INFLUENCE OF ARTIFICIAL INTELLIGENCE ON CUSTOMERS' ONLINE BUYING BEHAVIOUR

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ABSTRACT

Industry 4.0, driven by disruptive technologies like Big Data, AI, and Blockchain, has transformed modern marketing practices. Among these, Artificial Intelligence (AI) has had the most profound impact, benefiting both marketers and customers. AI technologies—including voice and image recognition, machine learning, and semantic search—enhance marketing through automation, predictive analytics, and voice search, while also improving customer experience via personalized content and services.AI-enabled platforms reshape marketing strategies and business models across sectors, especially in e-commerce, where AI supports automated services, product recommendations, and personalized marketing. Despite its widespread adoption, limited research exists on customer acceptance of AI-driven features in online retail. This study aims to bridge that gap by examining AI's influence on customer behavior and its strategic implications for marketing in the digital age.

1. Introduction

Artificial Intelligence (AI) has become integral to modern life, influencing everything from online searches to major purchase decisions. Through digital interactions—social media, e-commerce, and smartphone usage—consumers generate vast data footprints. Traditional analysis methods fall short in processing this data, making AI essential for extracting actionable insights.Marketers leverage AI for personalized advertising, content automation, and targeted campaigns. AI platforms analyze customer preferences, behavior, and purchase intent, enhancing CRM, boosting sales, and increasing engagement. According to Forbes Insights (2018), 84% of executives recognize AI's strategic importance. Companies like Amazon, Flipkart, and Google successfully use AI for personalized recommendations and predictive analytics to optimize performance. Despite its benefits, customer acceptance of AI in online retail remains underexplored. Previous research has addressed concerns like data privacy, trust, and user experience, but lacks comprehensive insight into how AI-driven features affect consumer behavior. This study aims to bridge that gap by examining AI's role in reshaping online retail and its influence on customer perceptions and satisfaction. The findings will contribute to marketing literature by highlighting AI's transformative potential and guiding businesses in developing AI strategies that enhance both operational efficiency and customer experience. Understanding AI's impact on consumer behavior is crucial for staying competitive in the evolving digital marketplace.

2. Literature Review

According to the Theory of Reasoned Action (Fishbein & Ajzen, 1975), customers' actual behaviour can mainly be determined by their decision of intention or willingness to use. According to the Cognitive Appraisal Theory (Lazarus, 1991), the decision making process of any individual

can be divided into different stages. The first stage is primary appraisal, where an individual evaluates the importance of anything, it can also be termed as stimuli. The next stage is secondary appraisal which is concerned with analysing the behavioural options. Further, the secondary appraisal leads to a creation of emotion (Lazaurus, 1991), which finally leads to the fourth stage i.e. outcome which depicts the behavioural intention or willingness of the customer to use AI as shown in figure 2. Based on the Lazarus (1991b), cognitive appraisal theory Gursoy (2019) suggests that customers will initially undergo an initial evaluation of relevance and congruence of the use of AI to themselves when considering the utilization of AI based platforms. Relevance refers to the degree to which something is meaningful, applicable, or significant in a particular context or to a specific individual or group. It involves the relationship between a subject and its importance or appropriateness in a given situation (Lazarus 1991a). Relevance in online retail revolves around tailoring the shopping experience to meet the specific needs, preferences, and expectations of individual customers. Leveraging data, personalization, and effective communication helps enhance the relevance of online retail platforms, ultimately contributing to customer satisfaction

3. Methodology

According to Creswell (2008), "Research is a process of steps used to collect and analyse information to increase our understanding of a topic or issue". This section presents the methodology by following which the present research is conducted. The section discusses in briefly about research design, sampling design, techniques used for data collection and statistical tools for data analysis used in this research. This research work aims to study the acceptance of artificial intelligence based technologies by the e-commerce customers. The study uses python program to do the analysis of the data. First, data adequacy, reliability and validity was checked. Later, confirmatory factor analysis (CFA) and structural equation modelling (SEM) was employed in order to confirm the factors and asses the strength of structural links between the independent and dependent variables

4. Research Gap

While AI has been widely adopted by both retailers and customers—offering personalized recommendations, advanced analytics, and consistent service—most existing studies focus on customer-related aspects such as motivation, preference for AI vs. human recommendations, and general acceptance of AI. However, these studies are largely descriptive or based on traditional models like TAM (Technology Acceptance Model) and UTAUT (Unified Theory of Acceptance and Use of Technology), as seen in works by Gursoy et al. (2019), Sundar et al. (2016), and Fritz et al. (2016). Scholars such as Lu et al. (2019) and Song (2017) have critiqued the reliance on these models, arguing they are inadequate for fully capturing AI adoption in service contexts. Recent research (Yoon et al., 2021; Yi & Choi, 2023) highlights the need for a more comprehensive framework to understand customer behavior and attitudes toward AI in service environments, beyond the scope of existing acceptance models.

5. Problem Statement

Artificial Intelligence (AI) is poised to be a major force in global advancement, with India playing a key role due to its growing economy and large population. Traditional technology

acceptance models fall short in addressing AI's unique features, such as natural language processing and human-like interactions, making constructs like "ease of use" potentially outdated.There is a need to explore alternative factors—such as social influence, hedonic motivation, and anthropomorphism—that may impact customer acceptance of AI. The role of anthropomorphism in shaping user perceptions remains underexplored, despite being a distinguishing feature of AI.Furthermore, AI's performance must be assessed through both cognitive and emotional lenses, given its ability to engage in non-repetitive tasks and social interactions. The psychological pathways—including emotional responses and privacy concerns—that influence customer acceptance of AI in online retail are not yet fully understood.In the context of developing countries like India, there is limited clarity on how customers perceive and accept AI technologies. This study seeks to identify key factors influencing cognitive and emotional responses toward AI and understand how these factors, including privacy concerns, shape overall acceptance in real-time, data-driven retail environments.

6. Objective of the Study

1. To explore factors influencing Artificial Intelligence acceptance by e-commerce customer.
2. To assess the role of social influence, hedonic motivation, anthropomorphism and insecurity on performance expectancy.
3. To assess the effect of social influence, hedonic motivation, anthropomorphism and insecurity on effort expectancy.

7. Research Design

A research design has significant and directive role in conduction of research. It refers to a research design as 'a plan, structure and strategy of investigation so conceived as to obtain answers to research questions and problems. The present study used exploratory cum conclusive research design to explore the constructs first, leading to reach conclusions.

8. Sampling Design

Population

As the study is on acceptance of artificial intelligence by the e-commerce customers, therefore the customers using e-commerce for online shopping forms the target population.

Sampling Frame

Customers doing online shopping from Amazon, Flipkart, Myntra were considered as sample frame for the present study. Customer from following companies were selected as these are leading companies in the country having a similar kind of AI services. Finally, individual customer buying online on different e-commerce platforms in Delhi NCR region was selected as sampling unit.

9. Sampling Technique

Purposive sampling was utilized for the data collection. This technique is used when a researcher wants to gain insights from a particular subset of the population that is most relevant to the study. Only those respondents were selected who had made at-least one purchase using the online platform in the previous 3 months and have experienced at-least one AI based services of the particular platform.

10. **Pre-Testing**

Pre-testing involves simulating the actual data collection process on a small sample to identify issues with research instruments and methodology (Hurst et al., 2015). In this study, 50 questionnaires were distributed to respondents. Technical terms were explained as needed, anda feedback section was included to gather input.Based on the feedback—both written and verbal—certain technical terms were simplified for better comprehension. After incorporating the suggestions, a final questionnaire was developed, consisting of two sections: demographic details and model-specific items for customers.

11. Statistical Tools & Techniques Used:

To ensure a comprehensive analysis aligned with the research objectives, various statistical tools and techniques were employed in this study. To begin with, **charts and diagrams** were utilized to present the demographic profile of respondents in a visually interpretable format, aiding in the understanding of the sample characteristics.To explore the **underlying factors influencing the likelihood of acceptance of Artificial Intelligence (AI)** by customers, **Confirmatory Factor Analysis (CFA)** was applied. This technique helped validate the factor structure of the constructs used in the study and ensured the reliability and validity of the measurement model.Further, to **examine the influence of these identified factors on Performance Expectancy**, **Structural Equation Modeling (SEM)** was conducted using **Python**. SEM enabled the analysis of complex relationships between multiple variables simultaneously, providing deeper insights into the structural paths and the strength of influence each factor exerts on performance expectancy in the context of AI adoption.

12. Findings of the Study

The research aimed to investigate the factors influencing the acceptance of Artificial Intelligence (AI) in e-commerce settings. A total of six objectives were framed, supported by fifteen hypotheses, and analyzed using advanced statistical tools and techniques. Each objective yielded significant findings that contribute to both theoretical understanding and practical implications for marketers and AI developers. The findings are discussed below, organized according to each research objective:

1. Findings of Objective 1:

The first objective focused on exploring the key factors influencing the acceptance of Artificial Intelligence by e-commerce customers. Based on an extensive review of prior literature, nine factors were identified: Social Influence, Hedonic Motivation, Anthropomorphism, Insecurity, Performance Expectancy, Effort Expectancy, Emotion, Willingness to Use, and Privacy.

These factors were validated through **Confirmatory Factor Analysis (CFA)** conducted using Python. The analysis revealed that all items had factor loadings above 0.5, meeting the threshold recommended by Hair et al. (2015). Reliability was confirmed using **Cronbach's Alpha** and **Composite Reliability (CR)**, with all constructs scoring above the acceptable limit of 0.8. For instance, Cronbach's Alpha values ranged from 0.864 to 0.938, indicating high internal consistency.

Convergent Validity was assessed through Average Variance Extracted (AVE), and all

factors had AVE values greater than 0.5. The AVE of each factor was also found to be less than its corresponding CR, validating convergent validity. **Discriminant Validity** was established using the Fornell-Larcker criterion, where AVE was greater than both MSV and ASV for all constructs. These results confirmed the construct validity and reliability, thereby enabling further structural analysis.

2. Findings of Objective 2: This objective aimed to assess the influence of Social Influence, Hedonic Motivation, Anthropomorphism, and Insecurity on Performance Expectancy. Four hypotheses were formulated and tested using **Structural Equation Modeling (SEM)** via Python.

Social Influence → Performance Expectancy: A positive and significant relationship was observed (β = 0.28, p = 0.018). This suggests that social pressures and norms significantly shape users' expectations regarding AI's utility.

- **Hedonic Motivation → Performance Expectancy:** A strong positive effect was noted (β = 0.61, p = 0.000), indicating that the enjoyment and fun associated with AI usage significantly enhances users' performance expectations.
- **Anthropomorphism → Performance Expectancy:** The results showed a significant positive influence (β = 0.14, p = 0.003). When AI systems exhibit human-like features, users tend to have higher expectations regarding their usefulness.
- **Insecurity → Performance Expectancy:** Although the coefficient was negative (β = -0.16), the relationship was not statistically significant (p = 0.138), implying that user insecurity does not play a major role in shaping performance expectancy in this context.

3. Findings of Objective 3: The third objective examined the effect of the same four independent variables on Effort Expectancy.

- **Social Influence → Effort Expectancy:** The relationship was not significant (β = -0.04, p = 0.098). This indicates that peer or societal opinions do not significantly influence users' perceptions of the ease of using AI technologies.
- **Hedonic Motivation → Effort Expectancy:** A significant negative relationship was found (β = -0.46, p = 0.000). This suggests that when users find AI systems enjoyable, they perceive them as easier to use.
- **Anthropomorphism → Effort Expectancy:** A positive and significant relationship was observed (β = 0.29, p = 0.000). This implies that anthropomorphic features may increase perceived complexity, requiring users to exert more effort.
- **Insecurity → Effort Expectancy:** The analysis showed a significant positive effect (β = 0.21, p = 0.001), meaning that users with higher insecurity perceive AI systems as more challenging to use. Addressing these concerns through transparent and user-friendly design could help mitigate perceived effort.

13. **Conclusion**

This study concludes that customer acceptance of AI in e-commerce is shaped by a combination of social influence, emotional response, and perceived usefulness and effort. Positive feedback from friends, family, and online communities encourages AI adoption, while skepticism

can discourage it. **Social norms** play a vital role in shaping customer attitudes.**Hedonic motivation** (the desire for enjoyment) enhances performance expectancy but may lower effort expectancy. Customers excited about AI tend to believe in its usefulness but may underestimate the learning curve. Similarly, **anthropomorphic AI** — systems with human-like features — increase user engagement but also raise perceived complexity and cognitive load, making them appear more demanding to use.**Performance expectancy** boosts perceived benefits, while **effort expectancy** raises perceived costs. Customers evaluate AI through this cost-benefit lens, which directly affects their willingness to adopt.Importantly, **emotions significantly influence AI adoption**. Positive emotions like trust, excitement, and satisfaction increase willingness to use AI. Emotions also partially mediate the relationship between performance expectancy and usage intentions, reinforcing the need to create emotionally engaging AI experiences.However, **privacy concerns** moderate this relationship. Even when users have positive emotions, high privacy concerns reduce their willingness to adopt AI. Thus, addressing privacy issues is crucial to fully leverage emotional appeal and increase adoption rates.In summary, AI adoption is driven by a mix of **social influence, emotional engagement, perceived utility, and privacy concerns**. Developers and marketers must focus on enhancing performance, reducing effort, evoking positive emotions, and ensuring data privacy to encourage widespread acceptance.

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