

AI-Driven Personalization -Based Customer Retention Strategies for Indonesian Digital Startups Amidst the Promo Fatigue Phenomenon

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Abstract. *The phenomenon of promo fatigue, characterized by the declining effectiveness of repeated promotions, poses a challenge for digital startups in Indonesia in maintaining customer loyalty. Modern consumers tend to ignore generic promotions due to the high intensity of exposure to similar advertisements and offers. Under these conditions, utilizing AI and Big Data is a strategic approach to increasing customer retention through personalized services and marketing communications. This study aims to... analyze role personalization based AI in increase retention customer on digital startup Indonesia in middle phenomenon promo fatigue. Method Which used is literature review By reviewing various scientific articles, international journals, and academic publications related to AI-driven personalization, customer engagement, customer loyalty, and customer retention, the study results show that AI is capable of processing data. customers in real-time to generate relevant product recommendations, personalized offers, and interactions that better suit individual customer preferences. Strategy the proven increase involvement customer, satisfaction, And loyalty thus contributing to long-term customer retention. However, AI implementation still faces challenges. various challenge like privacy data, bias algorithm, limitations quality data, as well as the risk of over-personalization. By Because That, startup digital need apply strategy AI Which transparent, ethical, and oriented towards customer needs to increase loyalty and business competitiveness in a sustainable manner.*

Keywords: Artificial Intelligence, Personalization, Retention Customer, Startup Digital, Promo Fatigue

INTRODUCTION

The development of digital technology has changed the paradigm modern marketing from a *mass marketing approach* going to *personalized marketing* based data And intelligence artificial (*Artificial Intelligence/AI*). Today's digital companies no longer compete solely on price and promotion, but also on their ability to understand customer behavior in *real time* through the use of *big data analytics* , *machine learning* , and *predictive analytics* . This transformation is increasingly visible in the *digital startup industry*. And *e-commerce* Which face competition very dynamic as well as change expectation consumers who the more tall. Phenomenon This push company For utilise *AI-driven Personalization* as a key strategy in maintaining customer loyalty. Timimi, Baaddia, and Bennounaa (2025) explain that AI enables

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companies to collect and analyze customer data. in scale big For produce experience Which more relevant, personal, And *Customer-centric* . AI can leverage customer purchase history, social media interactions, digital activity, and *browsing behavior* to generate more targeted product recommendations and marketing communications.

In the modern marketing context, AI-based personalization is becoming increasingly important as digital consumers tend to expect experiences that are fast, relevant, and tailored to individual preferences. Study Zed, Kartini, And Purnamasari (2024) show that *AI-driven personalization* own connection positive to *consumer loyalty* Because capable increase *emotional connection* , *repurchase intention* , And *customer engagement* in *e-commerce* . Condition the show that the success of today's digital companies is not only determined by the ability to acquire new customers, but also retain customers through more personalized and valuable experiences.

However, the development of digital personalization strategies has also presented a new challenge in the form of *promo fatigue* . Digital consumers are now starting to experience burnout due to excessive exposure to promotions. repetitive, and less relevant. A massive discount strategy that Previously effective marketing strategies are starting to lose their appeal as customers become more selective about the marketing communications they receive. In this environment, companies need to understand more deeply the customer's context, preferences, and needs.

Renjith's research (2015) explains that modern *e-commerce* company Companies face significant challenges in retaining customers due to high *customer churn* and changes in digital consumer behavior. Therefore, companies need to implement *predictive analytics* and *personalized retention strategy* so that can detect potential *churn* more beginning And give offer Which More relevant to customers. Personalization-based retention strategies are important because the cost of acquiring new customers is much higher than retaining existing ones.

Urgency utilization AI in strategy retention customer Also strengthened by study Hariguna and Ruangkanjanases (2024) stated that *AI assimilation* has a positive impact on *customer performance* , *customer relationship quality* , and *customer experience* . AI enables companies to improve the quality of customer relationships through personalized recommendations, *Natural Language Processing (NLP)* -based *chatbots* , and more accurate customer behavior analysis. Thus, AI no longer functions solely as a technological automation tool but has become a strategic instrument in building customer loyalty. (Lianah, 25).

Study about AI And *big data* in taking decision strategic Also explained by Manrejo et al. (2026) Which state that synergy *Big Data* And *Artificial Intelligence* capable Transforming business processes through *real-time analytics* , *market pattern detection* , and *performance optimization* . According to Manrejo et al. (2026), AI serves as a *complementary capability* that helps companies generate *strategic insights* and *superior value propositions* in an increasingly competitive global business environment. This research emphasizes that modern companies need to integrate AI and *big data* not only as operational technologies but also as the foundation for data-driven strategic decision-making.

Additionally, Huang and Rust (2021) explain that AI in marketing plays a strategic role in *segmentation* , *targeting* , *positioning* , *personalization* , and *relationalization* . AI enables companies to create *hyper-personalized engagement* through a combination of *mechanical AI* , *thinking AI* , and *feeling AI* , which are capable of understanding customer emotions and behavior in a more complex way. With thus, strategy marketing based AI does not Again just providing product recommendations, but also building long-term relationships with customers through more personalized and relevant experiences. However, implementing *AI-driven personalization* also faces various challenges such as *privacy concerns* , *algorithmic bias* , *information overload* , and *digital fatigue* . Gunawan And Suroso (2025) state that *over-personalization* can trigger fatigue digital and reduce *engagement effectiveness* if companies overly aggressively utilize customer data. On the other hand, research on *AI-driven personalization* and *trust* also shows that consumers are becoming increasingly sensitive to the use of personal data and the transparency of algorithms in digital

marketing.

Based on condition the, study This become relevant For study How strategy AI-based personalization customer retention can be applied to Indonesian digital *startups* amidst the *promo fatigue phenomenon* . This research is also important to expand on previous studies, particularly Manrejo et al.'s (2026) research, with a more specific focus on the implementation of *AI-driven personalization* in building *customer retention* and loyalty in the Indonesian digital *startup ecosystem*.

Phenomenon Promo Fatigue

Phenomenon *promo fatigue* is condition when consumer experience saturation to too frequent digital promotions, repetitive, and less relevant. In digital *startup* industry In Indonesia, discount strategies, *cashback* , free shipping, and promotional vouchers have been key tools for acquiring and retaining customers for years. However, excessive promotional intensity can actually lead to decreased marketing effectiveness as consumers begin to view promotions as something commonplace. And no longer own differentiation value. Phenomenon This increasingly visible in industry *e-commerce* , *food delivery* , *ride-hailing* , And *marketplace* digital Which Keep going compete through war price and promo massive. Consumer become the more rational And only move platform based on incentives term short, No loyalty to brand. As a result, cost promotion company increased, but *customer loyalty* did not grow sustainably.

According to Moqaddemi (2025), digital companies currently face a major challenge in maintaining *customer engagement* because consumers increasingly demand more personalized experiences. compared to just promotion mass. In condition *promo fatigue* , strategy marketing AI-based become important Because capable give *personalized recommendation* And *predictive engagement* that is more relevant to customer needs.

The phenomenon of *promo fatigue* is also related to *information overload* and *digital exhaustion* due to excessive exposure to marketing content. Gunawan and Suroso (2025) stated that *over-personalization* and *excessive marketing exposure* can reduce *engagement effectiveness* if companies fail to maintain customer relevance and *trust* . Therefore, companies need to change their strategies. marketing from just "give promo" become "give experience Which relevant and valuable." In this context, *AI-driven personalization* is seen as a strategic solution because it allows companies to understand *customer behavior* more deeply and create more targeted marketing communications. By leveraging *big data analytics* and AI, companies can reduce irrelevant promotions, increase *customer satisfaction* , and build customer loyalty more sustainably.

Novelty Study

research on *AI-driven personalization* has generally focused on the impact of AI on *customer engagement* , *customer experience* , and customer loyalty in the general context of *e-commerce* . Research by Timimi et al. (2025), Gunawan and Suroso (2025), and Zed et al. (2024) places greater emphasis on on connection between personalization AI with loyalty customer, satisfaction customers, and digital marketing effectiveness.

Temporary That, study Manrejo et al. (2026) discusses *Big role Data* and AI in decision-making strategic company in a way general, especially on aspect *real-time analytics* , *business prediction* , and *optimization performance* . However, the research has not specifically examined how the implementation of *AI-driven personalization* is used. as customer retention strategy at digital *startups* in middle phenomenon *promo fatigue* . By Because That, novelty study This located on integration three The main aspects are the phenomenon of *promo fatigue* , customer retention strategies based on *AI-driven personalization* , and the use of *big data analytics* in the context of Indonesian digital *startups* . This research not only discusses the effectiveness of AI on customer loyalty but also examines how AI is used to overcome digital promotion fatigue and build more sustainable customer relationships.

Study This Also present perspective strategic Which connect draft *AI-driven personalization* and the increasingly selective behavior of Indonesian digital consumers toward promotions. Therefore, this research is expected to provide theoretical contributions to the development of AI-based digital marketing studies and practical contributions for startups in designing more effective, personalized, and sustainable customer retention strategies.

Formulation Problem

Changes in digital consumer behavior, which are increasingly selective about promotions, require startups to develop more personalized and data-driven marketing strategies. Furthermore, the phenomenon of *promo fatigue* has caused the effectiveness of conventional promotions such as discounts, *cashback*, and vouchers to decline in building customer loyalty. In this context, the use of AI and *big data analytics* is seen as capable of helping companies understand customer behavior more effectively. more deep so that strategy retention customer can done in a way more effective and sustainable. However, the implementation of *AI-driven personalization* also faces various challenges like *privacy concerns*, *algorithmic bias*, And guard balance between personalization and comfort customer. Based on condition the, so formulation problem in study This are as follows:

1. How phenomenon *promo fatigue* influence loyalty customer on *startup* digital in Indonesia?
2. How implementation *AI-driven personalization* can increase *customer retention* on digital startups ?
3. How role *big data analytics* in understand behavior customer And support customer retention strategies?
4. What are the challenges? implementation *AI-driven personalization* in increase loyalty customers in the digital age?

Research purposes

This research was conducted to analyze how digital *startup companies* utilize *Artificial Intelligence* and *big data analytics* as a customer retention strategy amidst the increasing phenomenon of... *promo fatigue*. Besides That, study This Also aim For understand effectiveness AI-based personalization in building customer loyalty and identifying various implementation challenges in Indonesia's digital industry. Based on this research problem formulation, the objectives of this study are as follows:

1. Analyze influence phenomenon *promo fatigue* to loyalty customer on *startup* digital in Indonesia.
2. Analyzing the application of *AI-driven personalization* in increasing *customer retention* and *customer engagement*.
3. Analyzing the role of *big data analytics* in understanding *customer behavior* to support more effective marketing strategies.
4. Identifying challenge implementation *AI-driven personalization* in build sustainable customer loyalty.

LITERATUR REVIEW

Artificial Intelligence

Artificial Intelligence (AI) is a technology that enables computer systems to perform processes learning, analysis, And taking decision in a way automatic based on data Which available. In the context of digital business, AI is evolving into a strategic technology that supports marketing transformation, customer management, and data-driven decision-making.

Huang and Rust (2021) explain that AI in marketing plays a role in helping companies understand customer behavior, segment markets, and create more personalized and effective marketing

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strategies. Through the use of *machine learning* , *predictive analytics* , and *Natural Language Processing* (NLP), companies can analyze consumer behavior patterns and generate more relevant recommendations in *real time* .

Moqaddemi (2025) emphasized that the integration of AI in digital marketing has changed the way companies interact with customer through experience Which more personal And *Customer-centric* . Technologies such as *chatbots* , recommendation systems, and customer behavior analytics enable companies to improve service quality while strengthening long-term relationships with customers.

Furthermore, Timimi et al. (2025) explain that AI enables companies to manage customer data on a large scale to support more targeted marketing strategies. With its fast and dynamic data analysis capabilities, AI helps companies understand customer needs more accurately, enabling more effective customer retention strategies.

Hariguna and Ruangkanjanases (2024) also found that AI integration in digital services has a positive impact on *customer experience* , *customer relationship quality* , and customer loyalty. because of that, AI does not Again viewed just as a tool automation of technology, but has become an important foundation in building marketing and customer retention strategies in the digital era.

Big Data Analytics

Big data analytics is the process of processing large amounts of data to generate strategic information for companies. According to Manrejo et al. (2026), implementing *Big Data* enables organizations to perform *real-time analytics* , detect market patterns, and optimize business decision-making. Approach This No only help company understand behavior consumer based on historical data, but also predict future customer needs through *predictive analytics* .

In context marketing digital, Gunawan And Suroso (2025) explain that integration *Big Data* , *machine learning* , and *Natural Language Processing* (NLP) enable companies to create more personalized and relevant customer experiences in *real-time* . Meanwhile, Moqaddemi (2025) emphasized that ability AI in processing data customer in a way dynamic support adaptive marketing strategies that are able to respond to changes in consumer behavior more quickly.

Renjith (2015) added that *big data analytics* plays a crucial role in detecting potential *customer churn* through analysis of transaction patterns, purchase history, and customer behavior. *big data analytics* become foundation main in support strategy retention customer AI-based in the digital industry.

Customer retention

Customer retention or retention customer is ability company For retaining existing customers to continue using a product or service in the long term. Renjith (2015) confirm that in context B2C e-commerce, interesting customer new five time more expensive compared to retaining existing customers. Furthermore, Bain & Co. research cited by Renjith (2015) shows that a 5% increase in *customer retention rates can result in a minimum 25% increase in profits. This fact confirms that customer retention* is not merely a complementary strategy, but rather the foundation of long-term profitability for digital companies.

Renjith (2015) propose platform retention customer integrated Which consists of from three stage Main: churn detection through *predictive analytics* , customer profiling through cluster analysis (k-means), and *personalized retention strategy* based recommender systems with approach collaborative filtering technique *predictive analytics* utilise model statistics or *machine learning* For detect the probability of customer attrition through demographic data, purchasing patterns, and Net Promoter Score (NPS). When customer Which potential churn has identified, company can apply strategy Personal retention in the form of relevant offers according to each customer's preferences and transaction history. Hariguna and Ruangkanjanases (2024) confirmed that the success of customer retention is highly dependent on *customer relationship quality* , *customer experience* , And

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organizational agility in response change need customer. Studies they find that *customer Relationship quality* has a positive and significant effect on *customer performance* ($\beta = 0.872$). Companies that succeed integrate AI to in process his business will more responsive to customer needs Because AI capable identify need customer in a way more accurate, respond to questions more fast, And give experience service Which more relevant with context And preference individual.

Gunawan and Suroso (2025) strengthen this argument by showing that AI personalization increases *customer engagement* through recommendation systems, NLP-based chatbots, and *predictive analytics*, which ultimately drives loyalty. Trust and perceived content relevance play a role. mediator key in connection between *AI-driven personalization* And *customer loyalty* , While privacy concerns and information fatigue can reduce its effectiveness, an effective retention strategy therefore depends not only on the capabilities of AI technology but also on the company's ability to build customer trust in the effective use of their data. transparent and responsible.

In context phenomenon promo fatigue Which hit ecosystem startup digital Indonesia, Moqaddemi (2025) remind that dependence excessive on system AI without touch human touch Inadequate brand interactions can lead to customer emotional disengagement. Consumers value human involvement in brand interactions, so businesses must find a balance between leveraging AI for efficiency and maintaining human touchpoints to build customer relationships. Which authentic. Balance here it is Which become key success strategy retention sustainable customer retention in the digital age .

Personalization Marketing

Marketing personalization is a strategy that leverages customer data to create communications and offers tailored to individual customer needs. Zed et al. (2024) explain that *AI-driven personalization* enables companies to generate product recommendations, targeted advertising, and more relevant user experiences through the analysis of customer data. *real-time* . Strategy This proven increase *customer loyalty* , *repurchase intention* , And consumers' *emotional connection* to digital platforms.

Huang and Rust (2021) state that AI in marketing plays a role in the entire marketing process, from *segmentation* and *targeting* to *personalization* . Utilizing AI helps companies understand customer preferences more accurately, enabling more effective and *customer-centric marketing strategies* .

Besides That, Moqaddemi (2025) confirm that AI allows company move going beyond conventional segmentation towards a more dynamic and personalized customer experience. However, implementation personalization AI Also face challenge in the form of *privacy concerns* , *algorithmic bias* , and *over-personalization* which can reduce customer comfort if done excessively

Study Previously

Various study previously has discuss connection between AI, *big data analytics* , marketing personalization, and customer retention. Manrejo et al. (2026) concluded that the synergy of AI and *Big Data* is capable of increase quality taking decision strategic company through ability *real-time analytics* and *business predictions* .

Hariguna and Ruangkanjanases (2024) found that *AI assimilation* positively impacts *customer experience* , *customer relationship quality* , and *customer performance* . This research demonstrates that AI integration can improve the quality of customer relationships and support customer loyalty in digital businesses.

Meanwhile, Timimi et al. (2025) explained that the implementation of AI in marketing personalization has been proven increase customer satisfaction and effectiveness marketing However, the study also highlighted challenges to AI implementation, such as privacy, ethics, and transparency in customer data usage.

Zed et al. (2024) show that *AI-driven personalization* own influence significant on customer

loyalty in the *e-commerce sector* . The research confirms that relevant and personalized customer experiences are a critical factor in building consumer loyalty in the digital age.

On the other hand, Gunawan and Suroso (2025) highlighted that *over-personalization* can give rise to *digital fatigue* and reduce the effectiveness of *customer engagement* if companies fail to maintain a balance between personalization and customer privacy.

Based on various study the, can concluded that AI And *big data analytics* have a role strategic in increase retention customer through personalization marketing. However, Previous research has tended to discuss AI personalization in general and has not linked it to the phenomenon of *promo fatigue* in the context of Indonesian digital *startups* . Therefore, this study... This make an effort fill in gap the with study strategy retention customer *AI-driven personalization* in the middle change digital consumer behavior is increasingly selective towards promotions.

METHODS

This study uses a *Systematic Literature Review (SLR) approach* to identify, evaluate, And synthesize various study Which related with implementation *Artificial Intelligence (AI)* in marketing personalization and customer retention. A *literature review approach* was chosen because it provides a comprehensive understanding of conceptual developments, empirical findings, and the challenges of implementing AI in digital marketing strategies.

Literature sources were obtained from national and international journals indexed by Google Scholar, Scopus, ScienceDirect, and Springer, published between 2020 and 2025. Keywords used in the search included *Artificial Intelligence, AI-driven personalization, Customer engagement, Customer retention, Customer loyalty, Big Data Analytics, and Digital Marketing*.

On stage beginning, researchers get a number of article Which relevant based on suitability say research key and topic. Next, a literature *screening* and selection process is carried out based on several criteria, namely:

1. Article discuss implementation AI in marketing digital or retention customer;
2. Article own relatedness with *AI-driven personalization* , *customer engagement* , or *customer loyalty* ;
3. Article originate from journal scientific, proceedings, or publication academic Which relevant;
4. Article own context study on business digital, *e-commerce* , or *startup ecosystem* .

Based on this selection process, 11 primary articles were obtained, which served as the theoretical basis and analysis for this study. The research stages include:

1. **Identification Literature**
Gather article scientific Which relevant with theme personalization AI And retention customer.
2. **Selection Literature**
Selecting article based on suitability topic, quality publication, as well as relevance to the context of digital *startups* .
3. **Analysis And Synthesis Data**
Analyze draft, method study, results study, as well as implications practical from each selected literature.
4. **Interpretation Findings**
Integrate various results study For explain connection between AI, marketing personalization, *customer engagement* , and *customer retention* .
Through method This, study capable serve description conceptual about effectiveness AI-based personalization strategies in dealing with the *promo fatigue phenomenon* in Indonesian digital *startups* .

RESULTS AND DISCUSSION

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Summary Findings Literature About Personalization AI And Retention Customer And Challenges of Implementing *Artificial Intelligence* in Customer Retention Strategy

No	Researchers	Focus Study	Findings Main	Implications on Retention Customer
1	Gunawan & Suroso (2025)	AI personalization of <i>customer engagement</i> And <i>loyalty</i>	AI-based personalization increases customer engagement through product recommendations, <i>chatbot</i> , And <i>predictive analytics</i>	Increase loyalty and possible purchase repeat customer
2	Moqaddemi (2025)	<i>AI personalization in intelligent marketing</i>	AI is capable of creating more relevant and <i>real-time customer experiences</i> through analysis data customer	Increase satisfaction customers and strengthen long-term relationships long
3	Zed et al. (2024)	<i>AI-driven personalization on e-commerce</i>	Personalization increases <i>emotional connection</i> , <i>repurchase intention</i> , and <i>brand advocacy</i>	Strengthen customer loyalty to the platform digital
4	Hariguna & Ruangkanjanes (2024)	<i>AI assimilation and customer performance</i>	Integration AI improve <i>customer experience</i> and <i>customer relationship quality</i>	Driving improvement satisfaction And retention customer
5	Huang & Rust (2021)	<i>Strategic framework AI in marketing</i>	AI supports marketing personalization through analysis data and segmentation customer Which more accurate	Increase effectiveness marketing strategy and <i>customer retention</i>

Table 1: Summary Findings Literature About Personalization AI And Retention Customer.

Based on Table 1, most studies show that *Artificial Intelligence -based personalization* has a positive impact on *customer engagement*, *customer satisfaction* , and *customer loyalty* . AI enables companies to understand preferences Customers more accurately through the use of *Big Data*, *machine learning* , and *predictive analytics* . These capabilities result in more relevant product recommendations, more personalized marketing communications, and a better customer experience, which can increase customer retention.

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Challenge	Impact to Company	Impact to Customer
Privacy And security data	Risk violation data And sanctions regulations	Lower trust customer
Bias algorithm	Recommendation product not enough accurate	Customer feel No relevant or discriminated against
Quality data low	Analysis And prediction not enough appropriate	Experience customer become not enough optimal
Over-personalization	Strategy marketing considered too aggressive	arise flavor No comfortable And promo fatigue
Limitations source Power	Cost implementation And maintenance AI tall	Service personalization Not yet optimal

Table 2: Challenge Implementation AI in Strategy Retention Customer.

Meanwhile, Table 2 shows that the success of AI implementation is still influenced by various challenges, especially related to data privacy, algorithm bias, data quality, and *the risk of over-personalization*. By Because That, *startup* digital need apply principle transparency, security data, and ethical use of AI so that the benefits of personalization can be realized without compromising customer trust. Therefore, implementing *AI-driven personalization* requires not only technological readiness but also good data governance, algorithm transparency, and a balance between personalization and the need for effective personalization. and comfort customer so that strategy retention customer can walk in a way effective and sustainable

Shift Strategy Startup Digital from *Promo-Based Marketing* going to *AI-Driven Retention Strategy*

The results of the literature review show that digital *startups* in Indonesia have experienced a significant shift in marketing strategy, namely from mass promotion based approach towards customer retention strategy based *Artificial Intelligence (AI)* And *big data analytics*. Shift the influenced This is driven by the increasing phenomenon of *promo fatigue*, a condition where consumers begin to experience boredom with digital promotions that are repetitive, appear too frequently, and are less relevant to their needs. In recent years, discounts, *cashback*, vouchers, and free shipping have become key tools for digital companies to acquire new customers and retain existing ones. However, intensity promotion Which too high cause consumer the more become accustomed to the promotion so that its differentiation value decreases. As a result, customers become more rational in determine choice platform And tend move service only based on short-term incentives, not because of brand loyalty or the quality of the experience the company provides.

This phenomenon aligns with Moqaddemi's (2025) findings, which explain that modern digital consumers value personalized experiences over mere price incentives. Today's consumers are no longer simply looking for affordable products, but also want experiences that are fast, relevant, convenient, and tailored to their individual preferences. High consumer expectations of digital experience cause Companies must shift their marketing approach from *mass promotion* to *customer-centric personalization*. In this context, digital companies are beginning to realize that customer loyalty cannot be built solely through aggressive promotions, but rather through the ability to deeply understand customer needs and provide valuable experiences on an ongoing basis.

This change in marketing paradigm also reinforced by research by Huang and Rust (2021) which states that AI has transformed function marketing modern through *Mechanical integration AI*,

Thinking AI , and *Feeling AI* . These three types of AI enable companies to automate marketing processes, analyze customer behavior patterns, and understand consumer emotions and preferences in a more complex way. In practice, AI is no longer used solely as a promotional automation tool, but has evolved into a strategic instrument for understanding customer behavior, predicting consumer needs, and creating *hyper-personalized engagement in real time* . This condition shows that modern marketing is increasingly dependent on companies' ability to utilize customer data as a basis for strategic decision-making.

In the context of Indonesian digital *startups* , transforming marketing strategies is becoming increasingly relevant as competition in the digital industry no longer relies solely on price wars, but also on a company's ability to build sustainable customer loyalty. Research by Manrejo et al. (2026) confirms that the synergy between *Big Data* and AI enables companies to generate *real-time analytics* , *market pattern detection* , as well as *optimization performance* Which support process Data-driven decision making. According to Manrejo et al. (2026), AI functions as a *complementary capability* that helps companies generate *strategic insights* and *superior value propositions* in a competitive environment. business digital Which the more competitive. Findings the strengthen argumentation on The introduction states that modern digital *startups* need to make AI not just an operational technology, but as the foundation of long-term business strategy and customer retention.

The results of the study also show that AI-based retention strategies are considered more effective than traditional approaches. promotion conventional Because capable reduce dependence customer to long-term incentives short. Renjith (2015) explain that cost get customer new five time more Retaining existing customers is more important than retaining them. Therefore, companies are starting to utilize *predictive analytics* and *personalized retention strategies* to detect potential *customer churn* and provide more relevant recommendations and offers tailored to customer preferences. This strategy allows companies to take a more proactive approach to customers, thus strengthening relationships. Which formed No Again nature transactional, but develop become connection relational oriented towards customer experience and long-term value.

Implementation AI-driven personalization in Strategy Retention Customer

The research results show that the implementation of *AI-driven personalization* is a key strategy for digital *startups* in increasing *customer retention* and *customer engagement* . AI-based personalization enables companies to understand customer preferences more deeply through *real-time analysis of purchase history* , *browsing activity* , social media interactions, application usage patterns, and consumer behavior . With the support of technologies such as *machine learning* , *deep learning* , and *predictive analytics* , companies are able to generate more relevant product recommendations, promotions, and marketing communications according to each customer's needs. In the context of modern digital marketing, the ability to create personalized experiences is a crucial factor as consumers are increasingly selective about the information and promotions they receive every day.

According to Timimi, Baaddia, And Bennounaa (2025), AI allows company gather and process customer data at scale to generate more relevant, personalized, and *customer-centric experiences* . AI technology enables companies to automatically analyze customer behavior, allowing for faster and more accurate marketing decisions. In the context of digital *startups* , this capability is crucial because digital consumers have expectation tall to experience Which fast, efficient, And in accordance with preference their individual. Therefore, the implementation of AI personalization is seen as a strategic solution to improve quality interaction company with customer at a time strengthen loyalty customers in the long term.

This finding aligns with research by Zed, Kartini, and Purnamasari (2024), which found a significant positive relationship between *AI-driven personalization* and *consumer loyalty in the e-commerce sector* . The study showed that AI personalization has a positive correlation with consumer loyalty ($r = 0.582$; $p < 0.001$) and can increase *repurchase intention* , *brand advocacy* , and *emotional*

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connection . These results indicate that relevant, personalized experiences can create an emotional connection between customers and brands. In other words, customers are no longer just consider price in make decisions purchase, but Also considering the convenience, relevance of the experience, and quality of the interactions the company provides.

In perspective strategic, implementation personalization AI Also strengthen argumentation Manrejo et al. (2026) regarding The importance of integrating AI and *big data* in corporate decision-making processes. According to the study, AI enables companies to generate *strategic insights* based on dynamic customer behavior patterns, enabling them to design more adaptive and targeted marketing strategies. This demonstrates that AI personalization serves not only as a promotional tool but also as a strategic mechanism for building sustainable customer relationships. By optimally leveraging customer data, companies can understand customer needs more deeply and create experiences that consistently increase customer loyalty.

Results study Also show that system recommendation based AI become Wrong One personalization implementation Which most dominant on *startup* digital. System the Work use *collaborative filtering* , *content-based filtering* , and *predictive recommendation* approaches to display products or services that align with user preferences. Moqaddemi (2025) explains that recommendation systems like those used by Amazon and Netflix can increase customer satisfaction because they provide a more relevant experience than generic promotions. In practice, recommendation systems help customers find products that suit their needs more quickly, making the platform experience more convenient and efficient.

Besides That, development *Generative AI* like *ChatGPT* participate expand ability digital marketing personalization. *Startups* can now generate marketing content, product recommendations, and personalized communications. customer Which more dynamic And automatic in scale big. However thus, AI implementation personalization Also face challenge Serious related privacy data, *algorithmic bias* , And risk *Over-personalization* . Gunawan and Suroso (2025) stated that overly aggressive personalization has the potential to cause *digital fatigue* and reduce customer satisfaction levels if companies fail to maintain the relevance and transparency of data usage. Therefore, the effectiveness of AI personalization is determined not only by technological sophistication, but also by a company's ability to maintain a balance between the relevance of personalization and customer trust in the management of their personal data.

Role Big Data Analytics in Understand Customer Behavior

The study results show that the success of AI personalization implementation depends heavily on a company's ability to leverage *big data analytics* to gain a deeper understanding of customer *behavior* . In the digital *startup ecosystem* , data has evolved into a strategic asset with significant value. economy tall Because capable give description about preference, habit, pattern transactions, as well as *real-time* customer behavior trends . The highly dynamic changes in digital consumer behavior causing companies to no longer be able to rely on business intuition solely in making marketing decisions. Instead, companies need to leverage large amounts of data to generate outlook Which more accurate And predictive so that capable maintain Power competition in amidst increasingly tight digital industry competition.

According to Manrejo et al. (2026), *big data analytics* enables companies to perform *real-time analytics* , detecting patterns market, and optimize business decision-making processes more quickly and precisely. The research confirms that AI serves as a *complementary capability* that helps companies process large amounts of data into valuable *strategic insights* . In the context of digital *startups* , this capability is crucial because digital customer behavior tends to change rapidly along with developments in technology, social media, and other trends. And change style life public. By Because That, integration between AI And *big Data* is seen as the main foundation in building a

business strategy that is adaptive, responsive, and oriented towards customer needs.

The research results also show that digital *startups* utilize various sources of customer data. like history transaction, activity application, location users, history search, pattern click, to social media interactions to build a more comprehensive customer profile. The use of this data allows company understand behavior customer No only based on demographic characteristics, but also based on individual preferences and consumption habits. Renjith (2015) explains that *data mining* techniques And *predictive analytics* allows company Predicting potential *customer attrition* allows for more proactive retention strategies. This allows companies to identify customers who are likely to stop using their services before they actually switch to a competitor.

Besides being used For predict *customer churn* , utilization *big data analytics* Also helps companies develop more personalized and relevant marketing strategies. Gunawan and Suroso (2025) found that the combination of *Big Data* , *machine learning* , and *Natural Language Processing (NLP)* enables companies to create *real-time personalized interactions* . This strategy has proven to be effective. increase loyalty customer until 84% as well as increase effectiveness conversion marketing significantly. The findings show that *big data Analytics* doesn't just serve as a tool collection information, but Also as infrastructure main Which support overall ecosystem. AI-based personalization. In other words, the quality of personalization a company produces depends heavily on the quality of its data and its ability to strategically process that data.

In practice, utilizing *big data* also enables digital *startups* to implement *dynamic pricing* , *predictive recommendation* , and *behavioral targeting strategies* more effectively. Moqaddemi (2025) explains that AI's ability to process data in *real time* helps companies adjust promotions and offers based on dynamically changing customer preferences. This allows companies to reduce irrelevant promotions while increasing the effectiveness of marketing communications. Furthermore, data-driven strategies also help companies allocate marketing resources more efficiently because promotions can be given to customers with a higher probability of conversion. Thus, the use of *big data analytics* not only improves the quality of the customer experience but also increases the company's overall operational efficiency.

However, the use of *big data analytics* also presents quite complex challenges related to data security, algorithm transparency, and the ethical use of customer information. et al. (2025) confirm that success implementation AI personalization very influenced by a company's ability to safeguard customer privacy and build trust in transparent data use. Modern digital consumers are increasingly aware of the risks of data misuse. data personal so that company need ensure that collection And Data processing is carried out ethically and in accordance with data protection regulations. If the company fails to maintain transparency use data, so level trust customer can decrease And impact negatively impact customer loyalty. Therefore, digital *startups* need to implement ethical and privacy-focused data management strategies so that the use of *big data analytics* can provide sustainable benefits for both the company and its customers.

Impact AI-driven personalization to Loyalty Customer

The study results show that implementing AI personalization has a significant impact on increasing customer loyalty in digital *startups* . Personalization enables companies to create more relevant and contextual customer experiences, making customers feel understood and valued individually. In an increasingly competitive digital business environment, customer loyalty has become a strategic asset because loyal customers are more likely to make repeat purchases, recommend brands to others, and have a stronger emotional attachment to the company. Therefore, many digital *startups* are starting to utilize AI personalization as a key strategy to retain customers and improve long-term relationships with consumers.

Study Zed, Kartini, And Purnamasari (2024) show that personalization AI in a way significantly influence consumer loyalty by increasing *customer engagement* , *emotional connection* , and *repurchase intention* . Experiences that are relevant and tailored to customer preferences have been

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shown to improve relationships. emotional customer towards the brand so that customers no longer only considering factors price in take decision purchase. Findings it shows that AI-based personalization is capable of creating deeper emotional value than conventional promotional strategies. When customers feel that companies understand needs and preferences them, then the level of customer satisfaction and loyalty tends to increase significantly.

This finding is supported by Hariguna and Ruangkanjanases (2024), who stated that *AI assimilation* has a positive impact on *customer relationship quality* and *customer experience* . AI implementations such as *chatbots* , recommendation systems, and customer service automation help companies provide faster, more personalized, and contextual responses to customer needs. in practice, AI allows company create experience customer Which more Convenient because customers can obtain information, recommendations, and service assistance instantly without having to go through a lengthy process. This demonstrates that AI not only improves a company's operational efficiency but also continuously strengthens the quality of customer relationships .

From a relationship marketing perspective, customer loyalty is no longer built through aggressive promotions alone, but rather through experience Which consistent and valuable. Huang and Rust (2021) explain that AI enables companies to build *relationalization strategies* through a combination of personalization and data-driven emotional interactions. This strategy enables companies to create deeper customer relationships than traditional marketing approaches. oriented on transaction term short. With thus, success company in Customer retention is greatly influenced by a company's ability to build emotional relationships and positive customer experiences through the use of AI technology.

Results study Also show that loyalty customer based AI very influenced by The level of customer trust in the company. Gunawan and Suroso (2025) explain that perceptions of content relevance and trust in data use are key mediators in the relationship between AI personalization and *customer loyalty* . If customers feel that their personal data is used securely and transparently, the effectiveness of personalization will increase. Conversely, concerns about privacy will increase. Data and *information overload* can reduce the effectiveness of personalization if companies are too aggressive in utilizing customer data. This condition indicates that success strategy personalization No only determined by sophistication technology AI, but Also by the company's ability to build a sense of security and customer trust in the management of their personal data.

In this context, Manrejo et al.'s (2026) research is highly relevant because it emphasizes the importance of AI and *big data* as the foundation for strategic decision-making oriented toward creating a *superior value proposition* . Customer loyalty in the digital era is no longer built through massive promotions, but through a company's ability to deeply understand customer needs and consistently deliver valuable experiences. By leveraging AI and *big data analytics* , companies can create more adaptive, personalized, and sustainable customer retention strategies, thereby maintaining customer loyalty amidst increasingly complex digital industry competition.

Implementation on Startup Digital Indonesia

In the Indonesian context, various digital *startups* have implemented AI-based personalization strategies to increase customer retention amidst the phenomenon of *promo fatigue* and industry competition. digital Which the more intensive. Implementation the seen on sector *e-commerce* , *Ride-hailing* , *food delivery* , and even *financial technology* (*fintech*) that utilizes AI and *big data analytics* to gain a deeper understanding of customer behavior. This strategic shift demonstrates that the company digital in Indonesia start switch from approach marketing based promotion mass towards the approach Which more oriented on experience customer (*customer experience*) And loyalty long -term . In practice, companies are no longer solely focused on increasing transaction volumes, but also striving to build emotional connections and customer engagement through more personalized and relevant digital experiences.

Platforms like Gojek utilize AI to analyze user mobility patterns, transaction history, service

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preferences, and app usage habits to provide more relevant service and promotion recommendations. *Machine learning- based systems* enable companies to predict customer needs. customer in a way more accurate so that recommendation service can customized with context and user behavior in *real-time* . In addition, the recommendation feature on the *GoFood service* also utilizes algorithm AI For display restaurant And menu based on history purchase, user location, ordering time, and customer consumption patterns. This strategy helps companies increase the likelihood of repeat service usage *while strengthening customer engagement* through more personalized and efficient experiences.

On sector *e-commerce* , Tokopedia And Shopee has implement AI personalization through product recommendation systems, *dynamic search* , *behavioral targeting* , and user behavior-based advertising. This technology enables the platform to understand customer interests and preferences based on history search, pattern click, And activity transaction so that product Which displayed become more relevant to each user. This strategy not only increases marketing effectiveness, but also help company reduce dependence to promotion mass like discount and *flash sales* . In the competitive context of the digital industry, the ability to deliver a personalized shopping experience is a crucial factor in maintaining customer loyalty and sustainably increasing customer transaction value.

In addition, Traveloka also utilizes *big data analytics* and AI to provide travel recommendations. based on history search, preference destination, pattern transactions, and behavior users on the application. The system enables companies to create more relevant customer experiences. with display recommendation hotel, tickets flight, and package journey Which according to the needs of each customer. The use of AI in the travel sector is important because customer tend own preference And pattern journey Which different. By Because That,

The company's ability to understand customer behavior more specifically can increase the likelihood of *repeat purchases* and strengthen customer loyalty to the platform.

The implementation of AI personalization in Indonesian digital *startups* shows that digital industry competition is starting to shift from promotion-based strategies to customer experience and management-based strategies. connection customer in a way sustainable. Findings this strengthens Manrejo research et (2026) who emphasized that the integration of AI and *big data* has become a strategic foundation in creating competitive advantages for modern digital companies. According to Manrejo et al. (2026), a company's ability to process customer data quickly and accurately enables the creation of *Real- time analytics* and *strategic insights* support more effective business decision-making. Thus, implementing AI in Indonesian digital *startups* not only improves operational efficiency but also serves as a strategic tool for building customer loyalty and maintaining business sustainability in the digital economy era.

Although thus, implementation AI personalization Also face various challenge, especially related to privacy data, security information customer, And transparency algorithm. Consumer digital increasingly modern aware to risk abuse data personal so that company need ensure that data collection and use are carried out ethically and transparently. Gunawan and Suroso (2025) explain that concerns about data privacy can affect the level of customer trust in digital company. Therefore, Indonesian digital *startups need to implement* AI strategies that are not only oriented on effectiveness business, but Also notice aspect ethics, protection personal data , and a balance between technological automation and *the human touch* . With this approach, the implementation of AI personalization is expected to create stronger customer relationships, increase customer loyalty sustainably, and support the long-term growth of Indonesia's digital industry.

CONCLUSION

Based on the results of the literature review, it can be concluded that AI has an important role in improving retention customer on startup digital Indonesia in middle phenomenon promo fatigue. Through the use of *Big Data*, *machine learning*, and *predictive analytics*, AI enables companies to generate strategy marketing Which more personal, relevant, And appropriate target. Personalization based AI has been proven to increase *customer engagement*, customer satisfaction, and loyalty, which ultimately contributes to increased customer retention.

However, AI implementation is not without challenges, such as data privacy, algorithmic bias, suboptimal data quality, the risk of *over-personalization*, and limited technological resources. Therefore, the success of AI implementation depends not only on technological sophistication but also on a company's ability to manage data ethically, transparently, and with a customer-centric approach.

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