ENHANCED AI-POWERED CUSTOMER EXPERIENCE MODEL

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ABSTRACT
This journal will focus on the intersection of artificial intelligence (AI) and customer experience (CX), highlighting how emerging technologies enhance customer interactions, personalization and satisfaction. AI- powered customer experience models are revolutionizing how business interact with customers by offering real-time, personalized and data-driven interactions. Today's customers expect brands to anticipate their needs, resolve issues instantly, and provide seamless interactions across all channels. The enhanced AI-powered customer experience model aims to transform traditional customer service into an intelligent, customer-centric experience. This study presents an enhanced AI-powered customer experience model by integrating three (3) additional factors; data security, customer satisfaction, and customer loyalty into an existing framework comprised of seven (7) factors, including AI-perceived services (service quality), perceived sacrifice, perceived convenience, personalization, relationship commitment, trust and AI-powered customer experience service. Utilizing a quantitative approach, the model was tested for statistical significance using ANOVA, which confirmed the overall model's validity. Further analysis revealed that AI-powered customer service, relationship commitment, perceived convenience, data security, and customer satisfaction significantly impact the dependent variable, customer loyalty. Data Security is statistically significant with $p\ (0.000) < (0.05)$ which indicates that there is a substantial contribution from data security to customer loyalty. These findings highlight the importance of integrating data security and customer satisfaction into AI-driven customer experience strategies to effectively enhance customer loyalty. The enhanced model offers valuable insights for businesses aiming to optimize their customer experience initiatives through advanced artificial intelligence technologies.

Keywords: *Artificial Intelligence, Customer Experience, Customer Satisfaction, Customer Loyalty, Data Security.*

INTRODUCTION
AI has emerged a game-changer in the marketing automation, revolutionizing the way businesses interact with customers. By leveraging advanced algorithms, AI enables organizations to analyze vast amount of data and deliver personalized experience at scale. In the realm of marketing, AI manifest in various forms including chatbots, recommendation engines and predictive analytics, facilitating enhanced customer experience and foster customer loyalty. (*Surendranadha & Byrapu Reddy 2022*). In the dynamic realm of customer-focused business tactics, retaining loyal customers is still essential for long-term expansion and gaining a competitive edge. recognizing the complex relationships between the effective use of AI, service quality, personalization, perceived convenience, sacrifice, relationship commitment, customer trust, and AI-powered customer experience has become paramount for organizations striving to thrive in the competitive marketplace (*Trawnih et al., 2022*). The impact of AI on customer experience is multifaceted. According to a study in the International Journal of Recent Technology and Engineering, AI technologies, particularly in the form of AI enabled chatbots, have significantly improved personalization, service quality, and hassle-free customer service. These advancements have elevated the customer experience and contributed to better customer satisfaction and foster loyalty, which are critical in today's highly competitive business environment. (*Andrew Ifesinachi et al., 2024*).

Vijayakumar (2023) further elaborates on the role of AI in revolutionizing customer experience, emphasizing its contribution to revenue growth. AI began to emerge as a pivotal tool in creating more dynamic and personalized customer interactions, transitioning from a back-end operational tool to a front-end customer engagement enhancer. This shift was driven by the recognition that AI could do more than just automate; it could analyse, predict, and personalize. AI technologies, particularly machine learning and natural language processing, began to be used to understand customer behaviour, preferences, and needs. This led to the development of AI-powered chatbots and virtual assistants, which could provide personalized customer service at scale, as *Farhi et al. (2020)* highlighted. *Pillarisetty and Mishra, (2022)* discuss how AI tools have significantly impacted the e-commerce industry, enhanced online customer satisfaction and built brand trust. Security and privacy must be strengthened. As services are provided through a wireless connection, service providers must focus on relieving the anxiety about personal information leakage and hacking. Personal information protection can be improved by strengthening user authentication and user protection terms and conditions. In addition, comprehensive information management should be conducted, and continuous efforts should be made to develop network security and encryption technologies. *Yum K and Yoo B (2023)*.

Chen et al. (2021). explores the role of AI chatbots in influencing the online customer experience and customer satisfaction in e-retailing. A quantitative approach was used to collect 425 useable online questionnaires and Statistical Product and Service Solutions (SPSS) and SmartPLS was used to analyze the measurement model and proposed hypotheses. Findings reveal that the usability of the chatbot had a positive influence on extrinsic values of customer experience, whereas the responsiveness of the chatbot had a positive impact on intrinsic values of customer experience. Also, online customer experience had a positive relationship with customer satisfaction, and personality influenced the relationship between the usability of the chatbot and extrinsic values of customer experience.
Similarly, *Tula et al. (2024),* used a comprehensive literature review and detailed case study analysis methodology to examine how AI

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has evolved from an emerging technological tool to a fundamental component in customer-centric business strategies. The study further notes that AI has the capability in personalizing customer interactions, automating support systems, and leveraging predictive analytics and how these capabilities have revolutionized business-customer dynamics. However, this evolution is not without its challenges, including data privacy concerns, ethical considerations, and the need for skilled AI expertise. The study concludes that AI is a strategic asset, necessitating thoughtful integration into business models.

Ameen et al. (2020), analysed how the integration of AI in shopping can lead to an improved AI-enabled customer experience. A theoretical model drawing on the trust-commitment theory and service quality model was proposed. An online survey was distributed to customers who have used an AI- enabled service offered by a beauty brand. A total of 434 responses were analysed using partial least squares-structural equation modelling. The findings indicate the significant role of trust and perceived sacrifice as factors mediating the effects of perceived convenience, personalization and AI-enabled service quality. The findings also reveal the significant effect of relationship commitment on AI-enabled customer experience.

Tulcanaza-Prieto et al. (2023) reviews the relationship between customer perception factors and AI-enabled customer experience in the Ecuadorian banking industry. The study employs a self-designed online questionnaire with five factors for customer perception (convenience in use, personalization, trust, customer loyalty, and customer satisfaction) and two categories for AI-enabled customer experience (AI-hedonic customer experience and AI-recognition customer service). The final valid dataset consisted of 226 questionnaires. The data analysis and the hypotheses tests were conducted using SPSS 26 and structural equation modeling, respectively. The main findings displayed that all five customer perception factors (individual and joint effect) have a positive and significant effect (at least at the 5% level) on AI-enabled customer experience, AI-hedonic customer experience, and AI-recognition customer service in the Ecuadorian banking industry. The authors recommend future work should perform a longitudinal study using quantitative data to measure the effect of AI-enabled customer experience on the Ecuadorian banks' performance. *Ifekanandu et al. (2023)* assessed the influence of AI on customer experience and customer loyalty; as well as the mediating effect of personalization on this relationship. A quantitative online survey was conducted and 636 responses were gathered. The gathered data were analyzed using IBM's AMO for SEM and a number of findings were made. It was discovered that artificial intelligence yields positive and significant (p<0.05) influence on customer experience, customer loyalty, and personalization. The influence of artificial intelligence on customer experience and customer loyalty is also mediated by personalization. The study recommends that companies seeking to develop strong customer loyalty and customer experience should integrate AI into their product and service delivery process and this should be supported with personalization.

These, and other previous research consistently show how effective AI powered Customer experience model is as shown in Figure 1.0 by *Trawnih et al.,2022* but often overlook how integrating data security within AI models influences customer satisfaction and subsequently fosters loyalty. Since the aim of this study is to add AI capable factors which enhances the existing model that could uncover mechanisms by which organizations can achieve sustainable competitive advantages through superior AI-driven customer experiences.
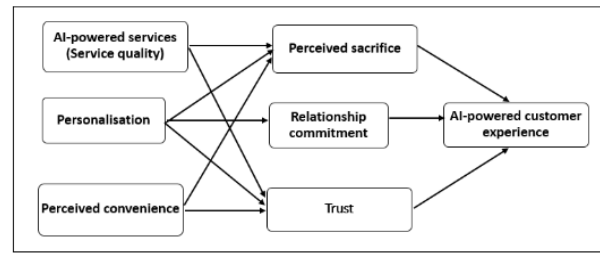
AI-Customer Experience Model

Figure 1.0: AI-Powered Customer Experience Model (Trawnih et al.,2022).

MATERIALS AND METHODS

An online survey was used in this study because of its advantages of flexibility, cost-efficiency, quick results, convenient administration, and storage *(Chen et al., 2022)*. respondents above 18 and have contact with AI will be used because they are considered as the most appropriate respondents to provide sufficient data for the research purposes. The study adopted a 7-point Likert scale (with "1" indicating strongly disagree, and "7" strongly agree) for all measurement items to enable flexibility and to prevent the target audience from being too neutral *(Chen et al., 2022)*.
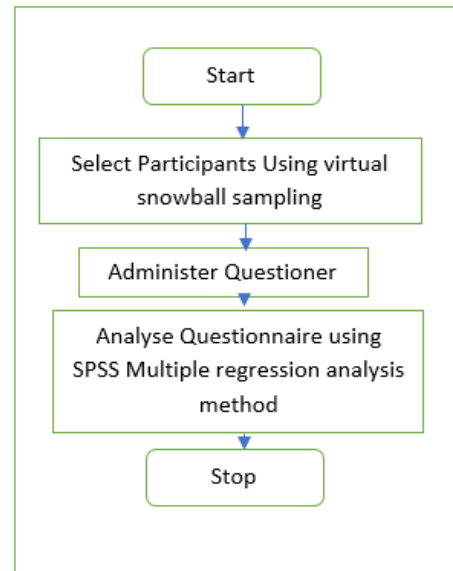

Figure 1.1 Validation Protocol of the study *(Mustapha, 2019).*

A quantitative approach was employed and utilized to gather data on the relationship between factors such as AI-Perceived Services-Service quality (AIPS), perceived sacrifice (PSF), personalization (PS), relationship commitment (RC), AI-Powered Customer experience (AIPCE), perceived convenience (PCV), trust (TRST), data security (DS), customer satisfaction (CS) and customer loyalty (CL). The study developed an enhanced AI-Powered customer experience model that identified key factors influencing customer AI use, satisfaction and loyalty. IBM SPSS (Statistical Product and Service Solutions) Version 20 was used to run the analysis of the

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collected data, the reason for the use of this method is because:

1. The method has been used by different researchers with satisfactory results gotten. (Li & yan et al., 2022; Chen et al., 2022).
2. Due to the nature of the data used, it makes it easy to establish a valid relationship between the dependent variable and the independent variables.
3. The computational procedure is fairly simple and not complicated as compared with other techniques.

RESULTS AND DISCUSSION
The enhanced model consists of three additional factors data privacy, customer satisfaction, and customer loyalty. The model is built upon a combination/extension of the Commitment-Trust Theory Model (Adapted from: *Trawnih et al., 2022)* and SERVQUAL Model (Adapted from: Al-*Araj et al., 2022).*
The model incorporates factors carefully selected to better address current customer expectations regarding privacy, loyalty, and service quality in AI-driven interactions. Including factors such as customer loyalty, customer satisfaction, and data security is important in an AI-powered customer experience model because each of these factors contributes significantly to a brand's success. Customer loyalty represents a long-term commitment from the customer, which AI can leverage to create more personalized experiences. By understanding loyalty patterns, the model can enhance engagement strategies, ensuring customers feel valued and are more likely to return and recommend the brand.
With these additions, the enhanced model now consists of ten factors, combining the original factors namely AI-perceived services, perceived sacrifice, personalization, relationship commitment, AI-powered customer experience, perceived convenience, and trust, with the new ones and represented symbolically using flow arrows to show the relationship between each factor. The identification of this relationship formed the enhanced AI-Powered customer experience model. Model validation showed the entire model is statistically significant as shown in the ANOVA table 1.2, with p value of (0.00 <0.05), using customer loyalty as the dependent variable. These results indicates that the enhanced model effectively addresses key elements in customer satisfaction and loyalty within an AI context.
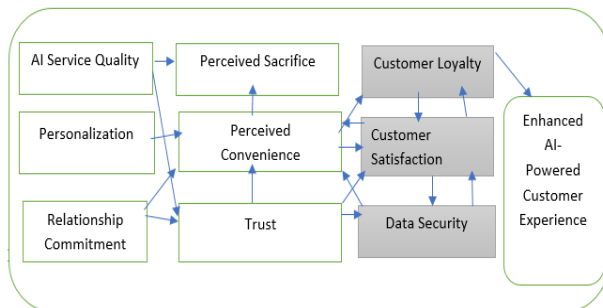

Figure 1.2: The enhanced AI-powered customer experience model validated using IBM SPSS Version 20.

Table 1.0: Descriptive Statistics

	Mean	Std. Deviation	N
CL	9.1835	3.92562	109
AIPCE	12.2385	4.53974	109
AIPS	10.0459	3.86194	109
PS	9.3303	3.00325	109
RC	12.1009	4.31609	109
TRST	13.5688	5.45752	109
PSF	11.2936	3.79889	109
PCV	11.0000	4.38220	109
DS	13.3394	5.80743	109
CS	11.9174	4.95186	109

Table 1.1: Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.873[a]	.761	.740	2.00295	2.129

a. Predictors: (Constant), CS, PSF, PS, DS, PCV, AIPCE, TRST, AIESQ, RC
b. Dependent Variable: CL

From the model summary in Table 1.1, the" R" column represents the value of R which is the multiple correlation coefficient or Pearson correlation with value given as 0.873 (R=0.873). This value is positive which indicates a very strong positive linear relationship between the dependent variable, CL and the independent variables CS, PSF, PS, DS, PCV, AIPCE, TRST, AIPS and RC. It also indicates a good level of prediction. The value of Durbin Watson was 2.129 which is greater than 1 and less than 3. This shows that there is an independence of observation (no auto correlation) and therefore it is statistically significant. And the independent variables used are truly independent. The R square column represents the R2 value (Also called the coefficient of determination) which is the proportion of variance in the dependent variable that can be explained by the independent. The value of 0.761 indicates that 76.1%, variations in CL is explained by CS, PSF, PS, DS, PCV, AIPCE, TRST, AIPS and RC and the remaining 23.9% of the variation in CL is accounted for by other factors not captured in this model.

Table 1.2: ANOVA[a]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	1267.163	9	140.796	35.096	.000[b]
	Residual	397.167	99	4.012		
	Total	1664.330	108			

a. Dependent Variable: CL
b. Predictors: (Constant), CS, PSF, PS, DS, PCV, AIPCE, TRST, AIESQ, RC

Statistical Significance of the model
The F-ratio in the ANOVA Table shows that the independent variables significantly predict the dependent variable, $F_{(9, 99)}$ = 35.096, p (0.000) <0.05. That is, the regression model is a good fit of the data. it further explains that the variation that occurs in CL is

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due to the use or introduction of the independent variables CS, PSF, PS, DS, PCV, AIPCE, TRST, AIPS, RC. In other words, there is a significant relationship between CL and CS, PSF, PS, DS, PCV, AIPCE, TRST, AIPS, RC. Also, there is an improvement in the prediction of the variables. The usefulness of these tests of significance is to investigate if each explanatory variable needs to be in the model.

Table 1.3: Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	.233	.773		.302	.764		
AIPCE	-.189	.093	-.219	-2.033	.045	.208	4.808
AIPS	.010	.113	.010	.090	.929	.193	5.172
PS	.012	.104	.009	.112	.911	.380	2.634
RC	.365	.110	.402	3.316	.001	.164	6.087
TRST	-.129	.070	-.180	-1.847	.068	.254	3.934
PSF	-.066	.058	-.064	-1.148	.254	.778	1.285
PCV	.235	.073	.262	3.207	.002	.361	2.772
DS	.306	.051	.452	6.005	.000	.425	2.351
CS	.208	.100	.262	2.078	.040	.152	6.600

a. Dependent Variable: CL

The constant, is the predicted value of the dependent variable when all of the independent variables are held constant or assumed to be 0. This means that we will expect an average increase of 0.233 in CL. The unstandardized coefficient indicated how much the dependent variable (CL) varies with the independent variables when all other independent variables are held constant. The regression coefficient provides the expected change in the dependent variable (CL) for a unit increase in the independent variable referring to the coefficients (Table 1.3) above the unstandardized coefficients for DS is 0.306. This means that for every unit increase in DS there is 0.306 increase in Consumer Loyalty. Which is statistically significant as p (0.000) < (0.05) which indicates that there is a substantial contribution from DS to CL. Also, the unstandardized coefficients for variables CS, PCV, and RC are; 0.208, 0.235, and 0.365 respectively. Which also shows that a unit increase in any of these independent variables holding others constant will bring about an increase in the dependent variable CL by 0.208 for CS, 0.235 for PCV and 0.365 for RC with their p values (0.04, 0.002, 0.001) < 0.05 which shows that each of these independent variables when used independently contributes substantially to CL as they are all statistically significant.

The value for the unstandardized coefficients of the independent variable PS and AIPS were 0.012 and 0. 010.with their p values (0.911, 0.929) > 0.05 which means that a unit increase in PS and AIPS will bring about an increase in CL by 0.012 and 0.010 respectively but does not substantially contribute to CL. We can further say that since it is not statistically significant, with the use of other variables, however it has a direct impact on trust and relationship commitment.

The value for the unstandardized coefficients of the independent variable were AIPCE and PSF (-0.189, -0.06) respectively. Which means that holding other independent variable constant, a unit increase is AIPCE and PSF will not have an impact on CL i.e PSF has a direct and negative impact on the AIPCE.

Multicollinearity problem does not exist in the model as the VIF for all variables < 10 and tolerance is > 0.1).

The results affirm that an AI-powered model can effectively enhance customer experience through improved responsiveness, personalization and proactive engagement which enhances satisfaction and foster loyalty. The proposed model integrates data security often an independent variable because it contributes to trust and satisfaction. While Customer satisfaction often an independent variable as it reflects the outcome of service quality, perceived convenience, trust and other factors. In addition to Customer loyalty usually considered a dependent variable because it depends on the customer's experience and satisfaction with the service.

The importance of Data security cannot be overstated, as AI relies on sensitive customer information to function effectively. By ensuring robust data security, the model builds trust, assuring customers that their privacy is protected. Trust in data handling is also fundamental to maintaining customer confidence and loyalty, as any breach or misuse of information can harm the brand's reputation and customer relationships. Integrating these factors will create a balanced, ethical, and customer-focused AI model that supports long-term growth and positive brand perception (Hayes et al., 2021).

Also, Customer satisfaction is essential as it reflects the quality of the experience customers have. A model that prioritizes satisfaction can dynamically adapt to individual preferences, resolving issues promptly and tailoring interactions to meet specific needs. This adaptability increases positive feedback and retention rates, as customers are more likely to stay with brands that meet or exceed their expectations.

Strengths of the Enhanced AI-Powered Customer Experience Model
Expanded Scope
The model's integration of data security, customer satisfaction, and customer loyalty broadens its applicability across various industries. Traditional customer experiences models often focus

narrowly on trust and perceived value. By integrating a more comprehensive range of variables, the model accounts for modern-day challenges and expectations, such as privacy concerns, personalized services, and long-term engagement.

Data Security
The inclusion of data security reflects the increasing importance of ethical data handling and compliance with regulations like General Data Protection Regulation (GDPR). Highlighting the need for businesses to implement robust cybersecurity frameworks to gain a competitive advantage in a trust-sensitive market.

Customer Satisfaction
This variable ensures that the model remains customer-centric, emphasizing the need to meet and exceed expectations consistently.

Customer Loyalty
Positioned as the dependent variable, it aligns with the overarching goal of building sustainable relationships and recurring business. Loyalty is influenced by other predictors, making it the core of the model's strategic recommendations.

CONCLUSION
The study demonstrates that adding data security, customer loyalty, and customer satisfaction improved the effectiveness of the AI-powered customer experience model. Also, this contributes to a better understanding of AI-enabled customer experiences offering a pioneering effort to analyse how a cutting-edge technology, artificial intelligence, can improve the shopping experience for consumers. Thus, using AI for customer service is a good decision for businesses, as it has the potential to increase efficiency while improving customer satisfaction and safe guarding data and privacy. We encourage marketing and researchers to conduct further interdisciplinary studies to examine additional factors that have the potential to provide an even more nuanced perspective on the success factors of AI-enabled services among different consumer segments and in a cross-national context.

Looking towards the future, it is clear that AI will continue to be a significant influencer in the business landscape. Recommendations from this study advocate for ongoing innovation and a firm commitment to ethical AI practices. Such measures will not only enhance customer experiences but also foster sustainable growth in an increasingly digitalized global economy.

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