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Exploring Emotional Responses of Customer towards AI Enhanced E-Commerce Portals

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Abstract

Artificial intelligence (AI) technology has emerged as an influential force in the digital age, revolutionising the emotional connection and customer experience in e-commerce platforms. Examining how AI-related marketing elements affect consumers' emotional reactions in online buying settings is the goal of this article. The study used a descriptive research design and focusses on three independent variables; promotional advertising, AI credibility and level of personalisation, with the dependent variable being the customer's emotional response. The Primary data was collected from 696 respondents who were e-commerce customers using non-probability sampling techniques; Convenience and Snow-ball Sampling through a self-designed well-structured questionnaire. The research questionnaire comprised of two sections, were first section included the statements relating to Demographic factors and Behavioural factors of the respondents. The second section comprises of five statements each relating to three independent factors and one dependent factor using five-point Likert scale. The samples collected were analysed using advanced statistical tools with softwares IBM SPSS Version 23. The respondents' behavioural and demographic traits were summarised using descriptive statistics. One-way ANOVA was utilised to compare the emotional responses based on the behavioural characteristics of e-commerce customers and Cluster analysis was employed to categorise customers into similar categories based on their emotional responses and behavioural patterns. To ascertain the predictive impact of AI-related marketing variables on consumers' emotional engagement, logistic regression analysis was used. The Secondary data was collected by reviewing and analysing various Research articles and papers.

The findings highlight that the Level of Personalisation and AI Credibility significantly enhance positive emotional engagement, while Promotional Advertising contribute variably towards various customer sections. The results emphasises that the growing AI-driven interactions in shaping customer perceptions and strengthening brand relationships in e-commerce portals. In spite of providing managerial insights for creating moral, data-driven, and emotionally appealing e-commerce strategies, this study adds to the existing literature by incorporating emotional analytics into AI-based marketing frameworks.

Introduction

Artificial Intelligence (AI) has grown into an integral part of our daily lives in the current digital era, especially in the e-commerce industry. AI is changing how businesses function as well as how consumers feel, think, and interact with online platforms. Examples of this include personalised product recommendations and intelligent chatbots that react instantly to consumer enquiries. Emotions, which were once thought to be less important than convenience, have become increasingly important in determining customer satisfaction and loyalty as shopping becomes more digital.

Today's e-commerce businesses mainly depend on AI-powered marketing tools to comprehend, forecast, and affect customer sentiment. Customers' perceptions and emotional connections with brands are directly impacted by features like promotional advertising, AI credibility, and degree of personalisation. Promotional messages generate enthusiasm or interest, AI credibility builds confidence and trust, and personalization makes shoppers feel valued. When combined, these components produce emotional reactions that decide whether a consumer merely visits a website or develops into a devoted brand advocate.

Need For the Study

Artificial Intelligence (AI) is now a major factor in how consumers interact with online shopping in today's digital marketplace. Through personalisation and astute suggestions, AI improves convenience, but it also affects how users feel when interacting with businesses online. Since emotions frequently influence brand loyalty, satisfaction and trust, it is crucial to comprehend these emotional reactions.

Few studies have looked at AI's emotional impact on consumers, despite the fact that many have concentrated on its financial and technical advantages. Businesses can create advertising approaches that feel more genuine, sympathetic, and human-centered by investigating the differences in how people react to AI-based marketing and personalisation.

Therefore, their arises a need for this study is to bridge the gap between technology and human emotion in e-commerce by determining how promotional advertising, AI credibility, and the degree of personalisation influence customers' emotional responses.

Scope of the Study

This study investigates how marketing strategies based on artificial intelligence (AI) affect consumers' emotional reactions on e-commerce platforms. It looks at how three important AI-related factors promotional advertising, AI credibility and degree of personalization affect consumers' feelings and perceptions in online shopping settings.

Responses from 696 online shoppers, gathered using non-probability sampling methods like convenience and snowball sampling, form the basis of the study. The demographics and behavioural traits of the respondents are displayed using descriptive statistics. Cluster analysis finds customer segments with comparable emotional and behavioural patterns, whereas One-way ANOVA compares opinions across various behavioural groups. Furthermore, using marketing factors related to AI, Logistic Regression forecasts the probability of favourable emotional reactions.

The study is restricted to self-reported experiences with AI-enabled platforms by e-commerce customers. However, its conclusions provide marketers looking to develop customer-focused, reliable and emotionally compelling AI advertising techniques in the digital sphere with insightful information.

Objective of the Study

- To explore the demographic profile and behavioural characteristics of e-commerce customers.
- To compare emotional responses across different customer groups based on behavioural factors.
- To identify and classify customer segments based on their emotional responses and behavioural patterns.
- To predict the likelihood of customer emotional response based on promotional advertising, AI credibility and level of personalization.

Significance of the Study

This research is important for comprehending the way artificial intelligence (AI) affects the sentimental aspects of online buying. Understanding how AI affects customers emotional reactions and level of satisfaction is crucial as e-commerce platforms depend more and more on it for personalised recommendations, promotional messaging and credibility-building.

The results offer useful information for e-commerce managers, marketers, and AI developers to create strategies that not only increase productivity but also create real emotional bonds with clients. Businesses can create digital experiences that are more engaging, reliable, and human-centered by determining how elements like promotional

advertising, AI credibility and degree of personalisation impact emotions.
From an academic standpoint, the study adds to the body of literature by establishing a connection between AI-driven marketing strategies and the behavioural and emotional aspects of customer engagement. This lays the groundwork for further research in the area of AI-based customer satisfaction.

Statement of Research Problem

Customer interactions are getting more automated and customised as a result of the quick incorporation of artificial intelligence (AI) into online stores. Although the goal of these technologies is to increase convenience and customer satisfaction, little is known about how AI-driven marketing strategies affect consumers emotionally.
The emotional experiences of customers are influenced by promotional advertising, AI credibility, and the degree of personalisation, but many e-commerce portals prioritise increasing technical efficiency such as quicker recommendations and targeted promotions. Examining how various customer groups view and respond to AI-enabled interactions is essential because emotional reactions are a major factor in determining trust, loyalty and purchase intentions.
The lack of empirical knowledge regarding how AI-based marketing elements affect e-commerce customers' emotional reactions and how these reactions differ among various behavioural and demographic groups is thus the issue this study attempts to address.

Research Methodology

This study adopts Descriptive Research Design, nn order to explore how Artificial Intelligence (AI)-based marketing practices influence the emotional responses of customers towards e-commerce portals. The research focuses on three major AI-related factors Promotional Advertising, AI Credibility and Level of Personalization as the Independent factors and Customer Emotional Response as the Dependent variable.
A well-structured self-designed questionnaire was developed to collect the primary data. The questionnaire comprised of two sections: the first section included statements related to the demographic and behavioural characteristics of the respondents, while the second section contained five statements each measuring the three independent variables and one dependent variable using a five-point Likert scale.
The data was collected from 696 e-commerce customers using non-probability sampling techniques, namely Convenience Sampling and Snowball Sampling. The questionnaire was distributed through Google Forms, ensuring ease of access and efficient data collection from a diverse group of online shoppers.
In addition to the primary data, secondary data was gathered from research journals, academic publications and conference proceedings related to AI applications in e-commerce.
The collected data was analysed using IBM SPSS Version 23. Descriptive Statistics were employed to summarise the demographic and behavioural profiles of respondents. One-Way ANOVA was used to compare emotional responses across different behavioural groups. Cluster Analysis classified customers based on similarities in their emotional and behavioural patterns. Logistic Regression was applied to predict the likelihood of positive customer emotional responses based on the independent variables promotional advertising, AI credibility and level of personalization.
In order to help create individualised and emotionally intelligent e-commerce environments that can comprehend and address customers emotional needs in a human-centric way, the study aims to produce significant insights into how AI-driven marketing strategies improve customers emotional engagement, trust and satisfaction.

Review of Literature

- **Laith T Khrais (2020),** In artificial intelligence (AI), the idea of explainability has grown in importance for comprehending the interpretability and transparency of algorithmic decision-making, particularly in e-commerce applications. Explainability's multifaceted nature is reflected in its association with terms like structure, clarification, application, knowledge, decision, and emotion, according to word cloud and Voyant tool analyses. These results imply that explainability encompasses user comprehension, emotional involvement, and confidence in AI-driven systems in addition to technical interpretation. Though AI technologies like chatbots, recommendation engines, and forecasting algorithms have revolutionised e-commerce, the ongoing "black box" problem makes it difficult for customers to understand the way decisions are made, which undermines adoption and confidence. As a result, the literature highlights the need for transparent AI frameworks that improve ethical reliability and transparency by enabling users to understand and interpret algorithmic processes. In addition to enhancing customer satisfaction and trust, these systems help build emotionally intelligent and user-focused e-commerce environments.

- **Isaac Owusu Asante et.al., (2023),** have analysed that AI applications in e-commerce has grown significantly, contributing both to theory and practice while opening various branches for further study. From a theoretical standpoint, studies have expanded knowledge in information systems and AI technologies by examining how AI applications on e-commerce platforms enhance consumer engagement, with key subsets including chatbots, image search, recommendation systems and automated after-sales services (Jenkins, 2003; Khrais,2020). Earlier researches focused on adoption and technicalities, whereas recent studies emphasis consumer interactions with AI, providing a more comprehensive understanding of both psychological engagement (unobservable attitudes) and behavioural engagement (observable actions). Consumer engagement has been framed as an attitude formation process within the Stimulus-Organism- Response (S-O-R) paradigm, showing how AI-driven interactions indirectly influence behaviour through psychological states, while recent research has also introduced social comparison as a moderating factor that can strengthen or weaken consumer engagement depending on perception of quality and fairness. On the practical side, the scholars study reveals that recommendation system efficiency has the strongest influence on consumer engagement, highlighting the importance of personalisation through machine learning to improve user experience and reduce search time. Enhanced recommendation systems lead to greater behavioural engagement such as purchases, referrals and reviews, while chatbots also play a vital role, especially when anthropomorphism creates human-like interactions. Similarly, image search functionalities simplify product discovery and sustain engagement and automated after-sales services add further value by improving satisfaction and loyalty. However, the literature notes that social comparison may diminish engagement if product quality is inconsistent and therefore e-commerce firms are advised to ensure quality standards across all offerings, strengthen recommendation systems to maintain relevance and accuracy and replace text-based searches with reliable image-based searches to enhance psychological engagement and foster positive observable behaviours. Despite these insights, limitations persist in current studies as most research relies on quantitative and cross-sectional approaches, which restrict depth and future studies are encouraged to use mixed methods for richer insights and adopt longitudinal designs to track evolving consumer attitudes over time. Moreover, additional factors such as platforms usability and accessibility deserve more attention, suggesting that while AI in e-commerce has clear potential, its full scope and long-term implications are yet to be uncovered.
- **Nazmun Nessa Moon et al. (2021),** have researched in their research work that the technology has made many aspects of daily life easier, and online shopping is a prime example, significantly reducing both time and effort. Its popularity surged during the pandemic, as customers increasingly relied on the internet to purchase products using personal computers or smart devices. Modern online marketplaces are widely developed, and the growing dependency on web technology has highlighted key factors that influence customer satisfaction, such as product quality, delivery time, security, privacy, and trust. Secure payment gateways, money-back guarantees, and reliable service further contribute to positive user experiences. Research shows that these factors collectively shape online shopping behavior and overall customer satisfaction. Various algorithms are now employed to analyze customer behavior, helping businesses understand and enhance the online shopping experience.
- **Niwet Thamma et al (2024),** highlighted that how artificial intelligence (AI) is transforming e-commerce by shaping the way people make purchase decisions and experience happiness through online shopping. When customers find AI tools easy to use (PEOU) and genuinely useful (PU), they are more likely to adopt them (IAI), make confident purchase decisions (BUY) and feel happier with their shopping experience (HAPPY). In simple terms, the smoother and more beneficial the AI feels, the more trust and satisfaction it creates among shoppers. Their findings emphasised the importance of developing AI-powered platforms that are not only efficient and intuitive but also foster a sense of trust, comfort and enjoyment encouraging customers to embrace AI as a helpful partner in their shopping journey.

Research Gap

Although earlier research has examined the functional elements of AI in e-commerce, including accessibility, customer participation, satisfaction, and adoption, little attention has been paid to how customers feel about AI-driven interactions. The majority of current research focusses on technical and behavioural results, ignoring how users interact and feel about AI features like credibility, personalisation, and promotional advertising. This disparity emphasises the need to investigate the affective aspect of AI use, as emotions have a substantial

impact on trust, satisfaction, and sustained engagement. In order to closer understand the human side of AI-driven online experiences, the current study intends to close this gap by investigating consumers' emotional reactions to AI-enhanced e-commerce portals.

Analysis and Interpretation

1. Reliability Analysis

Table 1: Showing Reliability Test

PARTICULARS	CHRON BACH ALPHA
Overall Reliability	0.855

Source: Primary Data

From the Table above, it is inferred that there is a strong internal consistency, as indicated by the Reliability analysis with Chron Bach Alpha of 0.855. This proves that the dataset dependability and suitability for the further analysis.

2. Descriptive Analysis

Table 2: Showing Descriptive Statistics

PARTICULARS	LEVEL OF PERSONALISATION	AI CREDIBILITY	PROMOTIONAL AD
Mean	21.44	21.59	21.49
Median	22	22	21
Mode	21	21	21
Std. Error of Mean	0.096	0.096	0.084
Std. Deviation	2.543	2.537	2.222
Min. Mean Value	5	5	5
Max. Mean Value	25	25	25

Source: Primary Data

According to the descriptive statistics for all three independent variables namely; Promotional Advertising, AI Credibility and Level of Personalization, the respondents perceptions were consistently positive in every way. The majority of respondents agreed favourably with the statements about AI-driven marketing features in e-commerce platforms, according to the mean scores for these variables (21.44, 21.59 and 21.49). A symmetrical distribution of responses, reflecting consistency in participants opinions, is further suggested by the median and mode values being near or equal to 21–22.

The comparatively low standard deviation values (2.543 for Level of Personalisation, 2.537 for AI Credibility, and 2.222 for Promotional Advertising) suggest that respondents were less variable and that the majority of their opinions were central to the mean. The responses' full range was confirmed by the minimum and maximum values, which range from 5 to 25, indicating a variety of generally positive perceptions.

Therefore, the Descriptive Statistics implies that e-commerce customers perceive a high level of personalization, credibility in AI technologies and effectiveness in promotional advertisements, which together contribute to their positive emotional responses and engagement in online shopping experiences.

3. ONE-WAY ANOVA

Table 3: Showing One-Way ANOVA – Behavioural Factors With Demographic Factors

VARIBLES WITH BEHAVIOURAL FACTORS	F STATISTICS	SIG
GENDER	68.367	p<0.01
AGE	44.453	
OCCUPATION	26.144	
MONTHLY INCOME	51.644	

Significant @ 1% Level

H_0: There is no significant difference between the demographic characteristic of the respondents with their behavioural factors towards AI enhanced e-commerce portals.

From the table above it is inferred that the F statistics between Gender (68.367), Age (44.453), Occupation (26.144) and Monthly income (51.644) is significant at 1% level. Hence the null hypothesis is rejected. Therefore, it is proved that there is significant difference between the demographic characteristics of the respondents with their behavioural factors towards AI enhanced e-commerce portal.

4. CLUSTER ANAYSIS

Table 4: Showing The Summary Of Cluster Analysis Results

Cluster	Cluster Name	Characteristics	Number of Respondents	Percentage
1	Emotionally Engaged AI Responders	High emotional engagement and strong trust toward AI-driven personalization and advertisements.	550	79.0%
2	Highly Skeptical and Emotionally Detached Users	Very low emotional response, low AI credibility perception, and minimal engagement with AI features.	4	0.6%
3	Moderately Responsive Ad-Influenced Customers	Moderate emotional responses, primarily influenced by promotional advertising and occasional personalization.	142	20.4%
Total			**696**	**100%**

Variables	Cluster 1	Cluster 2	Cluster 3
Customer Emotional Response 1	0.019	-2.728	0.001
Customer Emotional Response 2	0.16	-3.688	-0.516
Customer Emotional Response 3	0.342	-5.223	-1.179
Customer Emotional Response 4	0.117	-4.887	-0.315
Customer Emotional Response 5	0.343	-4.842	-1.192

Source: Primary Data

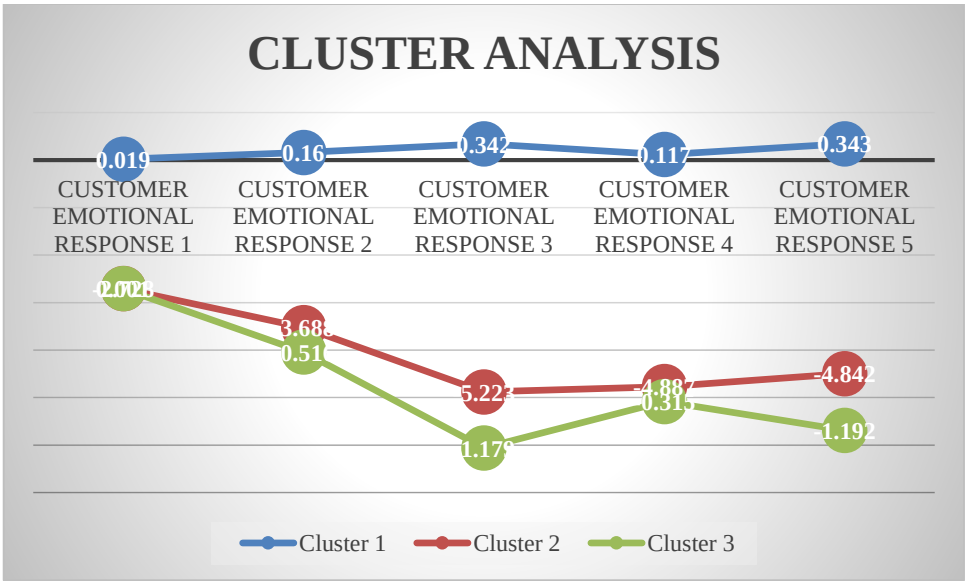
H_0: There is no significant difference in emotional responses among customer groups based on their perceptions of AI-enabled marketing practices.

Based on the respondents emotional reactions to AI-enhanced e-commerce marketing, the cluster analysis identified three unique customer segments.

- The majority or Cluster 1 (Emotionally Engaged AI Responders), consists of consumers who exhibit high levels of emotional involvement, belief, and satisfaction with AI features like personalisation and reliable marketing messages (79%). These users have a strong emotional connection to e-commerce platforms and are very open to AI-driven interactions.
- The group with the lowest percentage (0.6%), Cluster 2 (Highly Sceptical and Emotionally Distanced Users), is made up of people who have little emotional investment in and mistrust of AI technologies. Their lack of confidence points to reluctance or opposition to automated marketing campaigns and algorithm-based personalisation.
- With 20.4% of respondents, Cluster 3 (Slightly Responsive Ad-Influenced Customers) exhibits moderate emotional

engagement and seems to be more influenced by promotional ads than by AI personalisation or credibility.

Customers' varied levels of emotional responsiveness are highlighted by the existence of these three clusters. Because it highlights the need for unique AI marketing strategies improving emotional resonance for the engaged group, re-establishing trust for the sceptic group and bolstering personalisation for the moderate group, this segmentation is useful for marketers.



5. Logistics Regression

H₀:There is no significant influence of Level of Personalisation, AI Credibility and Promotional Advertisements on Customer Emotional Response toward AI-enabled e-commerce portals.

The logistic regression model was conducted to examine the influence of Level of Personalisation, AI credibility and Promotional Advertisements on customers' emotional responses toward AI-enabled e-commerce portals. The Omnibus Test of Model Coefficients (χ^2 = 43.716, p < .001) confirmed that the model significantly predicts customer emotional response. The model explains approximately 35.9% of the variance (Nagelkerke R^2 = .359), indicating a moderate level of explanatory power. The Hosmer and Lemeshow test (χ^2 = 6.981, p = .073) suggests that the model fits the data well, as there is no significant difference between observed and predicted classifications. The classification accuracy rate of 98.7% demonstrates a strong predictive performance. Among the predictors, only Promotional Advertisements (p = .043) emerged as a significant factor influencing customers' emotional responses, implying that emotional engagement is primarily shaped by exposure to AI-driven promotional content. Other factors such as leadership perception and AI credibility did not show a statistically significant effect. The model highlights the dominant role of promotional AI marketing in shaping customer emotions within e-commerce platforms.

Conclusion

The study arrives at the conclusion that by affecting how e-commerce consumers view, trust, and interact with online platforms, artificial intelligence (AI) significantly shapes their emotional experiences. The study sought to identify the emotional aspects of AI-driven marketing by combining promotional advertising, AI credibility, and degree of personalisation. The results showed that although customers had a positive perception of all three variables, the logistic regression analysis confirmed that only promotional advertisements had a significant impact on emotional engagement. This suggests that in digital marketplaces, emotionally charged, AI-powered ads are the main catalyst for consumer engagement and connection.

Additionally, cluster analysis identified three distinct customer groups: Ad-Influenced Customers, Highly Sceptical Users, and Emotionally Engaged AI Responders. These findings show that users' emotional engagement with AI varies depending on perceived authenticity and trust. Significant variations among the demographic and behavioural factors were also found in the study, indicating that factors like age, gender and income influence how people react emotionally to AI-enabled marketing.

The research emphasises that beyond technical efficiency, emotional intelligence in AI design is essential for fostering trust, satisfaction, and loyalty among online shoppers. E-commerce companies should, therefore, adopt ethical, transparent and emotionally sensitive AI strategies that humanise digital interactions. The study enriches existing literature by bridging the gap between technological advancement and emotional engagement, providing practical insights for marketers and theoretical contributions for future research on affective AI in e-commerce.

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