

Exploring the Relationship between AI Innovations in Digital Marketing and Brand Loyalty: The Mediating Effect of Customer Experience

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Abstract: - This Study examines how artificial intelligence (AI)–based innovations can change digital marketing, in terms of customer experience and brand loyalty. It looks at how the customer experience mediates between the AI innovations and brand loyalty. Partial Least Squares Structural Equation Modeling (PLS-SEM) was used to analyze data of 480 customers. The findings indicate that AI personalization, chatbots, AI-generated content, A/B testing, and data analytics contribute to the enhancement of customer experience to a significant extent. Customer experience has a strong impact on brand loyalty and moderates the association of AI innovations with brand loyalty. The structural model has a high explanatory power, with R^2 values of 0.657 for customer experience and 0.806 for brand loyalty. Results provide valuable insights on how to use AI-based personalization tools to boost the level of engagement and loyalty.

Key-words: - AI-driven innovations, AI-powered personalization, AI chatbots, AI-optimized content creation, customer experience, brand loyalty.

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1. Introduction

In the recent rapid-paced digital era, businesses have uninterruptedly sought various advanced ways to involve customers, improve practices, and build longstanding dealings. Moreover, among the most transformative developments in this space is the incorporation of artificial intelligence (AI) in digital advertising [1]. For redefining brands to interact with consumers, tools like strategies and AI-driven tools with predictive analytics, chatbots, approval procedures, and modified content transport. With these inventions, industries get the chance to research huge amounts of customer information, anticipate performance, and offer personalized involvement for building consistency in the products. Though AI is considered to have great potential in enhancing the effectiveness of advertising and the engagement of clients, its role in deciding the loyalty of the products rather than the involvement of the customers is the part of great interest [2].

Furthermore, even though there is growing approval of AI in digital advertisement, the administrations are still tormented with the

regulation of its smallest effect on brand consistency. The intermediating role of client practice and the worth of communications and insights developed by AI-driven advertisements improves another layer of struggle over this connection. The purpose of research is to find out the inventions of AI in digital advertising to affect the brand consistency with the mediating effect of customer knowledge [3]. The investigation aims to offer a deeper consideration of enhancing AI machinery for maintainable brand and consumer contacts.

1.1 Research Background

AI (“Artificial Intelligence”) has become a mandatory segment of the current online advertising strategies. Having the ability to process and analyse general data, AI knowledge assists businesses in valuing the preferences of consumers, predicting purchasing patterns, and driving customer communications. Additionally, AI systems that control advertisements, such as chatbots, edited mail movements, and artificial content approvals, have become aware of a way of increasing customer

engagement by introducing related and relevant practices. According to Lee & Li (2023), AI innovations improve promotion competence, allowing brands to be involved with customers in a more expressive and modified method [4]. Additionally, the capability of AI to provide hyper-personalized practices plays a vital role in manipulating customer choices and consistency. The study found that AI-driven reference organizations and active pricing policies create improved shopping performance, leading to increased customer retention and fulfillment [5]. Thus, marketing firms consider AI as a consistent effort [6].

Moreover, as administrations incorporate AI into their advertisement strategies, attention ought to be given to information security, procedural biases, and moral deliberations to maintain consumer beliefs. Sharma & Sharma (2024) assert that while the increased competence that comes from marketing based on AI may increase, there are certain tasks, such as transparency and unfairness in AI representations, that have the potential to affect consumer awareness and reliability for brands [7]. Furthermore, the rise of AI's strange immersive skills, similar to virtual reality (VR) and enlarged reality (AR) are redefining the client interaction. In addition, brands using such skills accomplish specific and engaging practices that enhance the emotional influences with clients. The integration of AI (artificial intelligence) with social media promotion, search optimization of speech, and analytics of analytics gives it further strength to become the driving engine for client practice and consistency. Moreover, the research is still limited in noticing the fact that customer involvement helps to connect AI-driven advertising and brand consistency.

1.2 Research Problem

Meanwhile, AI (artificial intelligence) has changed digital marketing, and the product constancy direct linking between AI inventions is multifaceted and complex. AI is a better way to make modifications, but the use of A. I is different among businesses and customer demographics. Moreover, some brands effectively implement AI-driven marketing to replace long-term relations, and some suffer from customer disbelief, data security apprehensions, and unpredictability in AI advantages. One of the main challenges lies in figuring out how AI-based connections impact customer knowledge and can result in brand consistency. Moreover, traditional models of marketing emphasize belief and emotion as a cause of consistency.

Moreover, AI is an exercise of getting to know automated relationships that might lack human cordiality and empathy, which could also influence customer insights. More so, the potential of AI to gather and analyze personal information raises ethical issues that are manipulated through consumer trust and engagement strategies. In order to report such gaps, this paper finds the position of customer knowledge as a mediating variable between AI-based numbered marketing and brand constancy. By investigating this relationship, the research seeks to offer marketers an actionable understanding of enhancing AI policies for enhanced client retention.

1.3 Research Objectives

- “To evaluate the relationship between AI innovations in digital marketing and brand loyalty”.
- “To examine the impact of AI innovations in digital marketing on customer experience”.
- “To analyse the influence of customer experience on brand loyalty”.
- “To investigate the mediating effect of customer experience on the relationship between AI innovations and brand loyalty”.

2. Literature Review

2.1 Overview of AI Innovations in Digital Marketing

Artificial Intelligence has surely altered something in digital marketing, if not anything, and it has made life easier for the brands to build up their client engagement policies through rules of computational, conversion, and data analytics. In addition, tools such as “natural language processing” (NLP), “predictive analytics”, “machine learning” (ML) systems, and chatbots become necessary to take marketing to the next level through the consumption of data. Various AI (artificial intelligence) inventions, such as the reference engines, the programmatic promotion, and the sentiment investigation, allow businesses to observe the customer’s preferences and henceforth ought to correct their advertising policies. Additionally, AI aided in the creation of content, automated email marketing, and enhancing motion of speech search optimization [8]. Current developments in AI technologies, similar to “virtual reality” (VR), “deep learning”, and “augmented reality” (AR), have further prolonged possible of digital marketing. VR and AR provide clients with immersive brand involvement, and they can perceive products before

buying. Similarly, AI-driven data investigation allows for hyper-personalization, confirming that the advertising messages resonate with the targeted viewers, foremost to increased meeting and higher alert rates [9]. Digital promotion has also changed due to AI inventions like generative AI and computer vision. Lastly, AI video investigation and analytics can observe the company's engagement with a visual, considering the majority of the genuine posters [10].

2.2 Customer Experience within Digital Marketing

In the digital period, customer experience (CX) is a factor in achieving brand success. Included in that is anything that links a product to its clients, including any website interactions, social media appointments, modified marketing labour, and post-sale provision. Additionally, inventions powered by AI have already altered the horizon of CX with its involvement in the provision of real-time support, analytical personalization and cooperative communication. For instance, virtual assistants and chatbots enhance CX by offering customers 24/7 support, quickly answering queries, and providing user satisfaction [11]. Furthermore, AI-powered sentiment studies and feedback organizations help products gauge client satisfaction and enhance service excellence. Personalization methods, determined by AI, permit dealers to make specific and engaging experiences personalized to particular customer requirements. Innovative data analytics permits products to predict customer performances, thereby improving their engagement policies [12]. However, challenges such as AI biases, information privacy, and objective computerization may slow the effectiveness of AI-based CX to meet the needs of ethical AI distribution in advertising. Another important part of CX in digital advertising is the incorporation of omnichannel. AI allows clients to have continuous communications on different stages, ensuring clients get reliable and relevant messages. [13].

Although it is acknowledged that AI-enabled systems will result in improved customer experience, over-automation has its possible disadvantages, including fatigue of personalization and data misuse and disrespect, and these aspects have not been addressed in the literature before. In addition, reactions of customers to AI-based experiences vary on a considerable level across cultural and demographic boundaries, which implies that AI-based tools are not likely to provide consistent outcomes across markets. These are ignored complexities that limit the generalizability

of the past results and indicate that further, more sophisticated researches are necessary that would analyse contextual, ethical, and behavioural aspects of AI adoption. The combination of such perceptions assists in strengthening the conceptual framework of the ongoing investigation and placing AI-based customer experience within a broader socio-technical framework.

2.3 Relationship Between Customer Experience and Brand Loyalty

Brand constancy is a vital result of a hopeful customer practice. Satisfied clients are more likely to advance strong demonstrative associates with products, leading to repeat purchases and long-term product encouragement. Moreover, customer practice impacts brand constancy by determining consumer insights, beliefs, and overall fulfilment [14]. Besides, interactive AI-powered tools such as recommendations and personalized systems can result in more significant brand and relationships with customers. Clients are more likely to endorse products that provide unparalleled service and new understandings. Therefore, with revisions, there is enhanced CX directed to augmented brand constancy [15]. Furthermore, these programs strengthen expressive contacts and boost repetition procurements that foster brand consistency.

2.4 Mediating Role of Customer Experience between AI Innovations in Digital Marketing and Brand Loyalty

An intermediating feature between AI revolutions in digital advertising and brand constancy is customer understanding. Additionally, AI enables the expansion of AI-driven marketing strategies that enforce better CX by providing changes that are suitable and similar to the requirements of communications. In chance, improved CX reinforces brand constancy by increasing belief, fulfilment, and expressive attachment to the product [16]. For instance, AI-powered reference systems deliver modified product proposals related to customer favourites, foremost to higher conversion and increased purchase determination. Virtual assistants and chatbots improve CX by providing instant provision, decreasing response times, and refining customer fulfilment. Moreover, AI-driven sentiment investigation supports brands in familiarizing their policies in real time, highlighting customer concerns, and enhancing service quality.

Poorly applied AI results, like disturbing chatbots or immaterial modified recommendations, can negatively influence CX, directed to client

frustration and disconnection. Moreover, ethical considerations, like transparency in AI (artificial intelligence) decision-making and data privacy guard, are vital in confirming AI's optimistic effect on CX and product loyalty [17]. Furthermore, developing AI technologies, like virtual brand ambassadors and AI-generated influencers, is reforming CX in digital advertising. Finally, these AI-powered entities engage with the customers on social media, grant the customers modified approvals, and create communication practices [18].

2.5 Theoretical Foundations

AI innovations influence customer experience and brand loyalty through well-established behavioural theories. The Technology Acceptance Model (TAM) explains that AI tools enhance perceived usefulness and ease of use, improving user attitudes and loyalty [19]. Expectation Confirmation Theory (ECT) suggests that when AI-driven personalization and support exceed expectations, customer satisfaction and loyalty increase. The Stimulus Organism Response (SOR) framework further shows that AI features act as stimuli that shape customer experience (organism), leading to loyalty (response) [20]. Together, these theories provide a solid conceptual basis for the mediating role of customer experience in AI-driven digital marketing.

3. Methodology

In an effort to find out the effect of AI-innovations in digital marketing on customer experience as well as brand loyalty, the study makes use of quantitative and positivist research approach. The design of the study is cross-sectional, where we investigate whether the effect of these AI innovations on “brand loyalty” can be transferred through “customer experience” of these innovations, which was assessed by studying the effect of these AI innovations on CE and BL, and finally, measuring the effect of CE between AI innovations and product loyalty as a mediation effect. The following details the sample, research instrument, data collection, and data analysis.

3.1 Conceptual Framework

Figure 1: Research variables and proposed hypotheses of the impact of AI innovators in digital marketing on BL and evaluation of mediation effects of CE between AI innovators and BL are shown in a conceptual model of the research study.

Figure 1. Conceptual Framework in Appendix A

3.1.1 Research Variables

This study included the independent variables as AI-innovations in digital marketing with different dimensions, such as AI-powered personalization (AIPP), AI-driven chatbots (AIDC), and AI-optimized content creation (AIOCC). However, the mediating variable is “customer experience” (CE), and the dependent variable is “brand loyalty” (BL).

3.1.2 Research Hypotheses

Based on a conceptual framework, the following research hypotheses were planned, such as:

H1: “There is a significant and positive relationship between AI-innovations in digital marketing and brand loyalty”.

H1a: “There is a significant and positive relationship between AI-powered personalization and brand loyalty”.

H1b: “There is a significant and positive relationship between AI-driven chatbots and brand loyalty”.

H1c: “There is a significant and positive relationship between AI-optimized content creation and brand loyalty”.

H2: “There is a significant and positive effect of AI-innovations in digital marketing on customer experience”.

H2a: “There is a significant and positive effect of AI-powered personalization in digital marketing on customer experience”.

H2b: “There is a significant and positive effect of AI-driven chatbots in digital marketing on customer experience”.

H2c: “There is a significant and positive effect of AI-optimized content creation in digital marketing on customer experience”.

H3: “There is a positive relationship between customer experience and brand loyalty”.

H4: “There is a mediating effect of customer experience on the relationship between AI innovations in digital marketing and brand loyalty”.

H4a: “There is a mediating effect of customer experience on the relationship between AI-powered personalization and brand loyalty”.

H4b: “There is a mediating effect of customer experience on the relationship between AI-driven chatbots and brand loyalty”.

H4c: “There is a mediating effect of customer experience on the relationship between AI-optimized content creation and brand loyalty”.

3.2 Population and Sampling

It was crucial to choose a well-defined population and sample for the study to understand the influencing role of AI innovations on brand loyalty while assessing the intervening effects of customer experience. However, the target individuals of the study included customers who engaged with AI-driven digital marketing tools. For the sample strategy, a “stratified random sampling” procedure was used to enhance data reliability and generalizability for ensuring diverse data representation [21].

3.2.1 Sampling Technique

This study adopted a “stratified random sampling technique” to improve data accuracy and representativeness across specific strata within a population. The stratification criteria included industry sector (Retail, E-commerce, Banking, and Others), age group for generational differences for AI adoption, gender, and frequency of interaction with AI tools. As such, upon the use of a statistical power analysis, the recommended sample size will be 480 respondents, which will guarantee statistical efficiency in a mediation analysis in the study [22]. Data collection was based on online surveys, and the questionnaire was published to consumers through “social media platforms,” email, and industry networks.

3.3 Data Collection

To gather data from consumers, a structured review was utilized to ensure reliable and valid representativeness of data for analysis. It would have facilitated data collection based on a large-scale [23].

3.3.1 Primary Data Collection

A self-administered questionnaire was distributed to target participants through online platforms for enhancing data accessibility and minimizing bias [24]. However, primary data collection included the development of a questionnaire based on existing validated constructs that ensure data reliability and validity [25]. Built on the dissemination of surveys via emails, social media networks, and industry channels, response rates from participants were improved, which would ensure data quality in terms of confidentiality and anonymity, and would reduce social bias. To portion the consumer perceptions regarding AI-driven marketing, brand loyalty, and customer experience, “5-point Likert scaling” was used (“1 = Strongly Disagree to 5 = Strongly Agree”) that maintained statistical analysis [26].

3.4 Data Analysis

For the statistical and structural equation (SEM) approaches, this Research used some “IBM SPSS 26.0” and “Smart PLS 4.0” tools. Therefore, the descriptive statistics were used to analyze demographic trends, whereas Cronbach’s alpha was used depending on data dependability, using an acceptable rate of 0.7 [27] with SPSS. The direct and indirect effects, as well as the achievement of this study, were to determine the effects of using AI copywriting services in the digital marketing context, which will increase the significance of brand loyalty and customer experience as a mediating role. These data findings would serve a useful purpose in research in the field of AI to carry out an AI digital marketing role as an influencer in brand loyalty & customer experience.

4. Results

Demographics were assessed using IBM SPSS 26.0, while mediation analysis was performed using SmartPLS 4.0 based on measurement and structural model methods.

4.1 Respondents’ Profiles

The demographic data of the 480 participants indicates that the largest percentage of the sample (480) is of 1834 age, which can be considered a technologically active population that can and does have a significant interaction with the AI-driven digital marketing tools. The younger generation tends to be more receptive to digital innovation, and this could affect their perception of customer experience and brand loyalty positively. The industry representation also supports this trend, as most of the respondents (46.7% e-commerce and 23.5% banking) are representatives of the most active industries regarding adopting AI technology in Jordan. The fact that the percentage of AI interaction in the daily and weekly reports among the participants was so high presupposes the high levels of comfort among the participants with the AI-enabled services, and, accordingly, the sample included primarily digitally engaged users. Such demographics create a significant background of interpretation of the results of this study, in that younger and technologically more advanced consumers are more likely to be open to AI technologies and their potential in driving the customer experience/loyalty. The demographic data of the 480 surveyed individuals indicate that the group of persons is mostly aged between 1834, which represents a technologically engaged group,

which has frequent contact with AI-based digital services.

Table 1. Demographic Characteristics of Participants (N = 480) in Appendix A

Moreover, many participants had interacted with AI-driven digital marketing tools on a weekly (38.3%) or daily (31.5%) basis. In addition, remaining consumers engaged with AI tools for monthly (17.3%) and rarely (11.9%), while a smaller proportion (1%) never utilized these tools. Furthermore, 99% of participants agreed that AI-powered chatbots, recommendations, and content played a significant role in purchasing decisions, while 1% were only reported no use of AI in buying choices. Thus, these results indicated that AI integration shapes the consumer decision-making processes positively.

4.2 Additional Inferential Statistical Analysis

In addition to the PLS-SEM analysis, classical tests of statistical tests were conducted with the help of IBM-SPSS 26.0. These were tests that were aimed at determining whether demographic groups varied significantly as regards their perception of an innovation that was driven by artificial intelligence (AI), customer experience (CE), and brand loyalty (BL). The variances depending on gender, age, Industry, and frequency of use of an AI were determined with the use of independent samples t-test, one-way analysis of variance, and Chi-square tests. These analyses add more robustness and support the generalizability of the study's findings.

4.2.1 Independent Samples t-Test

Independent samples t-tests were conducted to compare the mean difference in values of CE and BL between genders. The results did not show any significant gender-based differences in customer experience ($t = 1.12$, $p > 0.05$) or brand loyalty ($t = 0.87$, $p > 0.05$). This implies that both males and females have similar evaluations of interactions in digital marketing environments through AI. In addition, higher frequency respondents (daily/weekly) and lower frequency respondents (monthly/rarely) were compared in terms of how they use AI. Differences between groups were found towards customer experience ($t=3.46$, $p<0.01$), showing the frequent users had higher CE scores. However, the variation between the two groups in terms of brand loyalty was not significant ($t = 1.29$, $p > 0.05$). These findings suggest that while customers' experience with a product increases because of greater exposure to AI-driven marketing

tools, this does not automatically lead to a boost in customers' loyalty unless other relational mechanisms are in place.

4.2.2 One-Way ANOVA

A one-way ANOVA was conducted to determine whether customer experience and brand loyalty differed across age groups. Results showed a significant difference in CE among age segments ($F = 4.21$, $p < 0.01$). The Tukey post-hoc tests suggested that the participants of age 25-34 were significantly higher in terms of the reported CE than those of age 45 and above. This is an indication that younger users could be more open to AI-based personalization and chatbots. ANOVA was also conducted in terms of industry sectors (E-commerce, Retail, Banking, Other). The brand loyalty was significantly different ($F = 3.57$, $p < 0.05$), the highest level of BL was demonstrated by the representatives of the e-commerce industry. This is in line with the greater adoption of AI personalization and recommendation systems in the e-commerce settings. Nonetheless, the differences between perceptions of AI-powered personalization (AIPP) and chatbots (AIDC) between industries were not statistically significant ($p > 0.05$), which means that the attitude towards certain AI tools might be similar in all industries.

4.2.3 Chi-Square Test of Association

Chi-square tests were conducted to assess associations between categorical demographic variables and AI usage patterns. A significant association was found between industry type and frequency of AI interaction ($\chi^2 = 18.62$, $p < 0.01$). Respondents working in the e-commerce and banking sectors reported more frequent use of AI-powered chatbots, recommendation systems, and automated service tools. Similarly, a significant association emerged between age group and AI usage in purchasing decisions ($\chi^2 = 12.44$, $p < 0.05$), with younger adults (18–34) demonstrating higher involvement of AI tools in their online buying processes. No significant association was observed between gender and frequency of AI usage ($\chi^2 = 2.17$, $p > 0.05$), indicating that both genders are equally likely to interact with AI in digital marketing contexts.

4.3 Evaluation of Measurement Model

The measurement model outer loadings of AIPP, AIDC, AIOCC, CE, and BL were presented in Figure 2 to reinforce the data robustness. In accordance with the mentioned criteria of the measurement model, the convergent validity was

confirmed, which was supported by outside loads ranging from 0.839 to 0.952 (Table 2 in Appendix A). It is recommended that the variables represent the constructs sufficiently. Moreover, the variance inflation factor (VIF) was also falling under the acceptable values that ranged from 2.113 to 6.957, which did not show a concern about significant multicollinearity issues [28]. Although BL2 (6.957) and BL3 (6.883) were observed as the highest VIF values, no severe issues of multicollinearity were indicated since the values remain below the threshold of 10. Although the Cronbach's alpha values for CE and BL exceeded 0.96, which may indicate potential item redundancy, the items were retained because they demonstrated strong conceptual consistency and met all required validity thresholds. This high reliability is acknowledged as a limitation, but it does not materially affect the construct interpretation. Figure 2. Outer Measurement Model in Appendix A

Table 2. Collinearity Statistics (VIF) and Outer Loadings in Appendix A

The accuracy of the measurement model was achieved since it presented strong construct reliability and AVE values (Table 3 in Appendix A) in adherence to the guidelines of [28]. The higher level of data reliability was confirmed among measurement items, as internal consistency was achieved based on acceptable values of "Cronbach's alpha " ranging from 0.893 to 0.971. Moreover, the robustness of the model was validated based on composite reliability (CR), which also showed the recommended threshold of 0.7 for all items, ranging from 0.920 to 0.977. Therefore, all constructs revealed that they have strong internal consistency and measurement validity with the higher CR values. Furthermore, the amount of the variance explained by each construct's indicators was high because the AVE values exceeded 0.5. Conversely, it added that constructs were confirmed to have convergent validity. Although some VIF values for the brand

loyalty items approached 7, they remained below the commonly accepted threshold of 10, indicating that multicollinearity was not severe. These higher VIF values are likely due to the strong conceptual similarity among loyalty-related items, which is typical for reflective constructs. Nevertheless, the issue is acknowledged as a measurement consideration for future studies. Table 3 in Appendix A. Construct Reliability and Average Variance Extracted (AVE) in Appendix A.

4.4 Discriminant Validity

A test of discriminant validity in terms of the quality of the measurement model is performed, using the Heterotrait-Monotrait (HTMT) criterion [29]. Table 4 in Appendix A, shows the results of the HTMT, and it ranges from 0.045 to 0.914. That means, they were within acceptable values for most of the construct correlations. For example, 0.045 between AIDC and AIPP and 0.069 between AIDC and AIOCC, while the highest correlation value was reported for CE and BL, i.e., 0.914. Table 4 in Appendix A. Discriminant Validity: HTMT Criterion in Appendix A

These results indicated that the measurement model captured unique attributes of AI-driven digital marketing, brand loyalty, and customer experience without the overlap of indicators. While this seemed to provide good data findings for the conditional measurement model to support discriminant validity, more needs to be looked at regarding the structural model.

4.5 Hypotheses Testing and Structural Model Evaluation

Bootstrapping with 5000 resampling iterations is used for analyzing statistical significance and hypothesis testing [30] for assessing a structural model. The output values of significance (p-values) are shown on the inner structural model (Figure 3 in Appendix A).

4.5.1 Direct Effects Analysis

Since p-values were all less than 0.001, all direct relationships proved that there are significant relationships between AIPP, AIDC, AIOCC, CE, and BL. Among the four incites, AIPP, AIDC, and AIOCC all had a statistically effect on brand loyalty; however, AIPP had the greatest effect ($\beta = 0.545$, $t = 21.035$, $p = 0.000$), AIDC less so ($\beta = 0.438$, $t = 16.877$, $p = 0.000$), with AIOCC having the least ($\beta = 0.376$, $t = 14.170$, $p = 0.000$), as mentioned in Table 5 in Appendix A (2). AIPP had a significant and positive effect on brand loyalty. The highest cause and effect was for AIPP ($\beta = 0.526$; $t = 19.235$; $p = 0.000$) in the case of customer experience. The two outcomes followed up were AIDC ($\beta = 0.452$, $t = 15.690$, $p = 0.000$) and AIOCC ($\beta = 0.391$, $t = 15.172$, $p = 0.000$). Overall, these results recommended that customers experienced these interactions positively. Moreover, customer experience influenced brand loyalty significantly and positively ($\beta = 0.671$, $t = 20.762$, $p = 0.000$), indicating a stronger driver of customer commitment for the long term.

Table 5 in Appendix A. Hypotheses Testing in Appendix A

*Significant at 0.05 level; **Significant at 0.01 level.

4.5.2 Mediation Analysis

Furthermore, the authors used bootstrapping to find the indirect relationships that portray the impact of customer experience as a partial mediating effect between AI-driven digital marketing and brand relationship. The results indicated that customer skill plays as the mediating effect among constructs of AI-driven digital marketing, and brand loyalty and all indirect paths are significant ($p < 0.001$). Therefore, the formula of the relationship between AIPP, CE and BL was given as $\beta = 0.353$, $t = 14.228$, $p = 0.000$. As shown in Table 5 in Appendix A, I find that AIDC and BL mediation effect is $\beta = 0.303$, $t = 11.900$, $p = 0.000$; AIOCC and BL mediation effect is $\beta = 0.263$, $t = 13.185$, $p = 0.000$. Therefore, it follows from these results that it would definitely lead to a positive association between AI innovation and brand loyalty from any such increases in customer experience. In addition, AIPP indirectly impacts the personal AI-driven tools, which assist in boosting the customer experience as well as brand loyalty. The findings from the research have been solid enough, proving empirical evidence that AI-driven digital marketing, i.e., personalization, content creation, and chatbots, is good for customer experiences and can therefore lead to brand loyalty with the customer.

4.6 Model Explanatory Power

In order to determine the impact of AI-driven digital marketing, the prediction power of the model was analyzed through the R-Squared as well as f-Squared (in terms of effect size) values. As shown in Table 6 in Appendix A, R-squared was 0.806 for brand loyalty and 0.657 for customer experience. Following this guideline as per [29], if R-square values are above 0.5, this is judged as moderate to substantial. According to these values, it was evident that the model had strong predictive capability because a considerable proportion of customer experience and brand loyalty variance was accounted for by the model. The R-square results are presented in Appendix A, Table 6 in Appendix A. Further study was made on the effect size to determine the influence of AI innovations on brand loyalty and customer experience[22]. The effect size results are presented in Appendix A, Table 7 in Appendix A. The personalization (f-square = 0.808) was the strongest key driver of customer experience among AI-driven factors. Table 7 in Appendix A

shows a larger effect of customer experience (f-square = 0.793) on brand loyalty. This explains why Bajaj Electricals is taking measures to try to retain customers after servicing their faulty appliances and gadgets. Secondly, some moderate effects of AI-powered personalization ($f^2 = 0.105$) were demonstrated on brand loyalty. Two of the metrics that the AI chatbots contributed to improving customer experience were through Customer Experience (f-square = 0.595) and Enhanced Customer Interactions (f-square = 0.446). The effect of chatbots was small but significant (f-square = 0.058), as was the effect of content creation (f-square = 0.045). Though AI-powered innovation had increased brand loyalty, customer experience had mediated the relationship between the two almost entirely. The control of the model on the explanatory power, as further supported by these findings, also illustrates the higher model prediction power within consumer behavior on AI-powered digital marketing tools.

5 Discussion

This study identified various attributes of AI-powered innovations across digital marketing, including content creation, personalization, and chatbots, and carefully explored how these attributes can lead to higher levels of brand loyalty and the degree of differences between customer perception regarding the category as a whole and that of AI-powered innovations. This study confirmed the findings of [16] that customer experience was a significant and intermediary variable in the relationship between AI innovations and brand loyalty. The findings extend theoretical understanding by demonstrating how AI-driven innovations influence customer experience and loyalty through mechanisms aligned with TAM, Expectation–Confirmation Theory, and the Stimulus–Organism–Response framework. The strong effects of personalization and chatbots suggest that perceived usefulness, expectation fulfillment, and cognitive–emotional responses are central to AI-driven loyalty formation. The mediating role of customer experience further confirms that AI technologies shape internal evaluations that ultimately influence behavioral intentions. These results refine existing theoretical models by highlighting AI as a catalyst for experiential value creation.

5.1 Key Findings

Data findings from structural model data identified that AI is an essential predictor to provide personalized customer experience and as per the data, AI, personally driven personalization was the most ($\beta = 0.546$, $p < 0.001$) and positive predictor of brand loyalty. Therefore, this study justifies the personalization of AI-driven innovations for [12] for AI-driven innovations in that it used chatbots to enhance areas such as customer engagement by the utilization of relevant, efficient content that is delivered and it can predict what the customer would need. Moreover, we would build interesting interactions because brand loyalty is something that grows with the engagement towards the customer experience ($\beta = 0.671$, $p < 0.001$) [14]. Although the rate of these innovations led by AI cannot be rejected, AI has had a significant positive impact on customer experience and brand loyalty (chatbots, $\beta = 0.438$, $p < 0.001$; content creation, $\beta = 0.376$, $p < 0.001$). As per [11], the results obtained in the current outcome correspond with that of finding by [11] that customer satisfaction is enhanced when the chatbot provides the customer with personalized support, faster real-time support and reduces wait time in sessions. In addition, it showed that customer experience acts as a mediator of the nexus between AI innovations and brand loyalty, therefore confirming how AI enables the generation of enhanced experiences for the customers [13]. Customer experience acting as a mediator between AI marketing based on licensed AI technologies and such parameters as personalized interactions and brand loyalty is in consistent with [16]. There are, however, some studies that have proven the importance of the technical sophistication of AI over customer experience and concluded that the AI-generated influencers increased user engagement. According to this study's findings, predictive analysis and real-time support played a major role in influencing consumer behaviour.

5.2 Practical Implications for Marketers

The findings indicate that marketers should strategically prioritize investments in AI-powered personalization, as it demonstrates the strongest influence on both customer experience and brand loyalty. Firms are encouraged to strengthen AI-driven recommendation engines, real-time personalization systems, and intelligent chatbots that consistently enhance service quality. However, AI tools must be deployed with careful oversight. Poorly designed chatbots, irrelevant recommendations, or overly aggressive personalization may frustrate customers and

negatively impact their experience. Since this study is based on self-reported perceptions, organizations should not assume that a positive response on a survey is always representative of actual behaviour. Marketers are therefore advised to supplement perceptual data with behavioral data such as clickstream patterns, chatbot interaction logs, complaints and repeat-purchase data.

Cultural and regional factors in Jordan also need to be paid special attention to. Varying degrees of digital literacy, trust in AI technologies, and preferences for human interaction can affect how consumers perceive AI-driven marketing. As a result, a gradual, transparent approach to AI implementation should be adopted by companies, which should communicate how AI systems work and how sensitive or complex queries are processed by a hybrid model with human services. Such an approach helps to build customer trust, provide a better overall feel, and ultimately helps build long-term loyalty.

5.3 Ethical and Managerial Considerations of AI Use

Ethical issues surrounding AI-powered marketing must be paid attention to. The practice of using customer data to personalize interactions raises the question of privacy and data protection, as well as informed consent to data collection. Firms need to have transparent data practices and clearly communicate how AI systems are collecting, storing, and utilizing customer information. Additionally, AI algorithms may generate biased or unfair recommendations if they are trained on unbalanced datasets. Marketers need to have a process of continuous monitoring, fairness checks, and transparent disclosure to ensure customer trust. Strengthening ethical governance around AI deployment will boost customer experience while building long-term customer loyalty.

6 Conclusion

In this paper, they make investigation on how AI-based marketing innovations influence brand loyalty as well as the customer experience. Further, we found that chatbot ($\beta = 0.438$, $p < .001$), content creation ($\beta = 0.376$, $p < .001$), and personalization ($\beta = 0.545$, $p < .001$) have played a positive role in brand loyalty. Besides, AI-driven innovation has a strong and positive relationship with mediating variables: customer experience ($\beta = 0.676$, $p < 0.001$) and brand loyalty ($\beta = 0.671$, $p < 0.001$). These findings are important for marketing organizations that want to manage the explanatory

power of the AI innovations to explain marketing outcomes, particularly those that capitalize on the explanatory power of the structural model.

From the context of findings, predictive AI interactions are crucial in creating a seamless and engaging digital marketing environment in businesses, since there is now more and more literature on AI marketing. It is important to consider that AI personalization is the strongest aspect and the most significant in the aspect of influencing brand loyalty behavior, and this is again mediated by customer experience. These results highlighted the importance of AI marketing approaches on engagement and practical usability and refuted the hypothesis that the effectiveness of AI is impacted by technical sophistication. Moreover, this study is a foundation to recommend the strategies of improving brand loyalty and customer experience through AI-based innovations, including chatbots, personalization and content creation for businesses and digital marketers. Instead of dwelling on the never-ending technical progressions, this research emphasizes the importance of customer engagement in creating efficiently the strategy for AI. Overall, this research shows that it is the effect of AI-driven innovations on customer experience that is the main determinant of brand loyalty. Personalization, Chatbots, and Artificial Intelligence Generated Content serve as technological stimuli to the cognitive and emotional evaluation of a brand by the customer, which increases loyalty. By combining the principles of TAM, ECT, and the S-O-R framework, the study explains the role of AI tools in influencing customer perceptions and behaviors in digital environments. This theoretical synthesis offers a clearer understanding of the mechanisms linking AI adoption to consumer loyalty formation and provides a valuable foundation for future research on AI-enabled marketing strategies. Next, for further implications on the relationship between customers and brand loyalty, this study helps to reveal the importance of AI in the field of digital marketing.

6.1 Limitations

This study has some limitations that should be acknowledged. First, the cross-sectional research design limits the possibility of making causal inferences between AI innovations, customer experience and brand loyalty. The future of this research may involve the use of longitudinal or experimental methods to determine more precise temporal and causal sequences. Second, the study relies heavily on self-reported perceptual measures

and this may introduce a common method variance and therefore inflate the observed relationships. Participants may exaggerate their experience or loyalty, particularly in AI-driven environments where the effects of novelty will have an influence. To address this, future studies should include behavioral or observational data, such as clickstream activity, loyalty program tracking, or information about AI interaction, which could validate perceptual responses. In addition, the sample includes consumers who are already familiar with AI technologies, which could potentially limit the generalizability of the results to less technologically experienced consumers. Finally, Jordan's cultural and regional context may influence consumers differently in their attitude towards AI, compared to Western or more digitally mature markets. Therefore, future studies could compare findings across countries or even different cultures in order to gain a better understanding of how marketing effectiveness due to AI differs around the world.

Declaration of Generative AI and AI-assisted Technologies in the Writing Process. The authors wrote, reviewed and edited the content as needed and verified that none utilised artificial intelligence (AI) tools were used. The authors take full responsibility for the content of the publication.

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The authors equally contributed in the present research, at all stages from the formulation of the problem to the final findings and solution.

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Conflict of Interest

The authors have no conflicts of interest to declare.

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APPENDIX A

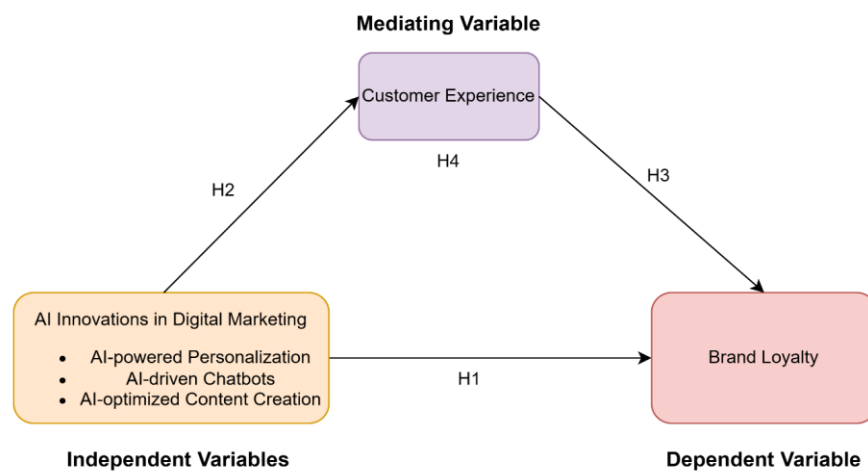


Fig. 3. Conceptual Framework
Source: Created by the authors

Table 8. Demographic Characteristics of Participants (N = 480)
Source: Created by the authors.

Demographics		Frequency	Percent
Age (Years)	Under 18	56	11.7
	18-24	80	16.7
	25-34	121	25.2
	35-44	79	16.5
	45-54	69	14.4
	55+	75	15.6
Gender	Male	321	66.9
	Female	133	27.7
	Prefer not to say	26	5.4
Industry	E-commerce	224	46.7
	Retail	95	19.8
	Banking	113	23.5
	Other	48	10.0
Frequency of Interaction with AI Tools	Daily	151	31.5
	Weekly	184	38.3
	Monthly	83	17.3
	Rarely	57	11.9
	Never	5	1.0
AI Usage in Purchasing Decisions	Yes	475	99.0
	No	5	1.0

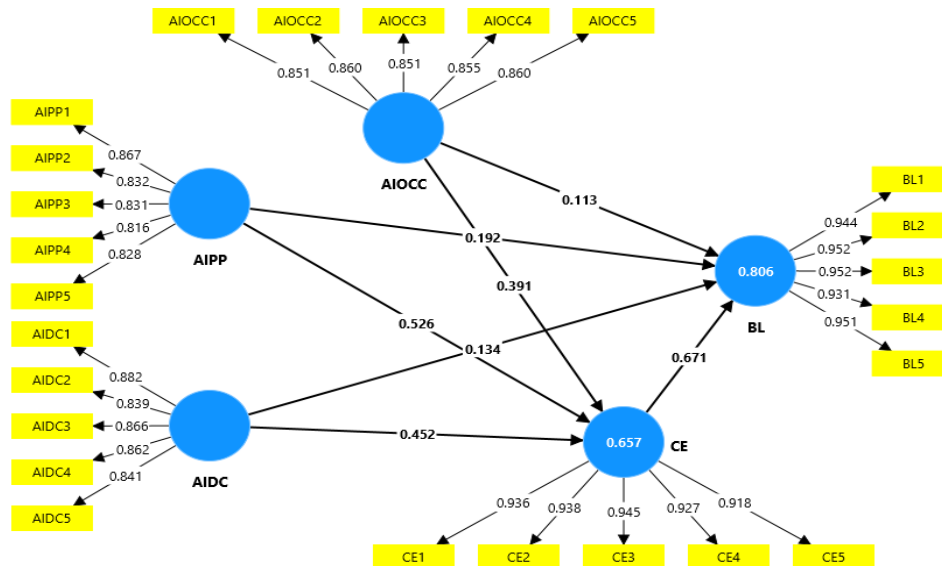


Fig. 4. Outer Measurement Model
Source: Created by the authors

Table 9. Collinearity Statistics (VIF) and Outer Loadings
Source: Created by the authors

	AI-Driven Chatbots (AIDC)	AI-Optimized Content Creation (AIOCC)	AI-Powered Personalization (AIPP)	Brand Loyalty (BL)	Customer Experience (CE)	Collinearity Statistics (VIF)
AIDC1	0.882					2.470
AIDC2	0.839					2.399
AIDC3	0.866					2.739
AIDC4	0.862					2.557
AIDC5	0.841					2.428
AIOCC1		0.851				2.225
AIOCC2		0.860				2.585
AIOCC3		0.851				2.394
AIOCC4		0.855				2.484
AIOCC5		0.860				2.639
AIPP1			0.867			2.155
AIPP2			0.832			2.280
AIPP3			0.831			2.276
AIPP4			0.816			2.151
AIPP5			0.828			2.113
BL1				0.944		6.279
BL2				0.952		6.957
BL3				0.952		6.883
BL4				0.931		5.043
BL5				0.951		6.762
CE1					0.936	5.399
CE2					0.938	5.454
CE3					0.945	6.053
CE4					0.927	4.707
CE5					0.918	4.203

Table 10. Construct Reliability and Average Variance Extracted (AVE)
Source: Created by the authors

	Cronbach's alpha	Composite reliability	Average variance extracted (AVE)
AIDC	0.912	0.933	0.737
AIOCC	0.908	0.932	0.731
AIPP	0.893	0.920	0.697
BL	0.971	0.977	0.895
CE	0.963	0.971	0.871

Table 11. Discriminant Validity: HTMT Criterion
Source: Created by the authors

HTMT	AIDC	AIOCC	AIPP	BL	CE
AIDC					
AIOCC	0.069				
AIPP	0.045	0.058			
BL	0.463	0.434	0.569		
CE	0.483	0.453	0.551	0.914	

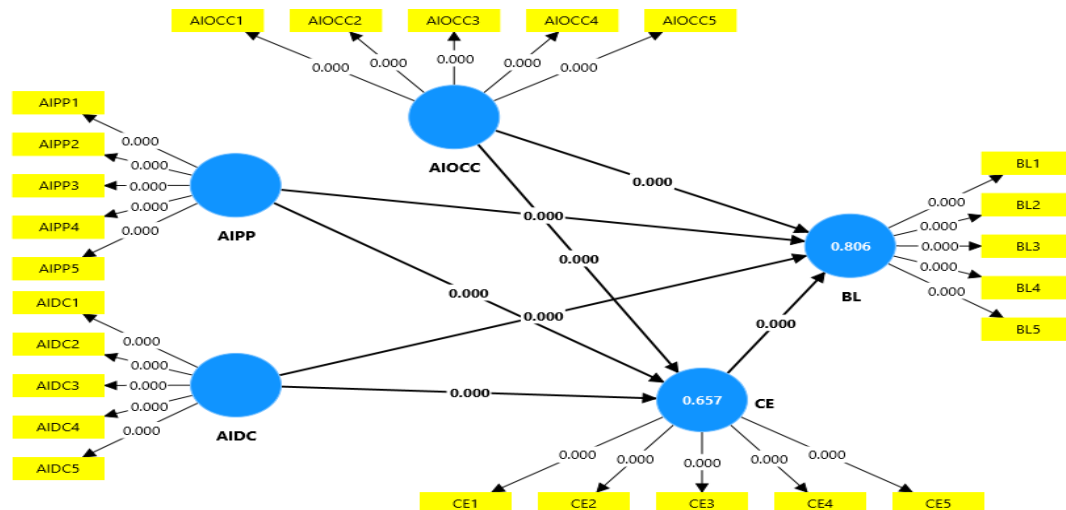


Fig. 5. Inner Structural Model
Source: Created by the authors

Table 12. Hypotheses Testing
Source: Created by the authors

Hypotheses	Std. Beta	Std. Error	t-value	P values	95% CI LL	95% CI UL	Inference
AIDC -> BL	0.438	0.026	16.877**	0.000	0.395	0.480	Supported
AIDC -> CE	0.452	0.029	15.690**	0.000	0.405	0.500	Supported
AIOCC -> BL	0.376	0.027	14.170**	0.000	0.332	0.420	Supported
AIOCC -> CE	0.391	0.026	15.172**	0.000	0.349	0.435	Supported
AIPP -> BL	0.545	0.026	21.035**	0.000	0.502	0.588	Supported
AIPP -> CE	0.526	0.027	19.235**	0.000	0.480	0.571	Supported
CE -> BL	0.671	0.032	20.762**	0.000	0.616	0.723	Supported
AIPP -> CE -> BL	0.353	0.025	14.228**	0.000	0.312	0.394	Supported
AIDC -> CE -> BL	0.303	0.025	11.900**	0.000	0.262	0.346	Supported
AIOCC -> CE -> BL	0.263	0.020	13.185**	0.000	0.230	0.296	Supported

*Significant at 0.05 level; **Significant at 0.01 level.

Table 13. R-square and Adjusted R-square
Source: Created by the authors

Constructs	R-square	R-square adjusted
Brand Loyalty	0.806	0.804
Customer Experience	0.657	0.655

Table 14. Effect Size (f-square)
Source: Created by the authors

Hypotheses	f-square
AIDC -> BL	0.058
AIDC -> CE	0.595
AIOCC -> BL	0.045
AIOCC -> CE	0.446
AIPP -> BL	0.105
AIPP -> CE	0.808
CE -> BL	0.793