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The Effect of Voice-Based Artificial Intelligence Applications on Brand Loyalty: Siri's Example

Ses Tabanlı Yapay Zeka Uygulamalarının Marka Sadakati Üzerindeki Etkisi Siri Örneği

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Öz

This research explores the impact of voice-based artificial intelligence applications on brand loyalty. Recent advancements in artificial intelligence (AI) have led to its widespread adoption across various domains, including marketing, thereby generating increasing interest in its effects This study examines the role of AI in marketing, specifically focusing on how voice-based AI applications influence brand loyalty. Although multiple voice-based AI applications exist, this study focuses on Siri, Apple's iPhone assistant, due to its increasing usage and ranking among the top 10 well-known AI tools. The research utilizes Smart PLS 4 for data analysis. The findings reveal that trust, interaction, and innovation have a positive and significant effect on brand loyalty, whereas perceived risk has no significant effect on brand loyalty.

Abstract

Bu çalışma, ses tabanlı yapay zekâ uygulamalarının marka sadakati üzerindeki etkilerini incelemeyi amaçlamaktadır. Yapay zekâ (YZ) alanında yaşanan son gelişmeler, bu teknolojinin pazarlama başta olmak üzere çeşitli disiplinlerde yaygın biçimde kullanılmasına olanak sağlamış ve söz konusu etkilerine yönelik akademik ilgiyi artırmıştır. Araştırma kapsamında YZ'nin pazarlamadaki rolü ele alınmakta; özellikle ses tabanlı YZ uygulamalarının marka sadakati üzerindeki belirleyici etkileri analiz edilmektedir. Birden fazla ses tabanlı YZ uygulaması bulunmasına karşın, çalışma kapsamı, artan kullanım oranı ve en çok bilinen ilk 10 YZ aracı arasında yer alması nedeniyle Apple'ın iPhone asistanı Siri ile sınırlandırılmıştır. Veri analizinde Smart PLS 4 yazılımı kullanılmıştır. Elde edilen bulgular, güven, etkileşim ve yenilikçilik değişkenlerinin marka sadakati üzerinde pozitif ve anlamlı bir etkiye sahip olduğunu, buna karşılık algılanan risk değişkeninin marka sadakatini anlamlı düzeyde etkilemediğini göstermektedir.

1. INTRODUCTION

Humanity has experienced significant changes across various domains since its inception. In the industrial sector, the first phase began with the invention of steam engines in 1712, shifting production from manual labor to machines. The second phase occurred between 1860 and 1914, characterized by the introduction of electricity in machines. Digitalization and advancements in information technologies marked the third phase, with computers being integrated into production processes. The fourth phase, also known as Industry 4.0, was driven by the evolution of AI and the increasing capabilities of robots and intelligent systems to perform tasks traditionally handled by humans. Both practitioners and scholars agree that AI will shape the future of society. AI helps businesses predict customer needs by monitoring and analyzing real-time data, enabling them to promptly respond to customer demands (Wisetsri, 2021).

In marketing, AI is employed in various applications, including voice recognition, text processing, image recognition, decision-making, autonomous vehicles, and robots (Chen et al., 2021). The capabilities provided by these technologies not only transform operational processes but also marketing strategies. In particular, AI's ability to provide crucial insights into consumer behavior is redefining customer experience, making customer acquisition and retention easier (Tjepkema, 2019).

In marketing, numerous studies have explored the role of various technologies, and recently, the intersection of AI and marketing has become a focal point of research (Vlačić et al., 2021). AI has increasingly gained prominence, with major tech companies like Google, Microsoft, and IBM investing in its development (Zhang & Lu, 2021).

AI has been defined since the 1950s as the capacity of machines to perform tasks typically requiring human intelligence (Kann et al., 2021). This field comprises theories, methods, and technologies aimed at replicating human intelligence through machines (Angelov et al., 2021). AI involves the use of machines to simulate human abilities such as thinking, feeling, and performing various tasks (Huang and Rust, 2021). In 2015, the Google Scholar search engine introduced machine learning, which was recognized by researchers as either the core application of AI or a subset of it (Gupta et al., 2021).

AI, as defined in the literature, entails the transfer of human intelligence to machines, enabling them to perform both simple and complex tasks (Verma et al., 2021). AI systems can learn autonomously and perform tasks that require intelligence, including speech recognition, natural language processing, and computer vision (Huang and Rust, 2022). Voice-based AI applications, such as Siri and Google Assistant, have become widely used in recent years. These systems recognize human voices and respond to questions, creating highly personalized interactions. These applications have the potential to transform customer service, as they can understand and interact with users across various languages (Bulutistan, 2023). The growing capabilities of voice recognition and text-to-speech technologies are expected to reshape consumer habits, from how they search for products to how they engage with brands (Cbot, 2022).

The increasing capabilities of voice recognition and text-to-speech technologies are expected to reshape consumer habits, from how they search for products to how they engage with brands. This transformation can strengthen brand relationships and enhance brand loyalty, as personalized experiences foster deeper connections between consumers and brands, thereby reinforcing loyalty. AI-powered applications not only improve customer satisfaction but also facilitate the development of strategies that bolster brand loyalty.

Brand loyalty is commonly defined as either behavioral or attitudinal commitment (Samarah et al., 2022; Demirağ and Çavuşoğlu, 2019), representing a customer's intention to repurchase a brand's product or service in the future (Budiman, 2021). Another definition suggests that consumers remain loyal to a brand not only for a particular product but also across the brand's broader range of offerings (Baydaş and Yaşar, 2019).

It is generally accepted that acquiring new customers is significantly more expensive than retaining existing ones (Budiman, 2021). Businesses aim to foster brand loyalty as a psychological process, encouraging customers to continue choosing their products over competitors (Durmaz and Dağ, 2018). Key factors influencing brand loyalty include perceived value, quality, brand recognition, trust, and image (Türker and Türker, 2013).

The increasing use of popular voice assistants like Siri offers a unique opportunity to understand their transformative effect on brand loyalty. Despite the growing body of research on brand loyalty and its relationship with various factors, limited studies, both nationally and internationally, have explored the impact of AI, particularly voice-based AI applications, on brand loyalty. This research aims to fill this gap by examining Siri's influence on brand loyalty, providing valuable insights into how brands can strengthen customer relationships and effectively integrate these technologies into their marketing strategies. By exploring the potential of voice assistants to enhance brand loyalty, this study contributes to the literature and advances understanding in this emerging area.

2. VOICE-BASED ARTIFICIAL INTELLIGENCE

AI refers to the capacity of machines to perform cognitive functions similar to those of humans, including learning, understanding, problem-solving, and decision-making (McCarthy, 1955; Turing, 1950; Russell and Norvig, 2020). AI has made significant advancements in computer vision technologies, which analyze visual data to perform tasks such as object and facial recognition. These applications are now widely used across various sectors, including security and healthcare. Natural Language Processing applications enable machines to analyze and interpret human language, facilitating tasks like text classification, sentiment analysis, and translation. These technologies are increasingly utilized in customer service and content moderation. AI-driven understanding and discovery applications focus on analyzing large datasets to uncover hidden patterns and relationships, offering innovative solutions in fields like biotechnology and finance. Predictive analytics and decision-making applications use historical data to forecast future events, aiding in strategic planning across industries such as healthcare, finance, and retail. These tools are instrumental in risk management and resource allocation.

Voice-based artificial intelligence (AI) is a type of AI based on technologies that enable users to interact with devices through voice commands. This system operates through a combination of technologies including natural language processing (NLP) natural language processing (NLP), speech recognition, and machine learning. These systems interpret, analyze, and generate appropriate responses to voice inputs received from users. By enabling more natural interactions with users, this technology has found widespread use in both individual and commercial domains (Tulshan and Dhage, 2019).

Voice-based AI has rapidly become prevalent, especially in devices such as smartphones, smart speakers, and home automation systems. These applications provide users with various conveniences, such as performing tasks, accessing information, and offering entertainment. For instance, Apple's Siri application personalizes the user experience by meeting diverse needs, from scheduling appointments to checking the weather (López et al., 2021).

Voice-based AI relies on speech detection and recognition technologies, and involves the intake of voice input, processing of speech, and analysis of user experiences through machine learning. (Kepuska and Bohouta, 2018). As a user-friendly application, this system offers a wide range of benefits across various industries, including fast access to information, user-friendly interfaces, and the advantage of performing tasks through spoken commands. While this method offers numerous advantages, it also comes with drawbacks. Privacy concerns, technical errors, and the limitations of natural language processing are among the primary challenges faced in the development of this technology (Shin, 2020).

3. BRAND LOYALTY

Brand loyalty is defined as a consumer's consistent preference for a specific brand while avoiding competing brands. This loyalty encompasses not only a behavioral response but also emotional elements. Behavioral loyalty refers to repeated purchasing behaviors, while emotional loyalty is associated with trust, satisfaction, and an emotional bond with the brand (Oliver, 1999).

Brand loyalty holds critical importance for companies, especially in today's highly competitive environment. Loyal customers not only deliver higher lifetime value but also serve as brand advocates, driving positive word-of-mouth communication (Chaudhuri and Holbrook, 2001). In technology-based services, user experience and personalization are among the most significant factors in fostering brand loyalty (Grewal, Roggeveen and Nordfält, 2017).

Brand loyalty allows companies to sustain customer loyalty and maintain their competitive advantage in the market. Loyal customers tend to consistently prefer a brand's products, thereby increasing revenue flow through repeat sales (Oliver, 1999). Additionally, loyal consumers are less sensitive to price changes and product modifications, which enables brands to make their pricing strategies more flexible (Chaudhuri and Holbrook, 2001). It also reduces customer acquisition costs. The effort and resources spent on acquiring new customers are minimized when there is a loyal customer base. Loyal customers, through word-of-mouth marketing, also indirectly reduce the company's advertising and marketing expenditures (Dick and Basu, 1994).

When examining the key factors affecting brand loyalty, consumer satisfaction stands out as a major determinant. Consumer satisfaction is measured by the extent to which a brand meets consumer's expectations, and this factor is a fundamental element brand loyalty (Oliver, 1999). Brand trust is also a critical factor influencing loyalty. As trust in the brand increases, consumers' loyalty to the brand strengthens (Chaudhuri and Holbrook, 2001). Additionally, brand image plays an important role in loyalty. Consumers expect the brand's image to align with their personal values and to reflect their own identity (Aaker, 1991). Customer experience and customer service are also significant factors influencing brand loyalty. Excellent customer service, quick and effective problem-solving, and generally user-friendly experiences are crucial elements that reinforce consumers' loyalty to the brand (Zeithaml, Berry, and Parasuraman, 1996). The balance between price and performance is another important factor affecting consumers' loyalty to a brand. Consumers expect the price of a brand's products to reflect the value they provide. If a brand offers high quality at a reasonable price, the likelihood of consumers remaining loyal increases (Dick and Basu, 1994). Finally, social interactions and word-of-mouth marketing are other important factors that enhance brand loyalty. Loyal customers tend to recommend the brand to others, which increases the brand's visibility and helps acquire new customers (Reichheld and Sasser, 1990).

Voice-based artificial intelligence (VAI) applications are considered powerful tools for enhancing brand loyalty. These systems, which allow users to interact effortlessly through voice commands, deliver personalized experiences, thereby increasing customer satisfaction. For instance, Apple's Siri application not only provides functional services to users but also strengthens their attachment to the Apple ecosystem. By learning users' habits and offering context-sensitive services, Siri fosters a positive perception of the brand and increases the likelihood of repeat usage (Rane, 2023; El Jaouhari et al., 2024).

Research shows that when users establish a personal connection with voice-based AI, their loyalty to the brand also increases. When users perceive VAI applications like Siri not just as tools but as "assistants" or "friends," this perception can evolve into emotional loyalty (Purington et al., 2017). This situation enables brands like Apple to position VAI not merely as a service tool but as a strategic element that enhances brand loyalty.

4. HYPOTHESES

This research aims to examine the impact of voice-based artificial intelligence applications on brand loyalty, using Siri as an example In line with this objective, a study was conducted among Apple brand users. The significance of this research lies in its contribution to understanding how brands can strategically utilize voice assistants during their digital transformation processes by investigating the effects of voice-based AI applications on brand loyalty. Specifically, the Siri example demonstrates the positive influence of user trust and engagement on brand loyalty.

Trust has become a significant topic in discussions surrounding AI. Establishing trust is viewed as critical for realizing the full potential of AI applications (Thiebes et al., 2021). Trust is also one of the main antecedents of brand loyalty (Samarah et al., 2022). Many studies confirm that brand trust significantly and positively influences brand loyalty (Saydan et al., 2011; Upamannyu et al., 2014; Marliawati and Cahyaningdyah, 2020). Research also highlights a positive relationship between machine learning, a subset of AI, and brand loyalty (Aluri et al., 2019).

H_1: Trust in voice-based AI applications positively influences brand loyalty.

Brand interaction, defined as the cognitive, emotional, and behavioral engagement between a consumer and a brand, is another important factor. Research indicates that brand interaction fosters customer loyalty and repeat purchase behaviors (Ulaş and Alkan, 2020). Virtual interaction through personal web pages and social networks, for instance, also leads to higher customer satisfaction and loyalty (Buran and Koçak, 2019).

H_2: İnteracting with voice-based AI applications has a positive effect on brand loyalty.

Perceived risk has been shown to negatively impact trust, customer satisfaction, and loyalty (Jin et al., 2016; Casidy and Wymer, 2016). As trust increases, perceived risk tends to decrease (Loureiro, 2013), and high levels of perceived risk are associated with lower loyalty (Aldas-Manzano et al., 2011; Yen, 2010).

H_3: Perceived risk has a negative effect on brand loyalty.

Innovation is another critical factor in fostering brand loyalty. Research shows that the level of perceived innovation significantly influences customer satisfaction and loyalty (Çağlıyan and Yılmaz, 2020). Innovative products or services, particularly in technology sectors, often help brands build long-term customer loyalty (Kiumarsi et al., 2020).

H_4: The perceived innovation of voice-based AI applications positively influences brand loyalty.

5. METHODOLOGY

5.1. Sample and Data Collection

This study explores the relationship between voice-based AI applications and brand loyalty, focusing on Siri as a representative example. The target population consists of iPhone users, and data were collected and analyzed using Smart PLS 4.

Figure 1: Research Model Proposed
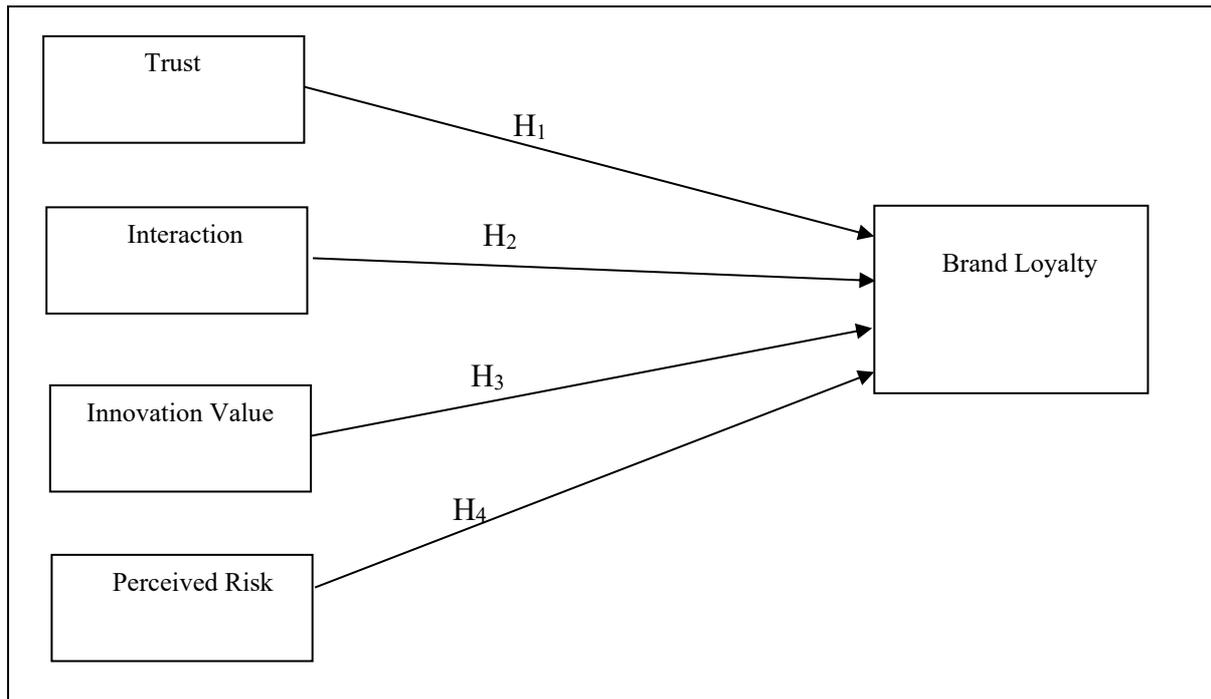
The study involved only individuals who were users of Apple iPhones. The brand's association allowed the research to explore voice-based AI applications like Siri and their role in fostering brand loyalty, particularly for iPhone models. In the study, a convenience sampling method was used, where individuals who were suitable in terms of time and accessibility were selected as the sample. Data were collected through a survey. The participants consisted of individuals who voluntarily participated in the research and whom the researcher was able to access. In this context, the data obtained is limited in terms of generalizability; however, it allows for meaningful inferences to be made about the relevant population (Büyüköztürk et al., 2020). A convenience sampling technique was employed, and data were collected through a survey. The questionnaire was divided into six sections. The first section collected demographic information, including age education level, gender, and marital status. Subsequent sections measured key study constructs such as trust, interaction, perceived risk, and innovation.

In the second section, participants' perceptions regarding trust were measured using a five-point Likert scale (1 = strongly disagree, 5 = strongly agree). The trust scale, originally developed by Kääriä (2017), was adapted for this study, consisting of three items in a single dimension. The third section evaluated participants' perceptions of interaction, using an adaptation of the interaction scale from Siddike et al. (2018). This variable included four items and was similarly measured on a five-point Likert scale. The fourth section focused on perceived risk, adopting the scale from Zhou (2011), consisting of three items measured with a Likert scale. In the fifth section, the perceptions of the innovation value variable were captured using a scale by Prebensen and Xie (2017), adapted for this study. The scale, one-dimensional and comprising three statements, was also based on a five-point Likert scale. Finally, the sixth section assessed brand loyalty using the scale developed by Jacoby and Chestnut (1978), presented similarly on a five-point Likert scale with four items.

Table 1: Survey Sections and Scales

Section	Variable	Scale Used	Source	Number of Items
Second Section	Trust	Likert Scale	Kääriä (2017)	3
Third Section	Interaction	Likert Scale	Siddike et al. (2018)	4
Fourth Section	Perceived Risk	Likert Scale	Zhou (2011)	3
Fifth Section	Innovation Value	Likert Scale	Prebensen and Xie (2017)	3
Sixth Section	Brand Loyalty	Likert Scale	Jacoby and Chestnut (1978)	4

Since the original scales were in English, they were translated into Turkish. Academics proficient in the field assisted with this process to ensure accuracy. A back-translation method was employed, in which Turkish translations were retranslated into English by two expert academics to confirm the consistency of the scales. After these steps, the finalized scale was used in the survey. Additionally, a pilot study involving 35 participants, who were not part of the main sample, was conducted to verify the survey's applicability. Based on their feedback, some survey questions were revised to enhance clarity and accuracy in language and spelling.

The primary goal of this study was to assess the impact of voice-activated AI applications on brand loyalty. A survey, distributed both in person and online, was used to gather participants' views on trust, engagement, perceived risk, innovation value, and brand loyalty. Participants were informed that participation was voluntary. Since common method bias can pose a challenge in such surveys, participants were assured that their responses would remain confidential and be used solely for research purposes. Additionally, participants were encouraged to answer all questions honestly, as there were no right or wrong answers. Data collection occurred between July 4, 2022, and October 30, 2022. Some surveys were conducted face-to-face, where 160 questionnaires were distributed, of which 23 were excluded due to incomplete or incorrect responses, yielding 137 valid responses. Additionally, 55 suitable questionnaires were obtained via Google Forms and distributed through social media. Hair et al. (2010) recommend a sample size at least 10 times the number of survey items. With 17 items in this study, a minimum of 170 participants was required. A total of 192 valid responses were collected, satisfying the necessary sample size.

From the valid responses (N=192), 50.5% of participants were male (N=97) and 49.5% were female. The age group 25–34 comprised the largest share, with 35.4% (N=68). Regarding marital status, 62.5% of participants were single (N=120), and 42.7% held an undergraduate degree (N=82). Regarding erceived income level, 40.1% (N=77) of participants reported having a low income.

6. RESULTS

6.1. Data Analysis

Smart PLS 4 was utilized to analyze the data, evaluate the research model, and test the hypotheses. A two-step approach was used: first, to assess the measurement model, and second, to evaluate the structural model. The measurement model examined the latent variables' loadings on their respective constructs, including reliability, internal consistency (via composite reliability coefficient), convergent validity, and discriminant validity. For the structural model, methods such as common variance bias (VIF - variance inflation factor), R^2-determination coefficient, and path analysis were employed to validate the hypotheses (Çavuşoğlu, 2021a).

### 6.2. Measurement Model Results

Reliability analysis confirmed the consistency of the scale items (Nunnally and Bernstein, 1994). For both reliability and internal consistency, a coefficient greater than 0.70 is recommended (Hair et al., 2014). The study's Composite Reliability (CR) coefficients, Cronbach's alpha (α), and rho_a values were all above the 0.70 threshold.

Table 2: Reliability and Validity

Variables	λ	CR	rho_a	AVE
Trust (α=0.93)		.96	.96	.94
1 I believe Siri is acting in my best interest.	0.977			
2 I expect Siri to be sincere and real.	0.962			
3 I believe that Siri fulfills its roles very well.	0.971			
Interaction (α=0.88)		0.97	0.97	0.91
1 I can interact with Siri easily.	0.953			
2 I can talk to Siri comfortably.	0.958			
3 I can easily chat with Siri.	0.961			
4 I can navigate easily using Siri.	0.958			
Perceived Risk (α=0.97)		0.98	0.99	0.97
1 Giving Siri personal information is risky.	0.980			
2 There will be a lot of uncertainty regarding the provision of personal information to Siri.	0.993			
3 There will be a lot of potential loss associated with providing personal information to Siri.	0.989			
Innovation Value (α=0.92)		0.96	0.96	0.87
1 Using Siri is a unique experience.	0.874			
2 Using Siri is a once-in-a-lifetime experience.	0.961			
3 Using Siri is an educational experience.	0.948			
4 The experience of using Siri satisfies my curiosity.	0.958			
5 Using Siri provides an authentic experience.	0.943			
Brand Loyalty (α=0.92)		0.97	0.97	0.92
1 Next time I buy any technology, I will buy the Apple brand.	0.972			
2 I intend to continue to purchase the Apple brand.	0.951			
3 I am affiliated with the Apple brand.	0.942			
4 I am willing to pay a higher price for the Apple brand than other brands.	0.973			

Çavuşoğlu (2021a) assessed the measuring model's discriminant and convergent validity. Convergent validity refers to the rate at which all items in the model correlate with other measures of the same latent variable. This validity should be established to ensure that the indicators of a construct measure the same idea. Convergent validity requires a factor loading of at least 0.708 (Hair et al., 2010) and a mean-variance (AVE) of more than 0.50 (Duckworth and Kern, 2011).

Figure 2: Correlation Values of the AVE Square Root of all Structures
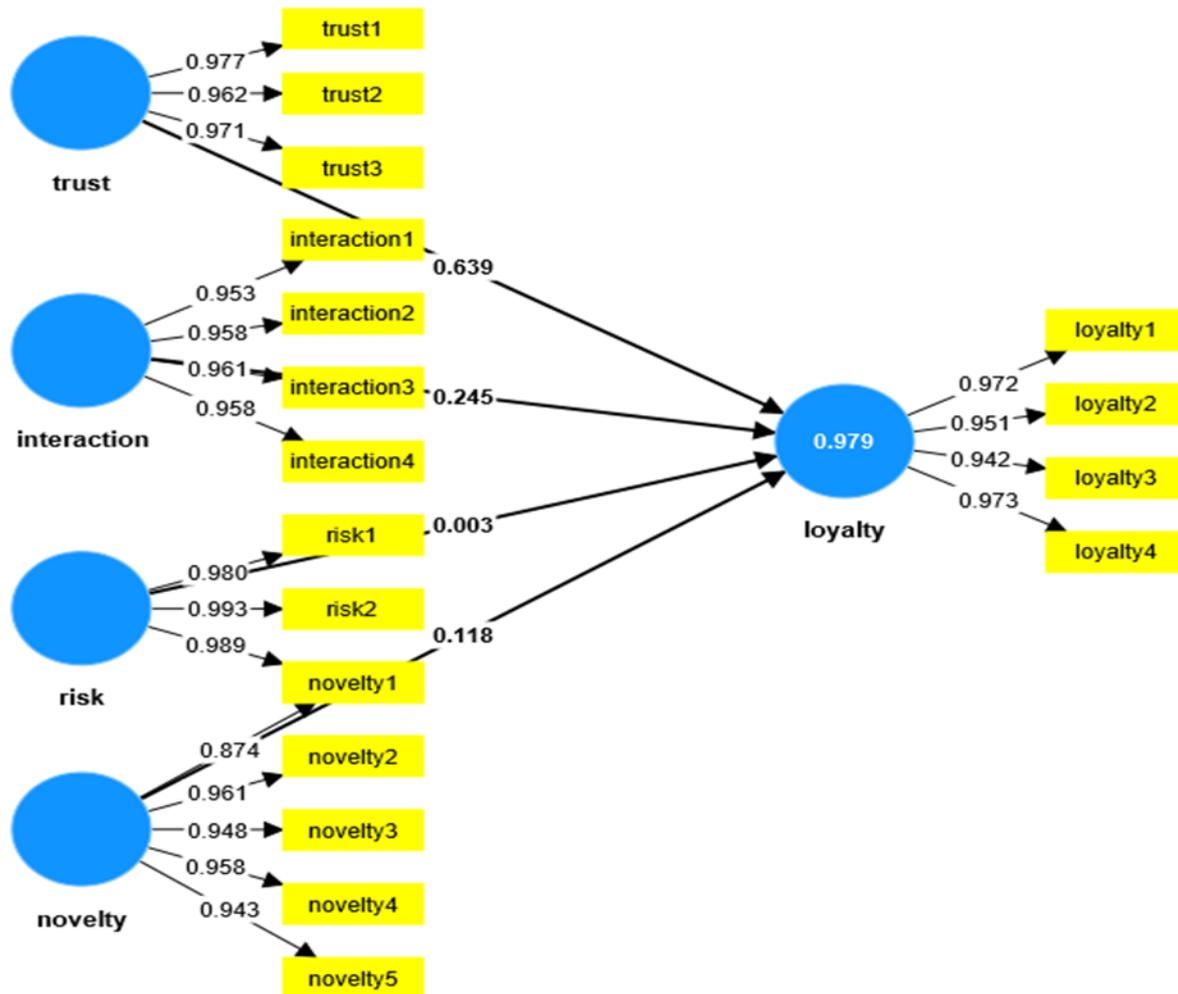
All of the variables had a factor load (λ) greater than 0.708, and each construct's AVE above 0.50. This demonstrates that convergent validity has been attained. The Fornell-Larcker criterion states that a construct has discriminant validity if the square root of its AVE is bigger than the correlation with another construct (Çavuşoğlu, 2021b). The data in Table 3 show that the square root of the AVE for all structures exceeds the correlation values.

Table 3: Discrimination Validity Results

Variables	1	2	3	4	5
Fornell-Larcker criterion					
Trust	0.970				
Interaction	0.937	0.957			
Perceived Risk	-0.180	0-.123	0.987		
Innovation Value	0.931	0.929	-0.156	0.938	
Brand Loyalty	0.916	0.913	-0.160	0.920	0.960
HTMT Criteria					
Trust					
Interaction	0.998				
Perceived Risk	0.180	0.122			
Innovation Value	0.963	0.960	0.155		
Brand Loyalty	0.916	0.902	0.159	0.970	

Notes: Italicized values represent the square root of the mean-variance subtracted (√AVE).

In addition, HTMT analysis was used to determine discriminant validity. According to Henseler et al. (2016), the HTMT should be less than one. Consistent with the findings in Table 3, all HTMT values are less than one, demonstrating discriminant validity for all latent components.

The goodness-of-fit index of the research model was also investigated. PLS computes the SRMR and NFI values for SEM goodness-of-fit values. Thus, the SRMR of 0.028 was less than the threshold value of 0.08 (Hu and Bentler, 1999). The NFI value was found to be 0.881, which is close to one (Hair et al., 2013). The values show that the research model meets the goodness-of-fit criteria. As a result of all these evaluations, measurement model tests were completed, and the structural evaluation stage started.

6.3. Structural Model Results

In the preceding section, all the proposed measurement model validity criteria were met, bringing the first part of the two-stage PLS-SEM evaluation procedure to a close. This section describes the second stage of the process. The structural model incorporates the tested hypotheses about the influence of the VIF, R^2, and other factors. This step starts with assessing the structural model for linearity and then evaluating the structural model's relationships and path coefficients. In terms of linearity, Table 4 shows the VIFs for the structural model's paths. Common technique bias issues can arise in social science studies, particularly those that measure perceptions or actions through questionnaires (Podsakoff and Organ, 1986). Since no VIF exceeded this threshold in the model, there were no linearity or bias problems.

Figure3: Structural Model Including All Variables
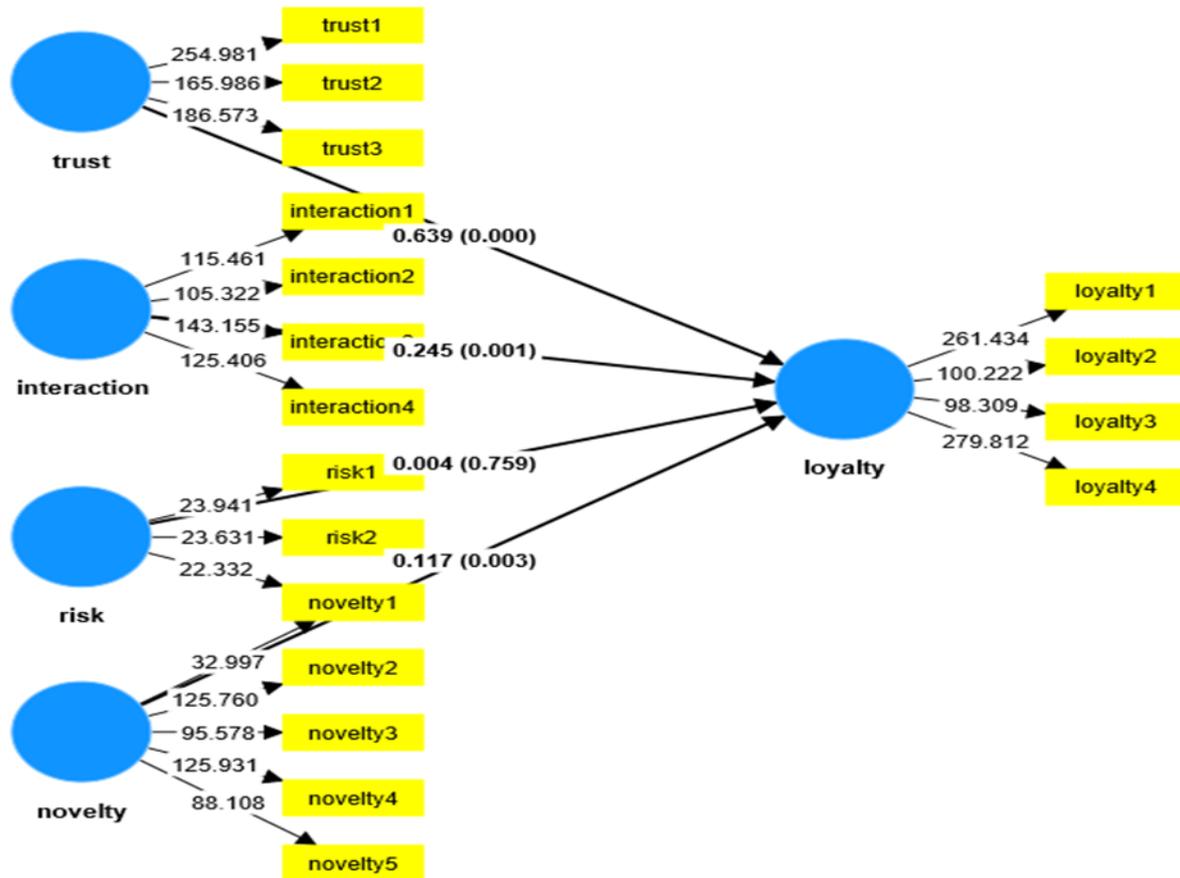
After calculating the VIFs, the R^2 values for the model's variables were analyzed. The R^2 number indicates the rate of disclosure of independent factors over dependent variables (Çavuşoğlu, 2021b). Accordingly, brand loyalty accounts for 97% of the independent variables. According to Hair et al. (2011), an R^2 coefficient of 0.75 or higher indicates a robust explanation rate. The internal model evaluations met the relevant conditions and tested the hypotheses.

This work used the PLS standard bootstrapping approach with 5,000 bootstrap samples and 192 data points to assess the route coefficients' significance (Hair et al., 2014). Figure 3 and Table 4 shows the predictions of the structural model that includes all the Variables.

Table 4. Structural Equation model results

Hypotheses		ß	S.S.	t-value	p- value	VIF
Model						
H_1	Trust >>> Brand Loyalty	0.639	0.071	8.980	0.000***	2.566
H_2	Interaction >>> Brand Loyalty	0.245	0.071	3.442	0.001**	1.678
H_3	Perceived Risk >>> Brand Loyalty	0.004	0.012	0.307	0.759	1.079
H_4	Innovation Value >>> Brand Loyalty	0.117	0.039	3.003	0.003**	2.325

p=<0.001***

The route analysis revealed that trust, engagement, and innovation had a significant, positive impact on brand loyalty. Thus, hypotheses H_1, H_2, and H_4 were approved. In this study, the perceived risk variable did not affect brand loyalty. As a result, H_3 is rejected.

7. CONCLUSION

Artificial intelligence, a significant product of Industry 4.0, defined as the current trend of automation and data exchange in production technologies, is attracting the attention of researchers across various fields. This study, designed to assess the impact of voice-based applications, specifically Siri, on brand loyalty, focuses on one of the key marketing science trends. Siri, a well-known application among AI technologies, provided the basis for this research.

This research aimed to explore the influence of AI, which has recently become a prominent part of daily life, on brand loyalty. It examined the effects of trust in AI, interaction with AI, consumers' perceived risk concerning AI, and the innovation value generated by AI, concerning their influence on brand loyalty (H_1; p<0,05). The findings indicate that trust in voice-based AI application positively impacts brand loyalty. As noted by Suhartanto et al. (2022), both attitude and trust toward AI are significant determinants of brand loyalty. Similarly, Samarah et al. (2022) highlighted brand trust as a key driver of loyalty. Numerous studies have identified a strong, positive relationship between brand trust and loyalty (Saydan et al., 2011; Upamannyu et al., 2014; Orzan et al., 2016; Marliawati and Cahyaningdyah, 2020; Shin et al., 2019).

This study also found a positive relationship between interaction with STYZU and brand loyalty (H_2; p<0,05). While research on the relationship between interaction and loyalty is limited, Doğaner and Armağan (2022) observed that consumer-brand interaction enhances brand loyalty. Similarly, Buran and Koçak (2019) reported that customer loyalty results from virtual interactions between consumers and brands. Çetin and Zengin (2022) also concluded that brand interaction positively correlates with loyalty.

Based on the analyses conducted, it was determined that the hypothesis (H_3), which proposed that 'Perceived risk has a negative effect on brand loyalty,' was not statistically significant, and therefore, the hypothesis was rejected (p>0.05). Another hypothesis tested in the study revealed that high perceived risk correlates with lower brand loyalty. According to Jin et al. (2016), perceived risk negatively influences trust, customer satisfaction, and loyalty. The findings of Marakanon and Panjakajornsak (2017) corroborate this outcome. Several other studies also indicate a negative relationship between perceived high risk and loyalty (Aldas-Manzano et al., 2011; Yen, 2010), with Marakanon and Panjakajornsak (2017) further stating that perceived risk and customer trust directly affect loyalty. Demir (2011) suggested that varying levels of perceived risk influence brand loyalty, with brand loyalty fluctuating according to the degree of perceived risk. Paulssen et al. (2014) asserted that when consumers perceive lower risk, brand satisfaction alone determines loyalty, but when risk perception is high, brand trust solely drives loyalty.

This study also found a positive relationship between interaction with STYZU and brand loyalty (H_4; p<0,05). While research on the relationship between interaction and loyalty is limited,

Doğaner and Armağan (2022) observed that consumer-brand interaction enhances brand loyalty. Similarly, Buran and Koçak (2019) reported that customer loyalty results from virtual interactions between consumers and brands. Çetin and Zengin (2022) also concluded that brand interaction positively correlates with loyalty.

Regarding the hypothesis that Siri's innovation value significantly enhances brand loyalty, this positive impact aligns with previous literature (Çağlıyan and Yılmaz, 2020; Şekerkaya and Erdoğan, 2019; Dölarslan, 2018; Unurlu, 2019; Yıldız and Koçan, 2018; Huo et al., 2022; Kiumarsi et al., 2020).

This study on the impact of voice-based AI applications on brand loyalty, using Siri as an example, can provide valuable insights for future research and the industry. Future studies could conduct comparative analyses of different voice-based AI applications (such as Alexa, Google Assistant, etc.) and provide an in-depth examination of user experiences. Additionally, research could be expanded to explore the long-term effects of perceived human-likeness and emotional connection in voice response systems on brand loyalty. For the industry, brands should embrace voice-based AI technologies as tools to enhance customer engagement and foster loyalty, while innovating on how these technologies can personalize user experiences. In this context, strategic investments focused on leveraging the potential of voice services to increase brand attachment are recommended.

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