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EXPLAINING CUSTOMER LOYALTY IN AI CHATBOT–BASED E-COMMERCE SERVICES: AN INFORMATION SYSTEMS SUCCESS PERSPECTIVE

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Abstract

The growing presence of AI chatbots across e-commerce platforms has prompted scholarly inquiry into how these systems build lasting customer loyalty beyond the point of initial adoption. This study aims to examine how chatbot-based services contribute to customer loyalty by drawing on the information systems success perspective. A quantitative approach was adopted, using Partial Least Squares Structural Equation Modeling (PLS-SEM) on data gathered from 132 Indonesian e-commerce users with prior experience interacting with AI chatbots. Results show that both information quality and system quality exert significant effects on use behavior and user satisfaction. Use and satisfaction were further confirmed as direct drivers of customer loyalty, framed here as net benefits, with use showing a comparatively stronger effect. These findings point to the conclusion that loyalty in AI chatbot-supported environments is cultivated primarily through repeated engagement and accumulated experience rather than being driven directly by system attributes. The study advances understanding of AI-enabled service outcomes by identifying the behavioral pathways through which chatbots produce long-term value. For practitioners, the findings suggest that e-commerce platforms seeking stronger loyalty should focus on functional reliability and create conditions that encourage sustained usage.

1. INTRODUCTION

The widespread adoption of artificial intelligence across digital commerce settings has fundamentally changed the way companies structure customer interaction and service delivery. Within e-commerce, customer service functions are increasingly supported by AI-based chatbots that are capable of handling inquiries, providing product information, and assisting transaction-related processes in real time. This transformation is driven by the growing demand for fast responses, continuous availability, and consistent service quality in online shopping environments. In Indonesia, where E-Commerce platforms such as Shopee, Tokopedia, and Lazada dominate daily consumer activities, chatbots have become a standard feature rather than a novel technological innovation.

Previous studies indicate that chatbots play an important role in shaping customer experience and post-purchase behavior. Research by Micallef (2022) shows that chatbot interactions influence multiple stages of the customer journey, particularly in information search and problem resolution. Similarly, Sfenrianto and Vivensius (2020) found that chatbot implementation in Indonesian E-Commerce platforms contributes to perceived service

efficiency and overall customer experience. These findings suggest that chatbot performance is not only a technical matter but also a strategic factor that affects customer perception and long-term platform competitiveness.

From a system perspective, the effectiveness of AI chatbots is closely related to the quality of the information they provide and the reliability of the system that delivers the service. Chen et al. (2023) demonstrate that high-quality AI service outputs are positively associated with customer loyalty, especially when customers perceive the chatbot responses as accurate, timely, and helpful. In addition, Azaga (2024) emphasizes that chatbot effectiveness in customer service depends on system stability, response speed, and the ability to handle customer requests consistently without human intervention. These considerations point to information quality and system quality as foundational determinants of chatbot outcomes.

Service interaction characteristics also influence how users evaluate chatbot-based services. Studies focusing on AI-enabled chatbots report that responsiveness, assurance, and empathy derived from chatbot interactions significantly affect user satisfaction. Chopra et al. (2023) and Vijayakumar (2025) show that dimensions adapted from SERVQUAL theory remain relevant when assessing customer satisfaction in AI-driven service contexts. Although service quality is not treated as a standalone construct in this study, its conceptual dimensions are reflected in how users perceive system quality, information quality, and overall satisfaction during chatbot use.

Another important aspect in chatbot research is actual system use. Unlike newly introduced technologies that emphasize intention to use, chatbots are already widely embedded in E-Commerce platforms. Saputra and Sutarso (2024) argue that usage behavior provides a more accurate reflection of customer interaction with chatbots than intention-based measures. Guo and Dong (2024) further confirm that frequent and effective chatbot usage enhances user favorability and acceptance across different service scenarios. Therefore, examining actual use becomes essential to understanding how chatbot systems generate value for both users and service providers.

Despite growing scholarly attention to AI chatbots, empirical work that simultaneously examines information quality, system quality, use, user satisfaction, and net benefits within the Indonesian e-commerce context remains scarce. Many existing studies address satisfaction or loyalty in isolation, without modeling the joint mediating pathways among these variables. Raborar et al. (2025) highlight the need for a more comprehensive evaluation framework to explain how chatbot performance translates into customer loyalty outcomes. Consequently, the present study sets out to analyze the structural relationships linking information quality, system quality, use, user satisfaction, and customer loyalty as net benefits within chatbot-based e-commerce services in Indonesia.

2. LITERATURE REVIEW

This section reviews the theoretical foundations and prior empirical work relevant to chatbot system success in e-commerce. The review is organized around identifying existing research gaps, establishing the theoretical basis for the study, and synthesizing empirical findings to support the proposed framework and hypotheses. By integrating information system success perspectives with chatbot-based interactions, this section provides a foundation for understanding how system-related factors influence user behavior and business outcomes.

2.1 Research Gap and Research Contribution

Previous studies have extensively examined the role of chatbots in enhancing customer experience, satisfaction, and loyalty in digital platforms (Micallef, 2022; Saini et al., 2024). Research has shown that chatbot effectiveness is influenced by system-related factors, including response accuracy, usability, and reliability (Azaga, 2024; Chen et al., 2023). However, empirical findings remain fragmented due to differences in research contexts, constructs, and analytical models.

Several studies have emphasized service quality dimensions in AI-enabled chatbots and their impact on customer satisfaction (Chopra et al., 2023; Vijayakumar, 2025). Nonetheless, many of these studies directly incorporate service quality constructs, which may not fully capture the automated and system-driven nature of chatbot interactions. In e-commerce settings, especially in developing markets, users often evaluate chatbots not as human service agents but as information systems embedded within platforms (Sfenrianto & Vivensius, 2020; Saputra & Sutarso, 2024).

Moreover, limited research has simultaneously examined information quality and system quality as primary antecedents of both use and user satisfaction, while linking these mediating variables to customer loyalty as a net benefit. Studies focusing on Shopee and similar e-commerce platforms tend to emphasize behavioral intention or satisfaction alone, without modeling their joint mediating role (Raborar et al., 2025; Saputra & Sutarso, 2024).

Therefore, this study addresses these gaps by proposing a customized conceptual model that explains how information quality and system quality influence customer loyalty through use and user satisfaction. The study contributes to the literature by (1) positioning chatbots explicitly as information systems, (2) integrating customer loyalty as a net benefit outcome, and (3) conceptually extending service quality through SERVQUAL without incorporating it directly into the structural model.

2.2 Theoretical and Conceptual Background

The evaluation of AI-based chatbot success in e-commerce can be conceptually understood through an information system success perspective that emphasizes quality dimensions, user responses, and resulting benefits.

In digital service environments where chatbots are already widely adopted, system-related qualities such as information quality and system quality play a central role in shaping user experience and outcomes.

Information quality refers to the degree to which chatbot-provided information is accurate, relevant, timely, and understandable for users. Prior studies indicate that high-quality information delivered by AI chatbots enhances user confidence and reduces uncertainty during online interactions. Chen et al. (2023) demonstrate that accurate and relevant responses from chatbots significantly improve customer perceptions and strengthen loyalty outcomes. Similarly, Guo and Dong (2024) find that clarity and usefulness of chatbot information positively affect user favorability across different service scenarios. These findings suggest that information quality functions as a foundational driver of positive user evaluation in AI-enabled customer service.

System quality reflects the technical and functional performance of chatbots, including response speed, reliability, ease of use, and system stability. Azaga (2024) highlights that system responsiveness and reliability are key determinants of perceived chatbot effectiveness in customer service contexts. Studies conducted in e-commerce settings also show that smooth interaction flow and dependable system performance encourage users to rely on chatbots as a primary service channel (Sfenrianto & Vivensius, 2020; Micallef, 2022). Conceptually, strong system quality reduces user effort and friction, enabling more frequent and sustained system use.

In environments where chatbot technology is no longer novel, actual use becomes a critical construct for assessing system success. Rather than measuring intention, use reflects real behavioral engagement with the chatbot during service interactions. Saputra and Sutarso (2024) emphasize that usage frequency and intensity better capture user-system interaction outcomes in established e-commerce platforms. Actual use also serves as an important link between system characteristics and post-use evaluations, particularly user satisfaction.

User satisfaction represents users' overall affective evaluation of their chatbot interaction experience. Research consistently shows that satisfaction emerges from both system performance and informational outcomes. Chopra et al. (2023) and Vijayakumar (2025) report that service attributes adapted from SERVQUAL dimensions, such as responsiveness and reliability, significantly influence satisfaction with AI-enabled chatbots. Satisfaction, in turn, plays a crucial role in shaping longer-term relational outcomes.

Net benefits in this study are reflected through customer loyalty, encompassing continued use of the platform, repeat purchases, and positive word-of-mouth. Chen et al. (2023) and Laksamana et al. (2024) indicate that effective AI-driven service interactions contribute to stronger customer attachment and loyalty by enhancing overall brand and service experience. Conceptually, loyalty represents the ultimate outcome of successful chatbot implementation in e-commerce contexts.

2.2.1 Information System Success Perspective

This study primarily adopts the information system success perspective to explain user interaction with e-commerce chatbots. This perspective posits that system-related characteristics determine how users interact with digital systems and how benefits are eventually realized. In chatbot contexts, users rely on the system to obtain accurate product information, receive timely responses, and complete transactions efficiently (Chen et al., 2023; Guo & Dong, 2024).

Information quality and system quality are central constructs within this perspective, as they represent the core attributes users evaluate during interaction. Prior studies confirm that high-quality information and reliable system performance increase user engagement and positive evaluations of AI-based customer service (Chang-Chien et al., 2022; Azaga, 2024).

2.2.2 SERVQUAL as a Theoretical Extension

Although service quality is widely discussed in customer service research, this study does not explicitly include service quality as a construct in the conceptual framework. This decision is based on the automated nature of chatbot services, where traditional service encounters involving empathy and human judgment are absent. Instead, service-related perceptions emerge indirectly through system performance and information delivery.

SERVQUAL is therefore used as a theoretical extension to support interpretation rather than as a structural component. Prior studies demonstrate that chatbot responsiveness, reliability, and assurance are embedded within system and information quality attributes (Chopra et al., 2023; Vijayakumar, 2025). This approach aligns with findings that users evaluate chatbot service quality through technical performance rather than interpersonal interaction (As-syiva & Nasution, 2023; Micallef, 2022).

By positioning SERVQUAL as an interpretative lens, this study avoids construct redundancy while still capturing service-related perceptions embedded in chatbot interactions.

2.2.3 Key Research Constructs

Information Quality refers to the accuracy, relevance, completeness, and timeliness of information provided by chatbots during customer interaction. High information quality enhances trust and facilitates effective decision-making in e-commerce environments (Chen et al., 2023; Saputra & Sutarso, 2024).

System Quality reflects the technical performance of chatbots, including reliability, ease of use, response speed, and accessibility. Research consistently shows that system quality significantly influences users' willingness to engage with AI-enabled services (Azaga, 2024; Guo & Dong, 2024).

Use represents the extent to which users actively interact with chatbots for information search, communication, and transaction support. Usage behavior is a critical mediating mechanism linking system attributes to perceived outcomes (Micallef, 2022; Raborar et al., 2025).

User Satisfaction refers to users' overall evaluation of their chatbot experience based on expectations and actual performance. Satisfaction has been consistently identified as a predictor of continued use and loyalty in e-commerce platforms (Chopra et al., 2023; Sfenrianto & Vivensius, 2020).

Net Benefits (Customer Loyalty) capture the long-term advantages perceived by users, including repeat purchase intention, platform preference, and positive word-of-mouth. Customer loyalty is widely recognized as a key outcome of successful chatbot implementation (Chen et al., 2023; Laksamana et al., 2024).

2.2.4 Information Quality

Information quality refers to the degree to which system-delivered information is accurate, relevant, complete, and understandable. In chatbot-based e-commerce interactions, this quality dimension is especially important because chatbots frequently serve as the primary source of product details, promotions, and transaction-related content.

High-quality information enables consumers to make informed decisions and enhances their confidence in the system. Consequently, information quality is expected to increase both the extent of chatbot use and users' overall satisfaction with the interaction.

2.2.5 System Quality

System quality captures the technical performance of a platform, encompassing ease of use, response speed, reliability, and functional consistency. For chatbots specifically, this quality is reflected in how effectively the system understands user input, replies without unnecessary delay, and operates without errors or interruptions.

A chatbot with high system quality is more likely to encourage repeated use and generate positive user perceptions. Therefore, system quality is considered a key determinant of chatbot usage behavior and user satisfaction.

2.2.6 Use

Use describes the degree and frequency with which users interact with a system. In this study, use refers to how often and how extensively consumers utilize chatbots in e-commerce platforms for obtaining information, communicating with sellers, and supporting purchase decisions.

Higher levels of use indicate greater acceptance of the chatbot and deeper engagement with the system. Increased use is also expected to enhance user experience, which may subsequently influence satisfaction and downstream outcomes.

2.2.7 User Satisfaction

User satisfaction reflects users' overall evaluation of their experience with a system. In the chatbot context, satisfaction arises from users' assessments of system performance, information usefulness, and the convenience of interaction.

Users who are satisfied tend to develop favorable attitudes toward the technology and are more inclined to sustain engagement with the platform. Accordingly, user satisfaction serves as a key indicator of system success and a predictor of long-term benefits.

2.2.8 Net Benefits (Customer Loyalty)

Net benefits represent the positive outcomes derived from system use. In this study, net benefits are conceptualized as customer loyalty, including repeat purchase intention, continued platform usage, and willingness to recommend the seller or platform to others.

Customer loyalty is a strategic outcome for e-commerce platforms, as it reflects the tangible value generated by chatbot implementation and its impact on consumer behavior.

2.3 Empirical Review and Hypothesis

Based on prior empirical findings and the proposed conceptual model, the following hypotheses are formulated:

H1: Information quality has a significant positive and direct effect on use of e-commerce chatbots. (Chen et al., 2023; Saputra & Sutarso, 2024)

H2: System quality has a significant positive and direct effect on user satisfaction with e-commerce chatbots. (Azaga, 2024; Chopra et al., 2023)

H3: Information quality has a significant positive and direct effect on user satisfaction. (Sfenrianto & Vivensius, 2020; Chang-Chien et al., 2022)

H4: System quality has a significant positive and direct effect on use of e-commerce chatbots. (Micallef, 2022; Guo & Dong, 2024)

H5: Use has a significant positive and direct effect on user satisfaction. (Raborar et al., 2025; Saputra & Sutarso, 2024)

H6: Use has a significant positive and direct effect on net benefits (customer loyalty). (Chen et al., 2023; Laksamana et al., 2024)

H7: User satisfaction has a significant positive and direct effect on net benefits (customer loyalty). (Chopra et al., 2023; As-syiva & Nasution, 2023)

3. RESEARCH METHODOLOGY

3.1 Development of Survey Instruments

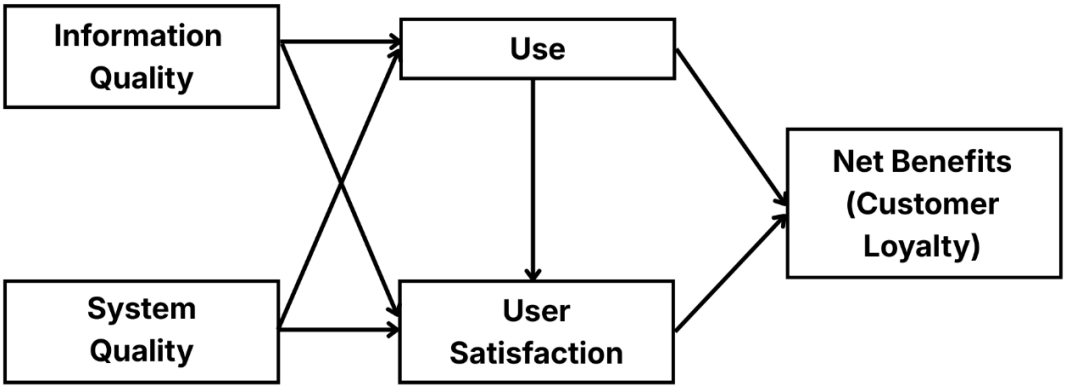


Figure 1. Conceptual Framework
Source: Authors (2025)

Data for this study were gathered through an online survey questionnaire built to measure the constructs in the proposed conceptual model (Figure 1). The instrument was designed around the research framework, which includes five constructs derived from the customized information system success perspective: Information Quality, System Quality, Use, User Satisfaction, and Net Benefits (Customer Loyalty).

A total of 25 measurement items were used to cover all constructs in the model. Each construct was operationalized using five reflective indicators, drawn from prior empirical work on chatbot usage, information systems, and e-commerce consumer behavior. The indicators were adapted to match the chatbot interaction context of e-commerce platforms, particularly from the perspective of buyers.

The questionnaire was originally developed in Indonesian to ensure clarity and comprehension among respondents. Subsequently, the items were translated into English to maintain academic consistency with the journal template. To minimize semantic bias, the translation process focused on preserving the original meaning of each item rather than literal word-for-word translation.

All measurement items were rated on a five-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree). This scale was chosen for its established suitability in capturing perceptions, attitudes, and evaluations in behavioral and information systems research. Using a structured Likert format also facilitates variance-based structural equation modeling.

The conceptual framework illustrated in Figure 1 serves as the basis for the survey design, ensuring alignment between constructs, indicators, and hypotheses. This approach supports construct validity and allows for systematic testing of the proposed relationships within the research model.

Table 1. Constructs Indicator Items

Constructs	Kode	Indicator	Reference
Information Quality	IQ1	The information provided by the chatbot is easy to understand.	Azaga (2024); Chen et al. (2023); Saputra & Sutarso (2024); Sfenrianto & Vivensius (2020)
	IQ2	The chatbot provides information that is relevant to my needs.	
	IQ3	The chatbot's answers are accurate and rarely misleading.	
	IQ4	The information from the chatbot helps me in making purchasing decisions.	
	IQ5	The chatbot delivers information clearly and without confusion.	
System Quality	SQ1	The chatbot is easy to use without requiring special instructions.	Chopra et al. (2023); Guo & Dong (2024); Raborar et al. (2025)
	SQ2	The chatbot responds to questions quickly.	
	SQ3	The chatbot rarely experiences glitches or errors.	
	SQ4	Interactions with the chatbot run smoothly.	
	SQ5	The chatbot system performs consistently every time it is used.	

Constructs	Kode	Indicator	Reference
Use	U1	I frequently use the chatbot when shopping on E-Commerce platforms.	Saputra & Sutarso (2024); As-syiva & Nasution (2023)
	U2	The chatbot is the primary feature I use when I need assistance.	
	U3	I use the chatbot to search for product information.	
	U4	I use the chatbot to resolve transaction issues.	
	U5	I am accustomed to using the chatbot when interacting with the platform.	
User Satisfaction	US1	I am satisfied with the experience of using the chatbot.	Chopra et al. (2023); Azaga (2024); Chen et al. (2023); Raborar et al. (2025)
	US2	The chatbot meets my expectations in assisting with the shopping process.	
	US3	I feel helpful by the services provided by the chatbot.	
	US4	Interacting with the chatbot provides an enjoyable experience.	
	US5	Overall, I am satisfied with the chatbot's performance on this platform.	
Net Benefits	NB1	I intend to continue using this E-Commerce platform.	Chen et al. (2023); Laksamana et al. (2024); Ok (2025); Azaga (2024)
	NB2	I am inclined to make repeat purchases on this platform.	
	NB3	I trust the quality of service provided by this platform.	
	NB4	I am willing to recommend this platform to others.	
	NB5	The experience with the chatbot makes me more loyal to this platform.	

Source: Author (2025)

3.2 Analytical approach

This study uses a quantitative analytical approach based on Partial Least Squares Structural Equation Modeling (PLS-SEM) to examine how information quality, system quality, use, user satisfaction, and customer loyalty relate within AI chatbot-based e-commerce. PLS-SEM was selected for its suitability in predictive modeling, its capacity to estimate complex causal structures, and its robustness when applied to moderately sized samples with non-normal distributions (Hair et al., 2017).

Data analysis was conducted in SmartPLS using 132 valid responses remaining after screening and cleaning. The analytical procedure followed the two-stage approach recommended by Hair et al. (2017), beginning with the measurement model and proceeding to the structural model. This sequence ensures that construct validity and reliability are confirmed before testing hypothesized relationships.

In the first stage, the measurement model was assessed for indicator reliability, internal consistency, convergent validity, and discriminant validity. Indicator reliability was examined via outer loading values, with a threshold of 0.70. Internal consistency was assessed using Cronbach's alpha and composite reliability, both requiring values above 0.70. Convergent validity was evaluated using Average Variance Extracted (AVE), requiring values above 0.50. Discriminant validity was assessed using the Heterotrait–Monotrait ratio (HTMT), with values below 0.85 confirming construct distinctiveness (Hair et al., 2017).

The second stage focused on the structural model. Hypothesis testing relied on path coefficients, t-statistics, and p-values obtained through bootstrapping, using a 5 percent significance level with the criteria of t-values greater than 1.96 and p-values below 0.05 (Hair et al., 2017).

Explanatory power was further assessed through the coefficient of determination for endogenous constructs, indicating how much variance in user satisfaction and loyalty is accounted for by the antecedent variables. Evaluating explanatory power is essential in this study, as the research objective emphasizes understanding how chatbot-related system attributes translate into behavioral engagement and long-term loyalty outcomes.

To complement hypothesis testing, an Importance–Performance Map Analysis was conducted with customer loyalty as the target construct. This analysis enables the identification of constructs that have a strong influence on loyalty while exhibiting moderate performance levels. According to Hair et al. (2017), IPMA provides practical insights by highlighting areas where improvements are likely to generate the greatest impact on key outcomes. In the context of this study, IPMA supports the interpretation of how use behavior and user satisfaction contribute to net benefits beyond statistical significance alone.

Overall, the analytical approach is designed to capture both the statistical validity and the practical relevance of the proposed research model. By integrating measurement validation, structural relationship testing, and importance–performance evaluation, this study provides a comprehensive examination of how AI chatbot characteristics influence customer loyalty through use and satisfaction mechanisms in e-commerce environments.

4. RESULT AND DISCUSSION

4.1 Result

This This section presents the findings from PLS-SEM analysis using SmartPLS on 132 valid responses following data cleaning. Analysis proceeded in two stages, consistent with the approach recommended by Hair et al.: measurement model evaluation followed by structural model assessment.

Overall, the results indicate that the proposed model meets satisfactory measurement standards, including adequate reliability and validity. The structural model reveals meaningful associations among constructs, lending support to the majority of proposed hypotheses. The model's explanatory power confirms that information quality and system quality are significant drivers of use behavior and satisfaction, both of which contribute to perceived net benefits in AI chatbot-based e-commerce.

The detailed results are presented through reliability and validity assessment, Importance–Performance Map Analysis (IPMA), and hypothesis testing. Each subsection elaborates the evaluation process in accordance with PLS-SEM guidelines

4.1.1 Reliability and Validity

Table 2 reports internal consistency reliability and convergent validity for all latent constructs, including Information Quality (IQ), Net Benefits (NB), System Quality (SQ), User Satisfaction (USAT), and Use (USE). Hair et al. (2017) recommend Cronbach's alpha and composite reliability values above 0.70 to confirm construct reliability.

Table 2. Construct reliability and convergent validity.

Construct	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
IQ	0,919	0,924	0,939	0,756
NB	0,908	0,912	0,932	0,732
SQ	0,924	0,930	0,942	0,766
USAT	0,895	0,897	0,923	0,705
USE	0,893	0,896	0,921	0,701

Source: Authors (2025)

Cronbach's alpha values across all constructs range from 0.893 to 0.924, confirming high internal consistency. Both composite reliability measures, rho_a and rho_c, exceed 0.90 for all constructs, further supporting measurement model reliability. AVE values range from 0.701 to 0.766, all above the 0.50 threshold, confirming that each construct accounts for more than half of its indicator variance and thereby satisfying convergent validity requirements.

Table 3. Outer-loadings matrix.

Construct	IQ	NB	SQ	USAT	USE
IQ1	0,866				
IQ2	0,859				
IQ3	0,898				
IQ4	0,841				
IQ5	0,881				
NB1		0,784			
NB2		0,855			
NB3		0,885			
NB4		0,863			
NB5		0,888			
SQ1			0,862		
SQ2			0,875		
SQ3			0,878		
SQ4			0,864		
SQ5			0,897		
USAT1				0,858	
USAT2				0,800	
USAT3				0,860	
USAT4				0,817	
USAT5				0,860	
USE1					0,864
USE2					0,828
USE3					0,797
USE4					0,845
USE5					0,849

Source: Authors (2025)

All indicator loadings exceed 0.70, confirming strong relationships between each indicator and its respective latent construct. Loadings for Information Quality indicators, for instance, fall between 0.841 and 0.898. System Quality and User Satisfaction indicators similarly display high and consistent values. According to Hair et al. (2017), results of this kind support satisfactory indicator reliability and justify retaining all measurement items.

Table 4. Discriminant Validity (HTMT Ratio)

Construct	IQ	NB	SQ	USAT
IQ				
NB	0,392			
SQ	0,292	0,439		
USAT	0,593	0,519	0,461	
USE	0,374	0,545	0,373	0,479

Source: Authors (2025)

Discriminant validity is assessed using the Heterotrait–Monotrait ratio as shown in Table 4. Hair et al. (2017) recommend HTMT values below 0.85 to confirm that constructs are empirically distinct. All values fall below the 0.85 threshold recommended by Hair et al. (2017), confirming that each construct measures a distinct concept without excessive overlap with other constructs. This establishes adequate discriminant validity for the measurement model.

Overall Taken together, the reliability and validity results demonstrate that the measurement model satisfies all evaluation criteria proposed by Hair et al. (2017). The constructs used to examine customer loyalty in the context of AI chatbot use are therefore both reliable and valid, supporting progression to structural model analysis.

4.1.2 Importance-Performance Map Analysis

Table Table 5 presents IPMA results with Net Benefits as the target construct. Importance values represent total effects of each antecedent on Net Benefits, while performance values reflect average latent variable scores scaled from 0 to 100.

Table 5. IPMA Results for Net Benefits

Construct	NB	Performance
IQ	0,242	68,654
SQ	0,193	70,253
USAT	0,317	69,775
USE	0,423	69,263

Source: Authors (2025)

Among the constructs examined, Use (USE) shows the highest importance value at 0.423, indicating that actual usage of the AI chatbot contributes most strongly to perceived Net Benefits. This result suggests that increased interaction with the chatbot plays a central role in shaping customer evaluations of its benefits. User Satisfaction (USAT) follows with an importance value of 0.317, highlighting its significant role in influencing perceived benefits through positive user experiences.

Information Quality and System Quality show lower importance values of 0.242 and 0.193, respectively. Although their direct contributions are smaller, both constructs remain relevant as foundational factors that support satisfaction and continued use. In terms of performance, all constructs display relatively similar scores, ranging from 68.654 to 70.253. This indicates that respondents generally perceive the AI chatbot as performing at a moderate to high level across all dimensions.

From an interpretative perspective based on Hair et al. (2017), constructs with high importance but moderate performance merit priority attention. Use and User Satisfaction represent the clearest areas for strategic focus, given that improvements here are most likely to generate gains in net benefits and customer loyalty.

4.1.3 Hypothesis Analysis

Table 6 presents structural model results and hypothesis testing outcomes. Relationships are assessed using path coefficients, t-statistics, and p-values from the bootstrapping procedure. Significance is determined by t-values above 1.96 and p-values below 0.05 (Hair et al., 2017).

Table 6. Path Coefficients and Hypothesis Testing.

Construct	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values
IQ -> USAT	0.402	0.400	0.080	5.024	0.000
IQ -> USE	0.271	0.268	0.093	2.924	0.003
SQ -> USAT	0.240	0.239	0.074	3.218	0.001
SQ -> USE	0.275	0.272	0.100	2.749	0.006

USAT -> NB	0.317	0.319	0.086	3.672	0.000
USE -> NB	0.357	0.352	0.086	4.158	0.000
USE -> USAT	0.209	0.208	0.080	2.624	0.009

Source: Authors (2025)

The path from Information Quality to User Satisfaction shows a coefficient of 0.402, with a t-statistic of 5.024 and a p-value of 0.000. This result indicates a strong and statistically significant effect, supporting the hypothesis that higher information quality provided by the AI chatbot increases user satisfaction. The magnitude of this coefficient suggests that accurate, relevant, and timely information is a key driver of positive user evaluations.

The effect of Information Quality on Use is also significant, with a coefficient of 0.271, t-statistic of 2.924, and p-value of 0.003. Better information quality not only raises satisfaction but also encourages users to interact with the chatbot more frequently. This supports the hypothesis and is consistent with the view that perceived usefulness drives usage behavior.

System System Quality has a significant effect on User Satisfaction, with a coefficient of 0.240, t-statistic of 3.218, and p-value of 0.001. System reliability, responsiveness, and ease of use each contribute positively to user satisfaction. All hypotheses meet the significance criteria established by Hair et al. (2017), and the findings support the theoretical framework linking chatbot characteristics to customer loyalty through satisfaction and usage pathways.

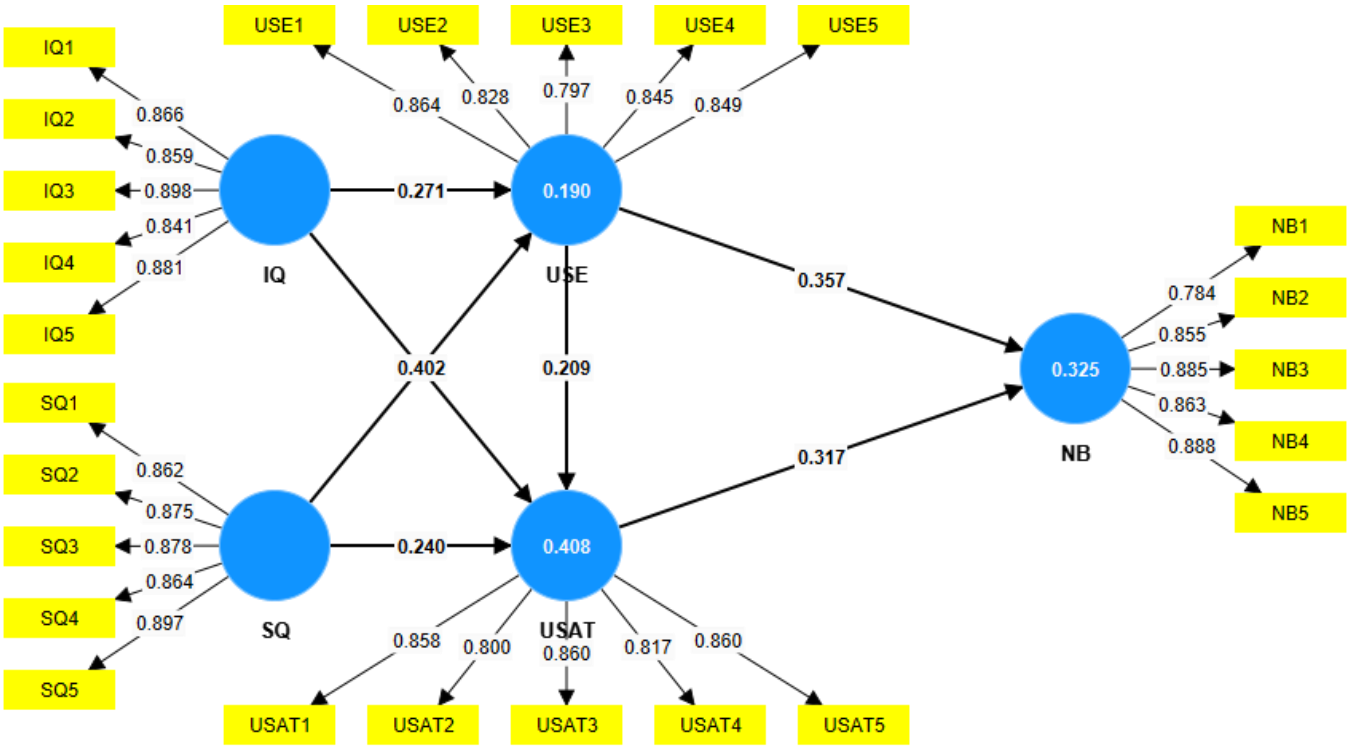


Figure 2. Path Diagram
Source: Authors (2025)

4.2 Discussion

This study examines how information quality and system quality shape customer loyalty through use behavior and user satisfaction in the context of AI chatbot services within Indonesian e-commerce platforms. The discussion is anchored in the observed strength and direction of relationships from the structural model, rather than restating theoretical expectations. The findings demonstrate that customer loyalty as a net benefit emerges primarily through behavioral engagement and experiential evaluation rather than being driven directly by system characteristics.

Information quality shows a strong and statistically significant effect on user satisfaction, with a higher path coefficient than its effect on use. Users evaluate chatbot information primarily in terms of how well it meets their expectations, rather than treating informative responses as a direct trigger for increased interaction frequency. This aligns with Chen et al. (2023), who argue that accuracy and relevance in AI-generated responses shape post-interaction evaluations and trust formation. Where chatbots are already integrated into routine service encounters, high-quality information reduces the cognitive effort involved in purchase decisions, reinforcing satisfaction even when usage intensity varies.

Information quality also shows a significant positive effect on use, although the magnitude of this relationship is weaker than its effect on satisfaction. This suggests that while informative responses encourage continued interaction, users do not necessarily increase usage solely because information quality improves. Similar patterns are reported by Chang-Chien et al. (2022), who note that users may rely on chatbots selectively, depending on task complexity and situational needs. Therefore, information quality functions more as a satisfaction driver than a direct behavioral accelerator in established e-commerce platforms.

System quality demonstrates significant effects on both use and user satisfaction, with comparable path coefficients. This result indicates that technical performance plays a dual role. Reliable operation, fast response time, and ease of navigation support repeated interaction while also shaping overall experience evaluation. These findings align with Azaga (2024), who emphasizes that system stability remains essential even as chatbot intelligence advances. In practice, users appear less tolerant of technical friction when interacting with automated services, which explains why system quality contributes directly to both behavioral and affective outcomes.

A notable finding is the significant effect of use on user satisfaction, which confirms that satisfaction is not solely a consequence of system attributes, but also develops through accumulated interaction experience. This supports the argument of Saputra and Sutarso (2024), who highlight that actual usage captures experiential learning that cannot be reflected through intention-based measures. Frequent interaction allows users to better understand chatbot capabilities and limitations, which stabilizes expectations and strengthens satisfaction over time.

Customer loyalty, conceptualized as net benefits, is significantly influenced by both use and user satisfaction. However, the path coefficient from use to customer loyalty is higher than that from satisfaction. This indicates that behavioral engagement plays a more dominant role in shaping loyalty outcomes in chatbot-supported e-commerce environments. Users who actively rely on chatbots for shopping-related tasks are more likely to continue using the platform, make repeat purchases, and recommend it to others. This finding aligns with Chen et al. (2023) and Laksamana et al. (2024), who emphasize that loyalty in digital platforms often emerges from habitual system reliance rather than affective attachment alone.

User satisfaction also shows a significant positive effect on customer loyalty, confirming its role as a critical evaluative mechanism. Satisfied users develop favorable perceptions toward the platform, which translate into long-term relational outcomes. However, the relatively lower coefficient compared to use suggests that satisfaction reinforces loyalty rather than initiates it. This pattern supports the observations of Raborar et al. (2025), who found that positive chatbot experiences strengthen loyalty most effectively when users already perceive the chatbot as functionally useful.

Overall, the discussion highlights that customer loyalty in AI chatbot contexts is behavior-driven and experience-stabilized. Information quality and system quality influence loyalty indirectly by shaping how users interact with chatbots and how they evaluate those interactions. This reinforces the suitability of the information system success perspective for explaining chatbot outcomes in mature e-commerce environments, where adoption is no longer optional but embedded in everyday transactions. The findings extend prior research by empirically demonstrating that loyalty emerges through a sequential process involving system quality, use behavior, and satisfaction, rather than through direct technological effects.

5. CONCLUSION

This study was designed to evaluate whether customer loyalty can be explained through AI chatbot use by applying the information systems success perspective. The empirical evidence confirms that the proposed hypotheses are supported: information quality and system quality significantly influence use behavior and user satisfaction, while use and satisfaction function as direct antecedents of customer loyalty conceptualized as net benefits. These findings are consistent with the causal logic of the information systems success model, which positions technological characteristics as indirect drivers of long-term value through user interaction and evaluation processes (DeLone and McLean, 2003; Hair et al., 2017).

The primary contribution of this research lies in demonstrating that customer loyalty in AI-enabled service environments is driven more strongly by behavioral engagement than by evaluative satisfaction alone. While prior work has emphasized satisfaction as the dominant mediator of loyalty in digital services, the results show that actual usage plays a more central role. This extends recent chatbot research by empirically validating the argument that habitual reliance on AI systems strengthens relational outcomes more effectively than positive attitudes in isolation (Chen et al., 2023; Chang-Chien et al., 2022). From a theoretical standpoint, this study also refines the application of

the information systems success model by highlighting the elevated importance of use in mature digital platforms where AI chatbots are already embedded in routine service encounters.

Several limitations should be acknowledged. The cross-sectional research design limits the ability to observe how perceptions and behavior evolve through sustained chatbot interaction. Reliance on self-reported data may introduce common method bias, despite the careful establishment of measurement validity and reliability (Hair et al., 2017). The study's focus on Indonesian e-commerce users also restricts generalizability to contexts with different levels of digital infrastructure or cultural orientations toward automation.

Future research is encouraged to adopt longitudinal approaches in order to capture dynamic changes in chatbot usage and loyalty formation. The inclusion of objective behavioral data, such as interaction logs or transaction frequency, would further strengthen empirical insights. Researchers may also extend the current model by incorporating constructs related to trust, perceived intelligence, or ethical concerns, which have been identified as emerging determinants of user evaluation in AI-mediated services (Azaga, 2024; Raborar et al., 2025).

From an institutional and systemic perspective, the results suggest that the effectiveness of AI chatbot implementation should be assessed based on sustained usage outcomes rather than adoption indicators alone. E-commerce platforms and policymakers involved in digital transformation initiatives should prioritize system reliability and functional usefulness to encourage repeated engagement. These findings imply that customer loyalty in digital markets is reinforced when AI chatbots operate as dependable service instruments rather than symbolic representations of technological advancement, which has implications for platform governance, service quality standards, and the evaluation of AI-driven customer service performance (Laksamana et al., 2024).

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