

Analysis of Consumer Impulsive Buying Behavior Towards Usage of Artificial Intelligence on E-commerce Platform

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Abstract: This study explores how artificial intelligence (AI) influences consumer's spontaneous or unplanned purchases in electronic commerce. The development and increasing use of various types of automated systems in e-commerce such as, but not limited to, chatbots, personalized product recommendation and real-time offers, provide new opportunities for influencing consumer's purchase decisions through automation. By investigating how these AI based tools directly or indirectly affect consumers' psychological states (e.g., convenience, urgency, customization), which stimulate unplanned or emotionally-based purchasing behaviours, this study seeks to contribute to a better understanding of how external AI based stimulus can generate internal response and subsequent behaviour. As part of its methodology, the study uses a mixed methodological design including both an online survey and qualitative interviews to investigate the level at which consumers engage with AI. The study is based upon the Stimulus-Organism-Response (S-O-R) model; Instant Gratification theory; and Cognitive Dissonance theory, among other psychological models, to examine how the AI generated stimulus leads to internal response and consequently affects the consumer's purchasing behaviour. Therefore, it is expected that AI will have a significant effect on the likelihood of spontaneous purchases due to both promotional activities and customised product recommendations. In addition, younger adults and those who possess greater discretionary income will likely be more susceptible than older adults and lower-income individuals. Furthermore, this study will examine the ethics associated with the use of AI in marketing and identify potential negative consequences (i.e., overspending/loss of financial control). Ultimately, the purpose of this study is to help companies understand AI's role in their business practices and make informed decisions about ethical AI usage; therefore providing further knowledge regarding the long-term impacts of AI on consumer behaviour.

Keywords: AI, AI Marketing, E-commerce, Consumer Behaviour, Impulsive buying behaviour

1. INTRODUCTION

The integration of artificial intelligence (AI) into the world of e-commerce has had an enormous effect on it; by encouraging new ideas, and fundamentally changing the way that businesses engage with their consumers. As most



e-commerce websites continue to be based upon AI driven technologies, the ways that we experience commerce will continually improve through the means of frictionless and personalized user experiences. Many modern-day retail websites must now implement features such as chatbots, live feeds, and in-real time promotions in order to provide an exceptional customer experience while driving purchasing decisions. Through the advancement of AI technology, both efficiencies of operation, as well as significant changes in consumer behavior patterns, particularly those related to impulse purchasing behaviors, have occurred for e-commerce websites. Impulse purchases within today's digital marketplace, often result from emotional responses. The influence of artificial intelligence (AI), in addition to creating these consumer impulse purchase behaviors, also forms them.

2. Background of the study

Modern commerce today cannot be effective without artificial intelligence. The use of AI enables businesses to create personal and focused buying experiences for users.

The AI uses the users' data including browsing history, purchasing habits and product preferences to give users relevant and timely information.

This custom approach provides an opportunity for the customer to be continually engaged, often prompting the customer to make a decision on a purchase they would never normally consider making (Dmitrievich, et al. 2024).

One of the primary benefits of using AI is its ability to personalize user experiences; it can also automatically interact with customers and predict what products the user will find of interest.

These factors contribute to the user having a more interactive and exciting shopping experience.

Chatbots are one of many examples of how AI can be applied in ecommerce to provide immediate support for the user. They allow for instant access to answers regarding questions the user has regarding their shopping experience (Iakupova, 2024).

Natural Language Processing (NLP) algorithms are behind the chatbot capabilities allowing for a conversation to occur in a manner similar to humans, while at the same time allowing customers to receive quick access to relevant product information.

As part of the users shopping experience, chatbots can also recommend related products or services, thus creating the potential for both up-sell and cross-sell opportunities that may result in impulse purchases. The rapid response provided by chatbots makes it more probable for customers to act upon purchases they previously had no intention of completing.

Machine Learning (ML) algorithms are used in other applications of AI that include recommending specific products to customers.

In this context, ML algorithms analyze customer preferences and behavior and then recommend products that the user is most likely to select.

Recommendations made by the algorithm are very important in influencing customers to explore products they may not have otherwise considered.

This creates the potential for impulsive purchases from the customers (Chandrasekhar et al. 2024).

Many times, AI directs customers toward products based on either their past browsing activities or previous purchases.

By establishing confidence among the customers with respect to the accuracy and dependability of these recommendations, this enhances the likelihood of customers accepting those recommendations (Xiong, 2022).

Artificial Intelligence (AI) driven flash sale or real time discounting creates a feeling of urgency that can influence impulsive purchasing.

For example, when a customer sees exclusive or limited time offers being presented as part of their shopping experience, there is a heightened sense of urgency for the customer to make decisions as quickly as possible.

Time sensitive AI generated offers commonly prompts customers to make impulsive purchases without first evaluating whether or not their needs or financial position will accommodate such purchases.

Artificial Intelligence creates a sense of urgency and a perceived lack of availability as well as two major influences on causing impulsive purchases (Chen, et al. 2022).

Impulsive Buying Behaviour as a Psychological Phenomenon in Digital Environments

Start_text impulsive purchasing behaviour, a psychologically studied phenomenon – characterized by unplanned and unintentional buying. While in-store displays, advertising or actual display of products in traditional retail settings were often triggers for impulsive purchases; with online shopping, such behaviours have evolved to include new forms stimulated through use of artificial intelligence. AI can communicate real-time with consumers within digital environments via predicting consumer preferences and habits. Subsequently, consumers are exposed to specific cues that may trigger emotional responses and result in impulsive purchasing (chandrasekhar et al., 2024)). Another key psychological factor involved in impulse purchase is convenience. AI-powered e-commerce sites offer easy access to large product selections, tailored suggestions & immediate customer support (shahzad et al., 2024)); as a result of the ease of using an AI-powered site, users are more likely to act on impulse, since it takes less cognitive effort to make decisions about what to buy. Furthermore, AI-driven technologies provide instant offers and promotions, providing users with instant gratification and encouraging them to act quickly. Another important component of urgency is highlighted in marketing tactics used when creating a sense of limited-edition or time-sensitive marketing. When consumers see flash deals or special prices available only for a short period of time, they experience fomo (fear of missing out), which leads to hasty purchases (min and Tan, 2023)). The pressure created by these limited-timed deals creates a psychological barriers that consumers find impossible to resist even if the original intent was not part of their original shopping plan. Finally, there is the influence of personalization on impulsive purchasing. AI has the capability to create customized product recommendations based upon user preferences, therefore creating relevance & confidence. Consumers will accept recommendations made specifically for them because they believe the recommended products align well with their needs (abdelsalam et al., 2020)). The customization strategy creates an emotional connection between the consumer and the product that increases the likelihood of making an impulsive purchase. Overall, how people behave, especially in regards to making impulsive purchases has changed as a result of the incorporation of artificial intelligence into e-commerce platforms. AI converts shopping into a highly engaging experience utilizing tools like chatbots, personalized recommendations, and real-time deals. These tools leverage psychological triggers including ease, urgency and personalization. Research on AI is needed to understand consumer behavior within digital environments and anticipates future advancements impacting the choices consumers make regarding purchasing (kiran et al., 2024)).

Research Objectives

1. To examine the impact of AI-driven technologies on consumers' impulsive buying behaviour
2. To investigate how AI features like real-time offers and personalized recommendations trigger unplanned purchases
3. To analyse the demographic factors influencing susceptibility to AI-induced impulsive purchases

3. LITERATURE REVIEW

There has been a radical shift in how businesses operate due to the introduction of artificial intelligence (AI) in the e-commerce market. Businesses first utilized AI to perform routine tasks for example: inventory control, customer service etc. However, over time the incorporation of AI within firms has evolved and become much more sophisticated and comprehensive allowing for a variety of data driven approaches and customizations to be provided to customers (Kumar et al., 2023). The use of artificial intelligence capabilities that include; machine learning, predictive analytics,

natural language processing, and recommendation systems have become key elements for e-commerce platforms to increase customer engagement, and improve operational performance. A number of AI powered solutions, for example, chatbots, and virtual personal shoppers enable customers to receive immediate assistance related to their purchase experiences and help to build customer loyalty (Kumar et al., 2023). One of the most prominent applications of AI in e-commerce is through the use of personalized recommendations. Computers track individual users' browsing history, preferences, and past purchases and recommend relevant products to the individual user. As a result of the relevance of these recommendations, these facilitate an efficient purchasing process and typically lead to higher conversion rates. Additionally, real-time offers, that are typically generated using customer profiles, prompt customers into taking action quickly. The feeling of urgency associated with these offers may lead to unplanned purchases (Fedorko, et al., 2022). Due to the ability of AI technologies to present ease, speed, and a level of customization previously unavailable in the retail environment; there has been a dramatic change in how consumers approach decision making when purchasing items. AI enables consumers to navigate the online shopping experience more intuitively and with greater levels of engagement than would traditionally occur through traditional marketing methodologies. AI plays a substantial role in shaping the way that consumers make purchasing decisions. Systems utilizing artificial intelligence are constantly evolving and becoming more familiar with each individual's purchasing behaviors and adapting the overall purchasing experience accordingly (Sahdev et al., 2023). In addition to increasing levels of customer interaction and influencing purchasing decisions, the level of personalization created by AI is far greater than what could be achieved through traditional marketing methodologies. Due to the fact that AI can display information to individuals based upon their predicted data regarding what they are likely to purchase; this creates an environment conducive to impulsive purchases. Therefore, AI significantly affects the manner in which customer decision-making occurs in digital formats. Specifically, by creating an easier and more satisfying experience for customers during the course of the buying process. Impulse buying is described as unplanned or unpremeditated purchases made by customers without prior consideration or reflection before making a purchase (Bahgat et al., 2023). The purchase is characterized by a high degree of emotionality and rapidity rather than being rational. Impulsive purchases are frequently triggered by strong emotional responses such as excitement, satisfaction, and urgency that are commonly experienced in digital environments where AI-based technology is widely available (Sahdev et al., 2023). Extensive research has investigated both external factors of the environment (e.g. product displays), psychology, and internal factors (e.g. cognitive states) that affect impulse buying. E-commerce environments contain various external cues such as; eye-catching product displays, limited-time offers, and tailored recommendations that can generate an impulse-purchase-atmosphere. Online shopping environments provide numerous additional barriers to impulse buying since consumers can rapidly complete transactions with just a few clicks eliminating potential barriers (Min & Tan, 2023). Research studies have identified several variables (i.e. perceived scarcity, emotional triggers, instant gratification) that impact impulse buying in digital environments (Wang et al., 2023). Customer reactions to stimuli such as; timely offers, personalized discounts, targeted advertisements frequently cause impulsive purchases. To stimulate similar emotional triggers, AI systems that predict consumer preferences and behavior patterns enhance the emotional triggers created by these stimuli. Creating frictionless paths to purchase by presenting products consistent with a consumer's interests; these systems create an instant-gratification environment in which customers feel compelled to act immediately. One-click ordering and quick shipping options offered on many e-commerce websites entice many impulse buyers by offering them instant satisfaction. Two types of digital marketing techniques utilize AI effectively in driving impulsive purchases: real-time promotion and personalized offers. Both techniques create outside cues that elicit feelings of urgency and excitement among customers resulting in impulsive purchases (i.e. hurriedly completed).

Theoretical Framework

Efficient Gratification Theory; Stimulus Organization Response (S-O-R) Model; and Cognitive Dissonance Theory are all established theories of technology that show how A.I. Technologies affect impulsive Purchasing Behavior (Chang et al., 2011). The Stimulus-Organization-Response (S-O-R) Model posits that external stimuli (S), such as A.I.-driven technologies, stimulate consumers' internal states (O), which in turn lead to behavioral responses (R), such as impulsive purchasing behaviors. E-commerce uses A.I. tools such as Real-Time Promotions and

Personalized Recommendations as stimuli to create consumers to be emotionally stimulated and psychologically affected through feelings of Enthusiasm, Curiosity and Urgency. Those internal emotional states then affect a person's behavior, including impulse buys. Therefore, the S-O-R. Model provides a mechanism for understanding how A.I. technologies effect consumer behavior via creating psychological and emotional states resulting in impulsive purchasing decisions. The Artificial Intelligence Theory explains how A.I. creates Instantaneous Emotional Gratification, which is often linked to Impulse Buying (Karim et al., 2021). Digital Contexts utilize A.I. Techniques to quickly respond to user inquiries through methods such as suggesting items based upon interest or providing instant discount opportunities. As a result of these quick responses, customers become more likely to act impulsively to meet their desire for fast gratification. Additionally, A.I.-Driven Personalization, and the ease of Online Shopping allow consumers to fulfill desires quickly, and with little cognitive thought, leading to impulsive purchases (LE et al., 2022). For instance, if a customer receives a personalized offer to buy something they had been interested in, they would be highly likely to make an immediate purchase due to the promise of Rapid Gratitude. In addition to explaining why people are uncomfortable after making impulsive purchases using A.I. Driven Ecommerce technologies, Cognitive Dissonance Theory could also be applied to explain the conflict people experience when they make an impulse purchase. Cognitive Dissonance is defined as the feeling of discomfort experienced when there is a contradiction between what a person believes and what they do. When a customer makes an impulsive purchase, but later feels it was unnecessary, or goes against their normal purchasing practices, they will most certainly feel some level of discomfort. Consumers may attempt to minimize the level of cognitive dissonance caused by their impulsive purchases by justifying those purchases to themselves by saying that they were necessary, or that the item purchased was required (Zhu et al., 2023). With the sophisticated personalized recommendations and targeted promotional strategies employed by A.I.-Drives Ecommerce technologies, consumers may believe that their impulse purchases were well thought out even though they were made spontaneously (Karim et al., 2021).

4. RESEARCH METHODOLOGY

Research Design

The study will employ a mixed-methods design using both qualitative and quantitative methods. In doing so, the goal is to provide an overall understanding of how Artificial Intelligence (AI) tools in E-commerce influence Impulse Buying Behavior. Theoretical frameworks such as the Instant Gratification Theory and the Stimulus – Organism – Response (S-O-R) Model will guide the connection between AI driven stimuli and consumer response. The multi dimensional examination of how AI influences consumer behavior will be enhanced by integrating the richness of qualitative insight with numerical data. (Anoop and Rahman, 2025).

Data Collection Techniques

The primary means of obtaining data was through two forms. Initially, the study will collect quantitative information from customer surveys of e-commerce websites via an online survey. The focus of this type of survey is to quantify how users are interacting with various features of the AI tool; specifically time-restricted promotions, personalized recommendations and other real-time decision support tools. The ultimate purpose is to measure the effect of these different types on impulse purchasing. Additionally, the study also gathers qualitative data through in-depth interviewing. This research consists of a small number of consumers who have experienced shopping environments using AI driven tools. The intent of this portion of the research is to identify consumers' emotional responses toward AI and their psychological experience when making decisions so that the researchers can gain a better understanding of what triggers impulsive purchases.

Sampling

A diverse sampling of customer types will help us generate results for a variety of demographics. Age, Income Level, and Exposure to AI technology prior to our study were identified as the sampling variables. It is imperative we have this diversity due to the fact that people from various demographics may respond differently to AI based stimuli in an e-commerce environment and may be more or less susceptible to impulsive buying.

Data Analysis

Statistical methods such as regression analysis and correlation analysis are applied to examine the quantitative survey results in order to identify relationships between specific characteristics of AI (e.g., recommendation engines) and impulsive purchasing. Furthermore, statistical analysis will assist in quantifying the effects of AI systems on consumers' purchasing decisions and aid in determining which characteristics have the greatest effect. A thematic approach is used to analyze the qualitative data from the interviews to identify recurring themes about the psychological triggers (such as an emotional fulfillment or a feeling of urgency generated by an offer driven by AI technology), that lead to impulse purchasing.

Key Areas of Investigation

AI Tools as External Stimuli

This paper focuses primarily on how artificial intelligence (AI) technology can be an outside cue to influence impulse purchase behavior. Ecommerce sites provide many ways for companies to use AI technology to drive impulse buying through their chatbots, real-time offers and personalized offers. Through developing an engaging and personalized customer experience, these technologies may cause consumers to make impulse purchases based solely upon emotional reactions. For instance, chatbots offer fast assistance by providing consumers with recommendations based upon their preferences (LE et al., 2022). Consumers feel pressure due to the urgent nature of flash sales or limited time discount opportunities offered by retailers creating a sense of urgency amongst consumers causing them to react quickly when they see an opportunity to save money. Personalized recommendations based upon browsing history and/or past purchases provides consumers with convenient access to products that align with their interests and reduces the amount of time spent searching for products increasing the likelihood of impulse purchases (Karim et al., 2021). Psychological aspects such as convenience, excitement and/or urgency used in conjunction with artificial intelligence have been shown to have the greatest effect on influencing consumer behaviors. Due to continuous stimulation causing consumers to be influenced into making impulse purchases, this study will examine the relationship between impulsive purchases and AI driven prompts. The study also examines the mechanics of how AI tools create a sense of urgency and convenience.

Psychological Triggers and Impulse Buying

Understanding the role of Artificial Intelligence in shaping consumer behavior involves comprehending how AI influences psychological mechanisms involved in making impulsive purchasing decisions. Emotions drive many impulse buys. The digital marketplace leverages customer emotions; for example, excitement, convenience and fear of missing out (FOMO), all create powerful emotional drivers that lead to impulsive buying behaviors. Excitement is created when using digital marketplace technology that includes limited time offers/promotions, personalization through product recommendation algorithms, etc. that create an emotional high, resulting in customers feeling compelled to quickly make a purchase (Rodrigues et al., 2021). Convenience is also a driver for creating a positive shopping experience. Digital marketplace AI technologies have made it easier than ever to shop online by providing easy-to-use product recommendation technologies and streamlined checkout experiences. However, some digital marketplace tools, for example countdown timers or alerts regarding low inventory levels can evoke feelings of FOMO that results in customers acting impulsively without adequately evaluating their options. This research will investigate the interaction between AI-based digital marketplace tools and consumer psychology, including examining how AI based features can heighten emotional stimuli that elicit impulse buying. The Stimulus Organization Response (S-O-R) theory represents the primary conceptual framework this study uses to explain how AI acts as a stimulus to alter consumers' internal psychological and emotional states, thereby influencing consumer decision-making processes (Chang et al., 2011).

Ethical Considerations in AI-driven Marketing

The significance of demographic characteristics in AI-induced impulsive buying is another important topic of research. The degree to which AI-driven marketing strategies are susceptible to different demographic groups varies.

For example, younger customers, who are frequently more accustomed to digital technology, can be more susceptible to the persuasive power of AI tools like chatbots or real-time offers (Rodrigues et al., 2021). They are more inclined to value quick satisfaction, which makes them ideal candidates for time-limited incentives and personalized recommendations. Because they are less restricted by economic constraints, those with higher disposable incomes are more likely to make impulsive purchases. The study will analyse the demographic characteristics that influence impulsive buying, specifically focusing on age, income level, and level of knowledge about AI technologies (Zhu et al., 2023). Finding out which demographic groups are most susceptible to AI-driven marketing tactics and comprehending how these elements interact with psychological triggers to promote impulsive buying behavior are the main objectives. By examining these demographic trends, the study aims to provide insights into the potential optimization of AI technologies for different consumer segments (Gong et al., 2024). For instance, we may need to customize AI-driven marketing techniques for younger versus older consumers, or for consumers with more disposable income versus those on a budget. By taking these dynamics into account, e-commerce platforms that are aware of ethical marketing techniques can more successfully target their customers (Karim et al., 2023).

Ethical Considerations in AI-driven Marketing

The increasing integration of AI capabilities into e-commerce platforms has raised ethical questions about the potential for these tools to encourage impulsive purchases (Adwan et al., 2024). While AI can improve the shopping experience, there are concerns that it could also have unfavourable effects, such as overspending or losing control over money (Muniratnam et al., 2024). Customers may experience pressure to make unplanned purchases, potentially leading to financial hardship or regret. One of the most important ethical questions is whether AI technologies respect consumer autonomy and encourage informed decision-making, or if their primary function is to exploit emotional responses to increase sales. Artificial intelligence (AI)-powered solutions, such as personalized recommendations and real-time offers, can occasionally foster an atmosphere that fosters impulsive behavior without providing customers with enough time to consider their options. This might cause regret or financial hardship, particularly for those customers who are more prone to impulsive purchases (Karim et al., 2023). The study will examine the moral ramifications of artificial intelligence in e-commerce, emphasizing the necessity of ethical and open marketing strategies. It will look at how businesses may strike a balance between using AI to boost sales and their moral duty to keep customers safe. This involves providing customers with the necessary tools to control their spending and ensuring they fully understand the impact of AI tools on their decisions.

Data Analysis

Objective 1: To examine the impact of AI-driven technologies on consumer's impulsive buying behaviour.

Regression Analysis

Dependent- Impulse buys due to AI

Independent- AI feature frequency

Table 1. Model Summary.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.926 ^a	.858	.855	.500

Table 2. ANOVAa.

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-2.063	.311		-6.632	.000
	AI Feature Frequency (Likert)	1.229	.072	.926	17.047	.000 ^b

Table 3. Coefficientsa.

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	72.521	1	72.521	290.588	.000 ^b
	Residual	11.979	48	.250		
	Total	84.500	49			

The provided data output focuses on the relationship between AI Feature Frequency (the frequency with which AI tools such as personalized recommendations and chatbots are used) and Impulse Buys due to AI (the tendency to make unplanned purchases driven by AI features), both measured using a Likert scale.

Variables Entered/Removed

The independent variable entered into the model is AI Feature Frequency, while the dependent variable is Impulse Buys due to AI. This means the analysis is designed to see how frequently consumers interact with AI features and how that frequency impacts their impulsive buying behavior.

Model Summary

The R value of 0.926 indicates a very strong positive correlation between AI Feature Frequency and Impulse Buys due to AI. The R Square value of 0.858 shows that 85.8% of the variance in impulsive buying behavior can be explained by the frequency of AI feature usage. This high R Square value suggests a strong explanatory power of the model. The Adjusted R Square (0.855) is slightly lower but still high, confirming that the model holds strong even when adjusted for the number of predictors. The standard error of the estimate is 0.500, indicating a moderate level of accuracy in predicting the dependent variable.

ANOVA Table

The ANOVA (Analysis of Variance) Table helps to determine how well your model fits your data. The F-Statistic equals 290.588. The P-Value for this statistic is .000. Since .000 is smaller than .05, we can conclude that your model is Statistically Significant. Therefore, it would be difficult for this relationship between the frequency of an AI feature and impulse buys because of AI to occur by chance. Additionally, the Regression Sum of Squares equals 72.521 while the Residual Sum of Squares = 11.979. As such, the majority of the variance explained in the data was done so by your regression equation.

Coefficients Table

The coefficients table provides information regarding how much influence ai tool usage has on Impulse Buys. The unstandardized b for the constant is -2.063, meaning when ai tool usage is zero, the expected value of Impulse Buys would be -2.063. Additionally, for every one unit increase in AI Feature Frequency used by consumers, impulsiveness increases by a Likert scale unit of 1.229 units. To being able to determine how much influence each variable has on impulsive buying through the use of standardized b's, the Beta's also allow us to determine the strength of the association between the two variables. As such, the Beta associated with AI Feature Frequency was .926, which suggests that there is a very strong association between AI Feature Frequency and impulsive buying behavior. Both

the t-statistic (17.047) and p-value (.000), indicate that the relationship between AI Feature Frequency and Impulse Buys is statistically significant.

Objective 2: To investigate how AI features like real-time offers and personalized recommendations trigger unplanned purchase.

Multiple regression analysis

Dependent- Impulse buy due to AI Independent- AI feature frequency, Emotional trigger (FOMO), Regret impulsive purchase.

Table 4. Descriptive Statistics.

	Mean	Std. Deviation	N
Impulse Buys due to AI (Likert)	3.10	1.313	50
AI Feature Frequency (Likert)	4.20	.990	50
Emotional Trigger (FOMO) (Likert)	3.40	1.294	50
Regret Impulsive Purchase (Likert)	3.50	1.035	50

The descriptive statistics indicate average response scores from participants for several variables using a Likert scale and illustrate the tendencies of consumers to make impulsive purchases based on use of artificial intelligence (AI). The mean score for Impulse Buys Due to AI was 3.10, with a standard deviation of 1.313; therefore, consumers exhibited moderate levels of impulsivity. The Mean score for AI Feature Frequency was 4.20 which indicated consumers interacted frequently with AI Features. The Emotional Trigger (FOMO) Mean Score was 3.40; thus, the tendency to experience fear of missing out (FOMO) when interacting with AI features was moderate. Finally, the Mean score for Regret Impulsive Purchases was 3.50, illustrating that consumers reported experiencing moderate levels of regret after making impulse purchases.

Correlation Analysis Summary

A significant relationship existed among all the variables. A strong positive correlation ($r = .926$) existed between AI Feature Frequency and Impulse Buys Due to AI; hence, as consumers engaged more frequently with AI tools they were more likely to make impulse purchases. Moderate positive correlations existed between FOMO and Impulse Buys ($r = .276$); however, this correlation was lower than the correlation between AI tool usage and impulse purchases. Additionally, a strong negative correlation ($r = -.638$) existed between Regret Impulsive Purchase and Impulse Buys. Therefore, as impulse purchasing behaviors increased, so did regrets experienced by consumers after making those purchases.

Regression Model Summary

The Regression Model Summary provided evidence supporting the validity of the research model. Specifically, the R-Square (.885) illustrated that approximately 88.5 percent of the variance in Impulse Buys Due to AI could be explained by the predictor variables: AI Feature Frequency, Emotional Trigger (FOMO), and Regret. Thus, the model demonstrated a very good fit. In addition, the results from the ANOVA Table illustrated the statistical significance of the research model ($F=118.502$; $p<0.001$), further substantiating the importance of the predictor variables in explaining impulsive purchase behaviors.

Coefficients Table

The Coefficients Table provided specific information regarding the effect of each independent variable on Impulse Buys Due to AI. As hypothesized, the independent variable, AI Feature Frequency had a statistically significant and large positive coefficient ($B=1.192$; $p<.001$); therefore, as consumers used AI tools more frequently, impulse purchases also increased. Conversely, both the independent variables, Emotional Trigger (FOMO) and Regret had statistically significant but small negative coefficients ($B=-0.142$; $p=.014$ and $B=-0.182$; $p=.026$ respectively). These results suggest that although AI features facilitate impulse purchasing behaviors, emotional and cognitive reactions such as Fear of Missing Out (FOMO) and regret provide counterbalancing effects to that influence.

The study's results indicate that AI features are primary drivers of impulse purchasing behaviors, whereas emotional/cognitive responses (i.e., FOMO and regret) serve as moderating influences. As a result of this finding, researchers emphasize the need to integrate ethical considerations within the development of marketing strategies driven by AI technologies to avoid creating consumer experiences that lead to excessive impulsive purchasing and subsequent feelings of regret.

Table 5. Correlation.

		Impulse Buys due to AI (Likert)	AI Feature Frequency (Likert)	Emotional Trigger (FOMO) (Likert)
Pearson Correlation	Impulse Buys due to AI (Likert)	1.000	.926	.276
	AI Feature Frequency (Likert)	.926	1.000	.414
	Emotional Trigger (FOMO) (Likert)	.276	.414	1.000
	Regret Impulsive Purchase (Likert)	-.638	-.598	-.305
Sig. (1-tailed)	Impulse Buys due to AI (Likert)	.	.000	.026
	AI Feature Frequency (Likert)	.000	.	.001
	Emotional Trigger (FOMO) (Likert)	.026	.001	.
	Regret Impulsive Purchase (Likert)	.000	.000	.016
N	Impulse Buys due to AI (Likert)	50	50	50
	AI Feature Frequency (Likert)	50	50	50
	Emotional Trigger (FOMO) (Likert)	50	50	50
	Regret Impulsive Purchase (Likert)	50	50	50

Table 6. Correlation.

		Regret Impulsive Purchase (Likert)
Pearson Correlation	Impulse Buys due to AI (Likert)	-.638
	AI Feature Frequency (Likert)	-.598
	Emotional Trigger (FOMO) (Likert)	-.305
	Regret Impulsive Purchase (Likert)	1.000
Sig. (1-tailed)	Impulse Buys due to AI (Likert)	.000
	AI Feature Frequency (Likert)	.000
	Emotional Trigger (FOMO) (Likert)	.016
	Regret Impulsive Purchase (Likert)	.
N	Impulse Buys due to AI (Likert)	50
	AI Feature Frequency (Likert)	50
	Emotional Trigger (FOMO) (Likert)	50
	Regret Impulsive Purchase (Likert)	50

Table 7. Variables Entered/Removed^a.

Model	Variables Entered	Variables Removed	Method
1	Regret Impulsive Purchase (Likert), Emotional Trigger (FOMO) (Likert), AI Feature Frequency (Likert) ^b		Enter

a. Dependent Variable: Impulse Buys due to AI (Likert)

b. All requested variables entered.

Table 8. Model Summary.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics		
					R Square Change	F Change	df1
1	.941 ^a	.885	.878	.459	.885	118.502	3

Table 9. Model Summary.

Model	df2	Change Statistics
		Sig. F Change
1	46	.000

Table 10. ANOVA.

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	74.819	3	24.940	118.502	.000 ^b
	Residual	9.681	46	.210		
	Total	84.500	49			

Dependent Variable: Impulse Buys due to AI (Likert)

Predictors: (Constant), Regret Impulsive Purchase (Likert), Emotional Trigger (FOMO) (Likert), AI Feature Frequency (Likert)

Table 11. Coefficientsa.

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.785	.571		-1.376	.175
	AI Feature Frequency (Likert)	1.192	.087	.898	13.750	.000
	Emotional Trigger (FOMO) (Likert)	-.142	.056	-.140	-2.543	.014
	Regret Impulsive Purchase (Likert)	-.182	.079	-.144	-2.303	.026

Table 12. Coefficientsa.

Model		95.0% Confidence Interval for B	
		Lower Bound	Upper Bound
1	(Constant)	-1.934	.363
	AI Feature Frequency (Likert)	1.018	1.367
	Emotional Trigger (FOMO) (Likert)	-.254	-.030
	Regret Impulsive Purchase (Likert)	-.342	-.023

Objective 3

To analyse the demographic factors influencing susceptibility to AI- induced impulsive purchase.

Anova (Analysis of variance)

Dependent- Impulse buy due to AI

Factors- Demographic variable

Table 13. Between-Subjects Factors.

		N
Age	18-24	15
	25-34	15
	35-44	10
	45+	10
Gender	Female	25
	Male	25
Income Level	\$20k–\$40k	15
	\$40k–\$60k	15
	Above \$60k	10
	Less than \$20k	10

a. R Squared = .970 (Adjusted R Squared = .965)

Table 14. Tests of Between-Subjects Effects.

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	82.000 ^a	7	11.714	196.800	.000
Intercept	428.750	1	428.750	7203.000	.000
Age	.000	0	.	.	.
Gender	.179	1	.179	3.000	.091
IncomeLevel	.000	0	.	.	.
Age * Gender	.000	0	.	.	.
Age * IncomeLevel	.000	0	.	.	.
Gender * IncomeLevel	.000	0	.	.	.
Age * Gender * IncomeLevel	.000	0	.	.	.
Error	2.500	42	.060		
Total	565.000	50			
Corrected Total	84.500	49			

This dataset examines how demographic factors such as age, gender, and income level influence impulse buy due to AI (measured on a Likert scale).

Between-Subjects Factors-

The sample includes 50 participants, evenly divided by gender (25 males, 25 females).

Participants are grouped by age: 15 each in the 18-24 and 25-34 categories, and 10 each in the 35-44 and 45+ categories.

Four income levels are represented- 15 participants each in the \$20k-\$40k and \$40k-\$60k groups, and 10 each in the above \$60k and less than \$20k groups.

Tests of Between-Subjects Effects-

The Corrected Model has a very high R-squared value of 0.970 (adjusted R-squared = 0.965), indicating that 97% of the variance in impulse buys due to AI is explained by the model. This suggests that the demographic variables collectively account for a significant portion of the changes in impulse buying behavior.

The intercept is highly significant ($F = 7203.000$, $p < 0.001$), showing a strong baseline effect independent of the demographic variables.

Gender shows a marginal effect ($F = 3.000$, $p = 0.091$), suggesting that gender might influence impulse buying behavior to a certain extent, but it is not statistically significant at the 0.05 level.

Age, Income Level, and interactions between these variables (e.g., Age, Gender, and Income Level) do not show significant effects, as no F or p-values are calculated, indicating they don't significantly impact impulse buying.

The error term is small, with an F-value of 2.500 and a mean square error of 0.060, implying that unexplained variation is minimal.

The analysis indicates that gender may have a slight influence on AI-driven impulse buys, although it is not statistically significant. Age and income level, along with their interactions, do not appear to affect impulse buying in this context. Overall, the model explains a substantial portion of the variance in impulse buying behavior. This suggests that while demographics have some influence, other factors (such as AI features or psychological triggers) are likely stronger drivers of impulse purchases.

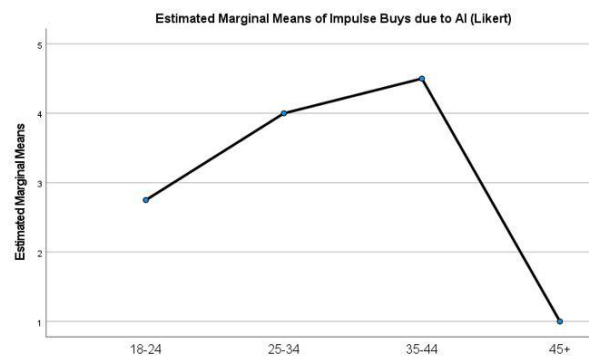


Figure 1. Profile plots: Age.

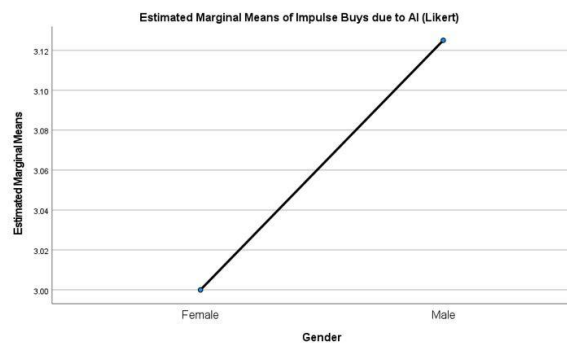


Figure 2. Profile plots: Gender.

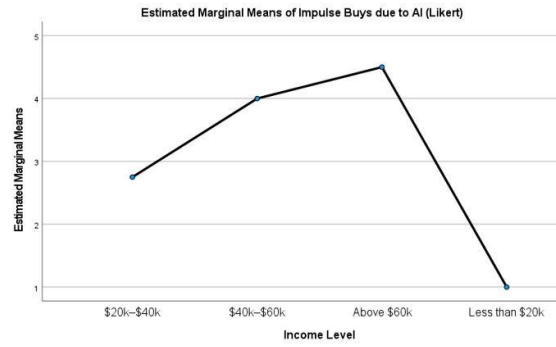


Figure 3. Profile plots: Income Level.

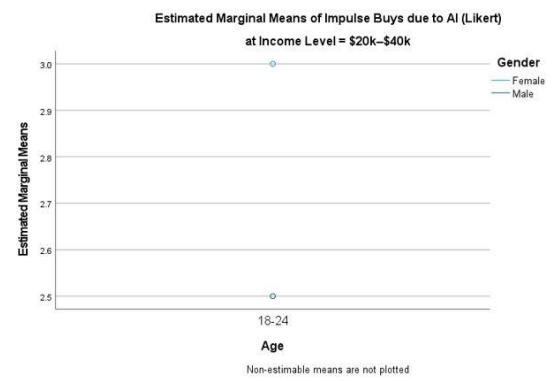


Figure 4. Profile plots: Age (18-24).

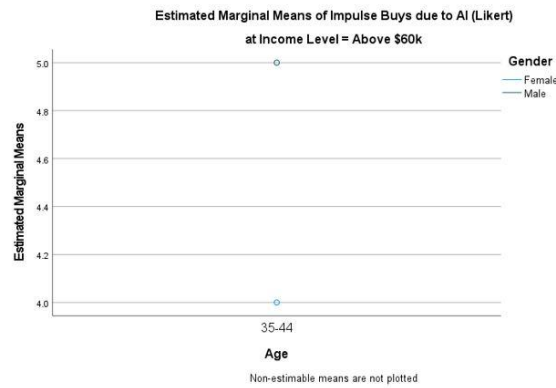


Figure 5. Profile plots: Age (25-34).

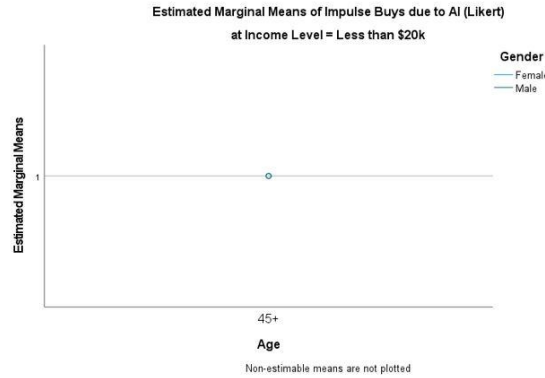


Figure 6. Profile plots: Age (35-44).

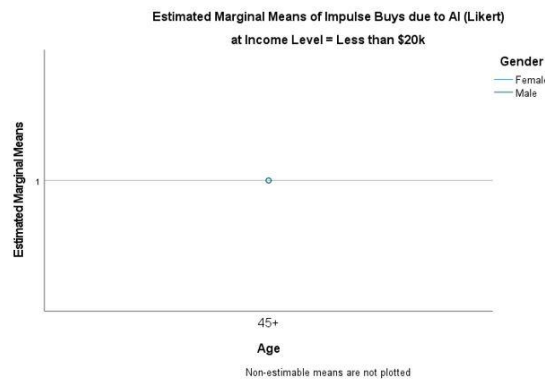


Figure 7. Profile plots: Age (44+).

5. CONCLUSION

The findings from this research provide insights into how AI affects consumers' impulse buying behaviors. Therefore it provides new directions for understanding how technological characteristics (e.g., regret, emotional activation, AI frequency) can influence consumer decision-making processes. Utilizing multiple regression and ANOVA analyses this research investigates three primary objectives. First, this investigation examines the relationship of AI-driven technology and consumer impulsive buying behavior. Second, this research studies the effects of various AI features including real-time offers and personalization-based recommendations on triggering unplanned purchases. Finally, this study analyzes the demographics that are most susceptible to impulsive purchasing triggered by AI. The purpose of utilizing regression was to explore the first objective. An extremely strong positive relationship exists between user's engagement with AI and their propensity to engage in impulsive purchasing. The data showed that user's engagement with AI technology resulted in a .926 correlation with impulsive purchasing. Further, the data indicated that engagement with AI features results in an estimated 85.8% or .858 squared of explained variance in terms of impulsive purchasing. The substantial explanatory ability of this relationship indicates that AI has a considerable role in determining consumer's behavior. To test the robustness of the model a statistically significant F-statistic was produced ($F=290.588$; $p<0.001$). Thus, if consumers utilize AI features more frequently (i.e., chatbots, recommendation engines etc.) they will be more likely to make an impulse purchase. The coefficients of the variables further indicate that for each additional unit of frequency in engaging with AI features consumers will exhibit an increase of 1.229 units in their tendency to engage in impulsive purchasing. These results suggest that companies using AI-based applications on their e-commerce platform have a significant opportunity to encourage impulse purchasing and thus create revenue opportunities via the use of AI.

The second goal, which examined the extent to which certain capabilities of AI and emotional triggers like FOMO (fear of missing out) will cause consumers to rush into making impulse buys, provided even greater nuance. Using a high standardized coefficient ($\beta = .898$) the multi-regression indicated that "frequency of AI feature use" remains a strong predictor of impulsive buying.[27] It also supported an earlier finding that AI features would significantly decrease consumers' inclination for impulse buys. Regret and fear of missing out were not the only emotions that moderate consumer behavior. The psychological components of fear of missing out ($b = -.142$; $p = .014$) and regret ($b = -.0182$; $p = .026$) both had negative coefficients indicating that these emotions will serve to minimize the influence of AI characteristics. Consumers who regret impulsive purchases made using AI may be less likely to repeat this type of purchase in the future. Therefore, it can be inferred that while marketers are able to create effective marketing strategies using AI, these same strategies should take into account the potential psychological/emotional cost associated with creating impulsive behaviors in customers. By focusing on the ethical uses of AI, companies can promote positive experiences for their customers, potentially minimizing the negative consequences related to impulsive buying including buyers remorse.[25]

The study was further supported by the third objective, which investigated demographic factors influencing an individual's sensitivity to artificial intelligence induced impulse purchase. The results from the ANOVA analysis showed that demographic factors like; age, gender, and income levels affect the degree to which individuals engage in impulse purchase behaviors. Several demographics including age and income were found to have little impact on impulsive purchases due to AI. Gender, however, demonstrated a marginally significant relationship ($F = 3.000$, $p = .091$) with regard to how male and female consumers respond to AI features in terms of their propensity for impulse purchases. More research is needed to understand the differences that exist between males and females within this context. No statistically significant interaction exists among demographic factors such as age and income, and/or age and gender. This suggests that AI has an equivalent effect on impulse buying across all demographics. Therefore, this research highlights the broad applicability and effectiveness of AI based marketing strategies, as they can be effective across a wide range of demographic populations.

The examination of AI-powered devices and their effects on impulsive consumer purchasing behavior highlights the significant influence that AI has over consumer choice. The frequent use of AI features clearly explains a sizable percentage of impulsive buying behavior, indicating that AI tools play a major role. Emotional triggers like FOMO and regret somewhat complicate the decision-making process, but AI features continue to play a major role.[7] The investigation of demographic variables reveals that AI has a broad impact that varies little among different consumer segments. These results provide marketers and companies looking to use AI in e-commerce with insightful information. However, they also highlight the importance of ethical considerations, as the potential for consumer remorse underscores the importance of striking a balance between AI-driven initiatives and ethical marketing techniques. Future studies could look more closely at the long-term effects of AI-induced impulse purchases, especially as they relate to customer retention and satisfaction.

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