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The Influence of Perceived Authenticity, Performance Expectancy, and Service Quality on Behavioral Intention to Use AI Chatbots through Perceived Usefulness

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ABSTRACT

The rapid development of artificial intelligence (AI) has encouraged the adoption of AI Chatbots as digital service tools in marketplace and e-commerce platforms. However, the increasing availability of AI Chatbots does not necessarily guarantee users' intention to continue using them. This study aims to examine the effects of Perceived Authenticity, Performance Expectancy, and Service Quality on Behavioral Intention, as well as the mediating role of Perceived Usefulness in the context of AI Chatbot usage in marketplace and e-commerce services. This study employed a quantitative explanatory approach using an online survey of 265 respondents who had interacted with AI Chatbots on marketplace or e-commerce platforms and resided in the Jabodetabek area. Data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) with SmartPLS. The results indicate that Perceived Authenticity does not significantly affect Perceived Usefulness, while Performance Expectancy and Service Quality have significant positive effects on Perceived Usefulness. Furthermore, Perceived Usefulness, Perceived Authenticity, and Service Quality significantly affect Behavioral Intention, whereas Performance Expectancy does not have a significant direct effect on Behavioral Intention. The mediation analysis shows that Perceived Usefulness significantly mediates the effects of Performance Expectancy and Service Quality on Behavioral Intention, but does not mediate the effect of Perceived Authenticity. The findings highlight the role of perceived usefulness and service quality in explaining users' behavioral intention toward AI Chatbots in marketplace and e-commerce services.

Keywords: Artificial Intelligence Chatbot, Perceived Authenticity, Performance Expectancy, Service Quality, Perceived Usefulness, Behavioral Intention

INTRODUCTION

The development of digital technology has brought significant changes to consumption patterns and the way companies interact with consumers, including activities conducted through electronic commerce (e-commerce). These changes have encouraged companies to adopt Artificial Intelligence (AI) technology as an effort to enhance customer experience and service. One of the increasingly prevalent applications of AI in digital services is the AI Chatbot, a conversational technology that enables users to interact with systems automatically to obtain information, receive recommendations, and receive real-time assistance in resolving problems

(K. Liu & Tao, 2022; L. Liu et al., 2025). The presence of AI Chatbots demonstrates that the utilization of AI in e-commerce is not solely oriented toward service process automation but is also directed toward improving the quality of interactions between companies and consumers.

This development is supported by the increasingly rapid growth of the digital economy. Indonesia is one of the largest digital economy ecosystems in Southeast Asia, with the e-commerce sector serving as one of its major components. The growth of video commerce and the increasing level of digital transaction activity demonstrate the growing role of technology in supporting business activities and consumer interactions (Google et al., 2024). At the global level, the use of AI Chatbots has also increased significantly. Sarkar (2025) recorded approximately 55.2 billion visits to various AI Chatbot platforms between April 2024 and March 2025, representing an increase of 80.92% compared with the previous period. This increase indicates that AI Chatbots are becoming an increasingly integral part of people's digital activities, making it important to understand the factors that can encourage their acceptance and continued use.

In Indonesia, the high level of consumer activity on marketplace platforms provides greater opportunities for the implementation of AI Chatbots as part of digital services. According to data from Muhamad (2025), Shopee was the most widely used marketplace in Indonesia, accounting for 53.22%, followed by TikTok Shop at 27.37% and Tokopedia at 9.57%. The high usage rates of these platforms indicate a broad user base for the development of technologies that support customer services. In line with this condition, several marketplaces in Indonesia have implemented technology-based communication and service features to assist users. Shopee provides Shopee Chat and AI-based services, while Tokopedia provides assistance through Tokopedia Care (Rohman, 2023; Shopee, 2026). These conditions indicate that competition among marketplace platforms is no longer determined solely by price and promotional aspects but also by the ability of companies to provide digital services that are responsive, relevant, fast, and of high quality.

Although the implementation of AI Chatbots continues to grow, the presence of such technology does not directly guarantee users' intention to continue using it. Suboptimal user experiences may occur when AI Chatbots are unable to understand the context of questions, provide inaccurate information, or fail to resolve users' problems. Such conditions may encourage users to seek alternative services, including human-provided services (Pham et al., 2025; Zhang et al., 2024). Therefore, the successful implementation of AI Chatbots is determined not only by their technological capabilities but also by how users perceive the characteristics, performance, usefulness, and service quality provided by the chatbot. In this context, Service Quality is an important aspect because it reflects the ability of AI Chatbots to provide services that are fast, accurate, relevant, accessible, and aligned with users' needs. (Zhang et al., 2024) demonstrated that response speed, response accuracy, convenience, and accessibility are aspects associated with the service quality of virtual agents in e-commerce customer service. Meanwhile, (Wu & Lim, 2024) found that aspects such as empathy and

reliability are associated with Perceived Usefulness, while accuracy can contribute to increasing users' perceived benefits of chatbots.

In addition to service quality, human-like characteristics of AI Chatbots are also relevant in shaping users' perceptions and behavior. In this study, Perceived Authenticity refers to users' perceptions of the extent to which an AI Chatbot possesses human-like characteristics, behaviors, and interaction capabilities, making the interaction perceived as more natural and authentic. These characteristics are related to the concept of anthropomorphism, which refers to users' tendency to attribute or perceive human characteristics in technology. (Wei et al., 2025) demonstrated that anthropomorphic characteristics of chatbots are associated with users' psychological mechanisms and chatbot usage intention. Furthermore, (Sfar et al., 2025) found that anthropomorphism has a positive effect on chatbot usage intention. These findings indicate that users' perceptions of the human-like characteristics possessed by chatbots may be one of the factors that contribute to their tendency to utilize the technology.

Another factor that needs to be considered is Performance Expectancy, which refers to users' belief that the use of a technology can improve performance or effectiveness in completing particular activities. In the context of AI Chatbot usage on marketplaces, Performance Expectancy may be reflected in users' beliefs that chatbots can help them obtain information more quickly, resolve problems, and support shopping activities more effectively. From the perspective of the Unified Theory of Acceptance and Use of Technology (UTAUT), Performance Expectancy is one of the factors that contributes to Behavioral Intention (Venkatesh et al., 2003). Users tend to have stronger intentions to use a technology when they perceive that it can provide benefits in achieving their goals. Consistent with this perspective, (Guo & Erdenebold, 2025) found that Performance Expectancy has a significant effect on Behavioral Intention in the use of AI Chatbots in an educational context.

Perceived Usefulness also plays an important role in explaining technology acceptance and usage intention. This concept refers to the extent to which users believe that the use of a technology can provide benefits for the activities they perform. In the context of AI Chatbot usage on marketplaces, perceived benefits may include the chatbot's ability to help users obtain product information, receive recommendations, resolve problems, and support purchase decision-making. Therefore, Perceived Usefulness should not only be viewed as a perception of the benefits provided by technology but may also serve as a mechanism explaining how the characteristics, performance, and service quality of AI Chatbots influence Behavioral Intention. Previous studies have demonstrated that Perceived Usefulness is an important factor in explaining technology acceptance and usage intention. In the context of chatbots, (Wu & Lim, 2024) found that several aspects of chatbot service quality are associated with Perceived Usefulness, indicating that perceived benefits are an important aspect in understanding users' responses to chatbot technology.

Various previous studies have examined the relationships among several of these variables; however, their findings remain distributed across different contexts and combinations of

variables. (Shahzad et al., 2024), for example, examined AI Chatbot Service Quality in relation to trust, experience, electronic word-of-mouth, and e-brand loyalty. Meanwhile, (Wu & Lim, 2024) investigated the relationships among chatbot service quality, Perceived Usefulness, satisfaction, and continuous usage intention. These studies have provided insights into the importance of service quality in shaping users' responses to AI Chatbots, but they have not integrated Perceived Authenticity and Performance Expectancy into the same research model.

Research on Performance Expectancy has also provided evidence of its relationship with Behavioral Intention. (Guo & Erdenebold, 2025) found that Performance Expectancy has a significant effect on Behavioral Intention in the use of AI Chatbots. However, their study was conducted in an educational context, where users' characteristics, needs, and objectives differ from those associated with the use of AI Chatbots in marketplaces or e-commerce. On the other hand, research on anthropomorphic characteristics has demonstrated their relationship with chatbot usage intention but has not specifically integrated Perceived Authenticity, Performance Expectancy, Service Quality, and Perceived Usefulness to explain Behavioral Intention in the marketplace context. These contextual differences indicate that previous findings do not fully capture the mechanisms underlying AI Chatbot acceptance in digital shopping activities.

Based on the previous studies, a research gap can be identified in the limited number of studies that integrate Perceived Authenticity, Performance Expectancy, Service Quality, Perceived Usefulness, and Behavioral Intention into a single research model in the context of AI Chatbots in e-commerce. The research proposal also identifies the limited integration among these variables as the basis for developing the research model. In addition, several previous studies have focused on educational contexts, customer service, or specific aspects of consumer behavior, indicating the need for research that specifically examines the relationships among these variables in the context of AI Chatbot usage on marketplace platforms. Such examination is important because digital shopping activities involve users' needs for information, recommendations, problem resolution, and support in decision-making, all of which may influence their evaluations of the usefulness and service quality of AI Chatbots.

To address this research gap, this study develops a model that positions Perceived Authenticity, Performance Expectancy, and Service Quality as variables expected to influence Perceived Usefulness and Behavioral Intention, with Perceived Usefulness serving as a mediating variable. This model enables the study to identify not only the direct effects of each variable on Behavioral Intention but also to explain the role of Perceived Usefulness in transmitting the effects of these variables on usage intention. Through this approach, the study is expected to provide a more comprehensive understanding of the factors that encourage users to accept and intend to use AI Chatbots in marketplace services.

This study is expected to contribute to the development of technology acceptance research by integrating the Technology Acceptance Model (TAM) and the Unified Theory of Acceptance and Use of Technology (UTAUT) with aspects of chatbot human-like characteristics and service quality (Davis, 1989; Venkatesh et al., 2003). This integration is employed to explain

the relationships among Perceived Authenticity, Performance Expectancy, Service Quality, Perceived Usefulness, and Behavioral Intention in the use of AI Chatbots. Empirically, this study focuses on AI Chatbot users of marketplace or e-commerce services in the Jabodetabek area, with Jakarta and South Tangerang as the primary research areas. Practically, the findings are expected to provide considerations for marketplace companies and AI Chatbot developers in improving service quality, response accuracy and relevance, the ability to understand users' needs, and the perceived usefulness of interactions with chatbots.

Based on the foregoing discussion, this study aims to analyze the effects of Perceived Authenticity, Performance Expectancy, and Service Quality on Perceived Usefulness and Behavioral Intention in the use of AI Chatbots in marketplace or e-commerce services. In addition, this study aims to analyze the role of Perceived Usefulness as a mediating variable in the relationships between Perceived Authenticity, Performance Expectancy, and Service Quality and Behavioral Intention. To achieve these objectives, this study employs a quantitative explanatory approach using a survey method and Partial Least Squares Structural Equation Modeling (PLS-SEM) to empirically examine both direct and indirect relationships among the variables in the proposed research model.

Based on the theoretical review and previous studies, this study develops relationships among Perceived Authenticity, Performance Expectancy, Service Quality, Perceived Usefulness, and Behavioral Intention. Perceived Usefulness is positioned as a mediating variable to explain how users' perceptions of the characteristics and performance of AI Chatbots may contribute to usage intention. Based on the proposed research model, the following hypotheses are formulated.

H1: Perceived Authenticity has a positive effect on Perceived Usefulness among AI Chatbot users in e-commerce.

H2: Performance Expectancy has a positive effect on Perceived Usefulness among AI Chatbot users in e-commerce.

H3: Perceived Usefulness has a positive effect on Behavioral Intention among AI Chatbot users in e-commerce.

H4: Perceived Authenticity has a positive effect on Behavioral Intention among AI Chatbot users in e-commerce.

H5: Performance Expectancy has a positive effect on Behavioral Intention among AI Chatbot users in e-commerce.

H6: Service Quality has a positive effect on Perceived Usefulness among AI Chatbot users in e-commerce.

H7: Service Quality has a positive effect on Behavioral Intention among AI Chatbot users in e-commerce.

H8: Perceived Usefulness mediates the relationship between Perceived Authenticity and Behavioral Intention among AI Chatbot users in e-commerce.

H9: Perceived Usefulness mediates the relationship between Performance Expectancy and Behavioral Intention among AI Chatbot users in e-commerce.

H10: Perceived Usefulness mediates the relationship between Service Quality and Behavioral Intention among AI Chatbot users in e-commerce.

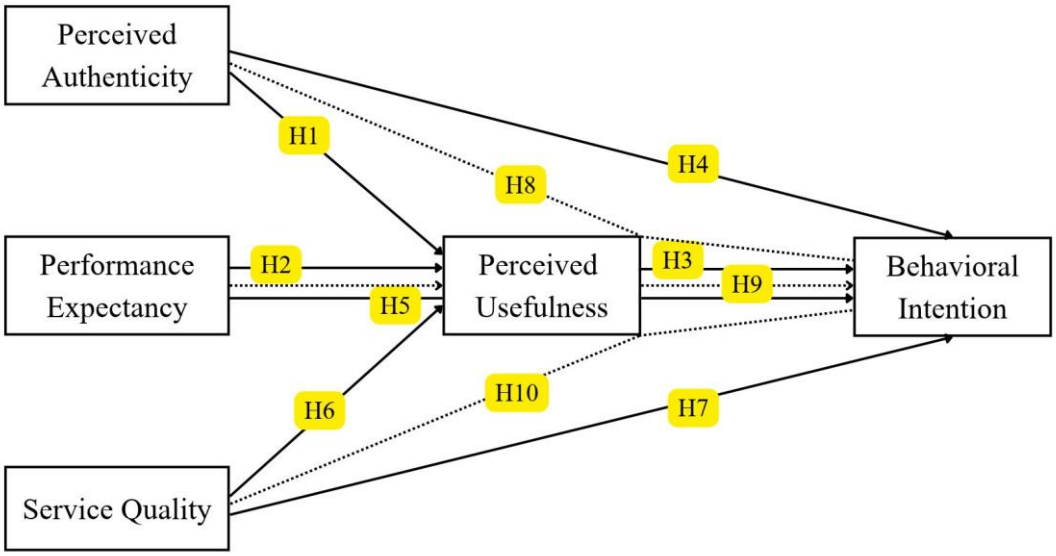

Figure 1. Research Model

RESEARCH METHOD

This study employed a quantitative explanatory research design using a survey method to examine the relationships among Perceived Authenticity, Performance Expectancy, Service Quality, Perceived Usefulness, and Behavioral Intention in the use of AI Chatbots on marketplace and e-commerce platforms. The study was conducted in the Jabodetabek area, with Jakarta and South Tangerang as the main research areas. The population consisted of AI Chatbot users in the Jabodetabek region whose exact number could not be identified due to the lack of specific data regarding AI Chatbot users based on domicile and usage experience. Therefore, the population was considered an unknown population. The study focused on users who had experience interacting with AI Chatbots in marketplace or e-commerce services, such as Shopee, Tokopedia, and TikTok Shop.

The sampling technique used was non-probability sampling with a purposive sampling approach. Respondents were selected based on predetermined criteria relevant to the research objectives. The criteria required respondents to be at least 17 years old, reside in the Jabodetabek area, have used or interacted with an AI Chatbot, have interacted with an AI Chatbot in a marketplace or e-commerce service, and have sufficient experience to evaluate the characteristics, performance, usefulness, and service quality of the AI Chatbot. The sample size

was determined based on the guideline proposed by (Hair et al., 2022), considering the number of indicators used in the PLS-SEM analysis. The study consisted of 25 indicators, with five indicators for each of the five variables. Based on the 10-times indicator approach, the minimum sample size was 250 respondents. A total of 265 valid responses were subsequently obtained and used for data analysis.

Primary data were collected through a structured online questionnaire distributed using Google Forms. Before answering the main questionnaire, respondents were required to complete screening questions to ensure that they met the predetermined sample criteria. The questionnaire consisted of two sections: the first section collected information regarding respondent characteristics and eligibility, while the second section measured the five research variables. All measurement items were assessed using a five-point Likert scale ranging from 1 = strongly disagree to 5 = strongly agree. The measurement instruments were developed from indicators adopted from previous studies and adjusted to the context of AI Chatbot usage. The five variables measured were Perceived Authenticity, Performance Expectancy, Service Quality, Perceived Usefulness, and Behavioral Intention.

Table 1. Operational Definitions and Indicators of Variables

Variable	Operational Definitions	Indicators (Questionnaire Items)
Perceived Authenticity (X1)	The extent to which users perceive that an AI Chatbot possesses human-like characteristics, behaviors, and interaction capabilities, making the interaction feel natural and authentic	PA1-PA5: Natural interaction, human-like characteristics, contextual responses, human-like interaction, human-like impression.
Performance Expectancy (X2)	The extent to which users believe that using an AI Chatbot can improve their effectiveness and performance in obtaining information or fulfilling service needs on e-commerce platforms.	PE1-PE5: Faster service, information effectiveness, problem resolution, productivity, meeting user needs.
Service Quality (X3)	Users' perceptions of the ability of an AI Chatbot to provide services that are fast, accurate, relevant, responsive, and reliable in fulfilling their needs.	SQ1-SQ5: Response speed, accuracy, relevance, understanding user needs, reliability.
Perceived Usefulness (Z)	The extent to which users perceive that using an AI Chatbot provides benefits and helps them fulfill service needs more effectively and efficiently.	PU1-PU5: Service effectiveness, faster task completion, service benefits, information access, overall usefulness.

Behavioral Intention (Y)	Users' intention or tendency to use and utilize an AI Chatbot in the future, including their willingness to continue using the chatbot when they require services.	BI1-BI5: Reuse intention, future use, continued use, future service use, recommendation.

The data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) with SmartPLS. PLS-SEM was selected because the proposed research model contains multiple latent variables and examines both direct and indirect relationships, with Perceived Usefulness serving as a mediating variable. The analysis consisted of measurement model and structural model evaluations. The measurement model was assessed through convergent validity, discriminant validity, and construct reliability. Convergent validity was evaluated using outer loading and Average Variance Extracted (AVE), with minimum criteria of 0.70 and 0.50, respectively. Discriminant validity was assessed using the Heterotrait-Monotrait Ratio (HTMT), with a recommended threshold below 0.90, while reliability was evaluated using Cronbach's Alpha and Composite Reliability, with values of at least 0.70 considered acceptable.

The structural model was evaluated using Variance Inflation Factor (VIF), coefficient of determination (R^2), effect size (f^2), and predictive relevance (Q^2). VIF was used to assess potential collinearity among predictor variables, R^2 was used to evaluate the explanatory power of the model, f^2 was used to assess the effect size of each predictor, and Q^2 was used to evaluate the predictive relevance of the endogenous variables. Hypothesis testing was conducted using the bootstrapping procedure in SmartPLS to assess the significance of direct and indirect effects. In addition, PLS-Predict was employed to evaluate the model's out-of-sample predictive capability, while Importance-Performance Map Analysis (IPMA) was conducted to identify the relative importance and performance of the predictor variables in explaining Perceived Usefulness and Behavioral Intention.

RESULT AND DISCUSSION

3.1. Respondent Characteristics

This study involved 265 respondents who met the predetermined screening criteria. The screening criteria required respondents to be at least 17 years old, reside in the Jabodetabek area, have experience using AI chatbots, and have interacted with AI chatbots provided through marketplace or e-commerce platforms. Respondents who did not meet these criteria were excluded from the analysis. Therefore, the 265 respondents included in this study were considered eligible and relevant to the research objectives. The characteristics of the respondents are shown in Table 2.

Table 2. Profile and Screening Respondent

Screening and Characteristic	Category	Frequency	Percentage
Active e-commerce user	Yes	265	100.0

	No		
Interaction history	Yes	265	100.0
	No		
Age	17-25 years old	161	60.8
	26-35 years old	103	38.9
	36-45 years old	0	0
	46-55 years old	1	0.4
	56-65 years old	0	0
Domicile	Jakarta	157	59.2
	Bogor	107	40.4
	Depok	0	0
	Tangerang	1	0.4
	Bekasi	0	0

The respondent screening indicates that the collected data are consistent with the target population defined in the study. The respondents had direct experience with AI chatbot technology in marketplace or e-commerce contexts, making their responses relevant for examining the relationships among *Perceived Authenticity*, *Performance Expectancy*, *Service Quality*, *Perceived Usefulness*, and *Behavioral Intention*.

3.2. Measurement Model Evaluation

The measurement model was evaluated before testing the structural relationships among variables. The evaluation included model evaluation, convergent validity, discriminant validity, and reliability. The purpose of this stage was to determine whether the indicators adequately measured their respective variables and whether the measurement model was sufficiently reliable for subsequent structural analysis.

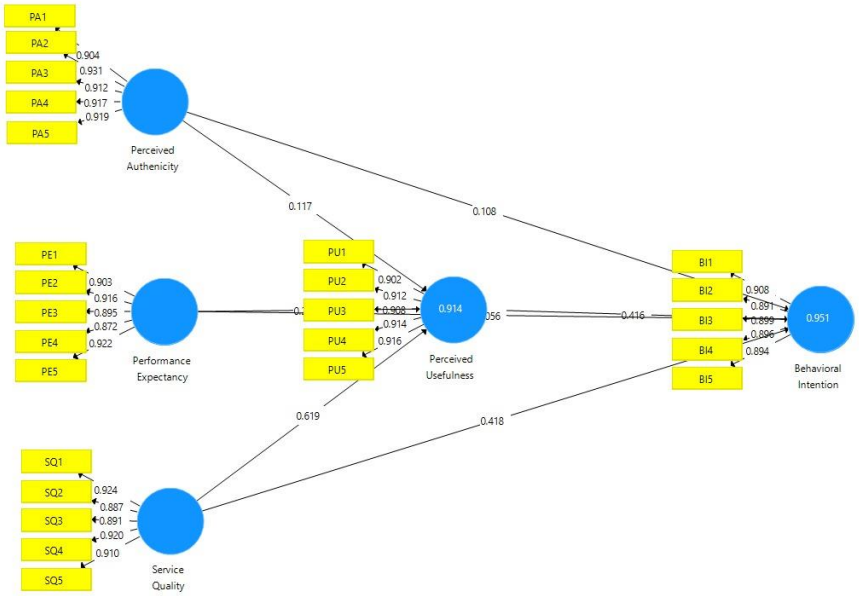

Figure 2. Model Evaluation

The model evaluation results show an SRMR value of 0.025934 and an NFI value of 0.920012. These results indicate a satisfactory level of model fit based on these measures. However, the RMS Theta value of 0.125864 is slightly above the commonly recommended value of 0.12, indicating that the model still has some room for improvement in terms of residual correlation among indicators. Nevertheless, the low SRMR and NFI above 0.90 provide evidence that the model has an acceptable overall fit for the analysis.

Convergent Validity

Convergent validity was assessed using the outer loading values and Average Variance Extracted (AVE). An indicator is generally considered to have adequate convergent validity when its outer loading is above 0.70, while an AVE value above 0.50 indicates that a variable explains more than half of the variance of its indicators.

Table 3. Outer Loading Value

Construct	Outer Loading	AVE
Behavioral Intention		0.806
BI1	0.908	
BI2	0.891	
BI3	0.899	
BI4	0.896	
BI5	0.894	
Perceived Authenticity		0.841
PA1	0.904	

PA2	0.931	
PA3	0.912	
PA4	0.917	
PA5	0.919	
Perceived Usefulness		0.829
PU1	0.902	
PU2	0.912	
PU3	0.908	
PU4	0.914	
PU5	0.916	
Performance Expectancy		0.813
PE1	0.903	
PE2	0.916	
PE3	0.895	
PE4	0.872	
PE5	0.922	
Service Quality		0.821
SQ1	0.924	
SQ2	0.887	
SQ3	0.891	
SQ4	0.920	
SQ5	0.910	

The results show that all 25 indicators have outer loading values above 0.70, with values ranging from 0.871 to 0.931. The highest loading is obtained by PA2 at 0.931, while the lowest is obtained by PE4 at 0.871. Therefore, all indicators meet the required loading criterion and can be retained in the measurement model.

The AVE values further support convergent validity. The AVE values are 0.806 for Behavioral Intention, 0.841 for Perceived Authenticity, 0.829 for Perceived Usefulness, 0.813 for Performance Expectancy, and 0.821 for Service Quality. All values exceed 0.50, indicating that each variable explains a substantial proportion of the variance in its indicators. Thus, the measurement model demonstrates adequate convergent validity.

Discriminant Validity

Discriminant validity was assessed using three approaches: cross loadings, the Fornell-Larcker criterion, and the Heterotrait-Monotrait Ratio (HTMT). These three assessments provide complementary evidence regarding whether each variable is empirically distinct from the other variables in the model.

Table 4. Cross Loadings Result

	BI	PA	PU	PE	SQ
BI1	**0.908**	0.817	0.864	0.848	0.863
BI2	**0.891**	0.821	0.852	0.833	0.867
BI3	**0.899**	0.808	0.875	0.840	0.874
BI4	**0.896**	0.802	0.870	0.837	0.872
BI5	**0.894**	0.814	0.850	0.825	0.839
PA1	0.827	**0.904**	0.816	0.849	0.822
PA2	0.847	**0.931**	0.848	0.867	0.845
PA3	0.823	**0.912**	0.811	0.842	0.824
PA4	0.808	**0.917**	0.793	0.815	0.797
PA5	0.843	**0.919**	0.823	0.848	0.818
PU1	0.863	0.816	**0.902**	0.829	0.847
PU2	0.883	0.823	**0.912**	0.845	0.861
PU3	0.873	0.804	**0.908**	0.848	0.866
PU4	0.871	0.810	**0.914**	0.862	0.854
PU5	0.881	0.809	**0.916**	0.836	0.887
PE1	0.841	0.889	0.843	**0.903**	0.844
PE2	0.843	0.819	0.836	**0.916**	0.858
PE3	0.836	0.807	0.831	**0.895**	0.826
PE4	0.819	0.786	0.806	**0.872**	0.825
PE5	0.864	0.851	0.862	**0.922**	0.865
SQ1	0.888	0.831	0.890	0.870	**0.924**
SQ2	0.851	0.799	0.835	0.851	**0.887**
SQ3	0.869	0.812	0.859	0.846	**0.891**
SQ4	0.884	0.800	0.869	0.831	**0.920**
SQ5	0.864	0.818	0.843	0.844	**0.910**

The cross-loading results show that each indicator has its highest loading on the variable it is intended to measure. For example, all BI indicators have their highest loading on Behavioral Intention, all PA indicators have their highest loading on Perceived Authenticity, and the same pattern is observed for Performance Expectancy, Perceived Usefulness, and Service Quality. Based on the cross-loading criterion, the indicators demonstrate acceptable discriminant validity.

Table 5. Fornell-Larcker Criterion Result

	BI	PA	PU	PE	SQ
Behavioral Intention	0.898				

Perceived Authenticity	0.905	0.917			
Perceived Usefulness	0.961	0.893	0.910		
Performance Expectancy	0.932	0.921	0.927	0.902	
Service Quality	0.961	0.696	0.948	0.936	0.906

The Fornell-Larcker results indicate that the criterion is not fully satisfied. The square root of AVE for Behavioral Intention is 0.898, which is lower than its correlations with Perceived Authenticity (0.905), Perceived Usefulness (0.961), Performance Expectancy (0.932), and Service Quality (0.961). Similarly, the square root of AVE for Perceived Usefulness (0.910) is lower than its correlation with Behavioral Intention (0.961), Performance Expectancy (0.927), and Service Quality (0.948). This indicates that several variables have very high correlations, suggesting that they are not sufficiently distinct according to the Fornell-Larcker criterion.

Table 6. Heterotrait-Monotrait Ratio Result

	BI	**PA**	**PU**	**PE**	**SQ**
Behavioral Intention					
Perceived Authenticity	0.957				
Perceived Usefulness	1.017	0.939			
Performance Expectancy	0.991	0.972	0.981		
Service Quality	1.020	0.944	1.001	0.992	

The HTMT results further indicate that discriminant validity is not fully established. Several HTMT values exceed the commonly used threshold of 0.90, including Behavioral Intention–Perceived Usefulness (1.017), Behavioral Intention–Service Quality (1.020), Behavioral Intention–Performance Expectancy (0.991), Perceived Authenticity–Performance Expectancy (0.972), Perceived Usefulness–Performance Expectancy (0.981), and Performance Expectancy–Service Quality (0.992). These results indicate substantial overlap among several variables.

Therefore, although the cross-loading assessment indicates that each indicator loads highest on its assigned variable, the Fornell-Larcker and HTMT assessments indicate that discriminant validity remains a limitation of the measurement model. This finding should be considered when interpreting the structural model because the high correlations among variables may contribute to the high levels of multicollinearity observed in the inner model.

Reliability

Reliability was assessed using Cronbach's Alpha, rho_A, and Composite Reliability. A variable is generally considered reliable when its reliability coefficients exceed 0.70.

Table 7. Construct Reliability

Construct	Cronbach's Alpha	rho_A	Composite Reliability
Behavioral Intention	0.940	0.940	0.954
Perceived Authenticity	0.953	0.953	0.963
Perceived Usefulness	0.948	0.948	0.960
Performance Expectancy	0.942	0.943	0.956
Service Quality	0.946	0.946	0.958

The results show that all variables have Cronbach's Alpha values between 0.940 and 0.953, while Composite Reliability values range from 0.954 to 0.963. The rho_A values also exceed 0.70 for all variables. These results demonstrate a high level of internal consistency among the indicators. Therefore, all variables can be considered reliable for further analysis.

3.3. Structural Model Evaluation

After evaluating the measurement model, the structural model was assessed to examine the relationships among the variables. The evaluation included the Variance Inflation Factor (VIF), coefficient of determination (R^2), effect size (f^2), hypothesis testing, predictive assessment, and Importance-Performance Map Analysis.

Variance Inflation Factor

The VIF test was conducted to identify potential multicollinearity among the predictor variables. The inner VIF results are presented below.

Table 8. VIF Result

Endogenous Variable	Predictor Variable	VIF

Perceived Usefulness	Perceived Authenticity	7.041
Perceived Usefulness	Performance Expectancy	11.223
Perceived Usefulness	Service Quality	8.600
Behavioral Intention	Perceived Authenticity	7.200
Behavioral Intention	Perceived Usefulness	11.588
Behavioral Intention	Performance Expectancy	11.890
Behavioral Intention	Service Quality	13.034

The results indicate that the inner VIF values are relatively high. The VIF values for Perceived Usefulness range from 7.041 to 11.223, while the values for Behavioral Intention range from 7.200 to 13.034. These values indicate substantial multicollinearity among the predictor variables, particularly Service Quality in predicting Behavioral Intention, which has the highest VIF value of 13.034.

This result is consistent with the high correlations identified in the discriminant validity assessment. Therefore, the structural path coefficients and hypothesis-testing results should be interpreted with caution because multicollinearity may affect the stability and precision of the estimated relationships.

Coefficient of Determination

The coefficient of determination (R^2) was used to evaluate the explanatory power of the structural model.

Table 9. Coefficient of Determination (R^2)

Endogenous Variable	R Square	R Square Adjusted
Behavioral Intention	0.951	0.951
Perceived Usefulness	0.914	0.913

The R^2 value for Perceived Usefulness is 0.914, indicating that Perceived Authenticity, Performance Expectancy, and Service Quality jointly explain approximately 91.4% of the variance in Perceived Usefulness. The remaining 8.6% is explained by factors outside the model.

Meanwhile, Behavioral Intention has an R^2 value of 0.951, indicating that Perceived Authenticity, Perceived Usefulness, Performance Expectancy, and Service Quality jointly

explain approximately 95.1% of the variance in Behavioral Intention. Thus, the model has substantial explanatory power for both endogenous variables. However, the high R^2 values should be interpreted alongside the high VIF values and the discriminant validity results.

Effect Size

The effect size (f^2) was used to assess the contribution of each predictor to the R^2 value of the endogenous variable.

Table 10. Effect Size (f^2)

	Behavioral Intention	Perceived Usefulness
Perceived Authenticity	0.033	0.023
Performance Expectancy	0.005	0.059
Performance Usefulness	0.307	-
Service Quality	0.275	0.516

The results show that Perceived Authenticity has a small effect on both Behavioral Intention ($f^2 = 0.033$) and Perceived Usefulness ($f^2 = 0.023$). Performance Expectancy has a negligible effect on Behavioral Intention ($f^2 = 0.005$) but a small effect on Perceived Usefulness ($f^2 = 0.059$).

In contrast, Perceived Usefulness has a medium effect on Behavioral Intention, with an f^2 value of 0.307. Service Quality has a medium effect on Behavioral Intention ($f^2 = 0.275$) and the largest effect on Perceived Usefulness ($f^2 = 0.516$). These findings indicate that Service Quality is particularly important in explaining Perceived Usefulness, while both Perceived Usefulness and Service Quality make relatively substantial contributions to Behavioral Intention.

3.4. Hypothesis Testing

Hypothesis testing was conducted using the bootstrapping procedure. A relationship was considered significant when the t-statistic exceeded 1.96 and the p-value was below 0.05.

Table 11. Direct Effect Result

Hypothesis	Path Coefficient	T Statistics	P Value	Decision
Perceived Authenticity → Perceived Usefulness	0.117	1.161	0.246	Rejected
Performance Expectancy → Perceived Usefulness	0.240	3.548	0.000	Accepted

Perceived Usefulness → Behavioral Intention	0.416	8.984	0.000	Accepted
Perceived Authenticity → Behavioral Intention	0.108	2.613	0.009	Accepted
Performance Expectancy → Behavioral Intention	0.056	0.963	0.336	Rejected
Service Quality → Perceived Usefulness	0.619	7.510	0.000	Accepted
Service Quality → Behavioral Intention	0.418	8.714	0.000	Accepted

The first hypothesis proposes that Perceived Authenticity positively affects Perceived Usefulness. The results show a path coefficient of 0.117, with a t-statistic of 1.161 and a p-value of 0.246. Since the p-value is greater than 0.05, H1 is rejected. This indicates that users' perceptions of chatbot authenticity do not significantly influence their perception of the chatbot's usefulness. Thus, an AI chatbot may be perceived as authentic without necessarily being perceived as useful for accomplishing users' activities.

H2 is accepted because Performance Expectancy has a positive and significant effect on Perceived Usefulness. The path coefficient is 0.240, with a t-statistic of 3.548 and a p-value of 0.000. This finding indicates that users who expect an AI chatbot to improve their performance are more likely to perceive the chatbot as useful. The result supports the underlying logic of technology acceptance, where expected functional benefits contribute to perceptions of usefulness.

H3 is accepted because Perceived Usefulness has a positive and significant effect on Behavioral Intention. The path coefficient is 0.416, with a t-statistic of 8.984 and a p-value of 0.000. This result indicates that users who perceive an AI chatbot as useful tend to have stronger intentions to use the technology. The finding is consistent with the Technology Acceptance Model, which places perceived usefulness as an important determinant of behavioral intention.

H4 is accepted because Perceived Authenticity has a positive and significant effect on Behavioral Intention. The path coefficient is 0.108, with a t-statistic of 2.613 and a p-value of 0.009. This finding indicates that authenticity can directly encourage users' intention to use an AI chatbot even though it does not significantly affect perceived usefulness. Thus, authenticity appears to influence behavioral intention through a direct mechanism rather than by increasing perceived usefulness.

H5 is rejected because Performance Expectancy does not have a significant direct effect on Behavioral Intention. The path coefficient is 0.056, with a t-statistic of 0.963 and a p-value of 0.336. This result suggests that expectations regarding the performance benefits of an AI chatbot are not sufficient to directly generate behavioral intention. Instead, the effect of

Performance Expectancy becomes meaningful when users translate those expectations into a perception that the chatbot is useful.

H6 is accepted because Service Quality has a positive and significant effect on Perceived Usefulness. The path coefficient is 0.619, with a t-statistic of 7.510 and a p-value of 0.000. Among the predictors of Perceived Usefulness, this relationship has the largest path coefficient. The finding indicates that better perceived service quality is strongly associated with a higher perception of chatbot usefulness.

H7 is accepted because Service Quality has a positive and significant effect on Behavioral Intention. The path coefficient is 0.418, with a t-statistic of 8.714 and a p-value of 0.000. This indicates that users who perceive higher service quality tend to demonstrate stronger intentions to use the AI chatbot.

Table 12. Specific Indirect Effect Result

Hypothesis	Indirect Effect	T Statistics	P Value	Decision
Perceived Authenticity → Performance Usefulness → Behavioral Intention	0.049	1.237	0.217	Rejected
Performance Expectancy → Performance Usefulness → Behavioral Intention	0.100	3.056	0.002	Accepted
Service Quality → Performance Usefulness → Behavioral Intention	0.258	5.514	0.000	Accepted

H8 is rejected because the indirect effect of Perceived Authenticity on Behavioral Intention through Perceived Usefulness is not significant. The indirect effect is 0.049, with a t-statistic of 1.237 and a p-value of 0.217. This indicates that Perceived Usefulness does not significantly mediate the relationship between Perceived Authenticity and Behavioral Intention. Combined with the significant direct effect of Perceived Authenticity on Behavioral Intention, the finding suggests that authenticity influences behavioral intention independently of perceived usefulness.

H9 is accepted because Perceived Usefulness significantly mediates the relationship between Performance Expectancy and Behavioral Intention. The indirect effect is 0.100, with a t-statistic of 3.056 and a p-value of 0.002. Although the direct effect of Performance Expectancy on Behavioral Intention is insignificant, its indirect effect through Perceived Usefulness is significant. This indicates that performance expectations are translated into behavioral intention primarily through users' perception of the usefulness of the AI chatbot.

H10 is accepted because Perceived Usefulness significantly mediates the relationship between Service Quality and Behavioral Intention. The indirect effect is 0.258, with a t-statistic of 5.514 and a p-value of 0.000. This finding indicates that service quality affects behavioral intention not only directly but also indirectly by increasing users' perceptions of chatbot usefulness.

Overall, seven of the ten hypotheses are supported, while three are rejected. The supported hypotheses are H2, H3, H4, H6, H7, H9, and H10. Meanwhile, H1, H5, and H8 are not supported.

Predict Model Evaluation (PLS Predict)

The predictive capability of the model was evaluated using *PLS-Predict*. The assessment considered the prediction errors and Q^2_predict values for the indicators of *Behavioral Intention* and *Perceived Usefulness*.

Table 13. Prediction Result

	PLS-RMSE	PLS-MAE	PLS-MAPE	Q^2_Predict
BI1	0.576	0.506	15.662	0.753
BI2	0.590	0.496	16.161	0.755
BI3	0.511	0.453	12.615	0.764
BI4	0.519	0.462	12.778	0.758
BI5	0.548	0.481	13.497	0.718
PU1	0.575	0.507	15.585	0.727
PU2	0.593	0.509	15.989	0.753
PU3	0.535	0.476	13.796	0.756
PU4	0.539	0.485	13.794	0.749
PU5	0.550	0.500	15.628	0.774

The results show that all Q^2_predict values are positive, ranging from 0.718 to 0.774. This indicates that the model has predictive relevance for all evaluated indicators. In addition, the PLS model produces lower RMSE values than the linear model (LM) for all ten indicators. This indicates that the PLS model has better predictive performance than the LM benchmark based on RMSE.

At the construct level, the Q^2_predict values are 0.933 for Behavioral Intention and 0.909 for Perceived Usefulness. These results further indicate strong predictive capability for the two endogenous variables. Therefore, the model demonstrates not only explanatory capability through its R^2 values but also predictive capability based on the PLS-Predict assessment.

Importance-Performance Map Analysis (IPMA)

The Importance-Performance Map Analysis (IPMA) was conducted to identify the importance and performance of each predictor in explaining Perceived Usefulness and Behavioral

Intention. The standardized total effects are used as indicators of importance, while performance represents the average latent variable score transformed to a 0–100 scale.

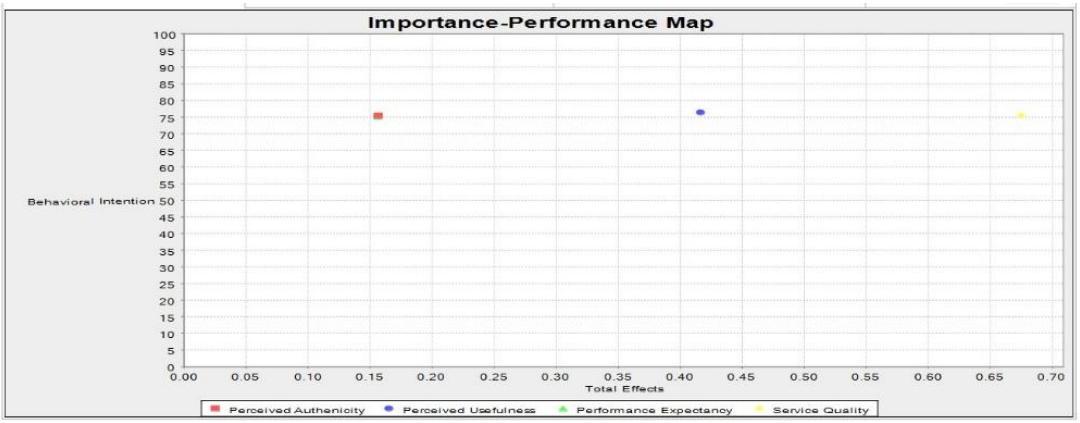

Figure 3. Importance-Performance Map Behavioral Intention

The Importance-Performance Map Analysis (IPMA) was conducted to identify the relative importance and performance of each predictor in explaining Behavioral Intention. As presented in Figure 3, Service Quality has the highest importance value at 0.675, with a performance score of 75.524. This indicates that Service Quality has the strongest total effect on Behavioral Intention compared with the other variables in the model, while its performance level is relatively high. Perceived Usefulness has the second-highest importance value of 0.416, accompanied by the highest performance score of 76.400. This indicates that Perceived Usefulness has a substantial role in explaining Behavioral Intention and is also perceived at a relatively high performance level.

Meanwhile, Perceived Authenticity has an importance value of 0.157 and a performance score of 75.428, while Performance Expectancy has an importance value of 0.156 and a performance score of 75.103. These results indicate that both variables have relatively lower total importance in explaining Behavioral Intention compared with Service Quality and Perceived Usefulness. Nevertheless, their performance scores remain above 75, indicating relatively favorable perceptions among respondents.

Overall, the IPMA results show that Service Quality represents the variable with the highest importance for Behavioral Intention, followed by Perceived Usefulness. At the same time, Perceived Usefulness records the highest performance score among the variables. The combination of importance and performance provides an overview of the relative contribution and current performance of each variable in explaining users' Behavioral Intention to use AI Chatbots in marketplace or e-commerce services.

Table 14. IPMA Result (Perceived Usefulness)

	Importance (Total Effect)	**Performance**

Perceived Authenticity	0.117	75.428
Performance Expectancy	0.240	75.103
Service Quality	0.619	75.524

The IPMA results show that Service Quality has the highest importance for Perceived Usefulness, with a standardized total effect of 0.619 and a performance value of 75.524. Performance Expectancy has an importance value of 0.240 and a performance value of 75.103, while Perceived Authenticity has the lowest importance at 0.117 with a performance value of 75.428.

These findings indicate that Service Quality should receive the greatest managerial attention when the objective is to improve users' perceptions of chatbot usefulness. Although the performance of all three variables is relatively similar, Service Quality combines the highest importance with the highest performance. Therefore, maintaining and further improving service quality has the greatest potential contribution to Perceived Usefulness.

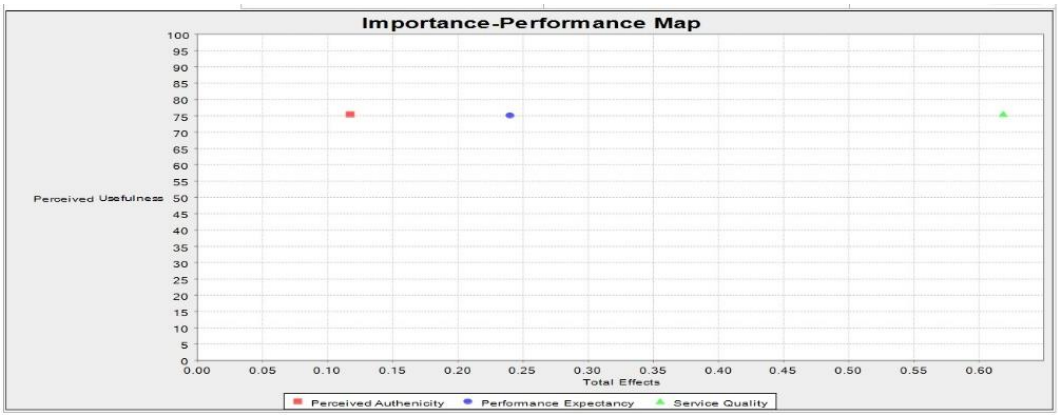

Figure 4. Importance-Performance Map Perceived Usefulness

The Importance-Performance Map Analysis (IPMA) was conducted to identify the relative importance and performance of the predictor variables in explaining Perceived Usefulness. As shown in Figure 4, Service Quality has the highest importance value of 0.619, with a performance score of 75.524. This indicates that Service Quality has the strongest total effect on Perceived Usefulness among the predictor variables, while its performance is also relatively high.

Performance Expectancy has an importance value of 0.240 and a performance score of 75.103. This indicates that Performance Expectancy contributes to explaining Perceived Usefulness, with a performance level that is relatively similar to that of Service Quality. Meanwhile, Perceived Authenticity has the lowest importance value of 0.117, with a performance score of 75.428. Although its importance in explaining Perceived Usefulness is comparatively lower, its performance score remains relatively high.

Overall, the IPMA results indicate that Service Quality has the greatest importance in explaining Perceived Usefulness, followed by Performance Expectancy and Perceived Authenticity. In terms of performance, the three variables show relatively high and comparable scores, ranging from 75.103 to 75.524. These findings provide an overview of the relative importance and current performance of each predictor in explaining users' Perceived Usefulness of AI Chatbots in marketplace or e-commerce services.

Table 15. IPMA Result (Behavioral Intention**)**

	Importance (Total Effect)	**Performance**
Perceived Authenticity	0.157	75.428
Perceived Usefulness	0.416	76.400
Performance Expectancy	0.156	75.103
Service Quality	0.675	75.524

For Behavioral Intention, Service Quality has the highest importance, with a standardized total effect of 0.675 and a performance value of 75.524. Perceived Usefulness has the second-highest importance at 0.416 and the highest performance among the predictors at 76.400. Meanwhile, Perceived Authenticity has an importance value of 0.157 and a performance of 75.428, while Performance Expectancy has the lowest importance at 0.156 and a performance of 75.103.

The IPMA results indicate that Service Quality is the most important variable for increasing Behavioral Intention. Its relatively high importance means that improvements in service quality are likely to have the greatest contribution to users' intention to use AI chatbots. Perceived Usefulness is also an important factor and has the highest performance value, suggesting that users already perceive the usefulness of the chatbot relatively positively. Nevertheless, further improvement in Service Quality remains a key priority because it has the strongest importance in explaining Behavioral Intention.

Discussion

The results provide several important findings regarding the factors influencing users' behavioral intention toward AI chatbot use. First, Perceived Usefulness is confirmed as an important determinant of Behavioral Intention. The significant path coefficient of 0.416 and the medium effect size of 0.307 indicate that users' perceptions of usefulness play a substantial role in determining their intention to use AI chatbots. This finding is consistent with the fundamental logic of the Technology Acceptance Model, which emphasizes perceived usefulness as an important factor in technology acceptance.

Second, Performance Expectancy significantly affects Perceived Usefulness but does not directly affect Behavioral Intention. The significant indirect effect through Perceived Usefulness demonstrates that users' expectations regarding performance benefits need to be translated into a concrete perception of usefulness before influencing their behavioral intention. This result provides a more specific explanation of how performance expectations operate within the proposed research model.

Third, Service Quality emerges as the most influential antecedent of both Perceived Usefulness and Behavioral Intention. Its direct effect on Perceived Usefulness is 0.619, while its direct effect on Behavioral Intention is 0.418. The indirect effect through Perceived Usefulness is also significant at 0.258. The IPMA results reinforce this finding, as Service Quality has the highest importance for both endogenous variables. Therefore, the quality of AI chatbot services is a critical factor in encouraging users to perceive the technology as useful and subsequently develop stronger behavioral intentions.

Fourth, Perceived Authenticity produces a different pattern. It does not significantly affect Perceived Usefulness, but it has a significant direct effect on Behavioral Intention. Furthermore, its indirect effect through Perceived Usefulness is insignificant. This suggests that users' perceptions of chatbot authenticity can influence behavioral intention without necessarily changing their assessment of the chatbot's usefulness. Thus, authenticity appears to operate more directly on behavioral intention within this research model.

The measurement model also reveals an important methodological finding. Although all indicators demonstrate adequate outer loadings, convergent validity, and reliability, the Fornell-Larcker and HTMT results indicate that discriminant validity is not fully established. The very high correlations among several variables are also reflected in the inner VIF values, which exceed commonly used thresholds. This indicates substantial overlap among the variables and suggests that the structural relationships should be interpreted carefully. In particular, the high VIF values may affect the stability of individual path coefficients and may partially explain why some relationships that are theoretically expected to influence Behavioral Intention directly do not reach statistical significance.

Despite this limitation, the structural model demonstrates high explanatory and predictive capability. The model explains 91.4% of the variance in Perceived Usefulness and 95.1% of the variance in Behavioral Intention. The positive Q^2_predict values and lower PLS RMSE values compared with the LM benchmark further indicate that the model has strong predictive capability for the endogenous variables.

Overall, the research objective of examining the effects of Perceived Authenticity, Performance Expectancy, and Service Quality on Behavioral Intention through Perceived Usefulness has been addressed. The findings show that Perceived Usefulness functions as a significant mediating mechanism for Performance Expectancy and Service Quality, but not for Perceived Authenticity. Among the antecedent variables, Service Quality has the strongest

overall role, while Perceived Usefulness serves as an important mechanism for translating users' perceptions of technological and service benefits into behavioral intention.

CONCLUSION

This study examined the effects of Perceived Authenticity, Performance Expectancy, and Service Quality on Behavioral Intention to use AI Chatbots, with Perceived Usefulness as a mediating variable. The findings indicate that Performance Expectancy, Perceived Usefulness, Perceived Authenticity, and Service Quality have significant direct effects on Behavioral Intention. In addition, Performance Expectancy and Service Quality significantly influence Perceived Usefulness, while Perceived Authenticity does not have a significant effect on Perceived Usefulness. The mediation analysis further shows that Perceived Usefulness significantly mediates the effects of Performance Expectancy and Service Quality on Behavioral Intention, but does not mediate the relationship between Perceived Authenticity and Behavioral Intention. Overall, the findings suggest that users' intention to continue using AI Chatbots is more strongly associated with their perceived usefulness, expected performance benefits, and service quality than with perceived authenticity as a determinant of usefulness.

The findings provide theoretical implications for the application of the Technology Acceptance Model (TAM) and Unified Theory of Acceptance and Use of Technology (UTAUT) in the context of AI Chatbot adoption. The results reinforce the importance of Perceived Usefulness as an important factor in explaining Behavioral Intention, while Performance Expectancy contributes both directly and indirectly through Perceived Usefulness. From a practical perspective, AI Chatbot providers and marketplace platforms should prioritize improving the usefulness, service quality, and functional performance of Chatbots. Enhancing the accuracy and relevance of responses, supporting users in completing their tasks, and providing reliable service may strengthen users' intention to use AI Chatbots.

This study has several limitations. First, the respondents were selected using purposive sampling and were limited to AI Chatbot users residing in the Jabodetabek area, which may limit the generalizability of the findings to users in other regions or populations. Second, the study employed a cross-sectional survey, so the findings represent respondents' perceptions at a particular period and do not capture changes in user behavior over time. Third, the study focused on five variables and a specific structural model, meaning that other factors that may influence AI Chatbot usage intention were not examined. Future research may therefore involve respondents from broader geographical areas, use longitudinal approaches, and consider additional variables relevant to AI Chatbot adoption. Future studies may also examine different types of AI Chatbots or service contexts to determine whether the relationships identified in this study remain consistent across different user groups and technological environments.

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