Investigating the impact of artificial intelligence stimuli on customer engagement and brand relationship quality in the retail banking industry

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ABSTRACT

The integration of artificial intelligence (AI) into mobile banking operations has become increasingly prevalent, with many banks leveraging AI to enhance their service offerings and operational efficiency. This study investigates the impact of various AI stimuli (perceived anthropomorphism, perceived interactivity, perceived personalization, perceived intelligence, information and accessibility) on customer engagement and brand relationship quality among young adults in the retail banking sector. Utilising a convenience sampling method, the study collected 267 responses through an online survey to test the proposed model. Data analysis was performed using the partial least squares structural equation modeling (PLS-SEM) technique. The findings reveal that system quality and service quality have a significant effect on customer engagement, while perceived anthropomorphism, perceived intelligence, and information quality do not significantly impact engagement levels. These results provide valuable insights for retail banking marketers, highlighting the importance of focusing on system and service quality to improve customer engagement in mobile banking. As young adults are significant users of mobile banking services, there is an opportunity for banks to enhance their use of AI stimuli and improve online system quality to better attract and retain this demographic. This research contributes to a deeper understanding of how young consumers perceive and interact with AI-driven services, shedding light on their attitudes and experiences related to AI stimuli and brand relationship quality in the banking sector.

Keywords: Artificial intelligence, perceived anthropomorphism, mobile banking, system quality, customer engagement, brand relationship quality

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INTRODUCTION

The integration of artificial intelligence (AI) into the global economy and financial services sector represents a significant advancement with far-reaching implications. AI technologies are increasingly being deployed across various industries, including government payments, healthcare, e-commerce, logistics, and finance (Rodrigues *et al.*, 2022). Within the banking industry, AI has emerged as a transformative force, significantly improving operational efficiency and reducing costs associated with traditional processes such as paperwork and printing. Notably, innovations like chatbots, which interact with customers through preprogrammed inquiries, have revolutionized customer service by enabling rapid, automated responses that enhance overall customer satisfaction (Mogaji *et al.*, 2021).

The adoption of AI in banking has led to a more unified and efficient customer experience, as banks leverage these technologies to digitize their operations and meet evolving customer expectations. However, despite the widespread implementation of AI, there is a notable gap in understanding how different demographic groups, especially young adults, perceive and engage with AI-enabled mobile banking applications.

Mobile banking has emerged as a particularly dynamic area of innovation, with advancements in mobile banking applications transforming how customers interact with their banks. Smartphones, once primarily used for communication, have become essential tools for managing financial transactions. The advent of self-service technology has enabled customers to conduct virtual banking transactions and access real-time information from anywhere, at any time (Hassan & Wood, 2020; Mehrad & Mohammadi, 2017). The rise of AI-driven services and fintech has intensified competition among banks, pushing them to adopt cutting-edge technologies to meet customer demands and stay ahead of rivals (Yusaivi *et al.*, 2021).

Young adults, defined as individuals aged 18 to 35, are particularly significant in this context. They are often characterized as 'tech-savvy' due to their familiarity with smartphones and digital technologies. This demographic includes millennials (born between 1981 and 1996) and Generation Z (born from 1997 onward), who are known for their early adoption of mobile banking and high level of technological proficiency. Millennials, in particular, represent a substantial portion of mobile banking users, with 70% actively engaging with these services. They value the convenience and efficiency provided by mobile and online banking apps and typically maintain a more transactional relationship with their banks, often holding fewer accounts across multiple institutions.

In the competitive landscape of the financial sector, particularly in Africa and South Africa, where a few dominant banks control the majority of the market, AI-driven innovations are essential for maintaining competitive advantage. As of September 2022, South Africa had 31 registered banks, with five banks controlling 90% of the country's banking assets (Galal, 2023). One of these banks alone had a substantial client base of 19 million as of August 2022. The intense competition among these institutions not only drives service improvements but also promotes innovation, ultimately benefiting consumers by enhancing service quality and reducing costs (Simatele, 2015).

This research seeks to investigate how AI stimuli affect young adults' engagement with retail banking services, aiming to provide deeper insights into the factors influencing customer interaction and brand relationship quality in the evolving landscape of mobile banking.

PURPOSE OF THE STUDY

The purpose of this study is to investigate the role of artificial intelligence (AI) stimuli in influencing customer engagement and brand relationship quality within the retail banking sector. Specifically, the study aims to investigate how AI-enabled mobile banking applications stimuli, such as perceived anthropomorphism, intelligence, information quality, system quality, and service quality, influence customer engagement, and how customer engagement subsequently impacts brand trust, brand commitment, and brand loyalty.

Given the growing reliance on AI-powered technologies like chatbots and virtual assistants, understanding these dynamics is critical for banks to effectively attract and retain young adult customers by offering engaging digital experiences (Hollebeek, Sprott, & Brady, 2021; Moussawi & Koufaris, 2019).

Furthermore, the study seeks to provide actionable insights for marketers and practitioners in leveraging AI-driven systems to enhance the quality of customer-brand relationships, ultimately improving customer loyalty and competitive advantage in a highly saturated market (Noor *et al.*, 2022; Abror *et al.*, 2020). By examining these interrelationships, this research aims to contribute to the literature on AI and customer engagement.

Key Objectives

1. To examine the impact of AI attributes (perceived anthropomorphism, perceived intelligence, information quality, system quality, and service quality) on customer engagement.
2. To investigate the influence of customer engagement on brand trust and brand commitment.
3. To assess the role of brand trust and brand commitment in driving brand loyalty.

THEORETICAL FRAMEWORK

This study is grounded in the following three theories: stimulus-organism-response theory (SOR) (Lee & Chen, 2022), the anthropomorphism theory (Epley, Waytz, & Cacioppo, 2007), and the brand relationship quality theory (Fournier, 1998).

THEORETICAL FRAMEWORK AND HYPOTHESES TESTING

Anthropomorphism Theory

Technological innovations and ultimately, AI features, are placed before consumers in views of conceiving and characterising these as having human-like features. This can be described as the root of the anthropomorphism theory (Guthrie, 1997). It consists of the distinctive human-like feelings, behavioural characteristics and mental state that a non-living object would be attributed as having (Salles, Evers, & Farisco, 2020). Further research goes on to discuss how it not only links to non-living objects but may include a rather large human-like interpretation of anything based on direct observations. According to Salles *et al.*, (2020), anthropomorphism can be seen as common in terms of anthropomorphising the environment, religious figures, animals, and technological objects.

Brand Relationship Quality Theory

Brand Relationship quality is described as a customer-based indicator that measures the depth and strength of the relationship between the consumer and brand (Fournier, 1998). Brands associating human qualities to their brand lead the audience to developing emotional attachments, almost similar to those individuals would have with other individuals. Brand Relationship Quality includes relationship components, such as supportive cognitive beliefs (e.g. intimacy and trust), behavioural ties (e.g. commitment), affective and socio-motive attachments (e.g. self-connection, nostalgia, love/passion) (Kim, Park, & Kim, 2014).

Stimulus-Organism-Response (SOR) Theory

The Stimulus-Organism-Response (SOR) theory, as defined by Mehrabian and Russell (1974), explains that a consumer perceives and processes a stimulus (input), which subsequently triggers a response or behavior (output). In essence, the researchers investigated what was known as the General Communication Model. This model followed the flow of Source →Message →Media → Receiver → Effects in terms of understanding consumer behaviour (Mehrabian & Russell, 1974). This flow subsequently breaks down into the stimulus-orientations-response theory, where Stimulus includes Source → Message → Media, Organism (receiver) and Response (effects). The Stimulus-organism-response theory was chosen as the theory to develop this research paper because, given literature reviewed in previous research, it has been stated that the theory was best found to investigate users' adoption of AI-enabled online banking.

THEORETICAL MODEL DEVELOPMENT

PERCEIVED ANTHROPOMORPHISM AND CUSTOMER ENGAGEMENT

Perceived Anthropomorphism measures are described to focus on the users' perceptions of robots or AI human-likeness, based on mental capacities and facial features (Moussawi & Koufaris, 2019). The anthropomorphism aspect of AI aims to enhance its capability to interact with users in a socially meaningful manner by mimicking human behaviours and attributes. For instance, if customers are unable to distinguish between interacting with a human sales consultant and an AI system, such as a chatbot, this indicates effective anthropomorphic design (Moussawi & Koufaris, 2019). When a consumer's engagement with AI feels as authentic as their interaction with a human staff member, it suggests that the AI is successfully meeting the criteria for effective customer engagement (Hollebeek, Sprott, & Brady, 2021). Therefore, it can be hypothesised that:

H1: Perceived anthropomorphism has a positive relationship with customer engagement.

PERCEIVED INTELLIGENCE AND CUSTOMER ENGAGEMENT

Intelligence in the context of AI is defined with qualities such as problem-solving, goal-achievement, speed, improvement, flexibility, environmental awareness, and learning (Moussawi & Koufaris, 2019). Literature describes Perceived Intelligence based on formed perceptions which are the extent of the personal intelligent agent's (e.g., Siri or Alexa) behaviour being goal-directed, autonomous, efficient and useful with a meaningful output and an ability to process and produce natural language (Moussawi & Koufaris, 2019). In ways of communicating with consumers through AI, customer engagement is deemed worthwhile when AI-application features present themselves to consumers in an effective, autonomous, goal-directed, useful, and communicatively understandable manner/behaviour (Hollebeek, Sprott, & Brady, 2021). Hence the following hypothesis is proposed:

H2: Perceived intelligence has a positive relationship with customer engagement.

INFORMATION QUALITY AND CUSTOMER ENGAGEMENT

To ensure optimal user satisfaction from AI, it is essential that the information provided is accurate, precise, reliable, and current. High-quality information helps keep consumers engaged, as they rely on it to make informed decisions (Kumar, 2023). Research indicates that users invest considerable time and effort in searching for product details, deals, and the latest offers online (Ashfaq *et al.*, 2020). Access to comprehensive and reliable information enhances the consumer experience, as it enables them to obtain all relevant data from the service provider easily. Therefore, providing high-quality information plays a crucial role in improving overall customer engagement with the brand. Therefore, we posit:

H3: Information quality has a positive relationship with customer engagement.

SYSTEM QUALITY AND CUSTOMER ENGAGEMENT

System quality can be referred to as the overall design and functionality of a system that ensures it produces high-standard information and offers user-friendly access. A well-designed system not only facilitates easy access to information but also includes features that enhance the user's experience (Muda & Ade Afrina, 2019). Users prefer systems that provide timely responses and accurate information, which contributes to higher levels of user satisfaction. This satisfaction is often reflected in purchasing behavior and brand loyalty (Prentice, Weaven, & Wong, 2020). In the context of our study, it is crucial to understand how system quality affects customer engagement and, in turn, impacts consumers' trust, commitment, and loyalty towards a particular brand. Hence the proposed hypothesis:

H4: System quality has a positive relationship with customer engagement.

SERVICE QUALITY AND CUSTOMER ENGAGEMENT

In the highly competitive banking sector, where numerous banks offer similar products, it is crucial for bank management to distinguish their brand through superior service quality (Noor, Rao Hill, & Troshani, 2022). Service quality is defined by how well the actual service experience aligns with customer expectations. When a service meets or exceeds these expectations, it results in customer satisfaction; however, failing to meet expectations can lead to dissatisfaction (Veloso, Magueta, Sousa & Carvalho, 2020). Research indicates that service quality positively influences brand loyalty indirectly through customer engagement. This engagement is significantly impacted by both service quality and customer satisfaction (Abror *et al.*, 2020). Therefore, we posit.

H5: Service quality has a positive relationship with customer engagement.

CUSTOMER ENGAGEMENT AND BRAND TRUST

The commitment-trust theory proposed by Morgan and Hunt (1994) highlights trust and commitment as critical components for a successful customer-brand relationship (Vohra & Bhardwaj, 2019). AI-driven applications enable users to engage with marketing service agents virtually at their convenience and from any location (Cheng & Jiang, 2022). In this context, customers desire to feel valued and acknowledged. Trust reflects a customer's readiness to rely on a company's actions, expecting these actions to be positive and beneficial (Al-Dmour *et al.*, 2019). Therefore, we hypothesise the following:

H6: Customer Engagement has a positive relationship with brand trust.

CUSTOMER ENGAGEMENT AND BRAND COMMITMENT

Customer engagement encompasses a consumer's active participation with a company's products and services, extending beyond mere behaviour (Al-Dmour *et al.*, 2019). Customer engagement is a consumer's participation in a company's offerings and product which is not limited to just behaviour (Al-Dmour *et al.*, 2019). Brand commitment, as discussed in the literature, involves understanding the cognitive processes that drive repeated purchases of a particular brand (Wali, Wright, & Uduma, 2015). Effective customer engagement fosters meaningful relationships with consumers, which in turn enhances brand commitment. This concept aligns with the brand relationship quality theory, where commitment and trust are central to defining the quality of the relationship between a consumer and a brand (Akrout & Nagy, 2018). Therefore, we hypothesise that:

H7: Customer Engagement has a positive relationship with brand commitment.

BRAND TRUST AND BRAND LOYALTY

Brand loyalty refers to a customer's consistent preference for and repeat purchase of a specific product or brand. This loyalty is deeply influenced by brand trust, which determines whether customers remain with a company or decide to switch to competitors. Brand trust is built on the reliability and integrity of the company, affecting the customer's decision to either maintain their patronage or abandon the brand altogether (Kwan Soo Shin, Amenuvor, Basilisco, & Owusu-Antwi, 2019). High levels of brand trust encourage repeat purchases and long-term commitment, while a lack of trust can lead to customer attrition. The dynamic between brand loyalty and trust highlights the importance of fostering strong, trustworthy relationships with customers to ensure ongoing support and minimize the risk of losing them to competitors. Therefore, we hypothesise that:

H8: Brand Trust has a significant impact on brand loyalty.

BRAND COMMITMENT AND BRAND LOYALTY

Brand loyalty is referred to as the commitment of a consumer to support and repurchase a selected product repeatedly (Jamshidi & Rousta, 2021). This gives guidance to the decision a consumer would make in deciding to choose a brand over other brands (Jamshidi & Rousta, 2021). How committed a consumer is to a brand, should determine the loyalty towards it. Being able to distinguish between brand loyalty and other forms of repurchase behaviour is provided by brand commitment which also gives premise to being able to assess the degree of brand loyalty (Wali *et al.*, 2015). Therefore, we hypothesise the following:

H9: Brand commitment has an impact on brand loyalty.

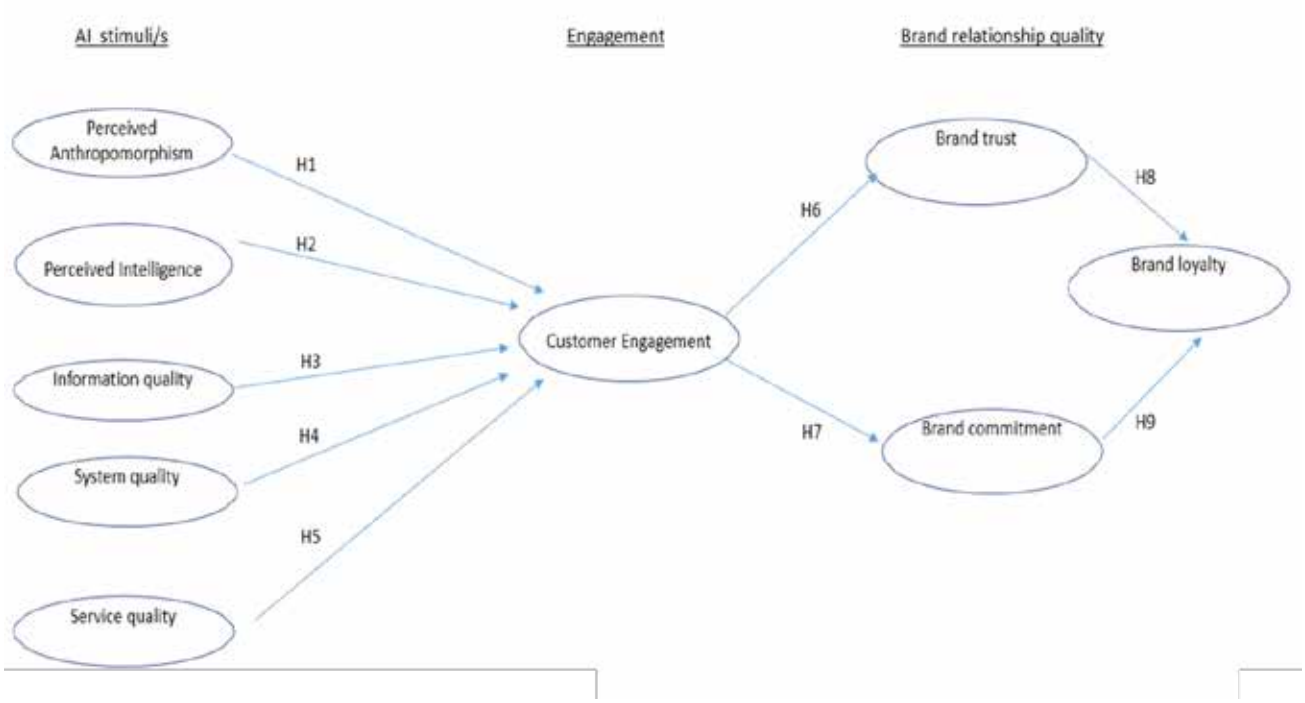

FIGURE 1: CONCEPTUAL MODEL

Source: Authors own construction (2023)

METHODOLOGY

DATA COLLECTION

For this study, the questionnaire items were adapted from existing scales. All the items were measured using a five-point Likert scale, ranging from “strongly disagree” 1 to “strongly agree” 5. An online survey was used to collect data. 267 valid responses were used for analysis.

RESULTS

DEMOGRAPHIC PROFILE OF RESPONDENTS

TABLE 1: RESPONDENTS PROFILE

Variable	Category	Frequency	Percentage
Gender	Male	90	33.7
	Female	172	64.4
	Prefer not to say	5	1.8
Age	18 - 23	169	63.2
	24 - 28	52	19.4
	29 - 35	46	17.2
Household Income	Less than R10 000	72	27.0
	R10 001 - R25 000	57	21.3
	Prefer not to say	43	16.1
	R25 001 - R40 000	41	15.3
	R40 001 - R55 000	30	11.2
	Above R60 000	16	6.0
How often do you use AI-enabled mobile banking applications per month?	Less than once	5	1.8
	1 - 2 times	33	12.3
	3 - 5 times	76	28.4
	More than 6 times	153	57.3

The majority of the participants were female, comprising 64.4% of the total sample (267 respondents), while 33.7% of the participants identified as male and the remaining 1.8% did not wish to disclose their gender. As the study focuses on young adults, respondents were requested to indicate their age from 18 and 35 years old. The profile illustrates that most of the participants (63.2%) are within the age range of 18-23 years, followed by 19.4% being between 24 and 28 years and 17.2% of the participants aged between 29-35 years old. For this study, six levels of household income were defined. The bulk of participants, approximately 27% of the sample, have household incomes of less than R10,000. Additionally, 15.3% of participants answered that their household earns between R25 001 and R40 000, 11.2% between R40 001 and R55 000, and 6% above R60 000. Furthermore, 21.3% categorised their annual household income in the range of R10 001 - R25 000, and 16.1% prefer not to specify. According to the findings, mobile banking applications are used by most participants who are in lower income groups. The data signifies that the majority (57.3%) of participants use mobile banking applications more than six times in a month. 28.4% of the participants use mobile banking applications 3-5 times a month, while 12.3% use it 1-2 times a month and 1.8% only use it occasionally, indicating less than once per month.

FACTOR OUTER LOADINGS

We used outer loadings (shown in Table 2), along with composite reliability (CR) and average variance extracted (AVE), to evaluate convergent validity. Outer loadings in this study were above the threshold recommended by (Hair, Risher, Sarstedt, & Ringle, 2019).

TABLE 2: FACTOR OUTER LOADINGS

BC1 <- Brand commitment	0,604
BC2 <- Brand commitment	0,671
BC3 <- Brand commitment	0,825
BC4 <- Brand commitment	0,753
BL1 <- Brand loyalty	0,876
BL2 <- Brand loyalty	0,878
BL3 <- Brand loyalty	0,849
BT1 <- Brand trust	0,831
BT2 <- Brand trust	0,907
BT3 <- Brand trust	0,869
CE1 <- Customer engagement	0,586
CE2 <- Customer engagement	0,453
CE3 <- Customer engagement	0,736
CE4 <- Customer engagement	0,835
IQ1 <- Information quality	0,735
IQ2 <- Information quality	0,802
IQ3 <- Information quality	0,732
PA1 <- Perceived anthropomorphism	0,738
PA2 <- Perceived anthropomorphism	0,766
PA3 <- Perceived anthropomorphism	0,853
PA4 <- Perceived anthropomorphism	0,750
PI1 <- Perceived intelligence	0,746
PI2 <- Perceived intelligence	0,822
PI3 <- Perceived intelligence	0,839
SQ1 <- System quality	0,738
SQ2 <- System quality	0,854
SQ3 <- System quality	0,738
SQ4 <- System quality	0,494
SVQ1 <- Service quality	0,805
SVQ2 <- Service quality	0,787
SVQ3 <- Service quality	0,730
SVQ4 <- Service quality	0,719

Source: Authors' construction based on PLS SEM

RELIABILITY AND VALIDITY

The Cronbach alpha values were above the threshold of 0.7 threshold as suggested Hair *et al.* (2019). The CR values ranged from 0.755 to 0.903, indicating strong internal consistency of the constructs. Additionally, all AVE values were above 0.50, varying from 0.516 to 0.756 (refer to Table 3), thus confirming convergent validity. Consequently, the measurement validity was deemed sufficient and satisfactory.

TABLE 3: MEASUREMENT STATISTICS OF CONSTRUCTS

	Cronbach's alpha	Composite reliability	Average variance extracted (AVE)
Brand commitment	0,702	0,808	0,516
Brand loyalty	0,836	0,901	0,753
Brand trust	0,838	0,903	0,756
Customer engagement	0,599	0,755	0,446
Information quality	0,643	0,801	0,573
Perceived anthropomorphism	0,785	0,859	0,605
Perceived intelligence	0,736	0,845	0,645
Service quality	0,760	0,846	0,579
System quality	0,672	0,805	0,516

Source: Authors' construction based on PLS SEM

DISCRIMINANT VALIDITY

Discriminant validity was tested through the heterotrait-monotrait (HTMT) criterion (Hair *et al.*, 2019). All HTMT values were below the threshold of 0.90, confirming the presence of discriminant validity. These HTMT results can be found in Table 4.

TABLE 4: HETEROTRAIT-MONOTRAIT RATIO (HTMT) - MATRIX

	Brand commitment	Brand loyalty	Brand trust	Customer engagement	Information quality	Perceived anthropo-morphism	Perceived intelligence	Service quality	System quality
Brand commitment									
Brand loyalty	0,771								
Brand trust	0,733	0,702							
Customer engagement	0,491	0,404	0,487						
Information quality	0,621	0,347	0,402	0,493					
Perceived anthropomorphism	0,512	0,154	0,203	0,410	0,627				
Perceived intelligence	0,480	0,170	0,225	0,370	0,602	0,722			
Service quality	0,744	0,394	0,610	0,732	0,713	0,450	0,571		
System quality	0,656	0,634	0,802	0,621	0,582	0,307	0,449	0,619	

Source: Authors' construction based on PLS SEM

TABLE 5: FORNELL-LARCKER CRITERION

	Brand commitment	Brand loyalty	Brand trust	Customer engagement	Information quality	Perceived anthropo-morphism	Perceived intelligence	Service quality	System quality
Brand commitment	0,718								
Brand loyalty	0,641	0,868							
Brand trust	0,595	0,591	0,870						
Customer engagement	0,346	0,335	0,384	0,668					
Information quality	0,396	0,274	0,313	0,353	0,757				
Perceived anthropomorphism	0,335	0,125	0,169	0,299	0,416	0,778			
Perceived intelligence	0,288	0,137	0,170	0,294	0,388	0,537	0,803		
Service quality	0,523	0,322	0,495	0,533	0,508	0,338	0,419	0,761	
System quality	0,452	0,488	0,610	0,437	0,375	0,192	0,294	0,425	0,718

Source: Authors' construction based on PLS SEM

The findings presented in Table 5 show the outcomes of the Fornell-Larcker Criterion, indicating that the square root of AVE values exceeds those of other elements within their respective rows and columns. Based on the evaluation of convergent and discriminant validity results, the measurement model used in this study is considered valid and reliable.

TABLE 6: R-SQUARE

	R-square
Brand commitment	0,119
Brand loyalty	0,479
Brand trust	0,147
Customer engagement	0,351

Source: Authors' construction based on PLS SEM

We assessed the explanatory strength of the structural model using R2, as outlined by Hair *et al.* (2019). The R2 values were 0.119 for brand commitment to mobile banking apps, 0.479 for brand loyalty, 0.147 for brand trust, and 0.351 for customer engagement. Hair *et al.* (2019) suggest that R2 should exceed 0.10 (10%). The structural model is illustrated in Table 6.

TABLE 7: HYPOTHESES RESULTS

		Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values	Decision
H1	Perceived anthropomorphism -> Customer engagement	0,116	0,110	0,075	1,554	0,120	Not Supported
H2	Perceived intelligence -> Customer engagement	-0,013	-0,002	0,068	0,185	0,854	Not Supported
H3	Information quality -> Customer engagement	0,015	0,014	0,093	0,166	0,868	Not Supported
H4	System quality -> Customer engagement	0,250	0,255	0,072	3,449	0,001	Supported
H5	Service quality -> Customer engagement	0,384	0,390	0,090	4,270	0,000	Supported
H6	Customer engagement -> Brand trust	0,385	0,392	0,064	6,040	0,000	Supported
H7	Customer engagement -> Brand commitment	0,343	0,350	0,056	6,099	0,000	Supported
H8	Brand trust -> Brand loyalty	0,324	0,324	0,064	5,090	0,000	Supported
H9	Brand commitment -> Brand loyalty	0,448	0,450	0,060	7,519	0,000	Supported

Source: Authors' construction based on PLS SEM

7. DISCUSSION

Perceived anthropomorphism does not significantly influence customer engagement toward mobile banking apps (β = 0.116, p = 0.120), thus H1 is not supported in this study. Perceived intelligence does not significantly influence customer engagement toward mobile banking apps (β = -0.013, p = 0.854), thus H2 is not supported in this study. Information quality does not significantly influence customer engagement toward mobile banking apps (β = 0.015, p = 0.868), thus H3 is not supported in this study. System quality (β = 0.250, p = 0.001) and service quality (β = 0.384, p = 0.000) positively influence customer engagement towards mobile banking apps and thus, H4 and H5 are supported. Customer engagement significantly influences brand trust toward mobile banking apps (β = 0.385, p = 0.000), thus H6 is supported in this study. Customer engagement significantly influences brand commitment toward mobile banking apps (β = 0.343, p = 0.000), thus H7 is supported in this study. Brand trust (β = 0.100, p = 0.000) and brand loyalty (β = 0.454, p = 0.000) positively influence brand loyalty towards mobile banking apps and thus, H8 and H9 are supported. The results of PLS-SEM are presented in Table 7.

7.1 THEORETICAL AND MANAGERIAL IMPLICATIONS

7.1.1 Theoretical Implications

This study adds to the existing body of banking literature by focusing on the variables that influence young adults' inclination to use AI-powered mobile banking apps. It specifically aims to investigate the impact of perceived anthropomorphism, perceived interactivity, perceived personalization, perceived intelligence, information quality, and accessibility on the engagement of young adults with AI in retail banking. Theoretically, this research advances on the understanding of AI factors in banking that affect customer engagement, as well as theories related to anthropomorphism, stimulus-organism-response (SOR), and brand relationship quality. The findings confirm that perceived anthropomorphism, perceived intelligence, information quality, system quality, and service quality have a positive influence on customer engagement. In summary, the empirical results indicate that all constructs; perceived anthropomorphism, perceived intelligence, service quality, system quality, information quality, brand trust, brand commitment, and brand loyalty, strongly impact young adults' engagement with AI in customer interactions.

Managerial Implications

The findings of this study provide valuable insights for research and development teams contemplating the integration of AI technology into mobile banking services. The insights of the study can help improve user satisfaction, and enhance overall reliability. The main aim revolves around embedding more intelligent functionalities into mobile banking app development, aiming for increased efficiency, seamless transaction processes, and enhanced user convenience while simultaneously reducing traditional labour costs in banking operations. As user needs evolve within a diverse society, there is an increasing demand for highly personalised services. Mobile banking applications must be designed to address specific user concerns with tailored responses, emulating human-like interactions to create a more engaging and intuitive user experience. This involves integrating anthropomorphic elements, such as voice recognition, natural language processing, and visual interfaces, to make digital interactions more relatable and effective.

CONCLUSION, LIMITATIONS AND AREAS FOR FURTHER RESEARCH

This study provides empirical evidence supporting the influence of nine key constructs (artificial intelligence stimuli) on customer engagement and brand relationships among young adults in the banking sector. The findings provide valuable insights into how AI stimuli influence these dynamics, highlighting the positive effects of integrating AI functionalities into banking practices. By highlighting the benefits of AI in enhancing customer engagement and brand relationships, this research makes a significant contribution to both the banking industry and the broader field of bank marketing.

Despite its contributions, the study has certain limitations. The study focuses on a specific demographic and banking context, which may not be applicable to other age groups or sectors. Future research could address these limitations by including various age groups. Further studies could also investigate the long-term effects of AI integration on customer engagement and brand loyalty to provide a more comprehensive understanding of its implications.

REFERENCES

Abror, A., Patrisia, D., Engriani, Y., Evanita, S., Yasri, Y., & Dastgir, S. (2020). Service quality, religiosity, customer satisfaction, customer engagement and Islamic bank's customer loyalty. *Journal of Islamic Marketing*, *11*(6), 1691-1705.

Akrout, H., & Nagy, G. (2018). Trust and commitment within a virtual brand community: The mediating role of brand relationship quality. *Information & Management*, *55*(8), 939-955.

Al-Dmour, H. H., Ali, W. K., & Al-Dmour, R. H. (2019). The relationship between customer engagement, satisfaction, and loyalty. *International Journal of Customer Relationship Marketing and Management (IJCRMM)*, *10*(2), 35-60.

Ashfaq, M., Yun, J., Yu, S., & Loureiro, S. M. C. (2020). I, Chatbot: Modeling the determinants of users' satisfaction and continuance intention of AI-powered service agents. *Telematics and Informatics*, *54*, 101473.

Cheng, Y., & Jiang, H. (2022). Customer–brand relationship in the era of artificial intelligence: understanding the role of chatbot marketing efforts. *Journal of Product & Brand Management*, *31*(2), 252-264.

Epley, N., Waytz, A., & Cacioppo, J. T. (2007). On seeing human: a three-factor theory of anthropomorphism. *Psychological review*, *114*(4), 864.

Fournier, S. (1998). Consumers and their brands: Developing relationship theory in consumer research. *Journal of consumer research*, *24*(4), 343-373.

Guthrie, S.E. (1997). Anthropomorphism: a definition and a theory. In Mitchell, R.W., Thompson, N.S. and Miles, H.L. (Eds.), Anthropomorphism, Anecdotes, and Animals, State University of New York Press, Albany, NY, pp. 50-58

Hair, J. F., Risher, J. J., Sarstedt, M., & Ringle, C. M. (2019). When to use and how to report the results of PLS-SEM. *European business review*, *31*(1), 2-24.

Jacoby, J. (2002). Stimulus-organism-response reconsidered: an evolutionary step in modeling (consumer) behavior. *Journal of consumer psychology*, *12*(1), 51-57.

Jamshidi, D., & Rousta, A. (2021). Brand commitment role in the relationship between brand loyalty and brand satisfaction: phone industry in Malaysia. *Journal of Promotion Management*, *27*(1), 151-176.

Kim, K., Park, J., & Kim, J. (2014). Consumer–brand relationship quality: When and how it helps brand extensions. *Journal of Business Research*, *67*(4), 591-597.

Kumar, P. (2023). Effects of in-store information quality and store credibility on consumer engagement in green retailing. *Journal of Retailing and Consumer Services*, *71*, 103195.

Kwan Soo Shin, S., Amenuvor, F. E., Basilisco, R., & Owusu-Antwi, K. (2019). Brand trust and brand loyalty: A moderation and mediation perspective. *Current Journal of Applied Science and Technology*, *38*(4), 1-17.

Lee, J.-C., & Chen, X. (2022). Exploring users' adoption intentions in the evolution of artificial intelligence mobile banking applications: the intelligent and anthropomorphic perspectives. *International Journal of Bank Marketing*, *40*(4), 631-658.

Morgan, R. M., & Hunt, S. D. (1994). The commitment-trust theory of relationship marketing. *Journal of marketing*, *58*(3), 20-38.

Moussawi, S., & Koufaris, M. (2019). Perceived intelligence and perceived anthropomorphism of personal intelligent agents: Scale development and validation.

Muda, I., & Ade Afrina, E. (2019). Influence of human resources to the effect of system quality and information quality on the user satisfaction of accrual-based accounting system. *Contaduría y administración*, *64*(2), 0-0.

Noor, N., Rao Hill, S., & Troshani, I. (2022). Recasting service quality for AI-based service. *Australasian Marketing Journal*, *30*(4), 297-312.

Pentina, I., Gammoh, B. S., Zhang, L., & Mallin, M. (2013). Drivers and outcomes of brand relationship quality in the context of online social networks. *International Journal of Electronic Commerce*, *17*(3), 63-86.

Prentice, C., Weaven, S., & Wong, I. A. (2020). Linking AI quality performance and customer engagement: The moderating effect of AI preference. *International Journal of Hospitality Management*, *90*, 102629.

Salles, A., Evers, K., & Farisco, M. (2020). Anthropomorphism in AI. *AJOB neuroscience*, *11*(2), 88-95.

Simatele, M. (2015). Market Structure and competition in the South African banking sector. *Procedia Economics and Finance*, *30*, 825-835.

Vohra, A., & Bhardwaj, N. (2019). Customer engagement in an e-commerce brand community: An empirical comparison of alternate models. *Journal of Research in Interactive Marketing*, *13*(1), 2-25.

Wali, A. F., Wright, L. T., & Uduma, I. A. (2015). Customer relationship management for brand commitment and brand loyalty. *British Journal of Marketing Studies*, *3*(4), 45-58.