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REVOLUTIONIZING E-COMMERCE WITH AI CHATBOTS: ENHANCING CUSTOMER SATISFACTION AND PURCHASE DECISIONS IN ONLINE MARKETPLACE

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ABSTRACT

This research investigates the impact of chatbot features on consumer satisfaction and purchase decisions within e-commerce platforms. The research identifies key factors contributing to consumer satisfaction, including interactivity, communication manner, responsiveness, and perceived usability. The findings demonstrate that responsiveness significantly influences customer satisfaction, which in turn, strongly affects purchase decisions. Contrary to expectations, perceived usability and interactivity did not show a statistically significant effect on customer satisfaction. These results suggest that while ease of use is important, responsiveness and communication manner may play a more critical role in shaping customer experiences. Effective communication, though not directly linked to higher satisfaction in this study, remains crucial for enhancing the natural and intuitive interaction with chatbots. The study underscores the importance of optimizing chatbot features to create a seamless and enjoyable shopping experience, ultimately boosting consumer satisfaction and encouraging repeat purchases. As the e-commerce sector continues to expand, businesses must focus on enhancing these aspects to remain competitive and meet evolving consumer needs.

Keywords: *E-Commerce, AI Chatbots, Customer Satisfaction, Purchase Decisions, Responsiveness*

1. INTRODUCTION

In our increasingly digitized environment, e-commerce stands out as a pillar of modern retail. Its ubiquitous effect reshapes customer behaviour, causing a shift toward online shopping preferences. The attractiveness of e-commerce stems from its unrivalled ease, which allows people to make purchases around the clock from the comfort of their own homes or offices. With a few clicks, buyers can easily compare costs and quickly purchase desired goods or services, such as e-books, fashion items, or technological devices[1].

Despite its profitability, maintaining a consistent and satisfactory client experience presents a slew of obstacles. As technology advances, the landscape of daily life undergoes tremendous upheaval, with electronic needs pervading every aspect of existence. . The dynamics of business and customer engagement are constantly developing in this fast changing digital context, necessitating a sophisticated understanding to traverse the complexity of the digital age [2].

No	E-commerce Name	Number of Website Visitors (People)
1	Shopee	2.349.900.000
2	Tokopedia	1.254.700.000
3	Lazada	762.400.000
4	Blibli	337.400.000
5	Bukalapak	168.200.000

Based on SimilarWeb data, Shopee emerged as the top marketplace e-commerce

platform in Indonesia throughout 2023, garnering approximately 2.3 billion site visits cumulatively during January-December 2023, far surpassing its competitors. This achievement underscores Shopee's dominance in the Indonesian e-commerce market, reflecting its popularity and appeal among consumers. In addition to the previous data, the number of visits to the Shopee website recorded a 41.39% increase year-to-date (YTD). Conversely, visits to the Tokopedia website decreased by 21.08% (YTD), Lazada decreased by 46.72% (YTD), and Bukalapak decreased by 56.5% (YTD). Among Shopee's competitors, only Blibli experienced positive growth in visits, increasing by 25.18% (YTD)[3].

E-commerce has been a big phenomena in Indonesia in recent years. The adoption of e-commerce in the country has surged due to widespread internet access, an increase in the number of smartphone users, and business activities. According to current research, Indonesia's e-commerce user base is growing, with millions of individuals purchasing online every day. By the end of 2023, the user base had grown to 70.21 million, demonstrating the widespread use of e-commerce in Indonesian culture. Various e-commerce platforms, both domestic and foreign, dominate the industry by providing a comprehensive range of products and services to fulfill the needs of its customers. The rise in digital payment transactions and the adoption of efficient delivery techniques indicate growing population participation in e-commerce. With a big and growing market potential, e-commerce in Indonesia is projected to continue to be a key driver of digital economic growth in the future[4][5].

AI technology, particularly in the form of chatbots, plays a pivotal role in shaping the contemporary online shopping experience. By harnessing the capabilities of AI-driven chatbots, businesses can effectively engage with customers in real-time, providing personalized assistance and guidance throughout the purchasing journey. These chatbots, equipped with natural language processing (NLP) algorithms, offer customers a seamless and conversational interface to address inquiries, offer product recommendations, and resolve concerns promptly. Moreover, AI-powered chatbots continuously learn from interactions, refining their responses and enhancing their ability to deliver tailored assistance over time. As customers increasingly expect instant and personalized support, integrating AI-driven chatbots into the e-commerce ecosystem becomes indispensable for businesses aiming to cultivate lasting customer relationships and drive revenue growth in the digital realm[6].

The use of AI chatbots and virtual shopping assistants has become a key trend in the e-commerce industry, with over 80% of retailers and e-commerce enterprises already utilizing or planning to use them. By 2027, chatbots are expected to be the principal customer care channel for more than a quarter of all e-commerce businesses. According to the search results, AI chatbots may greatly improve customer happiness and drive purchase decisions in the e-commerce sector by offering 24/7 availability, effective communication, personalized recommendations, and reduced friction throughout the checkout process. These technologies have grown in popularity among e-commerce organizations, with an increasing number of companies seeing their revolutionary potential in determining the future of e-commerce customer support and experiences [7].

Consumer satisfaction is an important statistic for any firm seeking long-term success and growth. It depends on several factors, including interactivity, communication manner, responsiveness, and perceived usability. These aspects form the whole consumer experience and significantly impact satisfaction levels. A company's marketing performance is measured not only by its ability to acquire customers, but also by its ability to keep them. This retention is strongly dependent on sustaining high levels of customer satisfaction. When customers are satisfied with their experience, they are more likely to stay loyal and continue to buy items or services from the same company. In the world of e-commerce, for example, the ability to provide a seamless and pleasurable shopping experience is directly tied to repeat purchases and long-term client loyalty[8][9].

Maintaining customer loyalty is critical in today's competitive marketplace for businesses. Businesses must constantly adapt their strategy in order to maintain high levels of consumer satisfaction. This includes not just recruiting new clients, but also retaining and satisfying existing ones. Businesses may improve the total customer experience and encourage long-term loyalty by focusing characteristics such as interactivity, communication manner, responsiveness, and perceived usability[8].

This research examines the complex interaction between AI-powered chatbots in e-commerce and their effect on consumer satisfaction and purchasing decisions. This study

seeks to identify how AI chatbots influence customer satisfaction levels and subsequent purchasing habits in the e-commerce landscape by investigating the interplay between chatbot

2. LITERATURE REVIEW

2.1 Chatbot

Chatbot AI refers to the application of artificial intelligence in chatbots, which are computer programs that replicate human conversation. These AI chatbots can analyze and understand natural language input from users, provide relevant information, and even learn from encounters to improve their responses over time. It is constructed with a combination of technologies, such as natural language processing (NLP), machine learning (ML), and developer-defined rules. Chatbots are classified into two types: declarative chatbots, which employ predefined rules and machine learning to generate automatic responses, and predictive chatbots, which use NLP and more powerful ML algorithms to learn from user interactions and anticipate needs[11][12].

Predictive chatbots, on the other hand, employ sophisticated AI techniques to learn from human interactions and improve their responses over time. They can comprehend difficult questions and deliver unique solutions depending on user choices and behavior. These chatbots can also anticipate user requirements and make appropriate comments or recommendations. However, they necessitate more sophisticated development and training since they must process enormous volumes of data and learn from it in order to produce correct and useful responses[13].

Chatbot AI in e-commerce refers to the application of AI in chatbots that assist customers during their purchasing process. These AI chatbots may make personalized product recommendations, answer pre-sales questions, and guide customers through the website. They are especially handy for organizations that do not have the capacity to run a live chat 24/7. AI chatbots for ecommerce can also manage typical and difficult customer care requests, such as shipping questions, warranty information, and exchanges, and they can interface with ecommerce technologies to conduct tasks and offer personalized solutions[14].

2.2 Responsiveness

Responsiveness refers to the ability to react swiftly and positively to something or someone. It is a quality that enables rapid and effective answers to changes or demands. In the realm of technology, responsiveness is frequently used to define how quickly and efficiently a system or application responds to user input or network requests. A responsive customer service team is one that can resolve customer issues and inquiries in a timely and friendly manner. Responsiveness is a key characteristic for any system or service that requires user contact or feedback. Responsiveness is an important quality factor for chatbots. When dealing with a chatbot, users anticipate rapid and relevant responses, particularly in customer support situations when timely assistance is frequently required. Improving responsiveness not only improves the user experience, but it also helps the chatbot system function more effectively[15][16].

2.3 Perceived usability

Perceived usability is a consumer's subjective perception of how simple a technology or system is to use. It is a measure of a person's belief that using a specific system would be simple and easy. Perceived usability is an important aspect in determining an individual's intention to utilize a technology or system since it determines how the system is perceived to be usable and user-friendly. In chatbot AI, perceived usability relates to how easy and simple it is for people to communicate with a chatbot. It plays an important role in determining chatbot acceptance and adoption since it influences users' intents to utilize the technology. High perceived usability can lead to improved trust in the chatbot, which in turn can raise the user's intention to utilize the chatbot[17][18].

2.4 Interactivity

Interactivity is the ability of a system, such as a computer or communication system, to respond to user inputs and adapt to user actions. It is the characteristic or circumstance of interaction, which can occur between users and computers, people, or humans and artifacts. Chatbot services' interactivity refers to the quality or condition of interaction between users and the chatbot. It is the user's perception that the chatbot comprehends and responds to their inputs, offering information and content in a timely and effective manner. The perceived interactivity of chatbot services is regarded as a significant quality parameter, because it can influence user satisfaction and the usefulness of the chatbot in giving support or information[19].

2.5 Communication Manner

Communication manner refers to how people express themselves verbally and nonverbally in various contexts. It can influence how people view them, how successfully they work with others, and how they handle feedback and disagreement. The communication style of an ecommerce chatbot AI is conversational, tailored, and context aware. These AI technologies are intended to emulate natural conversation and grasp the context of consumer interactions. They can generate relevant product information and make tailored suggestions based on consumer preferences and browsing history. Generative AI chatbots can potentially predict client demands by evaluating data and delivering proactive assistance[20].

2.6 Customer Satisfaction

Customer satisfaction is defined as how well a business meets its customers' requirements and expectations. It is a measure of a customer's satisfaction with a product, service, or experience provided by the company. High levels of customer satisfaction are linked to greater customer loyalty, repeat business, favorable word-of-mouth, and income. Customer satisfaction for chatbot AI is typically measured by the chatbot's ability to respond quickly and accurately to customer queries, enabling omnichannel engagement, personalizing the customer experience, optimizing the customer journey, and collecting data to improve future customer satisfaction. Chatbots can increase customer satisfaction by giving quick and accurate responses, enabling multi-channel help, offering tailored experiences, and improving the customer journey[9][21].

2.7 Purchase Decision

Purchase decision is the process by which a consumer identifies a need, produces possibilities, then chooses a specific product and brand to meet that need. Several things can influence this decision-making process. The process by which a consumer interacts with an online store, searches for products, adds them to a cart, and completes the transaction is referred to as the purchase decision for an e-commerce chatbot. The chatbot directs the customer through the shopping experience, making product recommendations and assisting

3. METHOD

3.1 Population and Sample

The study's participants are individuals from Indonesia who actively engage with online marketplaces. Based on data provided by the Statista Research Department, the estimated number of Indonesian online marketplace users in 2023 stands at 78.21 million people, thus establishing the study's population size.

For sampling purposes, a non-probability sampling approach employing purposive sampling techniques was adopted. This method was selected due to the requirement for participants to meet specific criteria, notably being active users of online marketplaces residing in Indonesia. The determination of the sample size will be conducted utilizing the Slovin formula, ensuring a representative subset of the population is included in the study.

$$n = \frac{N}{1 + NE^2}$$

Description :
n = Sample size
N = Population size
e = Margin of error

Following the calculations, given the study's population of 78.21 million individuals [4] and a margin of error of 10%, the sample size determined for this study is 99 respondents. Rounding up, the sample size will be adjusted to 100 respondents.

3.2 Research Model

In research, there are various independent and dependent variables that researchers employ, namely independent variables, which can be manipulated by the researcher to observe their effects, and dependent variables, which are influenced by the independent variables and are measured or observed in a study.. Researchers with the transaction. It can also provide post-purchase assistance, such as order tracking and addressing queries about returns or referrals. Chatbots can gather feedback on the buying experience through surveys and polls, and they can be modified to suit the business identity[22][12].

use all independent and dependent variables, namely Responsiveness (RPS), Perceived Usability (PU), Interactivity (ITY), Communication Manner (CM), Customer Satisfaction (CS), Purchase Decision (PD) which are shown in the below:

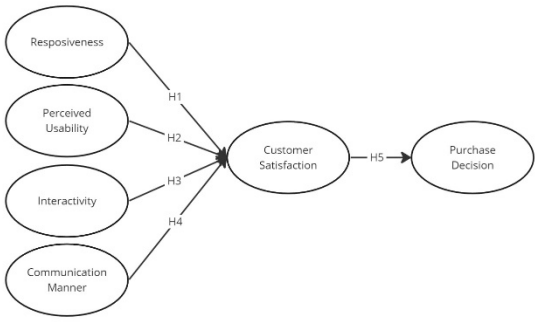

Figure 1 : Research Method

3.3 Research Hypothesis

H1 : Responsiveness (RPS) has a positive effect on Consumer Satisfaction (CS).
H2 : Perceived Usability (PU) of chatbot is positively related to Consumer Satisfaction (CS).
H3 : Interactivity (ITY) is positively related to Consumer Satisfaction (CS).
H4 : Communication Manner (CM) has a positive effect on Consumer Satisfaction (CS).
H5 :Customer Satisfaction (CS) from chatbot services is positively related to Purchase Decision (PD)

Table 3 : Variables and Indicators

Variable	Indicator	Definition	Statements	Literature
Responsiveness	Self Service Rate	Monitor the percentage of customer issues addressed entirely by the chatbot, indicating successful self-service through the platform.	I'm satisfied with the service this e-commerce chatbot offers.	[8]
	First Contact Resolution	The user's questions are answered by a chatbot without the need for human intervention.	This e-commerce chatbot answered my query right away.	[8]
	Promptness Index	The speed at which a system or service answers to queries or requests from users.	This chatbot for e-commerce provides prompt service.	[8]
Perceived Usability	Chatbot Accessibility	The chatbot's interface for online purchasing is simple to use and navigate.	It's simple to use this chatbot for online shopping.	[8]
	Query Response Time	How quickly consumer inquiries are answered by the e-commerce chatbot.	This e-commerce chatbot answers queries fast.	[8]
	Clarity of Chatbot Communication	The extent to which user interactions with the e-	Speaking with the e-commerce chatbot is easily comprehensible.	[8]

Variable	Indicator	Definition	Statements	Literature
		commerce chatbot are simple to comprehend and understand.		
Interactivity	User Empowerment	The level of consumer autonomy and control over their requests made possible by the e-commerce chatbot.	I'm in charge of my own demands thanks to this e-commerce chatbot.	[8]
	User Needs Understanding	The chatbot's ability to understand and respond to user needs when conducting online shopping.	This chatbot for online shopping understands my needs.	[8]
	User Time Saving	The time that users save as a result of the e-commerce chatbot's effective support.	I have time to answer thanks to this e-commerce chatbot.	[8]
Communication Manner	Ease of Interaction	The ease of use and simplicity of interacting with chatbots for online shopping.	Interacting with e-commerce chatbots is easy.	[8]
	Conversational Similarity	How closely e-commerce chatbot interactions mimic real-world human dialogue.	Speaking with e-commerce chatbots is similar to speaking with people.	[8]
	Clarity of Chatbot Communication.	The e-commerce chatbot's message comprehension ability of users	This e-commerce chatbot's language is simple to grasp and responsive.	[8]

4. RESULT AND DISCUSSION

4.1. Demographics of Respondents

In this study, the focus is on a sample consisting of users of e-commerce platforms who utilize AI chatbots in marketplaces. The characteristics of the respondents who participated in the survey and became subjects of this study will be detailed. Data was collected through Google Forms and disseminated across various social media platforms such as Facebook, Instagram, and Twitter to reach a broad and relevant audience. The author ensured that the survey reached e-commerce users by distributing it on platforms frequently used by this target group.

Through this method, participating respondents provided relevant insights into the use of AI chatbots in marketplaces and their impact on customer satisfaction and purchasing decisions in the era of e-commerce growth. This research aims to reveal how the use of AI chatbots affects customer satisfaction levels and their purchasing

decisions, especially in the context of the current rapid growth of e-commerce. The data obtained will be analyzed to understand the relationship between interactions with AI chatbots and the enhancement of online shopping experiences, as well as its impact on customer loyalty and transaction intensity.

The characteristics measured in this study include several key questions: "Have you ever made an online purchase through an e-commerce application?", "Which e-commerce platform do you use most frequently for online shopping?", and "Have you ever used a chatbot on an e-commerce platform before?". The data obtained from these questions will be analyzed to provide deep insights into the level of chatbot usage on e-commerce platforms. The following chart classifies respondents based on their answers, providing a clear picture of their shopping behavior patterns and preferences, as well as their interactions with chatbot technology.

4.2 Respondent Profile

Figure 2 : Respondent Profile Based On Marketplace Usage

According to the results of the survey shown in Figure 2, 100 percent of all respondents stated that they have used e-commerce. This means that every individual who participated in this survey has shopped or conducted transactions through e-commerce platforms. A usage rate of 100 percent indicates that e-commerce has become a part of the shopping habits of the respondents. This explanation confirms that all respondents in this survey use e-commerce.

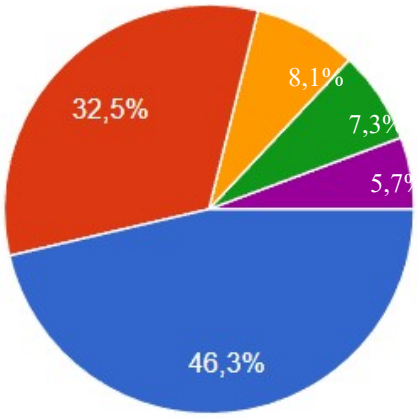

Figure 3 : Respondent Profile Based On Marketplace Application

Based on Figure 3 regarding the usage of marketplace applications, Shopee emerges as the most frequently used platform with a percentage of 46.3%. This indicates that nearly half of the total respondents prefer Shopee for online shopping. In the second position is Tokopedia with 32.5%, which is also a popular choice but significantly behind Shopee. Next, Lazada is used by 8.1% of respondents, Bukalapak by 7.3%, and Blibli by 5.7%. These percentages indicate that Shopee dominates in terms of e-commerce user preferences, followed by Tokopedia, while Lazada, Bukalapak, and Blibli have smaller market shares.

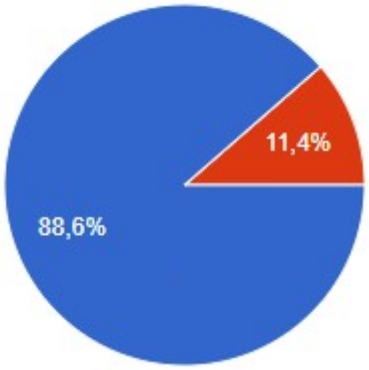

Figure 4 : Respondent Profile Based on Chatbot Usage

Based on Figure 4 regarding the usage of chatbots on e-commerce platforms, it was found that 88.6% of respondents have used chatbots in their marketplace activities, while 11.4% of other respondents have never used chatbots. This indicates that the majority of marketplace users are already familiar with and utilizing AI chatbot technology, which potentially contributes

positively to customer satisfaction and purchasing decisions in the era of e-commerce growth.

4.2 Measurement Model: Validity & Reliability

In this research framework, the investigators utilize various methods to test validity and reliability. Validity is assessed using convergent validity and Average Variance Extracted (AVE), while reliability is measured through Cronbach's alpha and composite reliability. Validity indicates the accuracy of an instrument in measuring its intended parameters, and the validity test determines the strength of relationships between variables, confirming the research instrument's accuracy. An instrument is considered valid if it shows a positive correlation value greater than 0.5 according to the AVE metric. Convergent validity involves reflective measurement of each indicator, based on the correlation between collected data and values calculated using Partial Least Squares (PLS). In this study, SmartPLS 4.1.0.3 software will be employed for these calculations, ensuring that the instruments are both reliable and valid, thereby reinforcing the robustness and credibility of the study's findings.

Table 3: Cronbach's alpha

	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)
CM	0.730	0.761	0.846
CS	0.867	0.872	0.919
ITY	0.862	0.915	0.916
PD	0.818	0.980	0.911
PU	0.973	1.023	0.982
RPS	0.936	0.938	0.969

The results of the construct reliability analysis indicate that the Cronbach's alpha values for all constructs are above the threshold of 0.70, with the following details: CM (0.730), CS (0.867), ITY (0.862), PD (0.818), PU (0.973), and RPS (0.936). This indicates good levels of internal consistency. Furthermore, the composite reliability (rho_a) values range from 0.761 to 1.023, where all constructs exceed the threshold of 0.70, with details as follows: CM (0.761), CS (0.872), ITY (0.915), PD (0.980), PU (1.023), and RPS (0.938). The composite reliability (rho_c) values also show strong results, ranging from 0.846 to 0.982, namely CM (0.846), CS (0.919), ITY (0.916), PD (0.911), PU (0.982), and RPS (0.969). All of these values indicate that the constructs measured in this study have very good and consistent reliability levels, supporting the validity and reliability of the measurements conducted.

Table 4 : Outer Loading Test

	Outer loadings	Validation
CM1 <- CM	0.774	Valid
CM2 <- CM	0.882	Valid
CM3 <- CM	0.755	Valid
CS1 <- CS	0.829	Valid
CS2 <- CS	0.944	Valid
CS3 <- CS	0.893	Valid
ITY1 <- ITY	0.944	Valid
ITY2 <- ITY	0.813	Valid
ITY3 <- ITY	0.896	Valid
PD1 <- PD	0.957	Valid
PD2 <- PD	0.872	Valid
PU1 <- PU	0.950	Valid
PU2 <- PU	0.980	Valid
PU3 <- PU	0.989	Valid
RPS1 <- RPS	0.968	Valid
RPS1 <- RPS	0.971	Valid

Based on the outer loadings results displayed in the table, all indicators show good convergent validity with loadings above 0.70, which is a commonly used threshold in research. The indicators for Communication Manner (CM1, CM2, CM3) have consecutive loading values of 0.774, 0.882, and 0.755, indicating significant contributions to the CM construct. Indicators for Customer Satisfaction (CS1, CS2, CS3) with loading values of 0.829, 0.944, and 0.893 demonstrate high consistency and validity in measuring the CS construct. Indicators for Interactivity (ITY1, ITY2, ITY3) with values of 0.944, 0.813, and 0.896 are also valid in representing the ITY construct. For the Purchase Decision construct, indicators PD1 and PD2 have very strong loadings of 0.957 and 0.872. The indicators for Perceived Usability (PU1, PU2, PU3) show very high loading values, each at 0.950, 0.980, and 0.989, indicating very strong validity. Finally, the indicator for Responsiveness (RPS1) with values of 0.968 and 0.971 demonstrates high validity in measuring the RPS construct. Overall, these results indicate that all

indicators used in this study have adequate convergent validity and can be relied upon to measure their respective constructs.

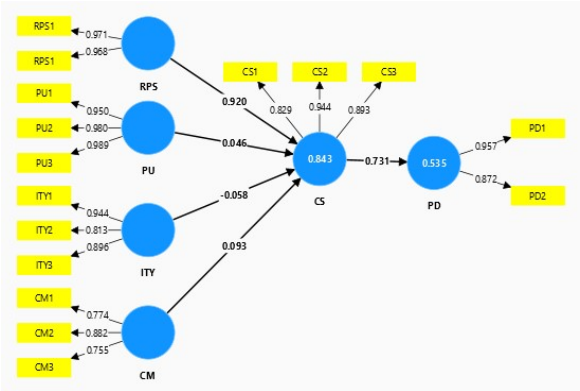

Figure 5. Measurement Model Validity & Reliability

Based on Figure 5, this research model is conducted to understand the relationship between several variables, namely Responsiveness (RSP), Perceived Usability (PU), Interactivity (ITY), Communication Manner (CM), Customer Satisfaction (CS), and Purchase Decision (PD). Each variable is measured using several indicators: RSP is measured by three indicators (RSP1, RSP2, RSP3), PU is measured by three indicators (PU1, PU2, PU3), ITY is measured by three indicators (ITY1, ITY2, ITY3), CM is measured by three indicators (CM1, CM2, CM3), CS is measured by three indicators (CS1, CS2, CS3), and PD is measured by two indicators (PD1, PD2).

The analysis results indicate that Responsiveness (RSP) has a positive relationship with Customer Satisfaction (CS) with a path coefficient of 0.046, although its contribution is relatively small. Perceived Usability (PU) shows a strong positive relationship with Customer Satisfaction (CS), with a path coefficient of 0.446, indicating that perceived usability by customers significantly influences their satisfaction. Interactivity (ITY) has a negative relationship with Customer Satisfaction (CS) with a path coefficient of -0.058, suggesting that higher interactivity may have a negative impact on customer satisfaction. Conversely, Communication Manner (CM) shows a positive relationship with Customer Satisfaction (CS) with a path coefficient of 0.093, indicating that good communication manner contributes to improving customer satisfaction. Customer Satisfaction (CS) has a very strong relationship with Purchase Decision (PD), with a path coefficient of 0.731. This indicates that customer satisfaction has a significant and strong impact on their purchase decision. Any substantial increase in customer satisfaction will substantially enhance their purchase decision.

Table 5 : Fornell-Larcker Criterion

	CM	CS	ITY	PD	PU	RPS
CM	0.805					
CS	-0.130	0.890				
ITY	0.768	-0.132	0.886			
PD	-0.087	0.731	-0.088	0.915		
PU	0.024	0.114	0.017	0.206	0.973	
RPS	-0.195	0.915	-0.159	0.527	0.073	0.969

Based on the presented table, the discriminant validity of constructs can be evaluated using the Fornell-Larcker criteria. This criteria states that for adequate discriminant validity, the square root of the Average Variance Extracted (AVE) for each construct (represented by diagonal elements in the table) should be greater than the highest correlation with other constructs (represented by non-diagonal elements in the same row and column). From the table, the square root of AVE for each construct (CM: 0.805, CS: 0.890, ITY: 0.886, PD: 0.915, PU: 0.973, RPS: 0.969) is indeed greater than the correlations with corresponding constructs, indicating that each construct shares more variance with its own measures than with other constructs. This demonstrates that all constructs meet the criteria for discriminant validity, thus each construct can be considered distinct and well-separated within the context of this study.

Table 6 : Cross Loading

	CM	CS	IR	PD	PU	RS
CM1	0.774	-0.084	0.487	0.042	0.100	-0.183
CM2	0.882	-0.125	0.567	-0.097	0.041	-0.180
CM3	0.755	-0.100	0.809	-0.132	-0.075	-0.111
CS1	-0.075	0.829	-0.067	0.927	0.179	0.619
CS2	-0.171	0.944	-0.155	0.560	0.081	0.970

CS3	-0.097	0.893	-0.131	0.442	0.037	0.849
IR1	0.836	-0.144	0.944	-0.106	-0.037	-0.172
IR2	0.484	-0.103	0.813	-0.075	0.071	-0.111
IR3	0.673	-0.095	0.896	-0.042	0.033	-0.130
PD1	-0.100	0.797	-0.088	0.957	0.170	0.599
PD2	-0.049	0.473	-0.071	0.872	0.224	0.301
PU1	0.017	0.077	0.008	0.171	0.950	0.056
PU2	0.005	0.128	0.003	0.212	0.980	0.079
PU3	0.047	0.117	0.037	0.208	0.989	0.074
RS1	-0.148	0.909	-0.094	0.519	0.062	0.971
RS2	-0.233	0.864	-0.218	0.503	0.080	0.968

The Cross Loading analysis presented in the table above demonstrates good discriminant validity for the constructs measured. Each indicator shows a higher loading on its intended construct compared to others. For instance, the indicators CM1, CM2, and CM3 have the highest loadings on the CM construct, with values of 0.774, 0.882, and 0.755, respectively. Similarly, the indicators CS1, CS2, and CS3 exhibit the highest loadings on the CS construct, with values of 0.829, 0.944, and 0.893, respectively. For the IR construct, indicators IR1, IR2, and IR3 have their highest loadings at 0.836, 0.484, and 0.673. The PD construct's indicators PD1 and PD2 show highest loadings of 0.797 and 0.473. The PU construct indicators PU1, PU2, and PU3 have highest loadings of 0.950, 0.780, and 0.947. Lastly, the RS construct indicators RS1 and RS2 show loadings of 0.971 and 0.968. Each construct reflects its indicators well, thus supporting the validity of the measurement model in this research. This ensures that each construct is distinct and accurately measured by its corresponding indicators, which is crucial for the reliability and validity of the study's findings.

Table 7 : Heterotrait-Monotrait Ratio

	CM	**CS**	**IR**	**PD**	**PU**	**RS**
CM						
CS	0.168					
IR	0.949	0.149				
PD	0.139	0.811	0.097			
PU	0.108	0.117	0.058	0.237		
RS	0.238	1.015	0.175	0.559	0.075	

Based on the HTMT (Heterotrait-Monotrait Ratio) analysis presented in the table above, the discriminant validity of the constructs in the research model can be evaluated. According to the HTMT criteria, values below 0.90 indicate good discriminant validity. In the table, the HTMT values between constructs are as follows: CM and CS (0.168), CM and IR (0.949), CM and PD (0.139), CM and PU (0.108), CM and RS (0.238); CS and IR (0.149), CS and PD (0.811), CS and PU (0.117), CS and RS (1.015); IR and PD (0.097), IR and PU (0.058), IR and RS (0.175); PD and PU (0.237), PD and RS (0.559); PU and RS (0.075). Most HTMT values are below the threshold of 0.90, indicating adequate discriminant validity for most constructs. However, the value between CS and RS (1.015) exceeds the threshold, suggesting potential issues with discriminant validity between these two constructs. Overall, except for the CS and RS pairing, the constructs demonstrate good discriminant validity, confirming that they are distinct and separately measurable within the research model.

Table 8 : Model Fit

	Saturated model	**Estimated model**
SRMR	0.094	0.100
d_ULS	1.201	1.369
d_G	1.701	1.716
Chi-square	619.675	636.934
NFI	0.676	0.667

The model fit analysis results from the table show that the Standardized Root Mean Residual (SRMR) value for the saturated model is 0.094, while for the estimated model it is 0.100, indicating a very small difference which suggests good fit. The values of d_ULS and d_G for the

saturated model are 1.201 and 1.701 respectively, while for the estimated model they are 1.369 and 1.716, indicating a relatively small increase, which is still acceptable. The Chi-square value for the saturated model is 619.675 and for the estimated model it is 636.934, showing a small increase but still within acceptable limits. Finally, the Normed Fit Index (NFI) value for the saturated model is 0.676 and for the estimated model it is 0.667, indicating a slight decrease, but still demonstrating moderate fit. Overall, these results indicate that the estimated model has a reasonably good fit compared to the saturated model.

4.3 Test Model

The relationship between Customer Satisfaction (CS) and Purchase Decision (PD) has a highly significant influence with a coefficient value of 0.731 and a P-value of 0.000, indicating a strong and statistically significant relationship. Responsiveness (RPS) also shows a highly significant influence on CS with a coefficient value of 0.920 and a P-value of 0.000. However, the relationships between Communication Manner (CM) and CS, Interactivity (ITY) and CS, as well as Perceived Usability (PU) and CS are not statistically significant, with P-values of 0.273, 0.543, and 0.425 respectively. Overall, these results indicate that RPS has a significant influence on CS and CS has a significant influence on PD, while the variables CM, ITY, and PU do not show significant influences on CS.

Table 9: P Values

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values
CM -> CS	0.093	0.071	0.085	1.096	0.273
CS -> PD	0.731	0.736	0.072	10.143	0.000
ITY -> CS	-0.058	-0.034	0.095	0.609	0.543
PU -> CS	0.046	0.040	0.057	0.798	0.425
RPS -> CS	0.920	0.921	0.030	30.491	0.000

H1: The p-value for CM > CS is above 0.05, indicating no significant positive relationship between CM and CS ($p < 0.05$), thus H1 is **rejected.**

H2: The p-value for CS > PD is below 0.05, suggesting a significant positive relationship between CS and PD ($p < 0.05$), thus H2 is **accepted.**

H3: The p-value for ITY > CS is above 0.05, indicating no significant positive relationship between ITY and CS ($p < 0.05$), thus H3 is **rejected.**

H4: The p-value for PU > CS is above 0.05, indicating no significant positive relationship between PU and CS ($p < 0.05$), thus H4 is **rejected.**

H5: The p-value for RPS > CS is below 0.05, indicating a significant positive relationship between RPS and CS ($p < 0.05$), thus H5 is **accepted.**

Table 10 : R-Square

	R-square	R-square adjusted
CS	0.843	0.836
PD	0.535	0.530

The analysis results indicate that the variable CS (Customer Satisfaction) has an R-square value of 0.843 and an adjusted R-square value of 0.836, indicating that this regression model can explain approximately 84.3% of the variation in observed data in terms of customer satisfaction, with slight adjustments for model complexity. Meanwhile, the variable PD (Purchase Decision) has an R-square value of 0.535 and an adjusted R-square value of 0.530, meaning that this model can explain around 53.5% of the variation in observed data regarding purchase decisions, also with minor adjustments for model complexity. This suggests that the regression model for CS is more capable of predicting variations in customer satisfaction compared to the model for PD. The adjusted R-square, which is only slightly lower than the R-square for both variables, indicates that the used models are sufficiently efficient and not overly complex.

Table 11: F-Square

	CM	CS	ITY	PD	PU	RPS
CM		0.022				
CS				1.148		
ITY		0.009				
PD						
PU		0.013				
RPS		5.156				

The F Square analysis in the table indicates the effect sizes of various variables in the model. These values reveal that CS (Customer Satisfaction) has a minimal impact on CM (Communication Manner) with an F Square value of 0.022. ITY (Interactivity) also has a very low influence on CS with a value of 0.009, as well as PU (Perceived Usability) on PD (Purchase Decision) with a value of 0.013. PD (Purchase Decision) significantly influences CS with an F Square value of 1.148, indicating a strong relationship. Most notably, RPS (Responsiveness) has a substantial impact on PU with an F Square value of 5.156, indicating a very strong predictive relevance. These results suggest that although some relationships between variables are weak, the relationships between PD and CS, as well as RPS and PU, demonstrate strong predictive effects in this research model

5. CONCLUSION

In this research, the primary objective is to demonstrate how consumer satisfaction is influenced by the use of the chatbot feature in e-commerce platforms. The study identifies several factors contributing to consumer satisfaction, including interactivity, communication manner, responsiveness, and perceived usability [23]. The hypotheses H1, H2, H3, and H4 support these findings by illustrating the direct impact of these elements on consumer satisfaction. Detailed analysis reveals how each aspect uniquely contributes to the overall user experience, offering a granular view of the mechanisms through which chatbots can enhance customer satisfaction in the e-commerce sector.

The research specifically examines the role of chatbot features in influencing purchase decisions. The findings reveal that higher levels of interaction, ease of communication, responsiveness, and a positive impression of using the chatbot correlate with increased consumer satisfaction [24]. These results align with previous studies, underscoring the importance of optimizing these features in chatbot development to enhance the user experience. By delving deeper into the nuances of each factor, the study elucidates how a well-designed chatbot can create a seamless and enjoyable shopping experience, thereby boosting consumer satisfaction and encouraging repeat purchases [25].

In conclusion, the study has provided valuable insights into the various factors influencing customer satisfaction and purchase decisions within the context of Indonesian e-commerce platforms. The findings indicate that responsiveness of chatbots significantly impacts customer satisfaction, and in turn, customer satisfaction strongly affects purchase decisions. This underscores the importance of responsive and efficient chatbot services in enhancing the overall customer experience and driving purchase behaviors.

The analysis revealed that perceived usability, although intuitively significant, did not show a statistically significant effect on customer satisfaction in this study. This suggests that while ease of use is important, other factors such as responsiveness and communication manner might play a more critical role in determining customer satisfaction with chatbot services. Future research could explore this dynamic further to understand the interplay between usability and other satisfaction determinants in more detail.

Interactivity also did not show a significant positive relationship with customer satisfaction, which is an interesting finding. This could imply that higher levels of interactivity may not always equate to higher satisfaction. It's possible that too much interactivity might overwhelm or confuse users, indicating that a balanced approach to interactivity, where the chatbot provides necessary assistance without over-complicating the interaction, could be more effective.

Communication manner, though not significantly impacting customer satisfaction in this study, remains a vital aspect of chatbot design. Effective communication can enhance user experience by making interactions feel more natural and intuitive. Although the current findings do not establish a strong link between communication manner and customer satisfaction, improving communication strategies should still be considered a priority for enhancing chatbot effectiveness.

Overall, the study highlights the critical role of customer satisfaction in influencing purchase decisions in the e-commerce sector. Ensuring high levels of responsiveness and

possibly refining other aspects like usability and communication could help in maintaining and improving customer satisfaction. As e-commerce continues to grow, particularly in Indonesia, businesses must focus on optimizing these factors to stay competitive and meet the evolving needs of their customers.

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