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MORALITY BEFORE KNOWLEDGE

Human–tech synergy: How digital marketing 5.0 shapes customer decisions in Pegadaian's digital ecosystem

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ABSTRACT

Background: The acceleration of digital transformation has reshaped consumer behavior within financial service ecosystems, particularly through the adoption of advanced technologies integrating predictive intelligence, contextual personalization, ethical algorithms, and customer experience enhancement. Pegadaian Digital represents a significant example of the integration of Marketing 5.0 principles in Indonesia's financial sector, combining artificial intelligence and human-centered technology to support digital transactions and decision-making processes. However, empirical research assessing how these Marketing 5.0 dimensions influence consumer purchase decisions—especially within state-owned digital financial platforms—remains limited. **Methods:** This study employed a quantitative approach using multiple linear regression analysis with purposive sampling. A total of 130 respondents participated, consisting of active users of the Pegadaian Digital application who engaged within the last six months. Five independent variables were analyzed: Predictive Marketing, Contextual Marketing, Augmented Reality (AR) Marketing, Ethical and Human-Centered Application of Technology, and Customer Journey. **Findings:** The regression model demonstrates statistical significance with an F-value of 51.111 and a p-value < 0.001, indicating that the model effectively predicts consumer decisions. The results reveal that Predictive Marketing (B = 0.224, Sig. = 0.038), Contextual Marketing (B = 0.285, Sig. = 0.015), Ethical and Human-Centered Technology (B = 0.262, Sig. = 0.016), and Customer Journey (B = 0.256, Sig. = 0.012) have a positive and significant effect on consumer decisions. Meanwhile, Augmented Reality Marketing (B = 0.148, Sig. = 0.182) does not significantly influence consumer decision-making. The strongest predictor is Customer Journey (β = 0.229), followed by Ethical Technology and Contextual Marketing. **Conclusion:** Predictive Marketing, Contextual Marketing, Ethical and Human-Centered Technology, and Customer Journey Engagement play a crucial role in shaping consumer purchase decisions in the Pegadaian Digital ecosystem, whereas AR marketing has not yet demonstrated a significant impact. These findings underscore the importance of human–tech synergy in enhancing trust, personalization, and decision effectiveness in digital financial services. **Novelty/Originality of this article:** This study introduces an integrated empirical model examining Marketing 5.0 strategic dimensions collectively within a digital financial environment—an analytical perspective that remains underexplored, especially in state-owned hybrid service institutions.

KEYWORDS: contextual marketing; ethical and human-centered technology; consumer decision; marketing 5.0; predictive marketing.

1. Introduction

The rapid advancement of information and communication technology (ICT) has fundamentally reshaped the global business environment and redefined competitive dynamics across industries. Over the last decade, digital transformation has accelerated at unprecedented levels, reshaping how organizations interact with consumers, communicate

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value, and deliver services. Marketing paradigms have shifted from traditional, product-centric approaches toward technology-empowered and human-centered models that emphasize real-time engagement, personalization, and data-driven decision-support systems (Chaffey & Ellis-Chadwick, 2022). This shift is not merely a technological revolution but a profound transformation in strategic thinking, reflecting a paradigm where digital ecosystems form the backbone of modern business sustainability and customer engagement. The evolution highlights the emergence of marketing as a multidimensional discipline integrating analytical intelligence, automation, and emotional resonance—signaling a new era characterized by Human–Tech Synergy and digital empathy.

Indonesia stands out as one of the largest and fastest-growing digital economies in Southeast Asia, supported by a population exceeding 275 million people and internet penetration of approximately 79% in 2024, positioning the country among the world's top internet-user markets (DataReportal, 2024). With more than 213 million active internet users and 191 million social media users, Indonesian society demonstrates a strong dependency on digital connectivity and online interaction, facilitated by a dominant mobile-first infrastructure in which 98% of users access the internet through smartphones. This demographic and technological landscape presents significant opportunities for organizations to dynamically shape consumer experiences through digital touchpoints and personalized communication strategies.

The digital lifestyle of Indonesian consumers has evolved rapidly, especially during and after the COVID-19 pandemic, which accelerated the adoption of online shopping, mobile banking, digital payments, and remote services across sectors. The pandemic-induced behavioral transformation compelled businesses to redesign customer engagement models through digital ecosystems, inevitably shifting the Indonesian marketing landscape from mass communication and transactional interactions to more humanized, contextual, and experience-oriented digital marketing. While this transformation has advanced rapidly, particularly within financial services, empirical studies examining consumer decision-making within digitally integrated financial environments remain limited. Existing research predominantly focuses on traditional technology adoption variables such as perceived usefulness, ease of use, trust, and user experience (Tiago & Veríssimo, 2014), but rarely incorporates broader strategic constructs aligned with the Digital Marketing 5.0 framework, including predictive marketing, contextual marketing, augmented reality (AR) marketing, and ethical, human-centered technology as determinants of customer decisions (Kotler et al., 2021; Chaffey & Ellis-Chadwick, 2022).

Within Indonesia's financial services landscape, PT Pegadaian (Persero) represents one of the most prominent examples of human–tech synergy and digital transformation in a public enterprise context. Historically known for pawn and gold-based financing through physical outlets since its establishment in 1901, Pegadaian has evolved into a technologically integrated financial ecosystem through the development of Pegadaian Digital Service (PDS), Pegadaian Online, and Tabungan Emas Digital. These platforms enable customers to pawn valuables, invest in gold, and conduct transactions via mobile applications, promoting accessibility, efficiency, and financial inclusivity (Pegadaian Annual Report, 2023). Pegadaian's transformation not only illustrates operational automation but reflects the adoption of Marketing 5.0 principles that combine algorithmic intelligence, personalization, and emotional engagement. Through digital storytelling, educational content, and socially oriented campaigns, Pegadaian strengthens trust, fosters emotional connection, and supports consumer empowerment—demonstrating how empathy and technology may coexist to influence behavioral shifts and encourage digital adoption.

Despite this progress, empirical studies concerning digital transformation within state-owned financial institutions, particularly hybrid service organizations balancing commercial and socio-public responsibilities, remain scarce. Research on AR marketing within financial service environments is still limited and often produces inconsistent or insignificant results, thereby presenting inconclusive evidence regarding its influence on consumer decision-making. Additionally, ethical and human-centered technology—encompassing transparency, fairness, privacy, safety, and data accuracy—has gained global

attention amid rising concerns about data misuse and privacy violations, yet remains profoundly underexplored in Indonesian digital financial contexts (Wilson et al., 2024). This gap is critical in high-risk transactional services such as pawn financing, digital gold investment, and collateral-based lending, where trust and perceived integrity are essential components of consumer decision frameworks.

Moreover, existing studies generally adopt fragmented, single-variable approaches rather than examining the synergistic influence of multiple digital marketing dimensions. Limited scholarship investigates integrated empirical models combining predictive marketing, contextual marketing, AR marketing, and ethical technology—nor evaluates interaction effects moderated by demographic factors, digital literacy, or privacy concerns (Chaffey & Ellis-Chadwick, 2022; Kotler et al., 2021). Consequently, the literature lacks a comprehensive understanding of how Human–Tech Synergy collectively informs customer decision-making within the context of Digital Marketing 5.0.

The emergence of Marketing 5.0, introduced by Kotler, Kartajaya, and Setiawan (2021), marks a conceptual transition from digital automation to empathetic intelligence, where advanced technologies such as artificial intelligence (AI), machine learning, big data, and automation converge with human insight, cultural understanding, and emotional intelligence. Unlike previous marketing eras focused primarily on connectivity and engagement, Marketing 5.0 emphasizes the integration of analytical precision with human sensitivity, enabling organizations to deliver contextually personalized and emotionally resonant experiences that strengthen loyalty and long-term relationships. Within this framework, the Theory of Planned Behavior (Ajzen, 1991) offers a theoretical foundation to explain how digital engagement influences attitudes, perceived control, and social norms—ultimately shaping purchase intentions and decision outcomes in environments characterized by digital interaction and trust-based evaluation.

However, despite increasing conceptual interest, empirical research linking Marketing 5.0 to customer purchase decision-making—particularly within digital financial ecosystems—remains insufficient. Most studies address conceptual discourse rather than measuring behavioral impacts, limiting both theoretical development and managerial applicability. Furthermore, research on Pegadaian's digital transformation remains predominantly descriptive, providing limited evidence regarding how AI-driven personalization, ethical algorithms, and digital empathy shape purchasing decisions in high-credibility financial product categories.

Given these gaps, this study aims to investigate how Marketing 5.0 strategies—specifically the integration of technology and human empathy—influence customer purchase decisions within Pegadaian's digital ecosystem. The findings are expected to contribute to academic discourse by developing an integrated empirical model and offer practical implications for strengthening digital financial service strategies in Indonesia.

1.1 Predictive marketing

In the era of data-driven decision-making, predictive marketing has emerged as a key strategic approach enabling organizations to anticipate consumer behavior and optimize marketing outcomes. Predictive marketing integrates artificial intelligence (AI), machine learning (ML), and big data analytics to forecast future consumer actions such as purchase intent, churn probability, or product preferences. This approach allows marketers to personalize experiences, allocate budgets efficiently, and improve return on marketing investment (ROI) (Martínez-Garmendia, 2024).

The theoretical foundation of predictive marketing lies in the combination of predictive analytics theory and consumer behavior models. Predictive analytics employs statistical and computational methods—such as regression models, decision trees, and neural networks—to identify patterns within historical data that predict future outcomes (Pauwels & Joshi, 2016). From a marketing perspective, it builds upon classical theories of segmentation, targeting, and positioning (STP), while extending them through real-time data and automation. Moreover, predictive marketing aligns with the technology

acceptance model (TAM) and data-driven marketing theory, emphasizing the role of data intelligence in shaping customer engagement strategies (Sarstedt & Liu, 2024).

In the context of Marketing 5.0, predictive marketing serves as a bridge between human empathy and technological capability. It enables firms to deliver contextually relevant and personalized messages that reflect not only what consumers have done, but what they are likely to do next (Kotler et al., 2021). By leveraging predictive insights, organizations can enhance customer satisfaction, retention, and long-term value, positioning predictive marketing as a vital capability in modern marketing management.

1.2 Contextual marketing

In today's hyper-digitalized environment, consumers are constantly bombarded with promotional messages from multiple platforms. This information overload has significantly reduced the effectiveness of traditional mass-marketing strategies that fail to address individual preferences and needs. To overcome this limitation, marketers have shifted toward more context-driven approaches that focus on personalization and relevance (Hanna, 2022). One of the most significant developments in this domain is Contextual Marketing, an approach that integrates data analytics, real-time technology, and consumer context to deliver tailored marketing messages.

Contextual Marketing refers to the practice of delivering personalized content, advertisements, or product recommendations based on the user's current situation—such as their browsing behavior, location, device type, time of day, or current activity (Deacon & Harris, 2011). Unlike behavioral marketing, which primarily depends on historical tracking through cookies, contextual marketing emphasizes real-time data and situational context to ensure relevance while maintaining consumer privacy (Ruiz-Ruiz, García-Sánchez, & Gómez-Tornero, 2021).

The importance of contextual marketing lies in its ability to enhance customer experience, engagement, and conversion rates through the delivery of messages that are meaningful and timely. According to Luo and Seyedian (2003/2004), contextual marketing positively influences customer satisfaction and loyalty, particularly in digital and e-commerce environments. Similarly, Vanessa and Japutra (2021) found that contextual triggers derived from customer purchase patterns can significantly improve message timing and conversion rates in online retail settings.

Contextual marketing is aligned with the philosophy of Marketing 5.0, which integrates artificial intelligence (AI), big data, and human-centered technology to provide value-driven, ethical marketing experiences (Kotler & Keller, 2016). This modern marketing paradigm promotes the use of technological tools not merely for efficiency, but to create emotionally intelligent interactions between brands and consumers.

However, the application of contextual marketing also raises several challenges, including issues of data privacy, technological infrastructure, and ethical data use (Waspada.id, 2023). As governments implement stricter privacy laws, such as the General Data Protection Regulation (GDPR), marketers must balance personalization with compliance and consumer trust. Despite these challenges, contextual marketing remains an essential strategy for achieving engagement, differentiation, and long-term relationship building in the digital ecosystem.

1.3 Augmented reality marketing

In the rapidly evolving landscape of digital marketing, Augmented Reality (AR) has emerged as one of the most transformative technologies reshaping how brands communicate, engage, and build relationships with consumers. Augmented Reality refers to the integration of digital information—such as text, images, audio, or 3D models—into a user's perception of the real-world environment, typically through smartphones, tablets, or wearable devices. Unlike Virtual Reality (VR), which creates entirely artificial

environments, AR enriches the physical world with contextually relevant digital elements, enabling consumers to interact with both simultaneously (Rauschnabel et al., 2022).

The increasing accessibility of AR technology, driven by advances in mobile computing, 5G connectivity, and artificial intelligence, has allowed marketers to develop more immersive, interactive, and personalized brand experiences. From virtual try-ons in fashion and cosmetics (e.g., Sephora, IKEA Place) to gamified retail experiences and AR-enhanced advertisements on social media platforms, AR marketing represents a paradigm shift from traditional one-way communication toward experiential and participatory engagement (Javornik, 2016; Heller et al., 2021).

Theoretically, AR marketing aligns with several foundational concepts in consumer behavior and marketing communication. Drawing upon Experiential Marketing Theory (Schmitt, 1999), AR enhances the sensory and affective dimensions of the customer journey, providing vivid, memorable experiences that influence attitudes and emotional attachment to brands. The Technology Acceptance Model (TAM) (Davis, 1989) and Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh et al., 2003) also provide useful frameworks to understand user adoption of AR technology, emphasizing perceived usefulness, ease of use, and enjoyment as key predictors of behavioral intention.

Furthermore, the Flow Theory (Csikszentmihalyi, 1990) explains how interactive and immersive features of AR can generate a state of deep engagement, wherein users lose track of time and become fully absorbed in the experience. This psychological immersion can significantly enhance brand engagement and purchase intention (Scholz & Duffy, 2018). From a communication standpoint, AR also increases media richness and interactivity, offering consumers greater control and participation in co-creating brand meaning (Yim et al., 2017).

In the era of Marketing 5.0—characterized by the convergence of human empathy and technological advancement (Kotler, Kartajaya, & Setiawan, 2021)—AR plays a central role in bridging the physical and digital (phygital) realms. It enables marketers to deliver context-aware, real-time experiences that respond to consumers' environments, emotions, and preferences. Such integration of AR aligns with predictive marketing and contextual marketing strategies, where data-driven insights are used to personalize interactions and anticipate consumer needs.

Empirical research increasingly supports the effectiveness of AR in marketing contexts. Studies show that AR applications can enhance brand attitude (Rauschnabel et al., 2019), perceived enjoyment (Yim & Park, 2019), purchase intention (Jessen et al., 2020), and brand trust (de Oliveira, 2023). At the same time, challenges persist regarding technological limitations, cost, privacy, and the need for standardization across devices and platforms. Given its potential to revolutionize customer experiences, AR marketing has become a key research domain bridging marketing, psychology, and information systems.

1.4 Ethical and human-centered application of technology

The rapid digital transformation in the global economy has intensified the need for an ethical and human-centered approach to technology. As artificial intelligence (AI), big data analytics, and automation become embedded in everyday consumer experiences, questions about human autonomy, fairness, and privacy have emerged as critical determinants of technological trust and acceptance (Floridi et al., 2018; Dignum, 2019). A human-centered perspective emphasizes designing and deploying technologies that enhance human well-being, protect individual rights, and reflect social values (Wang et al., 2023). This framework moves beyond traditional notions of efficiency or innovation, focusing instead on whether technologies align with human dignity, inclusivity, and ethical responsibility (Bolte et al., 2022).

The ethical application of technology refers to the principled development and use of technological systems that respect moral and social norms. Floridi (2019) highlights that ethical digital ecosystems should prioritize beneficence, non-maleficence, justice, and respect for autonomy. Similarly, the AI4People framework (Floridi et al., 2018) proposes

that technologies should be designed "for the good of humanity" — fostering trust and mitigating harms such as bias, surveillance, and discrimination. A human-centered approach complements this ethical dimension by embedding user participation, transparency, and inclusivity in every stage of technology design (Norman, 2019; Calvo et al., 2020). In this paradigm, technology is not an autonomous force but a partner in human flourishing, reinforcing the role of empathy, accountability, and shared values in digital innovation (Dignum, 2019).

From a marketing and consumer-behavior perspective, ethical and human-centered technology has a profound influence on purchase decisions. Contemporary consumers are increasingly guided by value-based criteria when selecting products and brands (Sheth, 2021). Research shows that consumers tend to favor companies perceived as socially responsible, transparent, and ethically driven, even when such products command higher prices (Lim et al., 2022). The integration of human-centered ethics into technology development—such as privacy-by-design features, explainable AI systems, or sustainable production practices—can thus become a powerful driver of purchase intention and brand loyalty.

Moreover, the ethical dimension of technology usage contributes to trust formation during the purchase decision process. According to the Technology Acceptance Model (TAM) and its ethical extensions (Pavlou & Gefen, 2004; McKnight et al., 2011), user trust mediates the relationship between perceived ethics and purchase behavior. When users perceive that a technology respects their privacy, provides fair treatment, and aligns with their moral expectations, they are more likely to adopt and recommend it. Conversely, ethical lapses—such as data misuse or algorithmic discrimination—undermine consumer confidence, resulting in negative brand perception and purchase avoidance (Martin et al., 2020).

In digital marketing ecosystems, the ethical and human-centered application of technology can therefore be viewed as a strategic advantage. By embedding ethical design principles and human values into digital platforms, organizations can differentiate themselves through authenticity and trustworthiness (Wang et al., 2023). For instance, companies like Apple and Patagonia have built strong ethical brands around data privacy and sustainability, influencing not only consumer attitudes but also the psychological processes underlying purchase decisions. These include enhanced perceived value, emotional engagement, and long-term loyalty—key elements of Marketing 5.0, where technology serves humanity rather than the reverse (Kotler et al., 2021).

In conclusion, the ethical and human-centered application of technology is not merely a moral imperative but a strategic determinant of consumer behavior and purchase decisions in the digital age. Organizations that integrate ethics into their technological ecosystems will likely experience higher consumer trust, satisfaction, and retention. As technology continues to evolve, the central challenge for marketers and technologists alike is ensuring that innovation remains aligned with human values, social justice, and ethical integrity, shaping not only what consumers buy, but also why they buy.

1.5 Customer journey engagement

In the era of digital transformation, understanding how consumers engage across multiple touchpoints has become essential for marketing effectiveness. The concept of the customer journey encompasses the full process through which consumers move—from initial awareness, consideration, and evaluation, to purchase and post-purchase behavior (Lemon & Verhoef, 2016). Within this journey, customer engagement refers to the emotional, cognitive, and behavioral investment customers make as they interact with a brand (Brodie et al., 2011). Effective engagement is not only about transactional interactions but also about co-creating value and fostering long-term relationships that influence customer perceptions, attitudes, and ultimately, purchase decisions.

Customer journey engagement integrates both online and offline experiences, emphasizing that the path to purchase is rarely linear. Instead, customers dynamically

switch between channels and devices, interacting with brands through various digital platforms and physical touchpoints (Court et al., 2009; Verhoef et al., 2021). These interactions collectively shape brand perceptions and decision-making outcomes. When customers engage actively—by seeking information, comparing alternatives, and providing feedback—they become more emotionally and cognitively attached to the brand, which increases the likelihood of purchase (Islam & Rahman, 2017).

Moreover, engagement functions as a mediator between marketing stimuli and purchase intentions. According to Hollebeek et al. (2014), customer engagement acts as a motivational driver that strengthens brand trust and satisfaction, which are critical antecedents of purchase decisions. This implies that high levels of engagement during the customer journey—through personalized communication, responsive customer support, and immersive digital experiences—can reduce perceived risk and enhance confidence in decision-making (Calder, Malthouse, & Maslowska, 2016). Consequently, marketers who focus on optimizing engagement across touchpoints are more likely to convert prospective consumers into loyal customers.

In addition, engagement-driven journeys influence post-purchase behaviors, such as repeat purchases and word-of-mouth advocacy. Research indicates that customers who experience meaningful engagement are more willing to recommend and repurchase, creating a cyclical reinforcement of the purchase decision process (Kumar & Pansari, 2016). The growing prevalence of data analytics and AI-enabled marketing tools further allows firms to track and enhance engagement in real time, enabling predictive insights into future purchasing behavior (Lemon & Verhoef, 2016; McKinsey & Company, 2020).

In summary, customer journey engagement serves as a strategic foundation for influencing consumer purchase decisions. It links emotional and behavioral involvement to marketing outcomes by ensuring that each interaction adds value to the customer experience. As digital ecosystems become increasingly interconnected, organizations must focus on delivering consistent, engaging, and ethical customer experiences that not only drive conversions but also nurture long-term loyalty.

2. Methods

The population of this study consists of all active users of the Pegadaian Digital application in Indonesia who have engaged in interactions within the last six months. Since an official population list was not available, this research employed a purposive sampling technique with the following inclusion criteria: (1) respondents aged 17 years or older, (2) having used the Pegadaian Digital application at least once within the last six months, and (3) willing to participate in the survey. To enhance representativeness, a quota-stratified purposive sampling approach was applied based on age categories and frequency of application usage. The final sample analyzed consisted of 130 respondents. This sample size meets the practical requirements for multiple regression analysis (Tabachnick & Fidell: $N > 50 + 8m$ (Tabachnick & Fidell, 2019); Green: $N > 104 + m$ (Green, 1991)), and therefore is considered adequate for examining the influence of the five independent variables on consumer decision-making.

3. Results and Discussion

3.1 Results

The table presents the item-total statistics from a validity test conducted with 30 respondents. The results indicate strong internal consistency and validity of the scale. The Scale Mean if Item Deleted values suggest that removing any individual item has minimal impact on the overall mean score, reflecting that each item is closely aligned with the scale's intended construct. The Scale Variance if Item Deleted values show that deleting any item does not significantly increase variability, further supporting the scale's stability. The

Corrected Item-Total Correlation values, which range from moderate to strong across all items, indicate that each item is well-correlated with the total scale, confirming that the items measure the same underlying construct. Additionally, the Squared Multiple Correlation values highlight that each item explains a substantial portion of the variance in the total scale. Lastly, Cronbach's Alpha if Item Deleted values consistently remain above 0.98, demonstrating excellent internal consistency and suggesting that the scale is highly reliable, even when individual items are removed. Overall, the results confirm that the scale possesses both high validity and reliability, making it an effective tool for measurement in this context.

Table 1. Validity results

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
VAR00001	177.2000	1084.372	0.835	0.982
VAR00002	176.8667	1106.809	0.671	0.982
VAR00003	176.9000	1116.576	0.541	0.982
VAR00004	176.7667	1103.840	0.722	0.982
VAR00005	177.2000	1084.372	0.835	0.982
VAR00006	177.0000	1094.138	0.739	0.982
VAR00007	176.7667	1110.944	0.585	0.982
VAR00008	177.0667	1105.306	0.636	0.982
VAR00009	177.0667	1123.375	0.379	0.983
VAR00010	176.8000	1106.510	0.596	0.982
VAR00011	177.1667	1085.178	0.849	0.982
VAR00012	177.2333	1106.392	0.509	0.983
VAR00013	176.8667	1109.568	0.531	0.983
VAR00014	176.8667	1106.809	0.671	0.982
VAR00015	176.7333	1105.306	0.608	0.982
VAR00016	177.0667	1099.168	0.683	0.982
VAR00017	177.1000	1094.714	0.655	0.982
VAR00018	177.2000	1090.648	0.795	0.982
VAR00019	177.0333	1100.240	0.766	0.982
VAR00020	176.9333	1095.857	0.783	0.982
VAR00021	177.4000	1105.352	0.616	0.982
VAR00022	176.9000	1101.128	0.615	0.982
VAR00023	176.8667	1095.775	0.732	0.982
VAR00024	177.2333	1087.289	0.822	0.982
VAR00025	177.1667	1085.178	0.849	0.982
VAR00026	176.6333	1098.171	0.773	0.982
VAR00027	176.8000	1093.890	0.780	0.982
VAR00028	176.9333	1101.651	0.530	0.983
VAR00029	177.3667	1096.861	0.646	0.982
VAR00030	177.3000	1088.217	0.698	0.982
VAR00031	176.7667	1102.668	0.745	0.982
VAR00032	176.8333	1099.799	0.775	0.982
VAR00033	176.8000	1104.097	0.669	0.982
VAR00034	176.6333	1100.171	0.673	0.982
VAR00035	176.6333	1097.482	0.785	0.982
VAR00036	176.7333	1098.892	0.790	0.982
VAR00037	176.7667	1094.530	0.815	0.982
VAR00038	176.7667	1102.254	0.541	0.983
VAR00039	176.9667	1091.551	0.852	0.982
VAR00040	176.9333	1089.651	0.891	0.982
VAR00041	177.2000	1094.579	0.732	0.982
VAR00042	177.0000	1085.379	0.880	0.982
VAR00043	177.1000	1084.852	0.823	0.982
VAR00044	176.9667	1093.895	0.851	0.982
VAR00045	177.0333	1086.378	0.895	0.982

VAR00046	177.3000	1098.217	0.687	0.982
VAR00047	177.0667	1091.099	0.815	0.982
VAR00048	176.9667	1092.999	0.867	0.982
VAR00049	177.1667	1091.247	0.850	0.982
VAR00050	177.3333	1096.920	0.864	0.982

The reliability statistics provided indicate the internal consistency of the scale used in the study. The Cronbach's Alpha value is 0.982, which suggests excellent reliability for the scale. Cronbach's Alpha measures the extent to which all items on the scale are consistent with each other. A value above 0.8 generally indicates good reliability, and a value above 0.9 indicates excellent reliability, as seen in this case. The Cronbach's Alpha Based on Standardized Items is 0.983, which is slightly higher, reflecting the reliability of the scale when the items are standardized. This metric suggests that the items maintain strong internal consistency even when adjusted for scale differences. Finally, the table indicates that the scale consists of 50 items, further reinforcing that the scale is comprehensive, yet still demonstrates high reliability across a large number of items. Overall, these statistics confirm the scale's strong internal consistency, making it a reliable tool for measurement in the given context.

Table 2. Reliability results

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
0.982	0.983	50

The ANOVA results show that the regression model used in this study is statistically significant. The significance value (Sig.) is < 0.001, which is far below the threshold of 0.05, indicating that the independent variables collectively influence the dependent variable, Consumer Decisions (VAR00006). The F-value obtained is 51.111, demonstrating a strong model fit and suggesting that the combination of Predictive Marketing (VAR00001), Contextual Marketing (VAR00002), AR Marketing (VAR00003), Ethical and Human-Centered Application of Technology (VAR00004), and Customer Journey (VAR00005) significantly contributes to predicting consumer decision outcomes.

Table ANOVA shows a Regression Sum of Squares (SS Regression) of 2298.068 with 5 degrees of freedom, and a Residual Sum of Squares of 1160.035 with 129 degrees of freedom. This indicates that a substantial portion of the variance in Consumer Decisions can be explained by the independent variables included, while the remaining variance is attributed to factors outside the model. The Mean Square Regression value of 459.614 compared to the Mean Square Residual of 8.993 further supports that the model has strong explanatory power.

Table 3. F-Test results

Model		Sum of squares	df	Mean square	F	Sig.
1	Regression	2298.068	5	459.614	51.111	<0.001[b]
	Residual	1160.035	129	8.993		
	Total	3458.104	134			

[a]dependent variable: VAR00006

[b]Predictors: (Constant), VAR00005, VAR00001, VAR00003, VAR00002, VAR00004

Based on the multiple linear regression analysis, Predictive Marketing (VAR00001), Contextual Marketing (VAR00002), Ethical and Human-Centered Application of Technology (VAR00004), and Customer Journey (VAR00005) show a statistically significant effect on Consumer Decisions (VAR00006). This can be seen from the significance values (Sig.) which are below 0.05, indicating that each variable contributes meaningfully to the prediction of consumer decision outcomes. Predictive Marketing has a regression coefficient (B = 0.224, Sig. = 0.038), suggesting that an increase in predictive marketing efforts tends to improve consumer decision-making. Contextual Marketing also shows a positive and significant

effect (B = 0.285, Sig. = 0.015), which implies that personalized and context-based marketing communication increases consumer decision accuracy.

Table 4. Multiple linear regression results

Coefficients[a]						
Model		Unstandardized B	Coefficients Std. Error	Standardized Coefficients beta	t	Sig.
1	(Constant)	-5.927	2.420		-2.449	0.016
	VAR00001	0.224	0.107	0.157	2.095	0.038
	VAR00002	0.285	0.115	0.213	2.469	0.015
	VAR00003	0.148	0.110	0.123	1.343	0.182
	VAR00004	0.262	0.108	0.232	2.435	0.016
	VAR00005	0.256	0.101	0.229	2.544	0.012

Meanwhile, Augmented Reality (AR) Marketing (VAR00003) does not have a significant effect on Consumer Decisions, with a significance value above 0.05 (B = 0.148, Sig. = 0.182). This result indicates that AR-based marketing strategies are not yet influential enough in shaping consumer purchasing decisions within the context of this research. Ethical and Human-Centered Application of Technology (VAR00004) has a positive significant influence (B = 0.262, Sig = 0.016), demonstrating that transparency, fairness, and responsible technology practices can increase consumer trust and strengthen decision-making behavior. Customer Journey (VAR00005) also significantly impacts consumer decisions (B = 0.256, Sig. = 0.012), showing that a well-designed customer experience across touchpoints enhances consumers' final purchasing choices.

The standardized coefficients (Beta) indicate the strongest predictor is Customer Journey (β = 0.229), followed by Ethical and Human-Centered Technology (β = 0.232) and Contextual Marketing (β = 0.213), while AR Marketing has the weakest predictive power (β = 0.123). The negative constant value (-5.927) indicates the baseline level of consumer decisions when all independent variables are assumed to be zero.

Table 5. Model diagnostics results

Model Summary[b]				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.901[a]	0.813	0.806	3.224

a. Predictors: (Constant), X5, X1, X2, X3, x4
b. Dependent Variable: Y1

The regression analysis model reveals that the five predictors—Customer Journey (X5), Predictive Marketing (X1), Contextual Marketing (X2), AR Marketing (X3), and Ethical and Human-Centered Application (X4)—are significant factors influencing Customer Decisions (Y1). The model demonstrates a strong correlation with an R value of 0.901, indicating a robust relationship between the predictors and the dependent variable. The R Square value of 0.813 means that approximately 81.3% of the variance in customer decisions can be explained by these factors, showcasing the model's strong explanatory power. The Adjusted R Square value of 0.806, which accounts for the number of predictors, still reflects a high model fit, indicating that the predictors remain relevant and impactful. Additionally, the Standard Error of the Estimate (3.224) suggests reasonable accuracy in the model's predictions. Overall, the model successfully highlights the significant role these marketing strategies and applications play in shaping customer decisions.

3.2 The influence of predictive marketing on customer decisions

Predictive marketing is a data-driven marketing approach that utilizes machine learning, predictive analytics, and artificial intelligence to forecast consumer behavior, preferences, and future decision patterns. In the context of consumer decision-making, predictive marketing functions as a mechanism that delivers personalized

recommendations, anticipates purchase intentions, and optimizes marketing interactions. These capabilities enable consumers to make purchasing decisions more quickly, more accurately, and in ways that align closely with their individual needs (Wedel & Kannan, 2016).

Research by Azad et al. (2023) demonstrates that integrating the Theory of Planned Behavior with predictive models significantly enhances the accuracy of forecasting online purchase decisions. AI-based models are capable of identifying intention patterns that traditional analytical approaches fail to capture, thereby influencing consumer decisions during both the evaluation and purchase stages. Furthermore, Martínez-Garmendia (2024) confirms that machine learning algorithms such as gradient boosting and neural networks can predict product choices with high precision, ultimately shaping purchase decisions through more effective personalization of recommendations and customer segmentation.

Kasemrat et al. (2025) also reveal that predictive marketing has a direct impact on consumer decision-making by leveraging predictive models to identify key decision drivers, such as price sensitivity, value perceptions, and digital behavior patterns. When consumers receive relevant messages, timely communications, and offers aligned with their preferences, they are more likely to make purchasing decisions quickly and positively.

Moreover, Pinheiro & Cavique (2025) explain that uplift modeling enables firms to measure the direct effect of marketing interventions on consumer decision outcomes. This means predictive marketing not only identifies who is likely to buy but also determines who is influenced specifically because of the marketing intervention itself. This strengthens the evidence that predictive marketing plays a causal role in shaping and modifying consumer decisions.

Studies examining the Pegadaian Digital application indicate that branch management and academic researchers have begun utilizing analytical tools to monitor digital campaign performance and customer behavioral patterns—elements that form the basis of predictive marketing. Through data generated from app usage (e.g., transaction frequency, product views, and campaign responses), Pegadaian has the potential to develop predictive models for product recommendations and customer retention. Several field studies recommend improving data quality and updating customer information to enable more accurate predictive analytics in Pegadaian's marketing strategy (Pertiwi, 2025; Universitas Pahlawan, 2024/2025).

3.3 The influence of contextual marketing on customer decisions

Contextual marketing, particularly in mobile and online environments, can significantly influence consumer decision-making by shaping attitudes toward advertising and, consequently, purchase intentions. For example, Wang et al. (2022) show that key characteristics of contextual mobile advertising—such as content accuracy and contextual interaction—positively affect consumers' attitudes towards those ads, which in turn increases their purchase intention. According to this study, when users perceive that the ad content is highly relevant to their current context (e.g., their location or task), they are more likely to evaluate the ad positively and therefore consider buying.

Another relevant concept is from the Consumer Contextual Decision-Making Model (CCDMM) proposed by Suomala (2020), which posits that consumers use mental "contextual models" when making decisions: they match current real-life situations with prior mental models of that context, and this matching process guides their purchase behavior. In other words, contextual marketing taps into these mental models to make advertising more salient and persuasive, because the message fits the "scene" that a consumer mentally simulates when deciding.

Privacy concerns also moderate this relationship. Irgui (2024) found that consumers' perceived privacy risk in contextual marketing affects how much they trust the brand and how likely they are to remain loyal. If consumers feel that contextual targeting invades their privacy, the positive effect on decision-making may be weakened, meaning that trust and ethical use of data are important for contextual marketing to effectively influence choices.

Research on omnichannel integration among Pegadaian Digital users shows that customer engagement and trust are influenced by the consistency of experiences across channels (mobile app, website, and physical outlets). Contextual marketing—delivering relevant messages tailored to specific channels, locations, and customer journey phases—has been recommended as a strategy to increase conversion and loyalty. Several field studies indicate that channel integration, personalized messages, and communication relevance significantly mediate customer satisfaction and purchase decisions in Pegadaian's digital ecosystem (Marbun, 2023).

3.4 The influence of ar marketing on customer decisions

Although Augmented Reality (AR) has become a popular digital marketing tool, several empirical studies indicate that AR marketing does not always exert a direct impact on consumer decision-making. Research suggests that the effectiveness of AR depends heavily on contextual and psychological factors, rather than the technology itself. For instance, Rauschnabel, Felix, and Hinsch (2019) found that while AR can enhance inspiration and brand experience, its direct influence on purchase intention remains weak unless mediated by emotional engagement or perceived value. Similarly, Yim and Park (2019) reported that AR-based virtual try-on applications do not significantly affect purchase decisions when consumers perceive high cognitive effort or discomfort during the interaction. In some cases, AR features may even lead to information overload, reducing clarity and confidence in decision-making (Heller et al., 2021). Moreover, Hilken et al. (2017) demonstrated that AR's impact is limited when consumers lack trust in the accuracy of AR visualizations, indicating that technological novelty alone is insufficient to shape decisions. Overall, these studies highlight that although AR can enrich customer experience, it does not automatically translate into purchase decisions unless supported by usability, trust, and perceived benefit.

Research on Pegadaian's digital transformation consistently shows that customer decisions are primarily influenced by functional factors such as system quality, transactional convenience, trust, financial literacy, and service transparency—without reliance on immersive or experiential technologies like Augmented Reality. Since Pegadaian Digital Services do not implement AR features in their app or promotional ecosystem, existing studies confirm that AR has no direct or measurable impact on customer decision-making within Pegadaian's context. Instead, customer behavior is shaped by core service attributes, especially security, ease of use, and channel integration, indicating that AR-based marketing remains irrelevant to the determinants of consumer decisions in Pegadaian's digital environment (Witjaksono, 2024; Putri & Fadhilah, 2024).

3.5 The influence of ethical and human-centered application customer decisions

The implementation of ethical and human-centered technology has become an increasingly critical factor in influencing consumer decision-making. Technology designed with principles of transparency, fairness, privacy, and user control enhances consumer trust in a brand, ultimately encouraging purchase intentions and final buying decisions. When consumers perceive that digital systems respect their rights and autonomy, their sense of security and perceived value increase significantly, which positively affects their willingness to engage in transactions. Additionally, Morley et al. (2020) emphasize that ethical technology practices—such as strong data protection and unbiased algorithms—strengthen perceptions of fairness and reduce consumer resistance to adopting new technologies. A human-centered approach also fosters a more personalized and inclusive experience, improving usability and satisfaction, both of which are essential determinants of purchase decisions. Therefore, the stronger the application of ethical and human-centered technology, the greater the trust and comfort consumers feel, ultimately exerting a positive impact on their purchasing decisions.

Studies discussing digital transformation in Pegadaian and other Indonesian non-bank financial institutions emphasize the need for human-centered design, ethical compliance

(including alignment with Sharia principles in Pegadaian Syariah), and trust protection. These studies highlight the importance of accessibility for older users, data security, transparency of product information, and culturally appropriate communication. Therefore, digital innovation at Pegadaian should be guided by human-centered design principles and ethical technology governance to maintain customer trust and satisfaction (Nasution, 2025; Wahyuni, 2023).

3.6 The influence of customer journey customer decisions

The customer journey variable in marketing refers to the sequence of stages consumers go through—from awareness, consideration, and decision, to post-purchase—while interacting with a brand across various touchpoints. Marketing literature emphasizes that the customer journey unfolds through multiple channels and media, shaping both the overall consumer experience and subsequent purchase decisions (Lemon & Verhoef, 2016; McColl-Kennedy et al., 2015). Research accessible through platforms such as Pure and ScienceDirect also highlights that each stage of the journey contributes uniquely to consumer perceptions and evaluations, ultimately influencing behavioral outcomes.

In the study The Impact of Customer Journey and Trust on Purchasing Decisions for Quality Furniture in the Digital Era: A Serial Mediation Analysis by Raditya, Utami, and Chan (2023), the customer journey variable was found to significantly influence purchase decisions through the mediating role of customer trust. The findings demonstrate that when consumers experience a well-structured journey—characterized by smooth interactions, adequate information, and positive experiences throughout awareness, information search, evaluation, and purchase stages—this enhances their trust in the product or brand, which subsequently strengthens their purchase decision (Raditya et al., 2023).

Theoretically, an optimized customer journey allows firms to identify the "moments of truth"—critical points in the process that most strongly shape consumer decisions. McKinsey & Company (2009) argue that influencing consumers at these decisive touchpoints is essential for guiding them toward a favorable purchase outcome. This view reinforces the importance of designing and managing customer journeys strategically to ensure that each interaction adds value and reduces friction.

Therefore, the customer journey variable is not merely a set of sequential stages, but a strategic mechanism through which consumer experiences at every touchpoint can meaningfully affect purchase decisions. This underscores the necessity for companies to manage touchpoints consistently and effectively so that the customer journey can support and enhance actual buying behavior.

Field studies conducted in Medan, Bandung, and Jakarta show that customer engagement plays a crucial role in the adoption of Pegadaian Digital services. Using models such as D&M IS Success and e-satisfaction mediation frameworks, researchers found that app quality (usability), satisfaction, and channel integration between digital and physical branches significantly influence customer loyalty. For Pegadaian Digital, improving onboarding experience, creating personalized communication at each customer journey stage (awareness → consideration → transaction → after-service), and tracking engagement metrics are strongly recommended to strengthen digital loyalty (Witjaksono, 2024; Putri & Fadhilah, 2024).

This study has several limitations that should be considered when interpreting the findings. First, the sampling technique used was purposive sampling, which may limit the generalizability of results to the broader population of Pegadaian Digital users in Indonesia. Second, the study relied on self-reported survey responses, which may be affected by response bias, subjective perception, and recall inaccuracy. Third, the research only analyzed five independent variables and did not include other potential influential factors such as brand trust, service quality, digital literacy, or perceived risk. Additionally, Augmented Reality marketing remains relatively unfamiliar to most respondents, which may explain its insignificant effect. Finally, data collection was conducted during a specific

timeframe, so the results may change due to market dynamics, technological development, or shifts in user behavior.

Future studies are recommended to employ probability sampling techniques or enlarge the sample size to improve representativeness and external validity. Researchers may also compare different user segments—such as by region, occupation, or financial preference—to gain deeper insights into behavioral variations. Additional variables such as brand trust, technology acceptance (TAM/UTAUT), perceived usefulness, perceived risk, satisfaction, and service quality could be integrated to broaden the conceptual model. Longitudinal or mixed-method approaches may also provide stronger causal interpretation and richer qualitative insights. Since AR marketing showed no significant effect, future research is encouraged to explore technology readiness, customer education, or financial product suitability before AR implementation. Comparative studies between Pegadaian and other digital financial platforms (e.g., bank apps, fintech lending, or e-wallets) are also recommended to understand competitive positioning and cross-industry digital experience.

4. Conclusions

Based on the results of the multiple linear regression analysis, this study concludes that Predictive Marketing, Contextual Marketing, Ethical and Human-Centered Application of Technology, and Customer Journey significantly influence Consumer Decisions among users of the Pegadaian Digital application in Indonesia. The statistical evidence indicates that all four variables demonstrate significance values below the threshold of 0.05, confirming their meaningful role in shaping decision-making behavior. These findings imply that the more effectively these digital marketing strategies are planned and executed, the stronger their positive contribution toward increasing consumer confidence, intention, and final purchase or usage decisions. Among these variables, Customer Journey emerges as the strongest predictor, emphasizing the critical importance of providing seamless, consistent, and value-creating experiences across every consumer touchpoint—starting from initial awareness through post-purchase service. This reinforces the idea that consumer decision outcomes are heavily influenced by emotional satisfaction, service continuity, and the perception of long-term relational value.

In contrast, Augmented Reality (AR) Marketing is shown to have no significant effect on consumer decisions in the context of Pegadaian's digital financial services. This outcome suggests that immersive or experiential marketing technologies may not yet be considered essential, relevant, or functionally influential for users whose priority is reliability, transaction convenience, and security rather than interactive visualization features. The insignificant result also indicates that innovation adoption must align with user needs, market readiness, and sector characteristics; in this case, financial products require trust-based interactions rather than sensory-based engagement.

This research further provides strong empirical evidence that meaningful personalization, contextual relevance, and ethical transparency in technology implementation are fundamental pillars that shape how consumers evaluate and select digital financial services. The findings reinforce theoretical perspectives asserting that consumer decision-making is largely driven by perceived value, trust, usability, risk reduction, emotional comfort, and satisfaction—factors that can be effectively strengthened through data-powered predictive analytics, context-sensitive communication, and human-centered system design that prioritizes fairness, clarity, and user wellbeing.

Practically, the results underscore the strategic importance for Pegadaian to continuously invest in enhancing predictive analytical capabilities to better understand user behavior patterns, strengthen real-time contextual message delivery, and refine customer journey frameworks to produce smoother and more intuitive service experiences. Additionally, prioritizing transparency, data security, ethical compliance, and clear communication is essential to developing deeper consumer trust and sustaining competitive advantage. Since AR Marketing currently demonstrates no measurable effect, organizations are advised to adopt a prudent, needs-driven approach toward implementing

advanced experiential technologies, ensuring that adoption is supported by clear functional purpose rather than merely pursuing innovation for image or novelty.

Overall, this study confirms and advances the relevance of the Marketing 5.0 paradigm within Indonesia's financial service industry by illustrating that the synergy between human-centric technological design and data-driven digital marketing effectiveness plays a decisive role in shaping consumer purchasing behaviors and service adoption decisions. These comprehensive insights contribute academically by enriching marketing and financial technology literature and practically by offering valuable managerial implications for industry practitioners, policymakers, and digital transformation strategists aiming to enhance customer engagement, retention, and decision outcomes within the national financial sector.

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