepted, namely H4 (estimate 0.007; p value 0.021) and H5 (estimate 0.329; p value 0.031) with each p-value > 0.005.

Table 2
Hypothesis Testing Result

	Hypothesis Model	Estimate	P
H1	System Quality → Extrinsic Value	1,728	***
H2	System Quality → Intrinsic Value	1,908	***
H3	Information Quality → Customer Satisfaction	1,050	***
H4	Extrinsic Value → Customer Satisfaction	,007	,021
H5	Intrinsic Value → Customer Satisfaction	,329	,031
H6	Customer Satisfaction → Brand-Relationship Quality	,855	***

source: processed data

To prove hypothesis 7 (H7), testing with the sobel test is used to see the indirect effect of the independent variable on the dependent variable through the mediating variable (Abu-Bader & Jones, 2021). In this study, what will be tested is the system quality variable on customer satisfaction with the mediation of online customer experience (extrinsic value and intrinsic value). Based on Figure 2. The p-value for each variable (extrinsic value and intrinsic value) is 0.019 and 0.027 (<0.05) with a T-statistic value of 2.065 and 1.927 respectively. So it can be concluded that the independent variable (system quality) indirectly affects the dependent variable (customer satisfaction) through extrinsic and intrinsic value of online customer experience as a mediating variable.



source: processed data

Figure 2
H7. Sobel Test

According to the results of the test, Hypotheses 1 and 2 have been accepted. This implies that the quality of the chatbot system has a significant impact on the intrinsic and extrinsic value of the online customer experience. A chatbot system that provides swift and precise responses can create positive perceptions in customers. Moreover, chatbots that match customers' technical expectations can make them feel comfortable and satisfied. Finally, chatbots that interact effectively with customers can make them feel valued for their time and efficiency (Chen et al., 2021; Chung et al., 2020; Go & Sundar, 2019; Magno & Dossena, 2023).

Chatbots that offer good system quality and ease of use can enhance customers' trust in using technological advancements. About 7,8% of millennials aged 31-40 years, who use chatbots, have demonstrated that chatbots can make users feel confident in utilizing technology. Moreover, the chatbot system's ability to keep up with trends can make customers feel empowered and satisfied while interacting with technology.

The results of Hypothesis 3 and Hypothesis 4 demonstrate that the extrinsic value and intrinsic value of online customer experience do not have a positive effect on customer satisfaction. This is in contrast to previous research by Chen et al. (2021); Ferreira et al. (2023); Nugraha et al. (2022). The findings of this study, especially in terms of extrinsic value, indicate that customer satisfaction cannot be easily achieved by providing a pleasant online shopping experience alone. Although chatbots are considered more efficient and effective for some customers, there are limitations to their use. Respondents in this study did not find the convenience and practicality of chatbots to be enough to make them feel satisfied with their online shopping experience. This could be due to the limitations of chatbot communication, which may lack empathy and personalization, making customers feel uncomfortable.

According to a recent study, the satisfaction of customers is not determined by the inherent value of their experience with a service. Just because a customer finds it easy to use a chatbot, it doesn't necessarily mean they are satisfied. In fact, the experience of shopping online using a chatbot versus a human agent can be quite different. The interactions that customers have with chatbots are often limited, and some customers may prefer to interact with a human agent online to have a more comfortable shopping experience. This could be because some customers feel uncomfortable communicating with chatbots or because they are not as proficient in using them (Nugraha et al., 2022).

The results of hypothesis 5 indicate that the quality of information provided by a chatbot has a significant impact on customer satisfaction. Customers are more likely to be satisfied if the chatbot presents accurate and relevant information. This suggests that a positive perception of the chatbot can be formed if it is able to provide credible and useful information that meets the needs of the customer (Chen et al., 2021). Chatbots that provide information in a clear and easy-to-understand format can make customers feel at ease and happy, which can ultimately lead to increased customer satisfaction (Magno & Dossena, 2023).

According to Hypothesis 6, customer satisfaction has a significant positive impact on the quality of their relationship with a brand. When customers feel satisfied with their experience interacting with chatbots during online shopping, it tends to improve their brand-relationship quality

(Chen et al., 2021). This, in turn, can lead to increased brand loyalty and positive e-WOM from customers, further enhancing the quality of their relationship with the brand.

Hypothesis 7 aims to prove that there is an indirect effect of System Quality on Customer Satisfaction through the mediation of Online Customer Experience (Extrinsic and Intrinsic value). Chatbots with good system quality have the ability to create positive customer perceptions in their online shopping experience, leading to customer satisfaction. The pleasant experience that customers feel from using an innovative chatbot can encourage them to recommend the brand, thereby increasing their satisfaction (Chen et al., 2021; Purnasari & Yuliando, 2015).

Theoretical and Management Implication

This study aims to integrate Total Quality Management (TQM) principles in research models that analyze the impact of chatbot adoption on online customer experience and customer satisfaction in e-commerce. The research highlights the importance of developing and implementing high-quality chatbots that improve system and information quality, resulting in increased customer satisfaction and stronger brand relationships quality. For businesses engaged in e-commerce, the adoption of quality chatbots can lead to sustainable competitive advantages. However, it is crucial to design chatbots with careful consideration of technological elements (Chen et al., 2021; Tasleem et al., 2019).

This research highlights the need for businesses to integrate TQM elements with technology-related elements. For instance, when utilizing chatbots to improve customer satisfaction, the quality of the chatbot technology itself should be related to the quality of the results provided. In addition, to a chatbot with integrated systems and information, businesses need to focus on creating a positive customer experience during online shopping. This is a crucial part of TQM implementation that can help businesses gain a competitive edge. When implementing chatbots, businesses should identify TQM elements such as customer focus, integrated systems, and effective communication, which are important for assessing suitability for their business model.

CONCLUSION

The results of this study concluded that chatbot system quality positively impacts online customer experience. However, there was no positive relationship between online customer experience and customer satisfaction. On the other hand, information quality directly impacts customer satisfaction, while system quality can influence customer satisfaction, with online customer experience acting as a mediator. Finally, customer satisfaction positively impacts brand relationship quality.

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