

Exploring How Anthropomorphic Voices Shape Brand Loyalty Today

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Abstract

This study explores the impact of human-like brand voices on customer loyalty, focusing on how brand trust and affection act as connecting factors, while also considering how worries about privacy can alter the effects in voice assistant interactions. Drawing from surveys of 353 young adults specifically Gen Z and millennials in Indonesia, the results show that viewing a voice assistant as more human-like boosts both trust in the brand and deeper emotional bonds, which in turn strengthen overall loyalty. On top of that, concerns over privacy tend to lessen the positive connection between this human-like perception and trust, highlighting the importance of creating voice assistants that blend relatable human traits with solid privacy protections. Overall, these findings help broaden our understanding of how consumers connect with brands through AI-driven exchanges.

Keywords:

Brand Anthropomorphism; Brand Loyalty; Brand Trust; Brand Love; Perceived Privacy Risk

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Abstrak

Penelitian ini mengkaji pengaruh suara merek yang menyerupai manusia terhadap loyalitas pelanggan, dengan menyoroti peran kepercayaan dan afeksi terhadap merek sebagai faktor penghubung, serta mempertimbangkan bagaimana kekhawatiran terkait privasi dapat memengaruhi hubungan tersebut dalam interaksi dengan asisten suara. Berdasarkan survei terhadap 353 responden muda, khususnya Generasi Z dan milenial di Indonesia, hasil penelitian menunjukkan bahwa persepsi terhadap asisten suara yang semakin menyerupai manusia dapat meningkatkan kepercayaan terhadap merek dan memperkuat ikatan emosional, yang pada akhirnya mendorong loyalitas pelanggan secara keseluruhan. Selain itu, kekhawatiran mengenai privasi terbukti melemahkan hubungan positif antara persepsi human-like dan kepercayaan terhadap merek, menekankan pentingnya pengembangan asisten suara yang mampu memadukan karakteristik manusia yang dapat diterima dengan perlindungan privasi yang kuat. Secara keseluruhan, temuan ini memperluas pemahaman tentang bagaimana konsumen membangun hubungan dengan merek melalui interaksi berbasis kecerdasan buatan.

Kata kunci: Brand Anthropomorphism, Brand Loyalty, Brand Trust, Brand Love, Perceived Privacy Risk.

Introduction

Voice assistants (VAs) have rapidly evolved into one of the most pervasive applications of artificial intelligence (AI), with global adoption exceeding 4.2 billion active users worldwide (Patrizi, Šerić, & Vernuccio, 2024a). This unprecedented scale of diffusion signals not merely technological advancement, but a fundamental transformation in how consumers interact with digital systems and brands. Embedded across smartphones, smart speakers, and connected environments, VAs function as continuous, voice-based interfaces that mediate everyday activities, information retrieval, and service interactions. As such, they increasingly integrate brands into consumers' daily lives, positioning voice-based AI not only as a functional tool but also as a strategic relational touchpoint through which brands communicate, perform, and establish enduring connections with users. The following presents the trend data patterns of VA users worldwide from year to year :

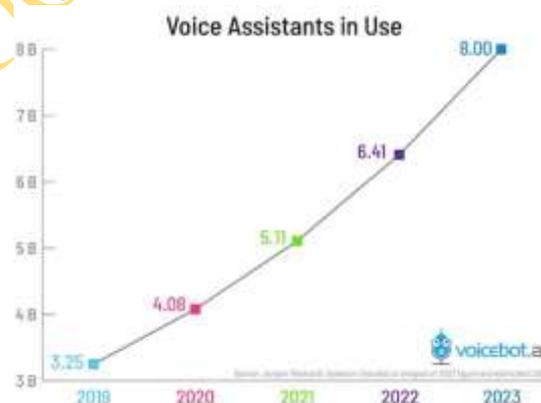


Figure 1.

Voice Assistant User Data From 2019-2023

Source: Juniper Estimates 3.25 Billion Voice Assistants Are in Use Today, Google Has About 30% of Them (2023)

Beyond their functional utility, voice assistants serve as a critical marketing interface, embodying a potent form of brand anthropomorphism the attribution of human-like qualities, such as intentionality, emotions, and consciousness, to non-human entities. When consumers perceive a voice assistant as socially present and human-like, the associated brand is more likely to be evaluated as trustworthy and relationally meaningful. Prior research demonstrates that anthropomorphic brand cues strengthen brand trust and commitment, thereby enhancing brand loyalty and brand equity (Golossenko et al., 2020). At the same time, these human-like characteristics introduce a paradoxical effect: while anthropomorphism fosters emotional closeness, it may also heighten consumers' sensitivity to data collection, surveillance, and information misuse, thereby amplifying perceived privacy risk and potentially undermining trust (McLean & Osei-Frimpong, 2019). This duality underscores the complex role of anthropomorphism in AI-mediated branding, positioning trust enhancement and privacy concern as simultaneous and interrelated outcomes of human-like voice interactions.

Extant research indicates that consumers often relate to brands as if they were human counterparts, enabling emotional attachment to emerge and evolve into loyalty or brand retention (Ali et al., 2021). In this sense, brand anthropomorphism functions as a relational catalyst that initiates affective responses by fostering psychological closeness and interpersonal-like bonds between consumers and brands. Prior studies further demonstrate that anthropomorphic cues encourage intimacy and engagement by positioning brands as social entities rather than impersonal market offerings (Ngoc Dan & Ngo Trong, 2023). However, while anthropomorphism may activate initial attachment, it does not by itself guarantee enduring loyalty. Instead, sustained loyalty depends on the depth of emotional engagement consumers develop with a brand. Brand love therefore represents the central affective mechanism through which anthropomorphic perceptions are transformed into long-term loyalty. Characterized by passion, attachment, and positive emotional resonance, brand love extends beyond functional evaluations and surface-level attachment, anchoring consumer-brand relationships in affective meaning rather than transactional exchange. Empirical evidence consistently confirms that brand love strengthens commitment and loyalty behaviors by deepening emotional bonds formed through positive consumer experiences (Anggara et al., 2023). In parallel, consumers cognitively respond to trust-related signals from brands before developing deeper emotional attachment, suggesting that brand trust operates alongside brand love as a complementary pathway reinforcing psychological involvement and loyalty (Nyadzayo et al., 2020). Taken together, these findings indicate that while brand anthropomorphism initiates relational perceptions, brand love constitutes the key deep mediator that converts such perceptions into enduring brand loyalty.

While research on artificial intelligence and voice assistants has expanded considerably, existing studies predominantly emphasize technology acceptance, privacy calculus, and utilitarian satisfaction outcomes associated with AI-enabled services (Xu et al., 2021; Cui & Zhang, 2021; Matheny et al., 2020; Noorbakhsh-Sabet et al., 2019; Taeihagh, 2021). Although these perspectives provide valuable insights into functional adoption and risk assessment, they offer limited understanding of the relational and emotional consequences of interacting with anthropomorphic voice assistants. Notably absent is a systematic examination of how the anthropomorphic experience of engaging with a voice assistant translates into higher-order, brand-specific affective outcomes, particularly brand love, and how this affective bond subsequently secures loyalty to the parent brand. Moreover, prior research has seldom integrated brand trust and perceived privacy risk to explain when and how anthropomorphic interactions strengthen or weaken these emotional pathways. Addressing this gap is essential for advancing theoretical understanding of consumer-brand relationships in AI-mediated

environments, where relational and emotional dynamics increasingly shape long-term loyalty outcomes.

This gap becomes particularly salient in the context of technology-oriented brands, where anthropomorphic cues are often less fully developed than in traditional consumer goods or service brands. Unlike brands that rely on rich symbolic narratives, technology brands such as those operating in the voice assistant domain frequently exhibit what may be described as “incomplete” anthropomorphism, in which functional performance dominates while emotional and relational attributes remain underdeveloped. As a result, the processes through which anthropomorphic interactions foster higher-order affective outcomes, especially brand love, may differ substantially from those observed in non-technological brand contexts. This condition underscores the need to examine not only whether anthropomorphism enhances loyalty, but also how and under what conditions anthropomorphic voice-based interactions translate into deep emotional attachment and sustained loyalty to the parent brand.

Therefore, this study aims to investigate the sequential mechanism through which perceived brand anthropomorphism in voice assistants fosters brand love, ultimately driving brand loyalty. By adopting an integrative relational perspective, this research moves beyond functional evaluations of AI technologies to explicate how emotionally grounded consumer-brand bonds are formed in voice-based interactions. We contribute to the brand relationship and human-computer interaction literature in two key ways. First, we theorize and empirically test brand love as a critical affective mediator that translates anthropomorphic voice-based interactions into enduring loyalty toward the parent brand. Second, we elucidate how interactive, voice-based anthropomorphism operates differently from static, visual anthropomorphism by highlighting the relational intensity and emotional immediacy afforded by continuous voice interaction. Together, these contributions advance understanding of how AI-driven voice assistants function as relational brand interfaces, offering theoretical refinement and practical insights for brands seeking to cultivate loyalty in increasingly anthropomorphic digital environments.

Theoretical framework and hypotheses

Theoretical basis

The increase and development of technology use is natural and something we definitely feel as the years go by. The existence of increasingly sophisticated technology is also important for users to achieve their goals in a more effective and efficient manner. One thing that deserves to be highlighted is the development of Artificial Intelligence (AI), which has become familiar and well-known to people living in the present day. VA, which is the subject of this study, will certainly be discussed in more detail, knowing that this technology is clear evidence of the rapid development of AI. However, whether everyone can accept the existence of this innovative technology is a question that we will explore further in this study. The Technology Acceptance Model (TAM) is a behavioral and cognitive psychology model that clarifies the process through which individuals come to accept and apply innovative technologies in their daily lives. This model was developed by Fred Davis in 1986. To understand consumer behavior related to technology adoption, the TAM model is the most widely used model (Purwianti, Nurjanah, Aqmi, & Yulianto, 2025). TAM is used to understand why people adopt or reject a new technology. People's attitudes toward technology are usually based on two key factors: perceived usefulness, or how much people believe that using a technology will help them achieve their goals or improve their performance; and perceived ease of use, or how much people believe that using a technology will be easy and uncomplicated. TAM explains the general relationship

between beliefs, user goals, needs, habits, and the actual usefulness of technology. This method has been used in research to explore the acceptance of electronic services and new electronic technologies. Developing TAM to analyze the application of technology in the real world reveals usefulness and ease of use as the most relevant factors (Purwianti, Nurjanah, Katherine, & Chen, 2024). This analysis is supported by the Value-based Adoption Model (VAM) theory, a model that explains how consumers adopt new information and communication technologies (ICT). This model was developed by H. W. Kim et al. in 2007 as an evolution of the Technology Acceptance Model (TAM). VAM is based on consumer choice and decision-making theories from economics and marketing research. VAM focuses on the importance of perceived benefits being greater than the sacrifices involved in adopting new technology. VAM considers benefits and sacrifices as important factors in determining perceived value, which in turn predicts a person's intention to adopt. The accelerating advancement of artificial intelligence (AI) has spurred the emergence of a wide range of intelligent, AI-based products. Consequently, numerous technology adoption frameworks have been employed to understand how consumers embrace these innovations. The present comparative analysis seeks to identify the theoretical model that most effectively explains consumer acceptance of AI-enabled smart products and to determine the key factors that exert the strongest influence on brand loyalty.

It is essential to apply theoretical frameworks that accurately capture the current dynamics of technological innovation and diffusion, including those found in AI, IoT, and AR/VR, rather than simply extending older acceptance models with additional variables. In the context of AI-based smart products, the Value-based Adoption Model (VAM) is considered the most suitable for explaining adoption behavior. Sohn & Kwon, (2020) observed that voice assistant services have become increasingly familiar to smartphone users, and as their experience with these systems grows, their perceived usefulness correspondingly increases.

The Influence of Brand Anthropomorphism on Brand Trust

Golossenko et al., (2020b) describe brand anthropomorphism as an analogical process in which consumers apply human-like cognitive schemas to interpret and express brand characteristics. This process involves perceiving and describing brands through surface-level similarities to humans, such as their appearance, personality, or behavioral cues. Empirical research indicates that brand anthropomorphism enhances several key outcomes, including trust and commitment, suggesting that strategies fostering human-like brand perceptions can deliver substantial marketing benefits (Golossenko et al., 2020b). Moreover, advertising appeals emphasizing a "cool" rather than "cute" anthropomorphic image tend to evoke stronger brand trust and increase purchase intentions for self-oriented messages, while altruistic appeals with similar traits foster greater goodwill and willingness to buy (Lu, Liu, Tao, & Ye, 2021). According to Lady, Shevia, Melsen, Purwianti, & Liu, (2025) Trust-based strategies might be deployed more universally, a brand should prioritize building trust through consistent, transparent, and ethical brand communication.

H1: Brand Anthropomorphism Has a Positive Effect on Brand Trust.

The Role of Moderating Perceived Privacy Risk

Perceived privacy risk refers to the potential threat consumers feel when their personal data is systematically gathered, stored, and analyzed for purposes such as targeted marketing, service

personalization, or the creation of data-driven products. According to Patrizi et al., n.d., perceived privacy risk negatively affects brand trust directly and indirectly through the moderating effect of brand attitude. The findings indicate that when users perceive a high level of privacy risk, they tend to develop negative attitudes toward the brand, which subsequently undermines their trust. Because privacy-related decisions in online environments often involve uncertainty, consumers with limited social interaction or low need-for-interaction (NFI) may respond less favorably to anthropomorphic websites, showing reduced willingness to register or make purchases (Xie, Chen, & Guo, 2020).

Mutumukwe, Kolkowska, & Grönlund, (2020) emphasize that well-structured privacy policies and effective organizational self-regulation play a crucial role in alleviating individuals' privacy concerns while enhancing user trust and their willingness to share personal data. The effectiveness of an organization's privacy strategy, therefore, reflects its commitment to safeguarding user information. Harrigan et al., (2021) further demonstrated that heightened privacy concerns significantly diminish consumer trust, particularly within social media contexts. Similarly, Yun et al.,(2019) identified that as digital platforms increasingly require greater self-disclosure, users experience a growing sense of losing control over their personal data, making privacy concerns a central issue in online interactions.

H2: Perceived Privacy Risk moderates the direct relationship between Brand Anthropomorphism and Brand Trust.

The Influence of Brand Anthropomorphism on Brand Love

The findings of Ali et al., (2021) suggest that when consumers anthropomorphize a brand as a person, brand affection can develop, leading to higher levels of loyalty, namely brand retention. Additionally, a study by T. L. Huang & Liu, (2021) used anthropomorphic technology capable of thinking or monitoring consumer behavior and responses to convince consumers that their needs could be immediately understood and fulfilled. Customers want to establish relationships with brands like interpersonal relationships. That is why they analogize brands as humans through brand attributes for loving or caring relationships with the brand (Singh, Bajpai, & Kulshreshtha, 2021). Brand anthropomorphism contributes to the emergence of brand love because the anthropomorphism of non-human entities makes them considered "social entities" (Delgado-Ballester, Palazón, & Peláez, 2020). Consumers with a communal orientation tend to engage in anthropomorphic thinking and show affection and concern for the brands they love (Garg, Mukherjee, & Biswas, 2019).

H3: Brand Anthropomorphism Positively Influences Brand Love.

The Effect of Brand Anthropomorphism on Brand Loyalty

Based on cognitive mapping, Vernuccio et al., (2023) identified three strategic pillars underlying brand anthropomorphism within non-brand voice assistant (NBVA) experiences: first, the drivers, which involve designing human-like brand voices and facilitating human-style interactions between consumers and brands; second, the intermediate outcomes, which include shaping perceptions of brand personality and reinforcing consumer-brand relationships; and third, the final outcomes, which focus on enhancing brand loyalty as the ultimate behavioral response. Anthropomorphic design can enhance consumers' perceptions of interpersonal

warmth to reduce product replacement intentions and increase brand loyalty (M. Zhang, Li, Ye, Qin, & Zhong, 2020).

Moreover, from a marketing standpoint, brand anthropomorphism offers greater strategic value than product-level anthropomorphism. While attachment to a specific product may discourage replacement, loyalty directed toward the brand motivates consumers to substitute old products with new ones from the same brand portfolio (Vernuccio, Patrizi, & Pastore, 2020). Prior research also suggests that when consumers perceive a brand as possessing human-like qualities, their willingness to repurchase significantly increases (Patrizi et al., 2024a). Consistent with this, Nguyen & Trinh, (2023) highlight that anthropomorphized brands foster stronger emotional connections, which in turn enhance the quality of interactions between consumers and the brand.

H4: Brand Anthropomorphism Positively Affects Brand Loyalty.

The Influence of Brand Trust on Brand Loyalty

Madeline & Sihombing, (2019a) emphasized that both experience and behavior play fundamental roles in shaping brand trust, which in turn serves as a critical foundation for fostering customer loyalty. When trust toward a brand strengthens, consumers are more inclined to align with company expectations, including repeat purchases and long-term commitment (Yulianto, Purwianti, & Author, 2024). Kwon et al., (2020) further noted that strong brand performance is attainable once a brand successfully engages consumers, as trust becomes a central driver of loyalty formation. Akoglu & Özbek, (2022) highlighted that brand trust has evolved alongside customer experience, making experiential engagement vital for sustaining loyalty. Similarly, Samarah et al., (2022) underscored that brand trust enhances the behavioral dimensions of loyalty, while Christiarini, William, & Edy Yulianto Putra, (2024) found that a positive brand image fosters trust by signaling reliability and quality. Atulkar, (2020) concluded that brand trust and loyalty are closely linked to customer satisfaction, conferring a sense of prestige and self-fulfillment across different income segments.

H5: Brand Trust Positively Influences Brand Loyalty.

The Influence of Brand Love on Brand Loyalty

After developing loving and trusting relationships with consumers, companies can gain consumer loyalty Madeline & Sihombing, (2019b). Love for a brand accompanied by various experiences will generate strong emotions, which can ultimately result in brand loyalty Anggara et al., (2023b). Positive consumer perceptions toward a brand foster the development of enduring relationships between customers and the brand itself (S. Zhang et al., 2020). Madadi et al., (2021) observed that strong emotional connections often emerge between consumers and service providers, with brand love serving as a key driver of brand loyalty. Compared to satisfaction, brand affection carries a deeper emotional component, which explains its stronger and more lasting impact on consumers' loyalty behaviors (Torres, Augusto, & Neves, 2022).

H6: Brand Love Positively Influences Brand Loyalty.

The Role of Brand Trust Mediation

Golossenko et al., (2020c) provide empirical support showing that brand anthropomorphism has a favorable impact on several brand-related constructs, notably brand trust. This suggests that implementing strategies that encourage consumers to perceive brands as human-like entities can generate substantial returns on investment. In turn, brand trust functions as a key mechanism that fosters brand loyalty, thereby contributing to the expansion of market share and the enhancement of brand equity. As consumers' trust increases, they engage more cognitively with the brand, thereby reinforcing brand awareness, perceived quality, and overall brand image (Patrizi et al., 2024b). Similarly, Ali et al., (2021b) found that when consumers perceive brands as personified entities, emotional attachment and affection emerge, leading to stronger brand loyalty and retention.

H7: Brand Trust mediates the influence of Brand Anthropomorphism on Brand Loyalty.

The Role of Brand Love Mediation

Anthropomorphism involves ascribing human-like traits, intentions, and emotional capacities to non-human entities (Sarkar et al., 2019). Within brand management, such humanized perceptions enable consumers to cultivate emotional ties with brands, conceptualized as brand love. This emotional attachment functions as a pivotal driver of brand loyalty, facilitating repeated engagement and fostering sustained commitment. Contemporary research highlights that the extent to which consumers anthropomorphize a brand directly influences their affective bond, thereby shaping loyalty behaviors in meaningful and measurable ways.

H7: Brand Love mediates the influence of Brand Anthropomorphism on Brand Loyalty.

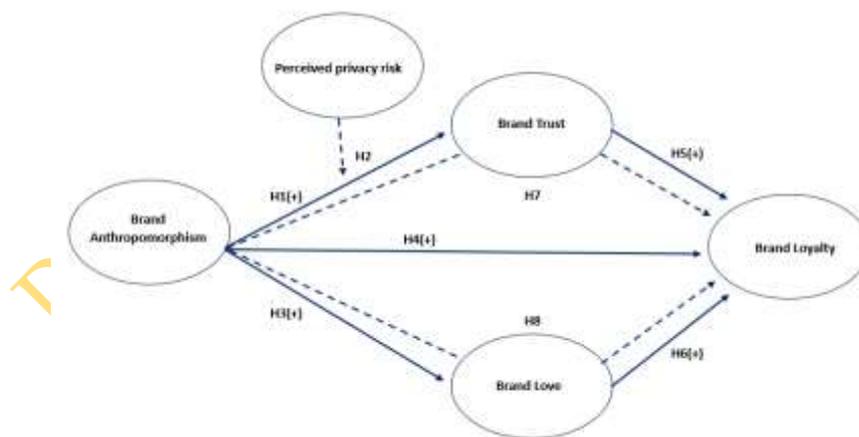


Figure 2. Research Framework

Source: Author

Methods

Population and Sampling Procedure

The population in this study consists of Indonesian citizens from several regions or cities who are familiar with Voice Assistant technology, including various types of Voice Assistants such as Siri, Alexa, Google Assistant, and others. The research sample consisted of male and female

students in Indonesia, both current students and alumni. The sample selection used non-probability sampling, a method of sample collection in which not all members of the population have the same chance of being selected as research samples (Kim, Park, Chen, & Wu, 2021). The sampling technique used in quantitative research is judgmental sampling, one of the most popular sampling methods used in research. Participants are selected based on specific criteria from a predetermined study (SAGE Research Methods Foundations Metadata, 2020).

The target sample size for this study was 230 people, selected based on Hair et al's approach which the appropriate sample size is determined by a tenfold ratio of the number of indicators, yielding a minimum of 230 samples for 23 indicators. The sample criteria for this study included Indonesian citizens aged 20-27 years old who had experience with or information about Voice Assistant technology.

Measurement

The method used as a measurement in quantitative research is the 5-point Likert scale, which is used to measure the opinions or perceptions of respondents in the specified sample. This method is used to ensure that the sample obtained is in accordance with the research topic, namely the understanding of young Indonesians regarding the use of Voice Assistant.

Data Analysis Procedure

This study aims to understand the influence of voice assistants (VA) on consumer loyalty. The data obtained is processed and analyzed using PLS.

Table 1.

Research Variables and Indicators

Variables	Indicators
Brand Anthropomorphism (Patrizi et al., 2024)	<ul style="list-style-type: none"> • The voice assistant I use seems to have a mind of its own. • The voice assistant I use seems to have intentions. • The voice assistant I use seems to have a mind of its own. • The voice assistant I use seems to have its own consciousness. • The voice assistant I use seems to have a mind of its own. • The voice assistant I use seems to have its own beliefs. • The voice assistant I use seems to have the ability to express emotions.
Perceived Privacy Risk (Patrizi et al., 2024)	<ul style="list-style-type: none"> • I doubt that my secrets are safe when interacting with the Voice Assistant that I use. • I am concerned about conducting transactions through the Voice Assistant that I use. • I am concerned that the personal data I store on the Voice Assistant I use will be stolen. • I am concerned that the Voice Assistant I use collects too much information about me.
Brand Trust (Nyadzayo et al.,	<ul style="list-style-type: none"> • I trust the voice assistant I use.

2020b)	<ul style="list-style-type: none"> • I can rely on voice assistants to solve problems. • The voice assistant I use is safe to use. • The Voice Assistant's performance meets my expectations.
Brand Love (Ali et al., 2021)	<ul style="list-style-type: none"> • The voice assistant I use is amazing. • The voice assistant I use is really great. • The voice assistant I use is fun. • I am very attached to the Voice Assistant that I use.
Brand Loyalty (Sarkar et al., 2019)	<ul style="list-style-type: none"> • I will remain loyal to the Voice Assistant service brand I use in the future. • I will use this brand's Voice Assistant service again. • This Voice Assistant brand will be my first choice. • I will recommend this Voice Assistant to my friends.

Results and discussion

4.1 Demographic Results and Measurement Model

Table 2.

Respondent demographics

Indicators	Classification	Frequency	Percentage
Age	Gen Z (12-19 years old)	40	11.33%
	Gen Z (20-27 years old)	128	36.26%
	Gen M (28-35 years old)	12	3.40%
	Gen M (36-43 years old)	1	0.28%
	Gen X (44-51 years old)	0	0.00%
	Gen X (52-59 years old)	0	0.00%
Sex	Men	172	48.73%
	Women	181	51.27%
Income	< Rp6.000.000	193	54.67%
	Rp6.000.001 - Rp11.000.000	115	32.58%
	Rp11.000.001 - Rp16.000.000	23	6.52%
	Rp16.000.001 - Rp21.000.000	6	1.70%
	Rp21.000.001 - Rp26.000.000	1	0.28%
	Rp26.000.001 - Rp30.000.000	3	0.85%
	> Rp30.000.000	12	3.40%
Last Education	Elementary School	0	0.00%
	Junior High School	1	0.28%
	Senior High School	221	62.61%
	Bachelor's Degree	120	33.99%
	Master's Degree	9	2.55%

Table 2 presents a brief profile of the study respondents. The sample is dominated by Generation Z users, particularly those aged 20–27 years, reflecting a cohort characterized by high digital literacy and frequent engagement with AI-enabled technologies. Gender distribution is relatively balanced, indicating that voice assistant usage transcends gender boundaries. Most respondents report early-career income levels and medium-to-high educational attainment, suggesting sufficient familiarity with digital platforms and intelligent systems. This demographic composition is highly relevant to the research context, as younger, digitally native consumers represent the primary adopters and active users of voice assistants, making them an appropriate segment for examining anthropomorphic interactions and brand relationship formation in AI-driven environments.

4.2 Measurement Model Assessment

Table 3.

Measurement model

Variables	Indicators	Outer Loadings	Cronbach's Alpha	Composite Reliability	Average Variance Extracted (AVE)	Variance Inflation Factor (VIF)
Brand Anthropomorphism	BA1	0,819	0,900	0,921	0,624	2,477
	BA2	0,748				1,886
	BA3	0,837				2,441
	BA4	0,771				1,909
	BA5	0,781				1,979
	BA6	0,773				2,265
	BA7	0,779				2,048
Brand Love	BL1	0,801	0,621	0,799	0,570	1,355
	BL2	0,712				1,168
	BL3	0,750				1,257
Brand Loyalty	BLT1	0,835	0,632	0,844	0,730	1,271
	BLT2	0,874				1,271
Brand Trust	BT1	0,808	0,615	0,797	0,567	1,345
	BT2	0,682				1,131
	BT3	0,764				1,304
Perceived Privacy Risk	PPR1	0,990	0,855	0,853	0,666	2,098
	PPR2	0,652				2,055
	PPR3	0,770				2,248

The measurement model was evaluated to assess the reliability and validity of all constructs, with the results reported in Table 3. Internal consistency is supported, as Cronbach's Alpha and Composite Reliability values exceed commonly accepted thresholds. Convergent validity is confirmed through Average Variance Extracted (AVE) values above 0.50 for all constructs, indicating that the latent variables adequately explain the variance of their indicators. In addition, all outer loading values exceed the minimum acceptable threshold, confirming indicator reliability. Variance Inflation Factor (VIF) values are well below the critical cut-off, suggesting the absence of multicollinearity and supporting the robustness of the measurement

model. Although the Cronbach's Alpha value for the Brand Love construct approaches the lower acceptable threshold, it remains within an acceptable range for exploratory research and is further supported by satisfactory Composite Reliability and AVE values, indicating adequate construct reliability.

4.3 Hypothesis Testing Results

Table 4.

Results of direct, indirect, and moderating effects

Variables	Sample Mean (M)	T Statistics (O/STDEV)	P Values	Status
Brand Anthropomorphism -> Brand Love	0.367	4.254	0.000	Accepted
Brand Anthropomorphism -> Brand Loyalty	0.162	2.810	0.005	Accepted
Brand Anthropomorphism -> Brand Trust	0.432	5.656	0.000	Accepted
Brand Love -> Brand Loyalty	0.298	4.030	0.000	Accepted
Brand Trust -> Brand Loyalty	0.207	3.133	0.002	Accepted
Perceived Privacy Risk -> Brand Trust	-0.117	1.528	0.126	Rejected
Perceived Privacy Risk x Brand Anthropomorphism -> Brand Trust	0.264	2.002	0.045	Accepted
Brand Anthropomorphism -> Brand Love -> Brand Loyalty	0.112	2.504	0.012	Accepted
Brand Anthropomorphism -> Brand Trust -> Brand Loyalty	0.091	2.604	0.009	Accepted
Perceived Privacy Risk -> Brand Trust -> Brand Loyalty	-0.024	1.307	0.191	Rejected
Perceived Privacy Risk x Brand Anthropomorphism -> Brand Trust -> Brand Loyalty	0.055	1.699	0.089	Rejected

The results of the structural model analysis are presented in Table 4. Brand Anthropomorphism is found to have a positive and significant effect on Brand Love, Brand Trust, and Brand Loyalty, supporting the corresponding hypotheses. Both Brand Love and Brand Trust also exert significant positive effects on Brand Loyalty, confirming their roles as key affective and cognitive drivers of loyalty. The direct effect of Perceived Privacy Risk on Brand Trust is not supported; however, the interaction between Perceived Privacy Risk and Brand Anthropomorphism significantly influences Brand Trust, indicating a moderating effect. Mediation analyses further reveal that Brand Love and Brand Trust significantly mediate the relationship between Brand Anthropomorphism and Brand Loyalty, while indirect effects involving Perceived Privacy Risk are not supported. Overall, the majority of the proposed hypotheses are supported, providing empirical validation for the conceptual model.

4.4 Discussion

4.4.1 The Direct Effects and Mediating Pathways

The findings demonstrate that Brand Anthropomorphism plays a central role in shaping brand relationships in voice assistant contexts. Its significant influence on Brand Love indicates that anthropomorphic cues embedded in voice-based interactions are capable of eliciting strong emotional attachment, even in the absence of visual human-like representations. This suggests that vocal tone, responsiveness, and perceived social presence function as powerful relational signals. In turn, Brand Love emerges as a critical affective mechanism that converts anthropomorphic perceptions into sustained Brand Loyalty. Beyond emotional attachment, Brand Anthropomorphism also strengthens Brand Trust, highlighting its cognitive impact. Trust operates as a stabilizing force that reduces uncertainty and reinforces loyalty, particularly in technology-mediated interactions. The significant mediating roles of Brand Love and Brand Trust confirm that anthropomorphism influences loyalty through complementary affective and cognitive pathways rather than through a single linear mechanism.

4.4.2 The Moderating Role of Perceived Privacy Risk

The moderating effect of Perceived Privacy Risk reveals an important boundary condition in anthropomorphic branding. While anthropomorphic cues generally enhance Brand Trust, this effect is contingent upon consumers' perceptions of data security and privacy protection. When privacy risk perceptions are elevated, the trust-enhancing role of anthropomorphism is weakened, suggesting that human-like brand behavior raises expectations of ethical responsibility. In this sense, anthropomorphism functions as a double-edged sword: it amplifies positive relational outcomes when privacy concerns are low, but intensifies distrust when such concerns are salient. This finding underscores the need to interpret anthropomorphism not as a universally beneficial strategy, but as one whose effectiveness depends on contextual factors related to digital risk perceptions.

4.4.3 Theoretical Implications

This study contributes to the literature on brand relationships and human-computer interaction in several important ways. First, it extends brand anthropomorphism theory into voice-based AI contexts, demonstrating that non-visual, interactive anthropomorphism can effectively generate emotional and cognitive brand bonds. Second, by empirically establishing Brand Love as a key affective mediator, this study advances understanding of how higher-order emotional outcomes emerge from anthropomorphic interactions. Third, the identification of dual mediating pathways affective (Brand Love) and cognitive (Brand Trust) provides a more nuanced explanation of loyalty formation in AI-mediated environments. Finally, the moderating role of Perceived Privacy Risk refines existing theories by highlighting privacy as a critical boundary condition that shapes the relational consequences of anthropomorphism.

4.4.4 Practical Implications

From a managerial perspective, the findings offer actionable insights for brand and technology managers deploying voice assistants. Brands should design voice assistants with carefully calibrated anthropomorphic features that convey warmth, empathy, and social presence to foster emotional attachment and trust. However, such human-like design must be accompanied by transparent and credible privacy practices, as privacy concerns can undermine trust even in highly anthropomorphic systems. Managers should clearly communicate data usage policies and provide users with control over privacy settings to mitigate perceived risk. Additionally, strategies that strengthen Brand Love such as personalized interactions and consistent relational cues are likely to be more effective in driving long-term loyalty than purely functional enhancements.

4.4.5 Limitations and Future Research

Despite its contributions, this study has several limitations that offer opportunities for future research. First, although reliability levels are acceptable, some constructs exhibit relatively lower Cronbach's Alpha values, suggesting the need for scale refinement in future studies. Second, the sample is concentrated on Generation Z users in Indonesia, which may limit the generalizability of the findings to other age groups or cultural contexts. Third, the cross-sectional design restricts causal inference and does not capture changes in consumer perceptions over time. Future research could employ longitudinal or experimental designs to examine how anthropomorphic interactions evolve with prolonged usage. Expanding the study across different cultures and age cohorts would further enrich understanding of brand anthropomorphism in global AI-driven markets.

Conclusion

This study aims to examine the influence of Brand Anthropomorphism on Brand Loyalty and to explore the roles of Brand Trust, Brand Love, and Perceived Privacy Risk in mediating and moderating this relationship. The results show that when consumers view a voice assistant as a human-like entity, it builds emotional closeness and trust in the brand, which ultimately drives their loyalty. Brand Love and Brand Trust are proven to be important bridges in shaping this loyalty, strengthening the relationship between the human perception of a brand and long-term consumer attachment. Although privacy concerns do not directly affect trust, this perception of risk still influences how consumers assess the humanity of technology-based brands. This study has limitations in its judgmental sampling technique, which relies on the researcher's subjective assessment in determining relevant respondents, so the results cannot be generalized broadly. In addition, the use of online questionnaires also has the potential to reduce the variation in respondent characteristics. Therefore, it is recommended that future research use a more representative sampling method and consider a qualitative or mixed approach to explore consumer perceptions of anthropomorphic technology and privacy issues in digital marketing in greater depth.

Recommendations

Further research is recommended to explore in greater depth the relationship between brand anthropomorphism and other emotional aspects, such as perceived companionship or users' feelings of loneliness, particularly in the use of Voice Assistants (VAs) in personal environments. Qualitative approaches such as in-depth interviews can also be used to explore users' subjective experiences of VA technology humanization in greater depth. In addition, the use of experimental design methods can be an alternative to test user reactions to VA designs with different levels of anthropomorphism, such as comparisons between neutral and expressive voices. Future research can also expand the age segmentation of respondents beyond Gen Z, in order to compare perceptions between different age groups towards brand anthropomorphism. For the long term, a longitudinal approach can be applied to observe the dynamics of changes in consumer perceptions of VA over time and frequency of use. Cross-cultural studies are also recommended to understand how factors such as privacy risk and brand love are perceived by users from different cultural backgrounds. In addition, the incorporation of biometric or neuromarketing technologies such as eye-tracking or EEG can provide new perspectives in understanding emotional responses to anthropomorphic VA. Future research is also expected to develop a more comprehensive conceptual model by considering other external variables such

as perceived usefulness, technology anxiety, or digital trust, in order to enrich the understanding of brand loyalty formation in the context of AI Voice Assistant technology.

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