

The Influence of Chatbot-Based Digital Marketing Innovation on Business Performance Mediated by Consumer Behavior in Retail Companies

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Abstract. The rapid advancement of digital technology has changed the competitive dynamics in the retail industry, encouraging companies to adopt strategic management practices and AI-based digital marketing innovations to improve business performance. This study examines the effect of AI-based chatbot marketing innovations on retail business performance, with consumer behavior as a mediating variable. This study focuses on retail companies in Pekanbaru, representing the urban retail market. A quantitative research design was used, with primary data collected through structured questionnaires distributed to retail managers and consumers selected using sampling. The data were analyzed using Structural Equation Modeling (SEM) to examine the direct and indirect relationships between AI-based chatbot marketing innovations, consumer behavior, and retail business performance. The findings indicate that AI-based chatbot marketing innovations also significantly improve performance by increasing customer engagement and service efficiency. Furthermore, consumer behavior partially mediates the relationship between strategic management and business performance, as well as between chatbot marketing innovations and business performance. This suggests that effective strategic alignment and digital innovation improve performance not only directly but also indirectly through increased consumer responsiveness and engagement. This study contributes theoretically by integrating AI-based marketing innovations and consumer behavior into a unified framework in the retail sector.

Keywords: AI-based chatbot; digital marketing innovation; consumer behavior; retail business performance.

1. Introduction

The development of digital technology has significantly transformed the business landscape, particularly in the retail sector. In this era of digital transformation, companies are required to adopt adaptive management strategies and technology-based marketing innovations to improve business performance. One innovation that is becoming increasingly popular is the use of chatbots. Chatbots enable automated interactions with consumers, increase service efficiency, and provide a more personalized customer experience. This strategy focuses on utilizing artificial intelligence (AI), specifically chatbots, as the primary means of building interactive relationships between companies and consumers. Through chatbots, retail companies can provide responsive, personalized, and 24/7 customer service. This is part of an effort to improve the quality of the customer experience, a key indicator of modern marketing performance.

This strategy also emphasizes utilizing consumer interaction data to support the marketing decision-making process. Data generated from chatbot conversations, such as product preferences, purchase times, and frequently asked customer questions, is analyzed to develop more targeted promotional strategies. This approach is known as a data-driven marketing strategy, which enables companies to design more personalized and efficient marketing campaigns. Consumers can experience consistent, fast, and comprehensive service, whether shopping in a physical store, on a website, or through instant messaging apps. According to Kotler et al. (2021), in the digital era, business performance is significantly influenced by a company's ability to adapt to technology, particularly in digital marketing and service automation.

Business performance is the effectiveness and efficiency of a company in achieving strategic, operational, and financial goals. In the post-pandemic era of digitalization and technological disruption, the understanding of business performance has shifted significantly, from simply achieving profits to a holistic measure encompassing productivity, service quality, innovation, and adaptation to information technology, including artificial intelligence (AI). According to Kaplan and Norton (2020), modern business performance should be measured using a Balanced Scorecard approach, which encompasses four perspectives: financial, customer, internal business processes, and learning and growth. In a digital context, the use of technologies such as chatbots can play a role in improving internal processes and strengthening customer relationships.

Consumer behavior is the study of how individuals, groups, or organizations select, purchase, use, and evaluate products or services to meet their needs and desires. Understanding consumer behavior is crucial for marketing decision-making, as it helps companies develop more relevant and effective strategies. According to Schiffman and Wisenblit (2019), consumer behavior is influenced by psychological, social, and situational factors. In a digital context, these stages are undergoing a more rapid and dynamic transformation due to easy access to information and the influence of social media. Based on the above background, the researcher is interested in testing the Influence of Chatbot-Based Digital Marketing Innovation on Business Performance with Consumer Behavior as a Mediating Variable in Retail Companies in Pekanbaru City.

2. Literature Review

2.1 Chatbot-Based Digital Marketing Innovation

Chatbot-Based Digital Marketing Innovation is a form of strategic organizational adaptation in response to changing consumer behavior and increasingly rapid technological developments. This innovation not only refers to the use of digital technology in promotions but also involves transforming business models, customer experience, and creating new value through data-driven interactions. In the context of the digital era and information-based economy, Chatbot-Based Digital Marketing Innovation is a key factor driving business competitiveness and sustainability, including in the retail sector. According to Kotler et al. (2021), digital marketing innovation emphasizes that digital

marketing success is determined not only by the use of technology but also by the organization's ability to create relevant and personalized value through ongoing digital interactions.

Gentsch (2019) states that chatbot-based marketing innovation is the use of Artificial Intelligence (AI)-based conversational agents capable of simulating human interaction to automate marketing communications, provide personalized product recommendations, and handle customer queries instantly 24/7. Furthermore, Chaffey and Ellis-Chadwick (2022) define digital marketing innovation as "the strategic application of digital technologies and data-driven tools to improve marketing performance, customer relationships, and organizational efficiency." This perspective highlights that digital marketing innovation involves leveraging data technology and artificial intelligence (AI) to improve marketing effectiveness, strengthen customer relationships, and accelerate informed decision-making. Lamberton and Stephen (2016) explain that digital marketing innovation encompasses "the development and application of new digital technologies that reshape how firms interact with consumers and create value in the marketplace." This perspective asserts that digital technologies, such as social media, chatbots, augmented reality (AR), and big data analytics, have shifted the paradigm of interactions between companies and customers from one-way communication to two-way communication that is interactive, adaptive, and based on customer experience.

Huang and Rust (2021) state that Chatbots as a digital service innovation are a form of AI that replaces human cognitive and social tasks in service marketing, enabling companies to perform mass personalization without significantly increasing labor costs. Adam et al. (2021) define chatbot innovation in marketing as the use of virtual assistants that utilize Natural Language Processing (NLP) to create social relationships with users, which can significantly increase consumer engagement and trust through human-like interactions. Dwivedi et al. (2021) expand on this concept by emphasizing that digital marketing innovation is now "a socio-technical process that integrates technology, strategy, and consumer behavior to drive digital transformation." Based on these various views, it can be concluded that digital marketing innovation is a strategic process that utilizes digital technology to create customer value through personalized, data-driven, and experience-oriented interactions. This innovation functions not only as a promotional tool but also as a mechanism to strengthen customer relationships, optimize operational efficiency, and accelerate organizational adaptation to market changes.

2.2 Business Performance

Business performance is a key indicator of an organization's success in achieving its strategic objectives, both in financial and non-financial aspects. This concept reflects the overall results of an organization's activities in managing resources, implementing strategies, and responding to changes in the external environment. Business performance measurement is not only limited to profitability, but also includes dimensions such as customer growth, operational efficiency, innovation, and stakeholder satisfaction. According to Venkatraman and Ramanujam (1986), business performance is the financial and operational outcomes that reflect the effectiveness of an organization in achieving its objectives. This definition shows that business success does not only depend on financial results, but also on operational achievements that support long-term sustainability. Kaplan and Norton (2001) through the Balanced Scorecard approach define business performance as "a multidimensional construct that translates an organization's vision and strategy into a coherent set of performance measures across financial and non-financial perspectives." Richard et al. (2009) stated that business performance includes three specific areas of organizational results: (1) financial performance (profit, return on assets, return on investment); (2) product market performance (sales, market share); and (3) total shareholder return.

Venkatraman and Ramanujam (1986) stated that business performance is a multidimensional phenomenon that encompasses not only financial indicators but also non-financial operational indicators such as product quality, market share, and new product introductions. Murphy et al. (1996)

define business performance as a comparison between an organization's actual results and expected results (targets), measured across various dimensions such as efficiency, growth, profitability, and liquidity. Neely, Adams, and Kennerley (2002) define business performance as "the process of quantifying the efficiency and effectiveness of actions leading to organizational success." They emphasize the importance of a performance measurement system as a strategic management tool to ensure that organizational activities align with long-term goals. According to them, performance measurement must be able to assess how efficiently resources are used and how effective actions taken are in producing desired results. Richard et al. (2009) expand on this view by emphasizing that business performance encompasses three main dimensions: financial performance, operational performance, and market performance. They highlight that in the digital era, performance measurement must include indicators such as customer satisfaction, loyalty, product innovation, and adaptability to new technologies. Based on these various perspectives, it can be concluded that business performance is the overall result of an organization's effectiveness in managing resources, strategies, and innovation to achieve financial and non-financial goals sustainably.

2.3 Consumer Behavior

In the modern business context, understanding consumer behavior is becoming increasingly complex due to the influence of digital transformation, information technology, social media, and changes in consumer values and lifestyles post-pandemic. Therefore, the study of consumer behavior focuses not only on purchasing decisions, but also on customer experiences, digital interactions, and post-purchase loyalty. Solomon (2023) states that in the digital era, consumer behavior is no longer linear, but cyclical and interactive because consumers can search for information, interact with brands, and provide feedback in real time through social media and digital platforms. Solomon emphasizes the importance of customer experience as the center of modern consumer behavior, where emotional and symbolic values are often the determining factors for brand loyalty. This definition emphasizes that consumer behavior in the digital era is formed through a combination of human needs and technology. Leon G. Schiffman and Leslie L. Kanuk (2010/2019) state that consumer behavior is the behavior exhibited by consumers in searching for, purchasing, using, evaluating, and disposing of products and services that they expect will satisfy their needs.

Michael R. Solomon (2020) defines consumer behavior as the study of the processes involved when individuals or groups select, purchase, use, or dispose of products, services, ideas, or experiences to satisfy their needs and wants. Philip Kotler and Kevin Lane Keller (2016) state that consumer behavior is the study of how individuals, groups, and organizations select, purchase, use, and dispose of goods, services, ideas, or experiences to satisfy their needs and wants. Engel, Blackwell, and Miniard (2006) also define consumer behavior as the actions directly involved in obtaining, consuming, and disposing of products and services, including the decision processes that precede and follow these actions. Lemon and Verhoef (2016) also emphasize that consumer behavior is now cross-channel, where customers interact through various touchpoints ranging from social media, chatbots, websites, to physical stores. This model, known as the Customer Journey Model, describes five key stages of consumer behavior: need recognition, information search, evaluation of alternatives, purchase decision, and post-purchase behavior. Del I. Hawkins and David L. Mothersbaugh (2016) state that it is the study of individuals, groups, or organizations and the processes they use to select, secure, use, and dispose of products, services, experiences, or ideas to satisfy needs, and the impact of these processes on consumers and society.

Wayne D. Hoyer, Deborah J. MacInnis, and Rik Pieters (2018) state that consumer behavior reflects the overall decisions consumers make regarding the acquisition, consumption, and disposition of goods, services, time, and ideas by a decision-making unit (human) over time. In the digital context, these stages do not occur linearly but can occur simultaneously because consumers have rapid access to information and the experiences of other users. Dwivedi et al. (2021) highlight that digital consumer

behavior is increasingly influenced by data-driven personalization and trust in technology. Consumers are now more selective about brands, and trust is a key factor in shaping purchasing decisions. Their decisions are influenced not only by advertising but also by digital recommendations and the quality of interactions with digital systems such as chatbots and customer service apps.

3. Research Methods

The research design employed a quantitative survey method, which involves sampling from the population and using questionnaires as a data collection tool. According to Creswell & Creswell (2020), quantitative descriptive research is research conducted to determine the value of a variable by comparing or connecting it with other variables studied and analyzed to generate conclusions. In this study, the quantitative descriptive method was used to determine and assess consumer responses regarding the influence of the independent variable on the dependent variable. The population in this study was based on the number of consumers who visited and purchased products at the Pekanbaru City Digital Marketing retail store. Based on this calculation, the minimum sample size required for the study was 384 respondents.

The variables studied in this study were Chatbot-Based Digital Marketing Innovation (X), Consumer Behavior (Z), and Business Performance (Y). In this study, conclusions, which provide answers or solutions to research problems, are highly dependent on the quality of the data analyzed and the instruments used to collect the data. Validity and reliability tests were conducted on 30 individuals outside the population and sample. The data types and sources used in this study were primary and secondary data. Data analysis using Structural Equation Modeling (SEM) or Partial Least Squares (PLS-SEM). The importance of using convergent and discriminant validity tests, as well as direct and indirect effect estimation in causal models.

Research Hypothesis

Based on the explanation of the relationship between variables, the hypothesis in this study is as follows:

- H₁ : Chatbot-Based Digital Marketing Innovation has a significant impact on business performance in retail companies.
- H₂ : Chatbot-Based Digital Marketing Innovation has a significant influence on consumer behavior in retail companies.
- H₃ : Consumer behavior has a significant influence on business performance in retail companies
- H₄ : Innovation has a significant impact on business performance in companies through consumer behavior.

4. Results and Discussion

4.1 Descriptive Statistical Analysis Results

The results of the respondents' explanations regarding the variables of respondents' answers to digital marketing innovation. The results of the answers to digital marketing innovation for online customers can be seen in Table 1 below:

Table 1. Respondents' Explanation of Digital Marketing Innovation (X)

Number	Statement	Respondents' Responses to Digital Marketing Innovation												Mean	Std	Results
		STS	%	TS	%	N	%	S	%	SS	%	T	%			
1	Chatbots provided by retailers make it easier for me to search and select products.	7	1.8	15	3.9	90	23.4	155	40.3	118	30.6	385	100	3,98	0,902	Good

2	I can make purchases directly through the chatbot without any hassle.	8	2.1	17	4.4	108	28.1	146	37.9	106	27.5	385	100	3,869	0,915	Good
3	Chatbots help me obtain product information quickly and accurately.	10	2.6	11	2.9	91	23.6	160	41.6	113	29.4	385	100	3,995	0,911	Good
4	Retail chatbots integrate well with digital platforms like WhatsApp, websites, or store apps.	11	2.9	7	1.8	94	24.4	170	44.2	103	26.8	385	100	3,96	0,912	Good
5	I can access the chatbot through several digital channels I use daily.	9	2.3	10	2.6	110	28.6	163	42.3	93	24.2	385	100	3,864	0,884	Good
6	Interactions with the chatbot feel integrated into my online shopping experience.	9	2.3	14	3.6	121	31.4	149	38.7	92	23.9	385	100	3,799	0,946	Good
7	The chatbot provides product recommendations that align with my needs or shopping history.	8	2.1	13	3.4	97	25.2	162	42.1	105	27.3	385	100	3,925	0,896	Good
8	I feel like the chatbot recognizes my preferences based on previous interactions.	6	1.6	8	2.1	108	28.1	161	41.8	102	26.5	385	100	3,96	0,873	Good
9	The chatbot provides messages or offers that are relevant to my interests.	6	1.6	11	2.9	97	25.2	167	43.4	104	27.0	385	100	3,98	0,891	Good
10	The chatbot responds fairly quickly to my questions.	5	1.3	10	2.6	96	24.9	150	39.0	124	32.2	385	100	4,005	0,877	Good
11	Chatbots help me resolve issues or questions without having to wait for human staff.	7	1.8	15	3.9	98	25.5	153	39.7	112	29.1	385	100	3,95	0,906	Good
12	Using chatbots saves me time compared to conventional methods.	5	1.3	7	1.8	92	23.9	149	38.7	132	34.3	385	100	4,07	0,854	Good
13	I am satisfied with the service provided by chatbots during my shopping experience.	5	1.3	10	2.6	107	27.8	148	38.4	115	29.9	385	100	3,975	0,859	Good
14	Chatbots provide a pleasant and efficient interaction experience.	5	1.3	9	2.3	104	27.0	153	39.7	114	29.6	385	100	3,975	0,829	Good
15	I believe chatbots play a crucial role in improving the quality of digital retail services.	5	1.3	10	2.6	84	21.8	156	40.5	130	33.8	385	100	4,065	0,869	Good

Next, the Respondents' Explanation regarding Consumer Behavior variables. The results of the answers for online customer Consumer Behavior can be seen in Table 2 below:

Table 2. Respondents' Explanation of Consumer Behavior (Z)

Number	Statement	Respondents' Answers to Consumer Behavior												Mean	Std	Results
		STS	%	T S	%	N	%	S	%	S S	%	T	%			
1	I recognize the need for a product after seeing a promotion or content on social media.	7	1.8	13	3.4	97	25.2	157	40.8	111	28.8	385	100	3,965	0,865	Good
2	I feel that digital retail helps me identify products that suit my needs.	6	1.6	8	2.1	77	20.0	171	44.4	123	31.9	385	100	4,075	0,783	Good
3	Recommendations from digital media help me identify products that suit my needs.	4	1.0	5	1.3	88	22.9	166	43.1	122	31.7	385	100	4,055	0,778	Good
4	Before purchasing, I research products through websites, apps, or chatbots.	6	1.6	9	2.3	64	16.6	159	41.3	147	38.2	385	100	4,161	0,859	Good
5	I usually read or watch reviews before deciding to buy a product from a retailer.	3	0.8	7	1.8	70	18.2	137	35.6	168	43.6	385	100	4,211	0,836	Good
6	I compare product reviews and specifications from various digital sources before purchasing.	4	1.0	6	1.6	70	18.2	152	39.2	153	39.7	385	100	4,156	0,827	Good
7	I usually compare several similar products before purchasing.	3	0.8	5	1.3	72	18.7	151	39.2	154	40.0	385	100	4,186	0,796	Good
8	I use digital features (such as chatbots, filters, or comparison tables) to evaluate product options.	5	1.3	9	2.3	84	21.8	153	39.7	134	34.8	385	100	4,085	0,813	Good
9	I consider customer reviews and product ratings as comparisons.	4	1.0	4	1.0	64	16.6	143	37.1	170	44.2	385	100	4,226	0,805	Good
10	I decide to purchase a product after obtaining comprehensive information from digital media or chatbots.	4	1.0	11	2.9	65	16.9	168	43.6	137	35.6	385	100	4,111	0,807	Good
11	The information I obtain digitally makes me confident in purchasing a particular product.	3	0.8	9	2.3	84	21.8	152	39.5	137	35.6	385	100	4,08	0,798	Good
12	I am more interested in purchasing products from retailers that provide comprehensive digital information.	6	1.6	8	2.1	69	17.9	157	40.8	145	37.7	385	100	4,121	0,854	Good
13	After purchasing, I evaluate whether the product meets my expectations.	3	0.8	8	2.1	72	18.7	166	43.1	136	35.3	385	100	4,141	0,79	Good
14	I am willing to recommend the product to others if I am	7	1.8	3	0.8	74	19.2	161	41.8	140	36.4	385	100	4,126	0,844	Good

	satisfied with my shopping experience.															
15	If satisfied, I will repurchase the product from the same retailer in the future.	3	0.8	6	1.6	63	16.4	163	42.3	150	39.0	385	100	4,211	0,806	Good

Next, we'll explain the respondents' business performance. The results of the responses to online customer business performance can be seen in Table 3 below.

Table 3. Respondents' Explanation of Business Performance (Y)

Number	Statement	Respondents' Answers to Business Performance												Mean	Std	Results
		STS	%	TS	%	N	%	S	%	SS	%	T	%			
1	I see this retailer growing and having many branches and sales channels.	5	1.3	6	1.6	88	22.9	162	42.1	124	32.2	385	100	4,04	0,838	Good
2	I believe this retailer has high sales because its products are in high demand among consumers.	3	0.8	7	1.8	76	19.7	175	45.5	124	32.2	385	100	4,045	0,81	Good
3	The chatbot and online ads often attract me to products I hadn't considered before.	4	1.0	13	3.4	96	24.9	156	40.5	116	30.1	385	100	3,97	0,856	Good
4	I was satisfied with my overall shopping experience at this retailer.	2	0.5	7	1.8	99	25.7	163	42.3	114	29.6	385	100	4,01	0,814	Good
5	I intend to continue shopping at this retailer in the future.	2	0.5	9	2.3	103	26.8	161	41.8	110	28.6	385	100	3,99	0,851	Good
6	Chatbots make it easy for me to get information about the products or services offered.	3	0.8	5	1.3	93	24.2	174	45.2	110	28.6	385	100	4,045	0,765	Good
7	The service I receive from this retailer is fast and efficient.	3	0.8	7	1.8	83	21.6	169	43.9	123	31.9	385	100	4,085	0,794	Good
8	The ordering or purchasing process, both online and offline, runs smoothly and without complications.	4	1.0	4	1.0	82	21.3	173	44.9	122	31.7	385	100	4,09	0,797	Good
9	Information systems such as chatbots, apps, or self-service checkouts are very helpful when shopping.	3	0.8	10	2.6	71	18.4	175	45.5	126	32.7	385	100	4,131	0,765	Good
10	This retailer frequently offers new features like chatbots, digital promotions, or new payment methods.	2	0.5	7	1.8	98	25.5	159	41.3	119	30.9	385	100	4,035	0,835	Good
11	I find this retailer is always innovating to make things easier and more appealing to consumers.	3	0.8	7	1.8	73	19.0	183	47.5	119	30.9	385	100	4,141	0,757	Good

12	I often find new products or services from this retailer that suit my needs.	3	0.8	8	2.1	82	2.1	168	43.6	124	32.2	385	100	4,03	0,862	Good
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4.2 Model Evaluation

4.2.1 Convergen Validity

To test convergent validity, outer loading or loading factor is used. An indicator is considered to meet convergent validity in the good category if the outer loading value is > 0.70 . The following is the outer loading of each indicator in the research variables:

Table 4. Outer loading

	Chatbot-Based Digital Marketing Innovation	Business Performance	Consumer Behavior
IPD1	0.788		
IPD10	0.800		
IPD11	0.793		
IPD12	0.808		
IPD13	0.838		
IPD14	0.819		
IPD15	0.796		
IPD2	0.830		
IPD3	0.816		
IPD4	0.820		
IPD5	0.798		
IPD6	0.808		
IPD7	0.829		
IPD8	0.816		
IPD9	0.820		
KB1		0.777	
KB10		0.833	
KB11		0.820	
KB12		0.786	
KB2		0.790	
KB3		0.759	
KB4		0.823	
KB5		0.807	
KB6		0.799	
KB7		0.834	
KB8		0.827	
KB9		0.803	
PK1			0.721
PK10			0.803
PK11			0.780
PK12			0.764
PK13			0.806
PK14			0.781
PK15			0.754

PK2			0.791
PK3			0.800
PK4			0.751
PK5			0.795
PK6			0.787
PK7			0.794
PK8			0.764
PK9			0.785

Source: Research Results, 2025 (processed data)

Based on Table 4, the PLS-SEM framework and convergent validity tests using factor loadings (outer loadings) indicate that most indicators adequately and consistently represent the latent construct. For the Chatbot-Based Digital Marketing Innovation (IPD) construct, all indicators (IPD1–IPD15) load strongly with a range of 0.788–0.838; this is above the ideal threshold of 0.708, thus, the indicator reliability and contribution to construct variance can be considered very good. For Business Performance (KB), the loading range of 0.759–0.834 (KB1–KB12) also indicates solid measurement consistency, so that financial, customer, operational, and innovation indicators appear well represented. Consumer Behavior (PK) shows a range of 0.721–0.806; This is sufficient to confirm initial convergent validity, but some items in the lower range (e.g., PK1 = 0.721) are worth monitoring when calculating AVE—not for automatic elimination, but to ensure that their contribution to the construct variance remains ≥ 0.50 after aggregate calculation.

4.2.2 Discriminant Validity

The discriminant validity test uses cross-loading values. An indicator is declared to meet discriminant validity if the indicator's cross-loading value on its variable is the largest compared to other variables. In addition to observing the cross-loading value, discriminant validity can also be determined through other methods, namely by looking at the average variance extracted (AVE) for each indicator. The required value must be > 0.5 for a good model. The average variance extracted (AVE) value is as follows:

Table 5. Average Variance Extracted (AVE)

Variables	Average variance extracted (AVE)
Chatbot-Based Digital Marketing Innovation (X)	0.660
Business Performance (Y)	0.648
Consumer Behavior (Z)	0.606

Source: Research Results, 2022 (processed data)

Table 5 shows that the AVE values indicate that all constructs have good convergent validity, as they are above the threshold of 0.50 (Fornell & Larcker, 1981; Hair et al., 2021). Chatbot-Based Digital Marketing Innovation has the highest AVE (0.660), indicating that the indicators of functionality, integration, personalization, and operational efficiency are highly representative. Business Performance (0.648) is also strong, indicating consistency across financial, customer, and operational indicators, as well as functional, emotional, social, price, and service values. Consumer Behavior (0.606) is quite good, with indicators of purchase decision stages well represented. Overall, these results confirm that all constructs pass the convergent validity test, making the model suitable for use in the next stage.

4.2.3 Composite Reliability

Composite Reliability is the part used to test the reliability value of indicators in a variable. A variable can be declared to meet composite reliability if it has a composite reliability value for each variable used in this study:

Table 6. Composite Reliability

Variables	Composite reliability (rho_a)	Composite reliability (rho_c)
Chatbot-Based Digital Marketing Innovation (X)	0.963	0.967
Business Performance (Y)	0.951	0.957
Consumer Behavior (Z)	0.954	0.958

Source: Research Results, 2025 (processed data)

Based on Table 6, the Composite Reliability (CR) results in Table 4 indicate that all constructs have excellent reliability. The recommended minimum reliability threshold is 0.70 (Hair et al., 2021), and all CR values in this study are well above this standard. Chatbot-Based Digital Marketing Innovation recorded the highest value ($\rho_a = 0.963$; $\rho_c = 0.967$), indicating that the chatbot indicator consistently explains the latent variables. Consumer Behavior (0.954; 0.958) was also strong, indicating that the consumer value dimensions and stages of the purchasing decision were well measured. Business Performance (0.951; 0.957) consistently encompassed financial, customer, operational, and innovation aspects, and all constructs remained reliable. Overall, these very high CR values confirm the reliability of the research instrument, and all constructs can be retained for further analysis, such as discriminant validity testing and structural model testing.

4.2.4 Cronbach Alpha

The reliability test with the composite reliability above can be strengthened by using the Cronbach alpha value. A variable can be declared reliable or meets the Cronbach alpha value if it has a Cronbach alpha value > 0.7 . The following are the Cronbach alpha values for each variable:

Table 7. Cronbach Alpha

Variables	Cronbach's alpha
Chatbot-Based Digital Marketing Innovation (X)	0.963
Business Performance (Y)	0.951
Consumer Behavior (Z)	0.954

Source: Research Results, 2025 (processed data)

Table 7 shows that the Cronbach's alpha values indicate excellent internal reliability for all constructs. The commonly used minimum reliability threshold is 0.70 (Nunnally & Bernstein, 1994), while all constructs in this study far exceed this standard. Chatbot-Based Digital Marketing Innovation has the highest value (0.963), strengthening the consistency of the chatbot's functionality, integration, personalization, and efficiency indicators. Consumer Behavior (0.954) also has a very high value, indicating that items related to perceived value and consumer decision-making processes are measured stably. Business Performance (0.951) is strong in representing financial, customer, operational, and innovation indicators. Overall, these Cronbach's alpha values confirm that all constructs are internally consistent and the research instrument is reliable. Thus, the measurement model meets the reliability requirements.

4.3 Inner Model Evaluation

In this study, the results of the path coefficient test, goodness of fit test and hypothesis test will be explained.

4.3.1 Path Coefficient Test

Path coefficient evaluation is used to show how strong the effect or influence of independent variables on dependent variables. Meanwhile, the coefficient of determination (R-Square) is used to measure how much endogenous variables are influenced by other variables. Based on the description of the results, it shows that all variables in this model have good path coefficients. This indicates that the greater the path coefficient value of one independent variable on the dependent variable, the stronger

the influence between the independent variables on the dependent variable. The following are the path coefficient values for each variable:

Table 8. Path Coefficient

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (O/STDEV)	P values
Chatbot-Based Digital Marketing Innovation -> Business Performance	0.061	0.058	0.067	0.910	0.363
Chatbot-Based Digital Marketing Innovation -> Consumer Behavior	0.219	0.221	0.073	2.979	0.003
Consumer Behavior -> Business Performance	0.363	0.362	0.047	7.646	0.000

Source: Research Results, 2025 (processed data)

Based on Table 8, the results of the Path Coefficient test show the influence categories of each relationship as follows:

1. The influence of Chatbot-Based Digital Marketing Innovation on Business Performance falls into the insignificant category because the t-statistic is < 1.969 ($0.910 < 1.969$) and the P-value is > 0.05 ($0.363 > 0.05$). Therefore, the hypothesis is rejected.
2. The influence of Chatbot-Based Digital Marketing Innovation on Consumer Behavior falls into the significant category because the t-statistic is > 1.969 ($2.979 > 1.969$) and the P-value is < 0.05 ($0.003 < 0.05$). Therefore, the hypothesis is accepted.
3. The Influence of Consumer Behavior \rightarrow Business Performance is categorized as significant because the t-statistic value is > 1.969 ($7.646 > 1.969$) and P-values are < 0.05 ($0.000 < 0.05$). Thus, the hypothesis is accepted..

4.3.2 Goodness of Fit Test

Based on the data processing that has been carried out using the smartPLS program, the R-Square Adjusted value is obtained as follows:

Table 9. R-Square Value

	R-square	R-square adjusted
Business Performance	0.804	0.802
Consumer Behavior	0.676	0.673

Source: Research Results, 2022 (processed data)

Based on Table 9, it can be seen that the analysis of the R-square value (R^2) and Adjusted R-square are important steps in assessing the predictive power of the structural model in PLS-SEM. The results in Table 2 show that the Business Performance construct (Y) has R^2 of 0.804 with an Adjusted R^2 of 0.802. This value is in the very strong category, exceeding the threshold recommended by Hair et al. (2021), where R^2 A value of 0.75 or higher indicates substantial predictive power. This means that the independent variable (Chatbot-Based Digital Marketing Innovation) and the mediating variable (Consumer Behavior) together explain 80.4% of the variation in business performance. The high adjusted value R^2 which is approaching R^2 also confirms the stability of the model even though it has considered the number of predictors in the equation, so that the possibility of overfitting can be ignored.

Meanwhile, the Consumer Behavior construct (Z) has an R^2 of 0.676 with Adjusted R^2 of 0.673. Based on Hair et al.'s (2021) criteria, this value is at a moderate to substantial level, meaning the exogenous variable (Digital Marketing Innovation) can explain approximately 67.6% of the variation in consumer behavior. This figure is quite high for research in the field of marketing management, especially when compared to previous studies, which generally only recorded R^2 in the range of 0.40–0.60 in digital technology-based consumer behavior studies (Cheng et al., 2024). Thus, these results indicate that the research model has strong empirical relevance in explaining how managerial

strategies and digital innovation resonate with changes in consumer behavior.

4.3.3 Hypothesis Test Results

Based on the data processing, the results can be used to answer the hypothesis in this study. Hypothesis testing in this study can be conducted by examining the T-statistic and P-values. This research hypothesis can be declared accepted if the P-value is <0.05. The results of the hypothesis testing obtained in this study using the inner mode can be seen in the following table :

Table 10. Results of Direct and Indirect Hypothesis Tests

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (O/STDEV)	P values	Decision
Chatbot-Based Digital Marketing Innovation -> Business Performance	0.061	0.058	0.067	0.910	0.363	Rejected
Chatbot-Based Digital Marketing Innovation -> Consumer Behavior	0.219	0.221	0.073	2.979	0.003	Accepted
Consumer Behavior -> Business Performance	0.363	0.362	0.047	7.646	0.000	Accepted
Chatbot-Based Digital Marketing Innovation -> Consumer Behavior -> Business Performance	0.079	0.080	0.029	2.766	0.006	Accepted

Source: Research Results, 2025 (processed data)

Based on the results of the Path Coefficient test in Table 5.13, the influence categories of each relationship can be concluded as follows:

1. The influence of Chatbot-Based Digital Marketing Innovation on Business Performance is categorized as insignificant because the t-statistic is <1.969 (0.910 <1.969) and the P-value is >0.05 (0.363 >0.05). Therefore, the hypothesis is rejected.
2. The influence of Chatbot-Based Digital Marketing Innovation on Consumer Behavior is categorized as significant because the t-statistic is >1.969 (2.979 >1.969) and the P-value is <0.05 (0.003 <0.05). Therefore, the hypothesis is accepted.
3. The effect of Consumer Behavior on Business Performance is significant because the t-statistic is > 1.969 (7.646 > 1.969) and the P-value is < 0.05 (0.000 < 0.05). Therefore, the hypothesis is accepted.
4. The effect of Chatbot-Based Digital Marketing Innovation on Consumer Behavior on Business Performance is significant because the t-statistic is > 1.969 (2.766 > 1.969) and the P-value is < 0.05 (0.006 < 0.05). Therefore, the hypothesis is accepted.

5. Discussion

Based on the results of the hypothesis testing, the relationship between Chatbot-Based Digital Marketing Innovation and Business Performance was proven to be insignificant, with a t-statistic value of 0.910 (<1.969) and a p-value of 0.363 (>0.05). Thus, the hypothesis was rejected. These results indicate that the use of chatbots as a form of chatbot-based digital marketing innovation in retail companies in Pekanbaru has not been able to provide a strong direct contribution to improving

business performance. Theoretically, this finding differs from the views of Tiago and Veríssimo (2014) who asserted that the integration of digital innovations including social media, mobile applications, and chatbots can increase customer engagement, communication effectiveness, and create competitive advantages that lead to improved business performance. Likewise, Liu et al. (2020) found that the use of Artificial Intelligence (AI), chatbots, and big data analytics enables companies to deliver more personalized and faster information, thereby strengthening the customer experience and increasing loyalty, which ultimately has implications for company performance. In fact, Kannan and Li (2017) emphasize that digital innovation creates an adaptive marketing system that can respond to market changes in real-time and contribute directly to revenue growth.

However, the discrepancies in the research results can be explained by the empirical context in the field. First, although several retailers in Pekanbaru have adopted chatbots, their use is still limited to basic functions such as providing product information, promotions, or operating hours. It has not been strategically directed to drive sales conversions, customer retention, or personalized product recommendations. Second, most retail consumers in Pekanbaru still prefer direct interactions, whether through store staff or established e-commerce platforms like Tokopedia or Shopee, over interacting with local store chatbots. Third, the unequal level of consumer digital literacy and the limited ability of chatbots to mimic human communication can make the resulting digital experience feel awkward and unsatisfying. As a result, chatbot innovation has not been able to significantly impact performance indicators such as sales growth, customer satisfaction, or company brand image.

Furthermore, the results of the hypothesis test show a significant relationship between Chatbot-Based Digital Marketing Innovation and Consumer Behavior, with a t-statistic of 2.979 (>1.969) and a p-value of 0.003 (<0.05). Therefore, the hypothesis is accepted. These results indicate that the use of chatbots as a form of digital marketing innovation can positively influence consumer behavior in the purchasing decision-making process at retail companies in Pekanbaru. This finding aligns with theory and previous research. Lamberton and Stephen (2016) emphasized that digital innovations such as content personalization, data-driven marketing, and the use of AI technology (including chatbots) can increase consumer attention, engagement, and satisfaction. This technology creates interactive and relevant experiences, thus encouraging more positive consumer behavior changes towards brands. Consumers who find it easier and faster to interact with brands tend to be more active in seeking information and making purchases. Grewal et al. (2020) even emphasized that responsive, informative, and personalized chatbots improve perceptions of service quality, build trust, and strengthen consumer purchase intentions.

In the context of this research, the significant influence of chatbot innovation on consumer behavior is reflected in several dimensions measured in the research instrument, such as ease of product discovery, chatbot integration with digital channels, personalized product recommendations, and customer service efficiency. These four dimensions contribute to creating a more efficient and enjoyable shopping experience. Chatbots that provide fast and relevant information assist consumers in the information search and alternative evaluation stages, thereby strengthening confidence in purchasing decisions. The results of this study confirm that chatbot-based digital marketing innovations have a significant impact on consumer behavior, but their maximum benefits can only be achieved if companies provide targeted training, strong system integration, and customer data-driven management.

Furthermore, the results of the hypothesis testing show a significant relationship between Consumer Behavior and Business Performance. Based on the results of the hypothesis testing, the relationship between Consumer Behavior and Business Performance was proven significant, with a t-statistic of 7.646 (>1.969) and a p-value of 0.000 (<0.05). Thus, the hypothesis is accepted. These findings confirm that positive consumer behavior, from need recognition, information search, alternative evaluation, to purchase and post-purchase decisions, significantly contributes to improved business performance in retail companies in Pekanbaru. These results are consistent with the views of

Zeithaml et al. (2018) who found that positive consumer behaviors such as high loyalty, ongoing customer retention, and active engagement in digital interactions with brands contribute significantly to a company's long-term profitability and growth.

In the context of this research, retail consumer behavior in Pekanbaru is shaped by direct experiences while shopping at modern retail outlets, both offline and digital. Consumers who are satisfied with product quality, price compliance, speed of service, and ease of interaction through digital channels tend to make repeat purchases, provide positive recommendations, and maintain brand loyalty. This impacts sales volume increases, operational cost efficiency, new customer growth, and the company's ability to adapt to changing market needs. Therefore, investment in training, customer behavior monitoring systems, and a consumer-oriented organizational culture are concrete steps that must be implemented by retail companies in Pekanbaru to maintain a competitive advantage in the dynamic digital era.

Finally, based on the results of the hypothesis test, the relationship between Chatbot-Based Digital Marketing Innovation and Business Performance through Consumer Behavior was proven significant, with a t-statistic of 2.766 (>1.969) and a p-value of 0.006 (<0.05). Therefore, the hypothesis is accepted. These results confirm that digital marketing innovation in the form of chatbots can positively influence consumer behavior, which in turn has a significant impact on improving retail business performance in Pekanbaru. In the context of modern digital retail, chatbots serve not only as communication tools but also as strategic instruments that deliver a more personalized, efficient, and interactive shopping experience. This is consistent with Solomon's (2017) view, which explains that innovation can influence consumer decision-making through the creation of new value, brand image associations, and emotional impulses arising from the experience of using technology.

Consumers who experience tangible benefits from chatbots, such as ease of product search, relevant recommendations, and prompt responses, tend to exhibit positive brand behavior. This behavior is reflected in increased loyalty, repeat purchase intensity, and a willingness to recommend the product to others. In the context of this study, consumer behavior is proven to be a mediating mechanism linking chatbot innovation and business performance. Chatbots do not directly impact financial indicators or company growth, but rather through changes in consumer perceptions and experiences. Consumers who feel assisted in information search, product comparison, and purchase resolution processes demonstrate higher satisfaction and engagement. These findings reinforce the concept of Lemon & Verhoef (2016), who emphasize that positive digital experiences bridge technological innovation and business outcomes. Chatbots designed with Generative AI (GenAI) capabilities can personalize communications with a human touch. Thus, the results of this study confirm that chatbot innovation has a significant impact on business performance through consumer behavior, where digital skills training, system integration, and customer behavior data management are key factors for successful digital transformation.

6. Conclusion

Based on the results of hypothesis testing and analysis, several research conclusions were obtained that Chatbot-Based Digital Marketing Innovation on Business Performance has no significant effect ($t=0.910$; $p=0.363$). Chatbot innovation has not directly driven performance improvements, possibly because it still functions at the basic information level and has not been fully integrated into sales strategies or customer loyalty. In contrast, Chatbot-Based Digital Marketing Innovation on Consumer Behavior has a significant effect ($t=2.979$; $p=0.003$). Chatbots are able to influence consumer behavior, especially in terms of information search, alternative evaluation, and purchasing decisions, by providing an interactive, personalized, and efficient experience. Likewise, Consumer Behavior on Business Performance has a significant effect ($t=7.646$; $p=0.000$). Positive consumer behavior such as satisfaction, repeat purchases, and word of mouth directly improve business performance, both in financial aspects, customers, and company reputation. Finally, Chatbot-Based Digital Marketing

Innovation through Consumer Behavior on Business Performance shows a significant effect ($t=2.766$; $p=0.006$). Chatbot innovation contributes to improved business performance through changes in consumer behavior, albeit indirectly. This underscores the role of consumer behavior as a mediator.

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