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Customer Attitude Towards Security And Trust In Ai-Powered E-Commerce Platforms

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ABSTRACT
Artificial intelligence (AI) and personalized technologies have propelled the quick development of E-Commerce 5.0, which has revolutionized online buying by providing tailored promotions, predictive search, and product suggestions. Concerns regarding security, privacy, and customer trust are raised by these advances, even while they improve convenience and engagement. This study examines consumer perceptions of security and confidence in Thoothukudi district AI-powered e-commerce platforms. A systematic questionnaire measuring demographics, platform usage, and opinions of trust and security on a 5-point Likert scale was used to gather primary data from 130 respondents. Descriptive statistics, frequency distributions, ANOVA, and independent t-tests were used in the investigation to look at the connections between trust perception and demographic characteristics. The results show that most respondents believe AI-powered e-commerce platforms are safe and reliable, and they have faith in payment gateways, data security protocols, privacy guidelines, and the ethical application of AI. Furthermore, perceptions of security and trust are largely unaffected by demographic variables like age and gender, suggesting uniform confidence among all user groups. The study provides useful insights for e-commerce providers in semi-urban and urban markets like Thoothukudi by highlighting the significance of transparent security measures, clear communication regarding privacy and refunds, and responsible AI practices in fostering customer trust, satisfaction, and continued usage..

Keywords: *AI-powered e-commerce, customer trust, E-Commerce 5.0*
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1. INTRODUCTION:

E-Commerce 5.0, which combines artificial intelligence (AI), machine learning, and customized technologies to improve consumer experience, has emerged as a result of the quick development of digital commerce. AI-powered e-commerce systems greatly increase customer convenience, efficiency, and engagement by offering customized promotional offers, predictive search, and personalized product suggestions. However, as consumers become more conscious of possible hazards such data breaches, abuse of personal information, online fraud, and financial fragility, security and trust problems are developing along with these advantages.

Customer trust is a critical factor influencing the adoption and sustained usage of AI-powered e-commerce platforms. Security features, including secure payment gateways, two-factor authentication, privacy policies, and transparency regarding data usage, play a pivotal role in shaping users' confidence and satisfaction. While urban centers have been extensively studied, there is limited empirical research on how consumers in semi-urban and urban regions like Thoothukudi perceive security and trust in AI-powered e-commerce platforms.

2. REVIEW OF LITERATURE

Patel and Sharma (2023) conducted a study to examine the relationship between security features and consumer trust in AI-driven e-commerce platforms in India. Using a survey of 300 online shoppers, the study found that visible security measures, such as secure payment gateways, privacy policies, and two-factor authentication, significantly enhance user confidence. The findings also revealed that trust directly influences customer satisfaction and willingness to continue using the platform.

Rao and Menon (2024) investigated how consumers perceive privacy and data protection in AI-powered online shopping environments. The study highlighted that while AI personalization improves shopping convenience, it raises concerns about data misuse and privacy violations. The researchers emphasized that transparency in data handling, ethical AI practices, and clear communication regarding security protocols are critical factors for building consumer trust and reducing perceived risks.

3. STATEMENT OF THE PROBLEM

The rapid adoption of E-Commerce 5.0 has transformed online shopping by integrating artificial intelligence (AI), machine learning, and personalized technologies to enhance user experience. Online shopping is made more convenient and interesting by AI-powered systems that offer personalized discounts, predictive search, and product suggestions. But along with these advantages, worries about security and trust have grown in importance. Consumers' trust in e-commerce platforms may be damaged by dangers such data breaches, illegal access, abuse of personal information, and online fraud.

Convenience is increased by AI-driven personalization, but privacy, ethical algorithm usage, and data management openness are concerns raised by the gathering and use of consumer data. There is no study on how customers see the security and reliability of AI-powered e-commerce platforms in semi-urban and metropolitan locations like Thoothukudi district. It remains unclear how factors such as visible security measures, privacy policies, payment protection, and platform transparency influence consumer confidence, satisfaction, and continued usage.

Therefore, this study aims to investigate customer attitude towards security and trust in AI-powered e-commerce platforms in Thoothukudi district, focusing on the awareness of security features, perceived risks, confidence in data protection, and overall satisfaction with platform reliability. The findings will provide insights for e-commerce providers to enhance security measures, build customer trust, and encourage safe and responsible online shopping practices.

4. OBJECTIVES OF THE STUDY

To examine customer perception and awareness of security measures, data protection, and privacy policies in AI-powered e-commerce platforms in Thoothukudi.

To evaluate customer trust and confidence in AI-driven e-commerce services, including secure payment gateways, ethical use of algorithms, and reliability of personalized recommendations.

To assess the influence of trust and security perception on customer satisfaction, continued usage, and willingness to recommend AI-powered e-commerce platforms.

HYPOTHESIS

There is no significant between Age and Trust & Security Perception of the respondents

There is no significant between Gender and Trust & Security Perception of the respondents

5. METHODOLOGY

The study adopts a descriptive research design to analyze customer attitudes towards security and trust in AI-powered e-commerce platforms in Thoothukudi district. Primary data will be collected from 130 respondents using a structured questionnaire divided into demographics, online shopping usage, and trust and security perception, measured on a 5-point Likert scale. Respondents will be selected through Convenience sampling to ensure representation across different age groups, income levels, occupations, and education levels. The collected data will be analyzed using descriptive statistics, frequency analysis, and Likert-scale evaluation, along with one way ANOVA and Independent t – Test techniques to identify the factors influencing trust, security perception, and customer satisfaction.

Framework and Analysis Table - I

Factors		Frequency	Percent
Monthly Income	Up to Rs. 10000	8	6.2
	Rs. 10000 - Rs. 20000	64	49.2
	Rs. 20000 - Rs. 30000	28	21.5
	Rs. 30000 - Rs. 40000	19	14.6
	Above Rs. 40000	11	8.5
	Total	**130**	**100**

Source: Primary data

Interpretation - The table shows the monthly income distribution of the 130 respondents. A majority of respondents (49.2%) earn between Rs. 10,000 and Rs. 20,000, indicating that nearly half of the sample belongs to a lower-income group. About 21.5% fall in the Rs. 20,000–30,000 bracket, 14.6% earn Rs. 30,000–40,000, and only 8.5% earn above Rs. 40,000. A small proportion (6.2%) earns up to Rs. 10,000.

Table - II

Factors		Frequency	Percent
Occupation	Private Employee	32	24.6
	Govt Employee	25	19.2
	Business	26	20.0
	Professional	38	29.2
	Others	9	6.9
	Total	**130**	**100**

Source: Primary data

Interpretation - The table presents the occupational distribution of the 130 respondents. The highest proportion of respondents are professionals (29.2%), followed by private employees (24.6%), business owners (20.0%), and government employees (19.2%). A small portion (6.9%) falls under the "Others" category. This indicates that AI-powered e-commerce platforms in Thoothukudi attract a diverse user base, with a slightly higher representation from professional and salaried employees.

Table - III

Factors		Frequency	Percent
AI-powered e-commerce platforms do you use most	Meesho	5	3.8
	Myntra	7	5.4
	Amazon	49	37.7
	Flipkart	42	32.3
	Others	27	20.8
	Total	**130**	**100**

Source: Primary data

Interpretation - The table presents the distribution of respondents based on their most frequently used AI-powered e-commerce platform. Amazon emerges as the most preferred platform, with 37.7% of respondents using it most often, followed by others at 20.8%. A significant proportion, 32.3%, use Flipkart platforms, while meesho and Myntra are used by 3.8% and 5.4% of respondents, respectively.

H0: There is no significant between Age and Trust & Security Perception of the respondents

ANOVA						
Factors		**Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**
I trust AI-powered e-commerce platforms to protect my personal information.	Between Groups	4.412	4	1.103	2.025	.095
	Within Groups	68.081	125	.545		
	Total	72.492	129			
I believe that the payment gateways on these platforms are secure.	Between Groups	4.305	4	1.076	1.420	.231
	Within Groups	94.772	125	.758		
	Total	99.077	129			
AI-based product recommendations are reliable and accurate.	Between Groups	1.497	4	.374	.401	.808
	Within Groups	116.780	125	.934		
	Total	118.277	129			
I am concerned about privacy risks while using AI-powered e-commerce services.	Between Groups	6.840	4	1.710	1.768	.139
	Within Groups	120.883	125	.967		
	Total	127.723	129			
Security certifications and visible privacy policies increase my trust in the platform.	Between Groups	2.654	4	.664	.963	.430
	Within Groups	86.122	125	.689		
	Total	88.777	129			
I feel safe storing my payment and personal details on these platforms.	Between Groups	2.642	4	.661	1.177	.324
	Within Groups	70.166	125	.561		
	Total	72.808	129			
I am confident that AI algorithms do not misuse my data for unethical purposes.	Between Groups	3.936	4	.984	1.102	.358
	Within Groups	111.572	125	.893		
	Total	115.508	129			
Clear information about fees, refunds, and return policies enhances my trust.	Between Groups	2.077	4	.519	.436	.782
	Within Groups	148.700	125	1.190		
	Total	150.777	129			
I would continue using platforms that maintain high security and trust standards.	Between Groups	4.727	4	1.182	2.047	.092
	Within Groups	72.166	125	.577		
	Total	76.892	129			
Overall, I am satisfied with the security and trustworthiness of AI-powered e-commerce platforms.	Between Groups	3.213	4	.803	1.343	.258
	Within Groups	74.787	125	.598		
	Total	78.000	129			

Source: Primary data

Interpretation

The ANOVA results indicate that the significance values (p-values) for all the statements regarding trust and security perception of AI-powered e-commerce platforms are greater than 0.05. This suggests that there is no statistically significant relationship between the age of respondents and their perception of trust and security on these platforms. In other words, users of different age groups in Thoothukudi perceive the security and trustworthiness of AI-powered e-commerce platforms similarly. Age does not appear to influence how confident consumers feel about data protection, payment security, privacy policies, AI-based recommendations, or overall platform trustworthiness. This indicates a relatively uniform level of trust and security perception across the demographic spectrum in the surveyed population.

H0: There is no significant between Gender and Trust & Security Perception of the respondents

Factors	**F**	**Sig.**	**t**	**df**	**Sig. (2-tailed)**
I trust AI-powered e-commerce platforms to protect my personal information.	6.3	0.13	-1.110	128	.265
			-1.110	117.464	.269
I believe that the payment gateways on these platforms are secure.	.207	.650	-.123	128	.902
			-.122	116.901	.903
	.036	.849	.517	128	.606

AI-based product recommendations are reliable and accurate.			.522	125.470	.603
I am concerned about privacy risks while using AI-powered e-commerce services.	6.658	.011	.588	128	.558
			.572	105.061	.569
Security certifications and visible privacy policies increase my trust in the platform.	.086	.770	1.843	128	.068
			1.804	109.780	.074
I feel safe storing my payment and personal details on these platforms.	.961	.329	1.231	128	.221
			1.206	110.264	.230
I am confident that AI algorithms do not misuse my data for unethical purposes.	3.110	.080	.825	128	.411
			.813	114.036	.418
Clear information about fees, refunds, and return policies enhances my trust.	.062	.804	-.845	128	.400
			-.838	117.715	.404
I would continue using platforms that maintain high security and trust standards.	.433	.512	-.147	128	.883
			-.147	123.271	.883
Overall, I am satisfied with the security and trustworthiness of AI-powered e-commerce platforms.	.327	.569	.452	128	.652
			.446	114.016	.657

Source: Primary data

Interpretation

The t-test results show that all the significance values (Sig. 2-tailed) are greater than 0.05 for the statements regarding trust and security perception of AI-powered e-commerce platforms. This indicates that there is no statistically significant difference in trust and security perception between male and female respondents. In other words, both genders in Thoothukudi perceive the security, privacy, and reliability of AI-powered e-commerce platforms similarly. Gender does not influence how users feel about data protection, payment security, privacy risks, AI-based recommendations, or overall trustworthiness of these platforms. This suggests a consistent level of confidence and satisfaction regarding platform security across male and female users.

6. CONCLUSION

Customers usually have a favorable opinion of the security and dependability of these platforms, according to a study on customer attitudes toward security and trust in AI-powered e-commerce platforms in Thoothukudi. Respondents expressed trust in data security, privacy rules, safe payment gateways, and the moral application of AI algorithms for tailored suggestions. Myntra and Meesho were the most popular platforms among those polled, indicating regional user preferences. Age and gender do not significantly affect feelings of security and trust, according to demographic data, suggesting a generally consistent degree of confidence across various groups. The results underscore the critical role of transparent security measures, clear communication about privacy and refund policies, and ethical AI practices in fostering consumer trust. Overall, the study emphasizes that AI-powered e-commerce platforms must maintain robust security standards, educate users about data privacy, and ensure responsible AI usage to enhance customer satisfaction, encourage continued usage, and strengthen long-term loyalty in semi-urban and urban markets like Thoothukudi.

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