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Electronic Loyalty Flow: AI Chatbots are Changing Generation Z's Shopping Style

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ABSTRACT

This study investigates the impact of artificial intelligence (AI) chatbots and flow experience on e-loyalty within e-commerce platforms, specifically focusing on Generation Z Shopee users in Pontianak City, with customer satisfaction serving as a mediating variable. Employing a quantitative research design with a causal approach, data were collected through a questionnaire distributed to 200 respondents selected via convenience sampling. The analysis was conducted using Structural Equation Modeling (SEM) with SmartPLS 3.0, revealing a positive and significant relationship between AI chatbots and flow experience on both customer satisfaction and e-loyalty. Furthermore, customer satisfaction was found to mediate the relationship between AI chatbots, flow experience, and e-loyalty. These findings provide valuable insights for developing strategies to enhance consumer loyalty in e-commerce, contributing to a deeper understanding of the factors influencing e-loyalty and offering practical implications for e-commerce platform development.

Keywords: *artificial intelligence chatbot; e-loyalty; customer satisfaction; flow experience; structural equation model*

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1. INTRODUCTION

The development of innovation and technology in the business sector, driven by current scientific advancements and various collaborations, has fueled many ideas in marketing strategies for e-commerce. This addresses the needs of every consumer, particularly in utilizing online media for transaction activities involving the purchase of products or services, commonly referred to as online shopping. The world has entered the era of Industry 4.0, which emphasizes digital economic patterns, artificial intelligence (AI), big data, robotics, and more (Akil & Ungan, 2022)

In Southeast Asia, Shopee holds the largest market share among e-commerce sites. It is the largest e-commerce site in the region, with 198 million visits per month. Shopee operates in six of the largest economies in Southeast Asia, with Indonesia being its largest market (Globaldata.com, 2021). Data published by Web Retailer in 2021 shows that Indonesia ranks first with the highest number of visits to the Shopee website, totaling 76.2 million per month.

Organizations are increasingly recognizing the importance of e-commerce for effective customer interaction, leading to a rise in online shopping behavior. Shopee is one of the e-commerce platforms that implements several marketing strategies to attract customer attention, including the Shopee Loyalty feature.

Higher customer loyalty results in more promotions, thereby encouraging customers to increase transaction numbers on the Shopee app. This is supported by research conducted by Bilgihan (2016), which shows that trust has a positive and significant impact on consumer e-loyalty among Millennials and Generation Z.

Companies across various industries are increasingly developing loyalty techniques supported by virtual service media in the form of AI. The AI developed by these industries is spreading into online retail, such as e-commerce products with these services, showing percentage results ranging from 29% to 43%.

Consumers benefit when companies provide clear experiences where tasks can be actively managed effectively and optimally. For example, customers appreciate not having to wait long for service during online media adoption as part of their shopping experience. Shopee is one of the e-commerce platforms that incorporates AI into its services. To attract customers, Shopee has integrated AI features that offer a more personalized and efficient shopping experience. However, despite efforts to leverage AI to enhance customer experience, challenges remain in maintaining customer loyalty. Changes in consumer preferences and competition in the e-commerce market can lead to a decrease in customer numbers.

The importance of loyalty factors in e-commerce businesses is increasingly emphasized. E-loyalty, particularly among Millennials and Generation Z, is influenced by trust in the platform and the company (Bilgihan, 2016). The e-commerce industry is undergoing significant changes with the application of technologies such as AI and chatbots.

AI chatbots have become a crucial factor in customer interaction on e-commerce platforms. The ability of chatbots to provide quick information, resolve issues, and offer product recommendations has enhanced customer interactions on Shopee. The implementation of AI chatbots on Shopee also contributes to customer satisfaction. Positive experiences through interactions with chatbots can increase customer satisfaction, which, in turn, can lead to stronger loyalty.

The positive impact of using AI chatbots in customer service extends beyond satisfaction, affecting operational efficiency and increasing transactions on the platform. This aligns with the growing trend in e-commerce toward greater reliance on technology. In this context, the research aims to analyze how AI, particularly through chatbot features, has shaped electronic customer loyalty on the Shopee platform. The analysis involves evaluating flow experience, customer satisfaction, and their impact on Shopee's overall business performance.

2. LITERATURE REVIEW

Marketing 6.0 emphasizes the importance of creating a comprehensive and insightful marketing experience for consumers. This concept is based on the understanding that the boundaries between the online and offline worlds are increasingly blurring, creating a new reality called "unified" or "integrated." In this context, "immersive" refers to experiential marketing that involves consumers completely, both online and offline, utilizing technology to create deeper and more meaningful interactions (Kotler et al., 2022).

Artificial Intelligence (AI) chatbots enhance customer satisfaction by simulating human-like interactions. The features of chatbots exhibit AI behavior that allows them to engage with users and conduct conversations similarly to humans. The theory of AI technology integration is crucial for enhancing the ability of a system or process to analyze and predict data or information. With AI technology, systems or processes can efficiently process large amounts of data quickly and accurately, aiding informed decision-making in various situations.

AI chatbots use algorithms and natural language processing to respond to questions, provide information, and even perform specific tasks. AI chatbots are AI-based entities designed to communicate with humans through conversational simulation. They are capable of mimicking behavior in processing and responding to information, thus providing a more personalized interaction experience in various contexts. The theory of artificial intelligence (AI) integration emphasizes the use of AI technology to optimize an existing system or process. AI is a technology that can automatically process data or information using predefined algorithms (Cheng & Jiang, 2022). The theory of AI technology integration is crucial for understanding because AI technology can provide numerous benefits for the development of a system or process. By employing AI technology, systems or processes can operate more efficiently and swiftly, thereby enhancing their productivity and quality. Furthermore, AI technology can assist in reducing the risk of human error, which is often encountered in various processes.

Customer satisfaction refers to the level of satisfaction and happiness experienced by customers regarding the products or services provided by a company or organization. It involves customers' perceptions of how well the products or services meet or exceed their expectations. Research by Shawar and Atwell (2002) illustrates that AI chatbots are not only able to connect with customers but also gather consumer preferences related to shopping satisfaction and product or service personalization. This enables companies to gain valuable insights into customer preferences.

In today's technological era, customers desire fast, responsive, and personalized interactions. AI chatbots emerge as a solution to meet these needs by providing quick and accurate responses to customer inquiries or requests. AI-driven chatbots have become a potential customer service application, aiming to provide economical and round-the-clock customer service. Statistics show that nearly one out of four customer service organizations employs AI-driven chatbots to serve their customers. It is no wonder that the related market is expected to grow to more than USD 142 billion by 2024 (Khaldy et al., 2023). The measurement of customer satisfaction arises when customers engage with a company's products or services. Interaction with AI chatbots is also part of this process, and satisfaction levels can be influenced by the ease, accuracy, and responsiveness of the chatbots.

AI chatbots have the potential to vary interactions with customers. By understanding customer preferences and interaction history, chatbots can offer services tailored to individual needs, enhancing the customer experience. Research on the use of AI chatbots in banking services has found that their implementation can positively impact customer satisfaction. The use of AI technology, particularly in customer service, can play a crucial role in enhancing customer satisfaction and creating a more positive experience.

H1: Artificial Intelligence Chatbots Influence Customer Satisfaction at Shopee.

Flow Experience and Customer Satisfaction: Mirvis and Csikszentmihalyi (1991) introduced the concept of flow experience as a psychological state reflecting an individual's experience of being fully engaged in an activity, resulting in a high level of focus and positive feelings. Flow experience is a state where a person is completely immersed in an activity, experiencing deep focus and a sense of positive involvement in the process.

Customer satisfaction refers to the level of satisfaction and happiness felt by customers regarding the products or services provided by a company or organization. It encompasses customers' perceptions of quality, value, and user experience. Research by Pu et al. (2015) shows that flow experience can occur in the context of online shopping experiences. To enhance customer satisfaction, companies leverage the concept of flow to strengthen production and technology tactics that generate positive flow experiences.

In an increasingly competitive e-commerce world, creating a flow experience has become crucial. Customers expect an immersive shopping experience that allows them to fully engage in the online purchasing process. A flow experience can drive higher levels of customer satisfaction. When customers engage in a deep and positive experience during interactions with products or services, their satisfaction levels are likely to increase. The role of AI chatbots in customer satisfaction, a core dimension of customer service performance, has been emphasized (Eren, 2021). Previous studies have mainly focused on issues such as system architecture, human-chatbot interaction, and satisfaction and acceptance (Eren, 2021).

Variations in customer experience can be integrated into the concept of flow experience. Companies can tailor customer experiences based on individual preferences and needs, creating a unique flow experience for each person. Research by Pu et al. (2015) indicates that a high flow level in customers is related to an effective shopping experience, positively affecting customers' intention to return to online shopping. In this context, flow experience contributes to customer satisfaction and provides significant benefits to the customers themselves.

H2: Flow Experience Influences Customer Satisfaction at Shopee.

Artificial Intelligence Chatbots and E-Loyalty: The use of AI chatbots has proven effective in changing consumer attitudes toward products or services. This involves using technology to influence consumer buying intentions through more personalized and persuasive interactions (Jiménez-Castillo & Sánchez-Fernández, 2019). AI chatbots are programs designed to communicate with humans through virtual conversations. They can respond to questions, provide information, and influence consumer behavior and attitudes.

E-loyalty refers to customer loyalty towards a business or brand in a digital or online context. It involves customers' commitment and intention to continue transacting with the company repeatedly. Research by Kim et al. (2021) reveals that the use of AI in chatbots can create a more profound and emotional conversational experience with consumers. This enables interactions based on emotional quotient (EQ), resulting in more human-like virtual communication.

In the digital era, consumers desire more personal and relevant interaction experiences. The use of AI chatbots is crucial for providing efficient, interactive support that impacts consumer attitudes and behavior. E-loyalty involves trust, satisfaction, and commitment from customers towards online businesses. AI chatbots can play a role in building this relationship by providing positive interaction experiences. The goal of experience design is to create a compelling experience that can be measured and analyzed based on flow experience (Mirvis & Csikszentmihalyi, 1991). Similar to many context-based experiences, flow experience affects customer satisfaction and future behaviors.

AI chatbots can be configured to offer varied experiences based on individual preferences and needs. This variation can strengthen interactions and influence consumer e-loyalty. Research indicates that deeper and more emotional interactions through AI chatbots can affect consumer attitudes and buying intentions (Jiménez-Castillo & Sánchez-Fernández, 2019). This contributes to the formation of e-loyalty, where customers become more loyal and are more likely to repeatedly interact and transact with the company.

H3: Artificial Intelligence Chatbots Influence E-Loyalty at Shopee.

Customer satisfaction and e-loyalty involve evaluative assessments of purchase decisions. This perspective views satisfaction as a result of comparing customer expectations with the experience of the products or services provided. Customer satisfaction reflects the positive feelings that arise after purchasing a product or service. It includes customers' assessments of the performance of a product or service in meeting or exceeding their expectations. Research related to the use of smart tools or features, as described by Audrain-Pontevia et al. (2013), indicates that this usage can impact customer satisfaction with specific products or services. These findings suggest that further exploration is needed regarding how these features affect customer satisfaction.

The importance of customer satisfaction in building long-term relationships is evident in the potential for satisfied customers to become more loyal to a brand or company. Satisfied customers are also more likely to recommend products or services to others. Customer satisfaction can vary based on individual preferences and expectations. Maintaining consistent satisfaction levels can be challenging in the face of changing preferences and rapidly evolving business environments. AI technology behind these chatbots allows them to learn from user interactions, providing increasingly accurate and relevant responses over time. In particular, the adoption of AI chatbots has surged in the rapidly growing Chinese e-commerce market, where companies seek to enhance customer experiences, improve service efficiency, and cultivate brand loyalty in the highly competitive online landscape (Kayeser Fatima et al., 2024).

In the context of e-loyalty, customer satisfaction plays a central role in shaping customer loyalty towards a brand or company in the digital environment. High levels of satisfaction tend to positively impact the growth of e-loyalty and repeated interactions in online business. Customer satisfaction and e-loyalty have a close relationship. Customer satisfaction with the online purchasing experience provides a strong foundation for developing sustainable e-loyalty, where satisfied customers are likely to remain loyal to the brand and company in the digital environment. The purpose of using chatbots for customer service is to encourage positive interactions with customers (Grewal et al., 2021).

H4: Customer Satisfaction Influences E-Loyalty at Shopee.

Flow Experience and E-Loyalty, according to Hoffman & Novak (2009), refers to a mental state resulting from adapting to the surrounding environment, particularly in the context of computer sites or websites. This concept explores how the experience of using online media can influence consumer attitudes, intentions, and behaviors. Flow experience generally refers to the natural sensation users feel when interacting with application media on electronic systems, creating a deep and satisfying experience when using technology.

Based on empirical studies, Hew et al. (2016) found that flow experience is linked to consumers' natural intention to continue using electronic media with a positive outlook. This flow experience can contribute to brand loyalty in the context of mobile social commerce. Flow experience becomes important in the digital environment as it can create an enjoyable and satisfying experience for users. This experience can encourage users to engage more deeply with the platform and the products offered.

Flow experience can vary based on user preferences and types. Challenges include creating an environment that evokes flow experiences for a large number of users across different contexts. Flow experience directly impacts the formation of consumers' natural intention to continue using electronic media. A positive flow experience can contribute to brand loyalty, especially in the context of e-loyalty, where users are likely to remain engaged with the platform and products offered online. Chatbots that struggle with natural language interactions or fail to resolve issues could leave customers dissatisfied. Ensuring chatbots achieve a high level of service quality is key to enhancing satisfaction (Lubbe & Ngoma, 2021). Parameters like response accuracy, the ability to address various query types, interaction speed, and communication clarity all influence a customer's experience. Poor-quality chatbot interactions may frustrate customers and diminish their perceptions of the brand. Conversely, chatbots that competently handle common requests can help boost satisfaction. Being able to quickly obtain answers from a chatbot regarding product information, order status, or account details anytime and anywhere provides value and convenience to customers (Haugeland et al., 2022).

H5: Flow Experience Influences E-Loyalty at Shopee.

Artificial Intelligence Chatbots and E-Loyalty through Customer Satisfaction: Research by Prentice et al. (2020) in the hotel industry highlights the impact of AI technology on customer service and its relation to e-loyalty and customer satisfaction. E-loyalty refers to customer loyalty in the digital environment, encompassing commitment, repeated intentions, and preferences towards brands or companies in online transactions.

AI is a computer technology that mimics human capabilities, such as natural language processing and decision-making. In e-loyalty, AI can enhance the customer experience and foster loyalty through improved personalization and interactions. Prentice et al. (2020) found that while AI has the potential to improve services, customers often prefer manual interactions or interactions with employees. This indicates the importance of balancing AI use with customer preferences..

AI in customer service needs to create a satisfactory experience and build loyalty. This requires alignment with customer expectations and a focus on the positive effects that shape loyalty. Customer satisfaction levels influence customers' intentions to engage further. If interactions with AI result in satisfying experiences, this can encourage e-loyalty by creating a stronger attachment. The degree to which customers are dedicated to a specific brand or organization is referred to as customer loyalty, which is essential for every successful business. Customers who remain loyal to an organization are more likely to continue doing business with it, recommend it to others, and provide favorable feedback. This can lead to higher revenue, reduced marketing expenses, and a strengthened market reputation. Businesses are using AI chatbots to enhance customer service. Chatbots can handle large volumes of basic requests and offer self-service options. However, they must deliver excellent service to build customer loyalty. Chatbots that fail to address inquiries or satisfy customers could harm the brand's image. Over time, unpleasant chatbot interactions may decrease loyalty. Therefore, organizations must design chatbots that understand language nuances, handle complex requests, and respond with empathy.

Customer preferences for AI usage vary. Some are comfortable with technology, while others prioritize human interaction. The impact of AI on e-loyalty can be viewed through the lens of customer satisfaction. If AI provides a satisfying experience, it will stimulate customer loyalty in the digital environment, illustrating how technology plays a role in forming closer relationships between brands and customers. As AI-powered chatbots continue to evolve, advanced natural language capabilities and a deeper understanding of context and semantics should translate to more lifelike and satisfying chat conversations. Chatbots may be empowered to empathetically handle sensitive customer situations and better address the full spectrum of support inquiries. This could significantly enhance customer satisfaction levels in the long run.

H6: Customer Satisfaction as an Intervening Variable in Artificial Intelligence Chatbots Positively and significantly Influences E-Loyalty on Shopee.

Flow experience and e-loyalty through customer satisfaction: Flow experience in the context of customer service and information on online shopping apps impacts customer responses and website services. Positive responses often arise when the service provides a unique experience that offers significant benefits to consumers (Hsu et al., 2012b). E-loyalty refers to customer loyalty in the digital environment, including commitment, repeated preferences, and the intention to continue transactions in online shopping apps.

Flow experience includes the optimal feeling when someone feels fully engaged in their activity. In the context of e-loyalty, flow experience leads to a highly positive experience during online shopping, encouraging customer loyalty. Research by Hsu et al. (2012) indicates that when online shopping services create a beneficial flow experience for consumers, it results in positive responses and impacts on the website. This demonstrates how flow experience contributes to customer loyalty levels in the digital environment.

To drive e-loyalty, online shopping services must create an experience that generates flow, motivating consumers to continue interacting. Engagement in flow is key to building customer loyalty. Customer satisfaction plays a crucial role in consumer interactions. If consumers are satisfied with the experience and service, they are more likely to engage in a positive flow experience. Customers satisfied with chatbots are more likely to develop emotionalties, trust, and dedication to the brand, increasing customer loyalty. A superior chatbot experience may promote brand loyalty by increasing satisfaction. However, negative chatbot experiences may lower customer satisfaction and brand loyalty, even if other brand interactions are positive (Tsai & Chuan, 2021). Chatbots that provide helpful, smooth service can boost customer loyalty. An always-available chatbot may make customers feel appreciated by the brand. Successful chatbot conversations familiarize users with digital self-service. This simplicity may increase customer retention, repeat purchases, and brand advocacy. As AI advances, chatbots may be able

to personalize interactions based on customers' preferences and historical search behavior. Personalized experience management with chatbots may differentiate brands and increase customer loyalty (Nicolescu & Tudorache, 2022).

Consumer preferences for experiencing flow can vary. Some may find it easier to achieve, while others may require specific factors. Flow experience can influence e-loyalty through the effect of customer satisfaction. When consumers are satisfied with the flow experience generated by online shopping services, it can encourage their loyalty to the platform in the digital environment.

H7: Customer Satisfaction as an Intervening Variable in Flow Experience Positively and significantly Influences E-Loyalty on Shopee.

The research model can be seen in Figure 1.

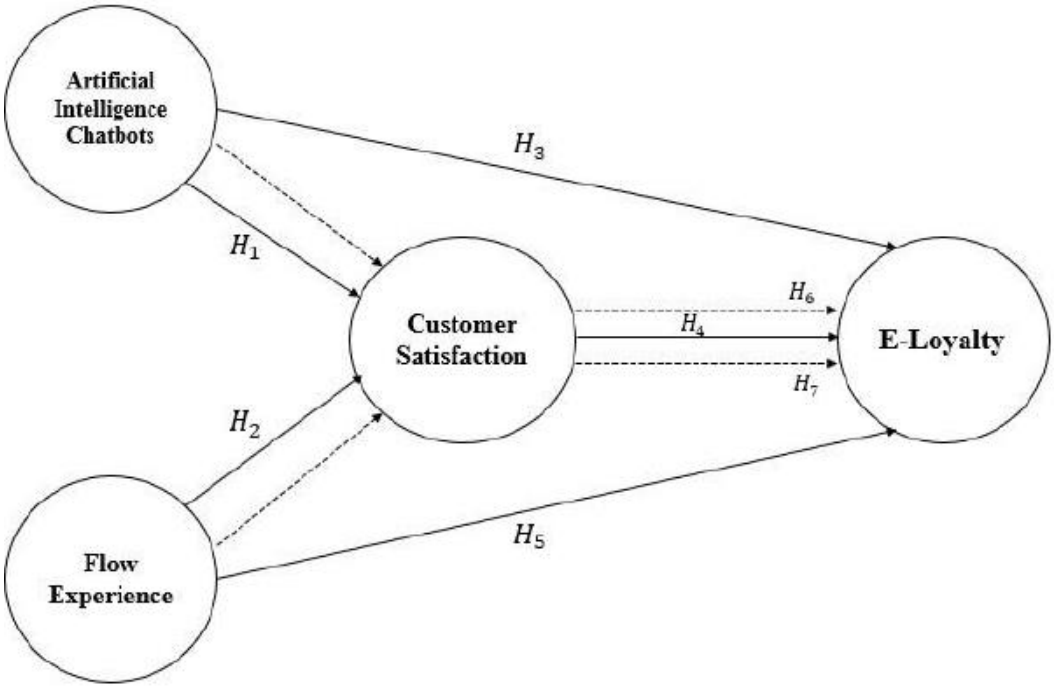

Figure 1. Research Conceptual Model

3. RESEARCH METHOD

The research employs analytical techniques provided by causality methods or utilizes quantitative data analysis, conducted in Pontianak City as the target for respondent data collection (Sugiyono, 2017). The research data was collected through questionnaires distributed to several respondents in Pontianak City who are users of Shopee. The population consisted of Generation Z individuals, born between 1995 and 2010. Data collection was conducted using convenience sampling, involving 200 Generation Z respondents whose specific characteristics were not precisely determined. The research variables include independent variables such as AI chatbots and flow experience, with mediation effects on customer satisfaction, and the dependent variable being e-loyalty.

4. RESULTS AND DISCUSSION

4.1 RESULTS

Measurement of the AI chatbots variable involves three indicators: emotional support, informational support, and esteem support (Lee et al., 2021). The flow experience, or the experience found by respondents, is determined using questions based on Guerra-Tamez & Franco-García (2022). Additionally, customer satisfaction, the mediating variable measuring the two

independent variables, includes four indicators: Price, After Sales Service, Delivery, and Quality, as outlined by Sengupta & Pandey (2022). Finally, e-loyalty was measured through representations adjusted by Kaya B., et al. (2019).

Measurement Model Evaluation: The data were analyzed using the SEM tool with the Partial Least Squares (PLS) method, tested on the structural variables, including the outer and inner models. In the outer model section, explanations are divided into validity and reliability measurements. Validity measurement is divided into convergent validity (including outer loadings), average variance extracted (AVE), and discriminant validity. Meanwhile, reliability measurement is divided into composite reliability and Cronbach's alpha. The convergent validity estimation model serves as a benchmark for the equivalence of various input indicators of measurement factors and the concept of literature review, which can explain the existence of certain variable item indicators. Convergent results can be determined through outer loadings, composite reliability, and AVE (J. J. F. Hair et al., 2022). The outer loadings model in SEM-PLS displays the magnitude of relationships between indicator items and latent variables. Outer loadings calculations are available in the PLS report from SmartPLS, as shown in Figure 2.

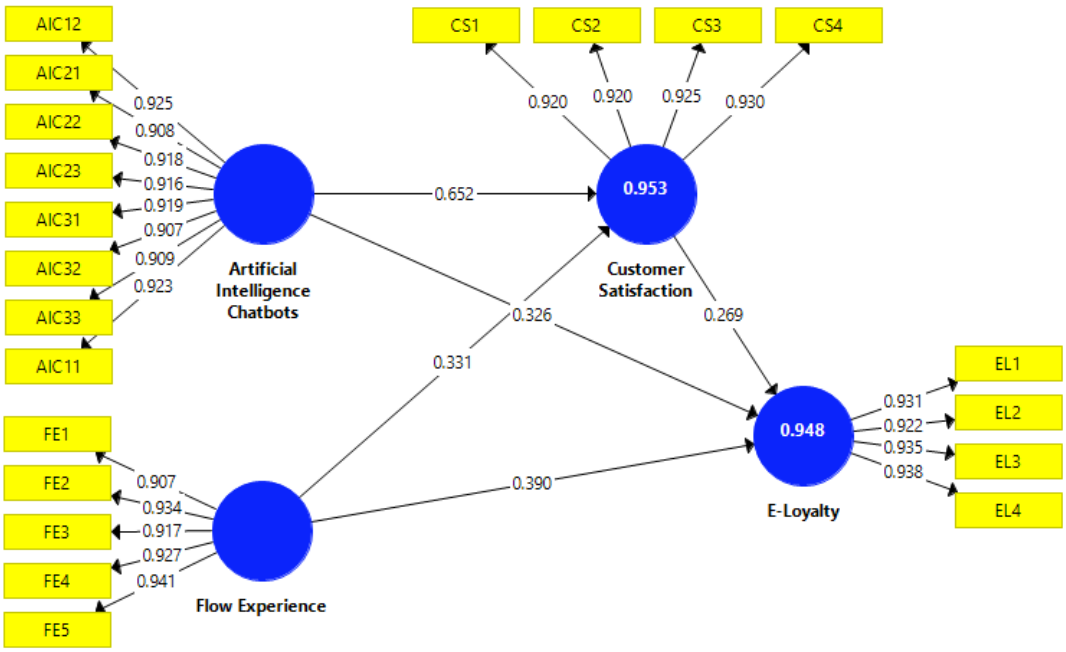

Figure 2. *Output of Loading Factor with Standardized Beta*
Source: Research results, processed with SmartPLS 3.2.9 (2023)

TABLE 1 | Outer Loading Values of SEM-PLS Data Processing Stage 1

	AIC	CS	EL	FE
AIC1.2	**0.925**			
AIC2.1	**0.908**			
AIC2.2	**0.918**			
AIC2.3	**0.916**			
AIC3.1	**0.919**			
AIC3.2	**0.907**			
AIC3.3	**0.909**			
CS1		**0.920**		
CS2		**0.920**		
CS3		**0.925**		
CS4		**0.930**		
EL1			**0.931**	
EL2			**0.922**	
EL3			**0.935**	
EL4			**0.938**	

	AIC	CS	EL	FE
FE1				**0.907**
FE2				**0.934**
FE3				**0.917**
FE4				**0.927**
FE5				**0.941**
AIC1.1	**0.923**			

Source: Research results, processed with SmartPLS 3.2.9 (2023)

The loading factor values from the output of the outer loadings in Table 1 are acceptable if the outer loadings content is > 0.70 (LF), which indicates that the assumption of the questionnaire items is satisfactory. According to Hair et al. (2022), loading factor values can provide the relationship between source variables and domain-related items through the process of identifying loading factors. For a sample size of 200 in this study, the content of outer loadings is acceptable if the minimum standard acceptance of the outer loadings results with LF reaches > 0.40. Therefore, it can be concluded that all research indicator items have high convergent validity. The findings from the convergent validity test based on AVE measurement are acceptable with results > 0.50 (J. J. F. Hair et al., 2022).

TABLE 2 | Convergent Validity Based on AVE Results

	AVE Results
Artificial Intelligence Chatbots	0.839
Customer Satisfaction	0.853
E-Loyalty	0.868
Flow Experience	0.856

Source: Research results, processed with SmartPLS 3.2.9 (2023)

TABLE 3 | *Loading* and *Cross Loading*

	AIC	QA	EL	FE
AIC12	**0.925**	0.898	0.897	0.890
AIC21	**0.908**	0.882	0.881	0.870
AIC22	**0.918**	0.886	0.880	0.899
AIC23	**0.916**	0.901	0.885	0.899
AIC31	**0.919**	0.903	0.879	0.890
AIC32	**0.907**	0.882	0.872	0.863
AIC33	**0.909**	0.874	0.864	0.865
CS1	0.886	**0.920**	0.873	0.881
CS2	0.907	**0.920**	0.893	0.897
CS3	0.897	**0925**	0.893	0.876
CS4	0.903	**0.930**	0.890	0899
EL1	0.892	0.888	**0.931**	0.889
EL2	0.892	0.891	**0.922**	0.896
EL3	0.897	0.906	**0.935**	0.912
EL4	0.912	0896	**0.938**	0.892
FE1	0.866	0.873	0.867	**0.907**
FE2	0.906	0.894	0.899	**0.934**
FE3	0.879	0.872	0.889	**0.917**
FE4	0.901	0.897	0.888	**0.927**
FE5	0.918	0.913	0.913	**0.941**

	AIC	QA	EL	FE
AIC11	**0.923**	0.897	0.903	0.904

Source: Research results, processed with SmartPLS 3.2.9 (2023)

The reliability test results were used to assess the consistency of the measurement tool on the respondents. The results were estimated based on 200 respondents answering statement items in 34 questionnaires within the research instrument. Reliability testing can be conducted using either Composite Reliability or Cronbach's Alpha. The reliability results for the instrument item questions from latent variables can be determined by evaluating Cronbach's Alpha and Composite Reliability for each latent construct variable (J. J. F. Hair et al., 2022).

TABLE 4 | Reliability Values in Cronbach's Alpha and Composite Reliability

	Cronbach's Alpha	Composite Reliability
Artificial Intelligence Chatbots	**0.972**	**0.976**
Customer Satisfaction	**0.943**	**0.959**
E-Loyalty	**0.949**	**0.963**
Flow Experience	**0.958**	**0.967**

Source: Research results, processed with SmartPLS 3.2.9 (2023)

Table 4, containing several input variables in this study, shows that the reliability test results meet the criteria for the two-context reliability test, with results above 0.60. Additionally, in the Inner Model test, decisions regarding the acceptance of predictions between the latent variables are made. These decisions can be accepted by reviewing the R-Square values for each latent construct variable (Hair et al., 2019). The measured R-Square evaluation serves as an assessment to measure the impact of independent construct variables on the dependent variable. The R-Square computation for these two variables can be found in Table 5. The interpretation shows that for the two variables, CS (as an intervening variable) indirectly and EL (as a dependent variable) directly, the influence of several independent or intervening construct variables is described as follows: The CS variable is 0.952, meaning that the AIC and FE variables contribute 95.2% of the indirect influence on the CS variable, with the remaining 4.8% being the influence of other variables outside the research model. Meanwhile, the EL variable is 0.947, indicating that the AIC, FE, and CS variables contribute 94.7% of the direct influence on the EL variable, with the remaining 5.3% being influenced by other variables outside the research model.

TABLE 5 | R-Square Contribution Values

	R Square Adjusted
Customer Satisfaction	**0.952**
E-Loyalty	**0.947**

Source: Research results, processed with SmartPLS 3.2.9 (2023)

The hypothesis test results in this study were displayed using the SMARTPLS software for SEM-PLS testing, with T-value distribution calculations performed by SMART PLS 3.2.9. According to Hair et al. (2022), the bootstrap test is used to assess the fit of the significance estimation results for the tested variables (input). Bootstrap models can be evaluated with hypotheses based on research probability or $p < 0.05$, which is considered significant, while $p > 0.05$ indicates non-significance. Additionally, the SEM-PLS hypothesis test T-value results can be considered precise if the result is > 1.96, which indicates significance at the 5% level.

TABLE 6 | Hypothesis Test Outputs

	Original Sample (O)	Mean Sample (M)	Standard Deviation (STDEV)	T-Statistic Value (|O/STDEV|)	Prob.
AIC --> CS	0.652	0.652	0.062	10.580	0.000
AIC --> EL	0.501	0.504	0.074	6.812	0.000
CS --> EL	0.269	0.262	0.080	3.358	0.001
FE --> CS	0.331	0.332	0.062	5.349	0.000
FE --> EL	0.479	0.476	0.073	6.555	0.000
AIC -> CS -> EL	0.175	0.174	0.054	3.255	0.001
FE -> CS -> EL	0.089	0.088	0.027	3.247	0.001

Source: Research results, processed with SmartPLS 3.2.9 (2023)

Hypothesis 1: The correlation between artificial intelligence chatbots and customer satisfaction is significantly positive, with a T-value of 10.580 > 1.96 and a research probability p (0.000) < 0.05. Therefore, the hypothesis that artificial intelligence chatbots influence customer satisfaction is supported. Hypothesis H1 is supported for AI chatbots on Shopee for Generation Z in Pontianak City. In this study, AI chatbots represent a system designed and programmed through a computer to simulate AI for conversational programming similar to human interaction.

Hypothesis 2: The correlation between the flow experience and customer satisfaction is significantly positive, with a T-value of 5.349 > 1.96 and a research probability p (0.000) < 0.05. Therefore, the hypothesis that flow experience influences customer satisfaction is supported. Hypothesis H2 is supported for FE on Shopee for Generation Z in Pontianak City. Flow experience in this study is the psychological outcome experienced by an individual, focusing on involvement in an activity (Mirvis & Csikszentmihalyi, 1991).

Hypothesis 3: The correlation between artificial intelligence chatbots and electronic loyalty is significantly positive, with a T-value of 6.812 > 1.96 and a research probability p (0.000) < 0.05. Therefore, the hypothesis that artificial intelligence chatbots influence electronic loyalty is supported. Hypothesis H3 is supported for AIC towards electronic loyalty on Shopee for Generation Z in Pontianak City.

Hypothesis 4: The correlation between customer satisfaction and electronic loyalty is significantly positive, with a T-value of 3.358 > 1.96 and a research probability p (0.001) < 0.05. Therefore, the hypothesis that customer satisfaction influences electronic loyalty is supported. Hypothesis H4 is confirmed for customer satisfaction towards electronic loyalty on Shopee for Generation Z in Pontianak City.

Hypothesis 5: The correlation between flow experience and electronic loyalty is significantly positive, with a T-value of 6.555 > 1.96 and a research probability p (0.000) < 0.05. Therefore, the hypothesis that flow experience influences electronic loyalty is supported. Hypothesis H5 is supported for flow experience towards electronic loyalty on Shopee for Generation Z in Pontianak City.

Hypothesis 6: The correlation between artificial intelligence chatbots and electronic loyalty, mediated by customer satisfaction, is significantly positive, with a T-value of 3.255 > 1.96 and a research probability p (0.001) < 0.05. Therefore, the hypothesis that artificial intelligence chatbots influence electronic loyalty through customer satisfaction is supported. Hypothesis H6 is supported for AIC in mediating customer satisfaction towards electronic loyalty on Shopee for Generation Z in Pontianak City.

Hypothesis 7: The correlation between flow experience and electronic loyalty, mediated by customer satisfaction, is significantly positive, with a T-value of 3.247 > 1.96 and a research probability p (0.001) < 0.05. Therefore, the hypothesis that flow experience influences electronic loyalty through customer satisfaction is supported. Hypothesis H7 is supported for FE in influencing CS towards electronic loyalty on Shopee for Generation Z in Pontianak City.

4.2 DISCUSSION

The first hypothesis links the presence of AI chatbots with customer satisfaction on Shopee. Statistical analysis shows a T-value of 10.580 > 1.96 and a probability of 0.000 < 0.05, indicating a positive relationship. Generation Z in Pontianak City supports this hypothesis, suggesting that AI chatbots contribute to customer satisfaction on the Shopee platform. AI chatbots are computer programs that simulate human conversation on Shopee. There are two types of AI chatbots: keyword-based and contextual. This study found that the use of AI chatbots can enhance conversational capabilities and customer satisfaction. This aligns with previous research indicating that AI interactions can affect customer treatment.

The positive relationship between AI chatbots and customer satisfaction aligns with the Technology Acceptance Model (TAM), which emphasizes that the perceived ease of use and usefulness of a technology significantly affect its acceptance and satisfaction. In this context, AI chatbots provide efficient, accurate, and 24/7 customer support, enhancing customer satisfaction by addressing their needs promptly. This result aligns with the Service Quality (SERVQUAL) Model, particularly in dimensions like responsiveness and reliability, which AI chatbots are designed to optimize. Chung et al. (2020) demonstrated that AI-driven customer service tools significantly improve user satisfaction by providing timely and accurate responses, reducing waiting times, and enhancing the overall shopping experience. Huang and Rust (2021) found that customers view AI-enabled tools positively when they meet or exceed expectations in providing solutions, reinforcing the notion that customer satisfaction is closely linked to technological capabilities.

The second hypothesis links flow experience with customer satisfaction on Shopee. The analysis shows a T-value of 5.349 > 1.96 and a probability of 0.000 < 0.05, validating this relationship. Generation Z in Pontianak City supports the connection between flow experience and customer satisfaction, illustrating that flow experience plays a role in enhancing customer satisfaction. Flow experience is a state where consumers feel fully engaged and satisfied with an activity. In this study's context, flow experience occurs during online shopping on Shopee. The research confirms that flow experience positively impacts customer satisfaction, demonstrating how engagement and pleasure affect customer interactions with the shopping platform. Novak, Hoffman, and Yung (2000) found that flow experiences in online shopping environments significantly impact customer satisfaction by enhancing the quality of interactions and engagement. This study supports findings that Generation Z in Pontianak City, who value seamless and intuitive online experiences, report higher satisfaction when engaging with Shopee. Kim et al. (2021) emphasized that mobile-friendly features, real-time interactivity, and user-focused designs contribute to flow experiences, especially among Generation Z users, leading to greater satisfaction.

The third hypothesis links AI chatbots with e-loyalty on Shopee. The analysis shows a T-value of 6.812 > 1.96 with a probability of 0.000 < 0.05, confirming this relationship. Generation Z in Pontianak City supports the link between AI chatbots and e-loyalty, suggesting that interaction with AI can influence customer commitment to the shopping platform. E-loyalty refers to the customer's commitment to continue shopping on the same online platform. The use of AI chatbots can enhance the customer experience with personalized service. The study shows that AI chatbots influence e-loyalty, as customers tend to remain on platforms offering better AI services. The relationship between AI chatbots and e-loyalty is supported by the Commitment-Trust Theory (Morgan & Hunt, 1994). This theory posits that trust and satisfaction build commitment, leading to customer loyalty. AI chatbots play a critical role in fostering trust by providing consistent, accurate, and efficient responses to user queries, enhancing the overall user experience. Additionally, the Unified Theory of Acceptance and Use of Technology (UTAUT) supports this relationship by highlighting how technology usage can lead to behavioral outcomes like loyalty, especially when users perceive value, ease of use, and enjoyment. Grewal et al. (2021) found that personalization and interactivity, common in AI chatbot interactions, positively influence emotional engagement and loyalty. These findings reinforce your results, showing that AI technology can foster long-term customer relationships.

The fourth hypothesis connects customer satisfaction with e-loyalty on Shopee. Statistical analysis shows a T-value of 3.358 > 1.96 with a probability of 0.001 < 0.05, validating this relationship. Generation Z in Pontianak City supports the idea that customer satisfaction contributes to e-loyalty, indicating that satisfied customers are more likely to continue shopping on

Shopee. E-loyalty occurs when customers are satisfied with their online shopping experience. This concept creates a bond between users and online platforms like Shopee. The study confirms that customer satisfaction plays a role in influencing e-loyalty, illustrating how positive interactions can impact consumer behavior. Gummerus et al. (2004) highlighted that satisfaction with specific features, such as fast delivery, reliable customer service, and user-friendly design, enhances customer loyalty in the e-commerce sector.

The fifth hypothesis links flow experience with e-loyalty on Shopee. Analysis shows a T-value of 6.555 > 1.96 with a probability of 0.000 < 0.05, confirming this relationship. Generation Z in Pontianak City supports the idea that flow experience affects e-loyalty, suggesting that positive experiences contribute to customer commitment to online shopping on Shopee. Flow experience involves consumer engagement and satisfaction in online activities such as shopping on Shopee. Its impact on e-loyalty indicates that a positive experience encourages consumers to continue shopping on the same platform. The relationship between flow experience and e-loyalty is strongly supported by Flow Theory (Csikszentmihalyi, 1990), which describes the psychological state of deep engagement and enjoyment in an activity. In the context of e-commerce, a flow experience occurs when users find a platform intuitive, engaging, and satisfying. These positive experiences create an emotional connection, increasing the likelihood of repeat usage and fostering e-loyalty. Huang et al. (2020) emphasized that for digitally savvy consumers like Generation Z, flow experiences—created by user-friendly design, gamification, and personalization—are key drivers of e-loyalty in competitive e-commerce markets.

The sixth hypothesis connects AI chatbots with e-loyalty through the influence of customer satisfaction on Shopee. Statistical analysis shows a T-value of 3.255 > 1.96 with a probability of 0.001 < 0.05, validating this concept. In this context, AI chatbots enhance e-loyalty by mediating customer satisfaction. Generation Z in Pontianak City supports the relationship between AI chatbots, customer satisfaction, and e-loyalty. AI chatbots can improve customer experience, which in turn affects e-loyalty. The use of AI in customer interactions creates a strong connection between experience and loyalty. Lu et al. (2020) established that AI chatbots improve customer satisfaction by enhancing service quality, which in turn fosters loyalty. Research findings (T-value of 3.255, p = 0.001) corroborate this, demonstrating that chatbots act as a key touchpoint in building e-loyalty on Shopee.

The seventh hypothesis links flow experience with e-loyalty through the influence of customer satisfaction on Shopee. Statistical analysis shows a T-value of 3.247 > 1.96 with a probability of 0.001 < 0.05, confirming this relationship. The research reveals that flow experience creates conditions where users feel satisfied with Shopee's service, which in turn affects e-loyalty. Generation Z in Pontianak City supports this connection, indicating that positive interactions with the platform contribute to customer commitment. The mediating role of customer satisfaction in the relationship between flow experience and e-loyalty aligns with Flow Theory. Flow Theory posits that a flow experience—a state of deep engagement and enjoyment—leads to positive emotional outcomes such as satisfaction. When users experience a seamless and enjoyable interaction on a platform like Shopee, they are more likely to be satisfied, which drives loyalty (Csikszentmihalyi, 1990). Expectancy-Disconfirmation Theory (EDT) suggests that satisfaction arises when the perceived experience exceeds expectations. A positive flow experience fulfills or surpasses users' expectations, leading to satisfaction, which in turn fosters loyalty (Oliver, 1980).

Flow experience significantly influences e-loyalty by impacting customer satisfaction, which in turn affects consumer engagement with online shopping platforms. This study introduces a new research perspective to explore how customer satisfaction mediates the relationship between AI chatbot service quality and customer loyalty. The literature review supports and reaffirms the theoretical significance of customer satisfaction as a primary motivator of client loyalty. Customer happiness and customer loyalty are positively correlated, according to several studies conducted in various industries. This study contributes to the body of knowledge by examining how customer satisfaction functions as a mediator in the context of chatbots, as demonstrated below: Reconceptualizing service quality for AI chatbots.

The study conducted by Chen et al. (2022) suggested that traditional service quality dimensions may not be suitable for evaluating AI chatbots. Accordingly, the study identified dimensions such as accuracy of response, omnipresence, personalized recommendation, self-learning, consistency, human-like empathy, always available, ease of use, and availability of human

service alternatives to provide a comprehensive framework for assessing AI chatbot service quality. Understanding the impact of AI chatbot service quality on customer loyalty is crucial. The study hypothesizes that AI chatbot service quality positively affects customer loyalty in the banking sector (Khan et al., 2021). By providing high-quality service, AI chatbots have the potential to enhance customer loyalty, leading to increased repeat business, positive word-of-mouth, and improved brand reputation. The study highlights the importance of customer satisfaction in the relationship between AI chatbots and customer loyalty. Satisfied customers are more likely to exhibit loyal behavior and engage in repeat purchases and positive word-of-mouth (Hult et al., 2022). Enhancing customer satisfaction through AI chatbot service quality: The study emphasizes the impact of AI chatbot service quality on customer satisfaction.

5. CONCLUSION

Overall, this study concludes that e-loyalty on the Shopee platform in Pontianak City is influenced by key factors such as unique user experiences, customer satisfaction levels, and interactions with AI chatbots. An in-depth analysis reveals a positive and significant correlation among these variables, indicating that development strategies that strengthen relationships with chatbots, enhance user experience (flow experience), and ensure customer satisfaction have the potential to bolster electronic loyalty. However, the study has limitations regarding the complexity of relationships among variables and the generalizability of results to the Generation Z population in other regions. Future research could delve deeper into the mediation between these variables and involve a more geographically and culturally diverse sample to expand understanding of electronic loyalty dynamics in the evolving online retail era.

To deepen the understanding of electronic loyalty and the influence of related factors, future studies could explore the role of mediation among the identified variables. Exploring how positive shopping experiences and customer satisfaction act as intermediaries between AI chatbots and electronic loyalty could provide clearer insights into the influence pathways among these variables. Additionally, involving a broader and more representative sample of Generation Z across various regions in Indonesia could yield more generalizable and relevant findings. Data collection from diverse cultural backgrounds and consumer environments could help identify different and deeper patterns regarding how factors like AI chatbots, shopping experience, and customer satisfaction influence e-loyalty on a larger scale.

6. LIMITATION AND IMPLICATION

These findings contribute to the existing body of knowledge and provide valuable insights for practitioners in understanding the key factors that impact customer experiences. As the integration of AI chatbots in the banking sector continues to evolve, several avenues for future research can further enhance our understanding of this dynamic relationship. One potential direction for future research is to explore the long-term impact of AI chatbots on customer loyalty and how customer perceptions and attitudes may change over time. Additionally, investigating the role of trust and privacy concerns in the context of AI chatbots could provide valuable insights, as these factors can significantly influence customer satisfaction and loyalty.

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