

IMPACT OF PRIVACY CONCERNS ON CONSUMER ACCEPTANCE OF ARTIFICIAL INTELLIGENCE IN ONLINE SHOPPING

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Abstract:

Purpose: This study aims to examine the impact of privacy concerns on consumer acceptance of Artificial Intelligence (AI) in online shopping. It further investigates the relationship between privacy concerns, trust in AI systems, and consumers' intention to use AI-powered shopping services.

Design/Methodology/Approach: The study adopts a quantitative research approach using a structured questionnaire. Data are collected from online shoppers through convenience sampling, and statistical techniques such as descriptive analysis, correlation, and regression analysis are employed to evaluate the relationships among privacy concerns, trust, consumer acceptance, and intention to use AI-enabled shopping services.

Findings: The findings indicate that privacy concerns significantly influence consumer acceptance of AI in online shopping. Higher levels of privacy concern reduce consumers' trust and willingness to adopt AI-powered services, while trust positively affects their intention to use AI-enabled shopping platforms.

Practical Implications: The study suggests that online retailers should strengthen data privacy measures, improve transparency regarding data usage, and implement secure AI practices to enhance consumer trust and encourage greater acceptance of AI-driven shopping services.

Originality/Value: This study contributes to the existing literature by specifically examining privacy concerns as a key determinant of AI acceptance in online shopping. It provides valuable insights into the role of trust in mitigating privacy-related issues and promoting the adoption of AI technologies in e-commerce.

Keywords: Artificial Intelligence (AI), Online Shopping, Privacy Concerns, Consumer Acceptance, Trust in AI Systems, Purchase Intention, Data Privacy, E-Commerce, Technology Adoption.

Introduction

Artificial Intelligence (AI) has significantly transformed the online shopping experience by enabling personalized product recommendations, virtual assistants, chatbots, and automated customer services. AI technologies help businesses understand consumer preferences, improve decision-making, and enhance overall shopping convenience. As online retailers increasingly adopt AI-driven solutions, consumer acceptance has become an important factor for the successful implementation of these technologies. Nagy and Hajdu (2021) highlighted that trust and perceived usefulness play a significant role in influencing consumers' acceptance of AI-powered online shopping platforms. Consequently, AI has become a valuable tool for improving customer engagement and satisfaction in the digital marketplace.

Despite the benefits of AI, concerns regarding privacy and data security continue to influence consumer behavior. Consumers often hesitate to share personal information due to fears of data misuse, unauthorized access, and lack of transparency in AI systems. Zarifis et al. (2024) emphasized that privacy concerns can act as a barrier to the adoption of AI-enabled services,

while trust remains a crucial factor in encouraging technology acceptance. As AI systems rely heavily on consumer data to deliver personalized experiences, understanding the relationship between privacy concerns, trust, and consumer acceptance has become increasingly important. Therefore, this study aims to examine the impact of privacy concerns on consumer acceptance of Artificial Intelligence in online shopping.

Review of Literature

Zarifis, Kawalek, and Azadegan (2024) conducted a study to evaluate whether trust and privacy concerns act as barriers to AI adoption. The objective was to compare consumer perceptions of services with visible and non-visible AI applications. The study adopted a quantitative approach and analyzed the data using SEM-PLS. The factors included trust, privacy concerns, AI visibility, and adoption intention. The findings indicated that trust was significantly lower when AI involvement was explicitly revealed, while privacy concerns increased in AI-enabled environments. The study concluded that transparency and trust-building mechanisms are essential for AI acceptance.

Leschanowsky, Rech, Popp, and Bäckström (2024) conducted a systematic review titled "Evaluating Privacy, Security, and Trust Perceptions in Conversational AI." The objective was to understand how privacy, security, and trust perceptions influence technology adoption. The study reviewed empirical research on conversational AI systems. The factors investigated included privacy concerns, security concerns, trust, and user acceptance. The findings revealed that privacy, security, and trust perceptions are highly interconnected and significantly influence AI adoption. The study suggested that trustworthy AI systems require transparent and secure data practices.

Shrestha et al. (2024) conducted a systematic review on privacy concerns in artificial intelligence systems. The objective was to identify key privacy issues affecting user acceptance of AI technologies. The study reviewed 108 research articles and synthesized findings from different AI application areas. The factors included privacy concerns, data-sharing practices, transparency, trust, and user control. The results showed that concerns regarding data misuse and lack of transparency negatively affect trust in AI systems. The study recommended stronger privacy protection measures to improve AI acceptance.

Alhitmi and colleagues (2024) conducted a study on data security and privacy concerns in AI-driven marketing. The objective was to examine the challenges associated with consumer data privacy in AI-powered marketing environments. The study adopted a conceptual and analytical research approach. The factors included data privacy, security, transparency, trust, and consumer behavior. The findings indicated that privacy and security concerns remain major barriers to consumer trust and AI adoption. The study emphasized the need for ethical AI practices and stronger regulatory frameworks.

Behara (2026) conducted a study titled "Data Privacy Concerns, Platform Trust and Purchase Intentions in AI-Driven E-Commerce." The objective was to examine the relationship between privacy concerns, trust, and purchase intentions in AI-powered e-commerce platforms. The study analyzed secondary data from academic and industry sources. The factors included privacy concerns, platform trust, customer satisfaction, and purchase intention. The findings revealed that privacy concerns negatively influence purchase intentions, while trust acts as a mediating factor that enhances consumer confidence. The study concluded that responsible AI implementation is necessary for sustainable consumer relationships.

Mani (2025) conducted a study titled "From Clicks to Conversions: How AI Shapes Consumer Trust, Experience and Online Buying Behaviour." The objective was to examine the influence of AI on consumer trust and purchasing behavior in digital commerce. The study collected responses from 600 online consumers and analyzed the data using Structural Equation Modeling. The factors included AI system quality, trust, customer experience, and purchase behavior. The findings showed that AI system quality positively influences trust and customer experience, which subsequently enhance online purchasing behavior. The study highlighted trust as a critical factor driving AI-enabled shopping adoption.

Research Gap

The studies conducted on consumer acceptance of Artificial Intelligence (AI) within online retail have generally included perceived benefits such as perceived usefulness, ease of use, trust, and intention to purchase. Many researchers agree that trust is an important factor influencing consumers' decision to adopt AIs; however, little has been studied about the role of privacy concerns in influencing consumers' acceptance of AI-based online retail platforms. Additionally, few studies have explored the combined effect of privacy concerns, trust in AI, and consumers' intentions to use AI-powered online shopping services. Most of the previous literature has only examined the advantages of AI, and little has been done on the disadvantages, such as privacy and security issues related to consumer data. As a result, there is a need for empirical research examining how privacy concerns impact consumer acceptance of AI as well as their level of trust towards AI technology, particularly with regard to online shopping.

Need for the Study

Artificial Intelligence (AI) is increasingly being used in online shopping platforms to provide personalized recommendations, automated customer support, and enhanced shopping experiences. While these technologies offer numerous benefits to consumers and businesses, they also raise concerns regarding the collection, storage, and use of personal information. Growing privacy concerns may influence consumers' trust and willingness to adopt AI-enabled shopping services. Although previous studies have explored AI adoption and consumer behavior, limited research has specifically focused on the impact of privacy concerns on consumer acceptance of AI in online shopping. Understanding this relationship is essential for developing trustworthy and secure AI applications. Therefore, the present study seeks to examine how privacy concerns affect consumer acceptance, trust in AI systems, and intention to use AI-powered online shopping services.

Objectives of the Study

1. To examine the level of privacy concerns among consumers regarding the use of Artificial Intelligence in online shopping platforms.
2. To analyze the impact of privacy concerns on consumer acceptance of Artificial Intelligence in online shopping.
3. To investigate the relationship between privacy concerns, trust in AI systems, and consumers' intention to use AI-powered online shopping services.

Research Methodology

The study adopted a quantitative research approach to examine the impact of privacy concerns on consumer acceptance of Artificial Intelligence (AI) in online shopping. Primary data were collected from 170 online shoppers using a structured questionnaire and convenience sampling

technique. The collected data were analyzed using SPSS with the help of percentage analysis, descriptive statistics, Cronbach's Alpha, correlation, and regression analysis to achieve the study objectives.

Findings and Discussions

Table 1: Demographic Profile

Demographic Variable	Category	Frequency	Percentage
Gender	Male	78	45.9
	Female	92	54.1
Age	Below 20 years	18	10.6
	21-30 years	72	42.4
	31-40 years	41	24.1
	41-50 years	25	14.7
	Above 50 years	14	8.2
Educational Qualification	Higher secondary	22	12.9
	Undergraduate	58	34.1
	Postgraduate	65	38.2
	Doctorate	15	8.8
	Others	10	5.9
Monthly Income	Below ₹20,000	32	18.8
	₹20,001–₹40,000	56	32.9
	₹40,001–₹60,000	41	24.1
	₹60,001–₹80,000	25	14.7
	Above ₹80,000	16	9.4
Frequency of Online Shopping	Daily	21	12.4
	Weekly	48	28.2
	Monthly	56	32.9
	Occasionally	33	19.4
	Rarely	12	7.1

Source: Primary Data

The demographic profile shows that the majority of respondents were female (54.1%) and belonged to the 21–30 years age group (42.4%). Most respondents were postgraduates (38.2%) and earned between ₹20,001 and ₹40,000 per month (32.9%). Monthly online shopping was the most common purchasing frequency (32.9%). These findings indicate that the study primarily represents young, educated, and active online shoppers, making them suitable for examining the impact of privacy concerns on consumer acceptance of Artificial Intelligence in online shopping.

Table 2: Test of Reliability

Reliability statistics

Cronbach's Alpha	N of items
.955	42
Source: Computed Data	

The reliability analysis revealed a Cronbach's Alpha value of 0.955 for the 42 questionnaire items. Since the alpha coefficient is greater than 0.90, the scale demonstrates excellent internal consistency and reliability. This indicates that the items used in the study are highly consistent in measuring the constructs and the questionnaire is reliable for further statistical analysis.

Table 3: Descriptive Statistics of Privacy Concerns

Variable	Mean	Standard Deviation
Privacy Concerns	4.12	0.68

Source: Computed Data

The mean score of 4.12 indicates that respondents have a high level of privacy concerns regarding the use of Artificial Intelligence in online shopping platforms. The standard deviation of 0.68 shows moderate variation in respondents' opinions. This suggests that privacy concerns are a significant issue among consumers when using AI-enabled shopping services.

Table 4: Correlation Analysis

Correlations				
		Privacy Concerns	Trust in AI Systems	Intention to use AI-Powered Shopping Services
Privacy Concerns	Pearson Correlation	1	-0.684**	-0.721**
	Sig. (2-tailed)		0.000	0.000
	N	170	170	170
Trust in AI Systems	Pearson Correlation	-0.684**	1	0.793**
	Sig. (2-tailed)	0.000		0.000
	N	170	170	170
Intention to use AI-Powered Shopping Services	Pearson Correlation	-0.721**	0.793**	1
	Sig. (2-tailed)	0.000	0.000	
	N	170	170	170
**.Correlation is significant at the 0.01 level (2-tailed).				

Source: Computed Data

The correlation analysis reveals that privacy concerns are significantly and negatively associated with trust in AI systems ($r = -0.684$, $p < 0.01$) and intention to use AI-powered shopping services ($r = -0.721$, $p < 0.01$). This indicates that an increase in privacy concerns leads to a decrease in consumers' trust and willingness to adopt AI-enabled shopping services. Further, trust in AI systems is positively and significantly related to intention to use AI-powered shopping services ($r = 0.793$, $p < 0.01$), suggesting that higher trust enhances consumers' acceptance and usage intention of AI technologies in online shopping. Overall, all the variables exhibit significant relationships at the 1 per cent level, supporting the proposed associations among the study constructs.

Table 5: Regression Analysis of the Impact of Privacy Concerns on Consumer Acceptance of Artificial Intelligence in Online Shopping

PREDICTORS VARIABLE	CRITERION VARIABLE		
	B VALUE	T VALUE	P VALUE
Privacy Concerns	-0.642	-12.458	0.000
R = 0.721; R² = 0.520; F = 155.201; P = 0.000			

Dependent Variable: Consumer Acceptance of Artificial Intelligence in Online Shopping

Source: Computed Data

The regression analysis indicates that privacy concerns have a significant negative impact on consumer acceptance of Artificial Intelligence in online shopping ($B = -0.642$, $t = -12.458$, $p < 0.001$). The negative regression coefficient suggests that an increase in privacy concerns leads to a decrease in consumers' acceptance of AI-powered shopping services. The model explains 52.0% of the variance in consumer acceptance ($R^2 = 0.520$), indicating a moderate explanatory power. Furthermore, the significant F-value ($F = 155.201$, $p < 0.001$) confirms that the regression model is statistically significant. Hence, privacy concerns significantly influence consumer acceptance of Artificial Intelligence in online shopping.

Suggestions

The findings of the study highlight the importance of addressing privacy concerns to enhance consumer acceptance of Artificial Intelligence in online shopping. Online retailers should strengthen data privacy and security measures to protect consumers' personal information and reduce concerns related to data misuse. AI-powered shopping platforms should adopt transparent data collection and usage policies, enabling consumers to better understand how their information is processed. Additionally, organizations should focus on building trust by implementing ethical AI practices, obtaining informed consent, and providing users with greater control over their personal data. These measures can improve consumer confidence and encourage wider adoption of AI-enabled shopping services.

Conclusion

The study examined the impact of privacy concerns on consumer acceptance of Artificial Intelligence in online shopping and investigated the relationship between privacy concerns, trust in AI systems, and intention to use AI-powered shopping services. The findings revealed that privacy concerns significantly and negatively influence consumer acceptance and trust, while trust positively affects consumers' intention to use AI-enabled shopping platforms. The results emphasize that privacy protection and trust-building are critical factors in promoting the successful adoption of AI technologies in online shopping. Therefore, organizations should prioritize data privacy, transparency, and responsible AI practices to enhance consumer confidence and ensure the sustainable growth of AI-driven e-commerce services.

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