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A Study on the Impact of Adopting Ai in Ecommerce Platform with Special Reference in Coimbatore District

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Abstract: AI is changing e-commerce pretty fast. Online stores are using it to run things better and connect with customers in new ways. It helps with efficiency and making things more competitive in the market. Tools like chatbots help answer questions right away. Predictive analytics figures out what people might buy next. Personalized recommendations pop up based on what you looked at before. Automation takes care of boring tasks. Platforms are picking these up to make processes smoother and fit what customers want. Studies say adopting AI boosts marketing and gets customers more involved. Sales go up too. But there are issues. Costs for setting it up can be high. Privacy with data is a big worry. Not everyone is ready for the tech side. In places like Coimbatore district, things are still catching on with digital changes. It's a busy area for local business. This study looks at how AI fits into e-commerce there. Businesses integrate it into daily operations. It affects how customers act and how well the business does. Barriers make it hard to do right. Like maybe not enough skills or money. The research mixes numbers with talks from local firms and shoppers. Quantitative data shows patterns. Qualitative stuff adds why things happen. Aims to give real info on pluses and minuses for AI in this spot. I think findings could help add to what we know in books. For small and medium shops in Coimbatore, it might give ideas on digital stuff. Recommendations for using AI to grow steady. Stakeholders might find ways to handle it. Some parts get messy with implementation. Not totally sure on every barrier yet.

Keywords: Artificial Intelligence, Bussiness, Chatbots, E-Commerce

I. Introduction

The rapid development of digital technologies has significantly transformed the commercial environment in recent years. Among these technological innovations, Artificial Intelligence (AI) has emerged as one of the most influential forces shaping the growth of e- commerce across the world. AI technologies such as machine learning algorithms, predictive analytics, natural language processing, and automated chatbots are increasingly being integrated into online retail platforms to improve efficiency and customer engagement. These technologies enable businesses to analyze large volumes of data, identify consumer preferences, and deliver personalized shopping experiences. One of the most important applications of AI in e-commerce is personalized product recommendations. AI systems analyze customer browsing history, purchase patterns, and search behavior to suggest products that match the customer's interests.

This personalized approach enhances the shopping experience by helping customers quickly find products that meet their needs. Studies indicate that personalized recommendations can significantly influence purchasing decisions and increase online sales. For example, AI-driven personalization can increase conversion rates and encourage customers to add more products to their shopping carts. Another important

AI application is the use of chatbots and virtual assistants. These AI- powered tools provide instant responses to customer queries, assist with product searches, and help customers track orders or resolve issues. Chatbots can operate 24 hours a day and handle thousands of customer interactions simultaneously, making them highly efficient for customer service.

Objectives of The Study

• To study the influence of AI adoption on customer experience and satisfaction within local e-commerce businesses.
• To identify the key factors that drive or hinder the implementation of AI tools in e- commerce platforms.

Statement of The Problem

Artificial Intelligence is changing e-commerce by improving personalization, customer engagement, and business operations. However, small and medium online businesses face challenges such as high costs, lack of technical skills, data privacy issues, and integration problems. In Coimbatore district, e-commerce is growing rapidly, but AI adoption is not equal among all businesses. There is limited research focused specifically on this region. This study aims to examine the level of AI adoption, customer awareness, usage of AI features on platforms like Amazon and Flipkart, and its overall impact on businesses and consumers in Coimbatore district. Artificial Intelligence is transforming e-commerce by improving personalization and customer engagement. Small and medium businesses face challenges like high costs, lack of skills, and data privacy concerns. In Coimbatore district, e-commerce is growing, but AI adoption varies among businesses. This study examines AI awareness, usage, and its impact on consumers and online platforms like Amazon and Flipkart.

II. Research Methodology

Research Design

For this study, a descriptive research design was used to examine the impact of Artificial Intelligence on e-commerce platforms. Descriptive research helps in understanding people's opinions, experiences, and satisfaction levels regarding a particular phenomenon without changing any variables. The study focuses on online shoppers in Coimbatore District and collects structured information about their views on AI features such as product recommendations, chatbots, and personalized advertisements used in online shopping platforms. The collected data helps analyze consumer awareness, usage, and satisfaction with AI in e-commerce.

Data Collection

The study is based on both primary and secondary data.

- **Primary Data:** Primary data refers to original information collected directly from respondents for a specific research purpose. It is gathered first-hand by the researcher using methods such as

questionnaires, surveys, interviews, or observations. Primary data is used because it provides accurate, current, and relevant information directly related to the research problem.

- **Secondary Data:** Secondary data pulls from other places too, like journals on research, some books, websites, articles, and earlier studies about AI and e-commerce. It helps fill in the background.

Sample Size

The sample size has been selected 130 convenient. This will allow an in-depth study of the survey on the impact of adopting AI in ecommerce platform.

Sampling Method

Simple Random Sampling was used in this study. It is a probability sampling method where every member of the population has an equal chance of being selected. Data for this study was collected from students in Coimbatore District to understand their awareness and use of AI in e-commerce platforms.

Area of the study

The study was conducted in Coimbatore city.

Tools Used

- Simple percentage
- Chi – square

III. Review of Literature

1. Mubashir Alam, etal (2025) The Role of Artificial Intelligence in E-Commerce: A Comprehensive Review of Emerging Trends, Applications, and Challenges explore how AI is fundamentally transforming the digital commerce landscape. The paper synthesizes current research and industry practices to analyze how AI enhances operational efficiency and improves customer experiences through data-driven decision-making. It categorizes evolving use cases such as recommendation engines, customer service automation, and fraud detection, with a specific focus on the unique needs of the Indian e- commerce market.
2. Dr. P. Ramachandran etal (2025) Adoption and Impact of Artificial Intelligence Technologies in Digital Marketing: A Study with Special Reference to Coimbatore City issue of the International Journal for Multidisciplinary Research. The abstract highlights a transformative shift in business engagement strategies, noting that AI has made digital marketing significantly more data-driven and customer-centric across global online channels. By examining tools like content generation, email automation, and predictive analytics, the authors demonstrate how marketers can now craft highly personalized user experiences.

3. Noor M. Alkudah etal (2024) The Integration of Artificial Intelligence Techniques in E-Commerce Enhancing Online Shopping Experience and Personalization" The research focuses on utilizing machine learning, neural networks, and fuzzy logic to provide efficient product suggestions and reduce customer churn. The authors find that these AI integrations significantly boost customer satisfaction and revenue while simultaneously lowering operational costs for businesses.
4. T. Maheswari, etal (2023) Implementation of AI Technology in Banking Sector Based on Coimbatore City which traces the evolution of digital networks from the 1980s to modern mobile payments. The abstract emphasizes that banks must focus on digital technologies that enable agility, scalability, and efficiency to satisfy evolving customer needs.

IV. Analysis and Interpretation

CHI-SQUARE ANALYSIS

Income Level vs. Online Shopping Frequency Hypothesis of the study

Table 1: Observed Frequency Table

Null Hypothesis (H_0)	**There is no significant association between Income Level and Online Shopping Frequency**
Alternate Hypothesis (H_1)	There is a significant association between Income Level and Online Shopping Frequency
Level of Significance	0.05 or 5%

Table 2: Expected Frequency Table

Income Level	**Weekly**	**Monthly**	**Occasionally**	**Rarely**	**Total**
Below ₹10,000	3	5	10	12	30
₹10,000–15,000	5	10	12	8	35
₹20,000–25,000	6	8	7	4	25
Above ₹25,000	4	4	2	0	10
Total	18	27	31	24	100

Table 3: Full Chi-Square Calculation Table

Income Level	**Weekly**	**Monthly**	**Occasionally**	**Rarely**
Below ₹10,000	5.40	8.10	9.30	7.20
₹10,000–15,000	6.30	9.45	10.85	8.40
₹20,000–25,000	4.50	6.75	7.75	6.00
Above ₹25,000	1.80	2.70	3.10	2.40

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Table 4: Degrees of Freedom Calculation

Income Level	Income Level	Shopping Frequency	Shopping Frequency	O	O	E	E	O−E	O−E	$(O-E)^2$	$(O-E)^2$	$(O-E)^2/E$	$(O-E)^2/E$
Below ₹10,000	Below ₹10,000	Weekly	Weekly	3	3	5.40	5.40	−2.40	−2.40	5.76	5.76	1.067	1.067
Below ₹10,000	Below ₹10,000	Monthly	Monthly	5	5	8.10	8.10	−3.10	−3.10	9.61	9.61	1.186	1.186
Below ₹10,000	Below ₹10,000	Occasionally	Occasionally	10	10	9.30	9.30	+0.70	+0.70	0.49	0.49	0.053	0.053
Below ₹10,000	Below ₹10,000	Rarely	Rarely	12	12	7.20	7.20	+4.80	+4.80	23.04	23.04	3.200	3.200
₹10,000 – ₹15,000	₹10,000 – ₹15,000	Weekly	Weekly	5	5	6.30	6.30	−1.30	−1.30	1.69	1.69	0.268	0.268
₹10,000 – ₹15,000	₹10,000 – ₹15,000	Monthly	Monthly	10	10	9.45	9.45	+0.55	+0.55	0.30	0.30	0.032	0.032
₹10,000 – ₹15,000	₹10,000 – ₹15,000	Occasionally	Occasionally	12	12	10.85	10.85	+1.15	+1.15	1.32	1.32	0.122	0.122
₹10,000 – ₹15,000	₹10,000 – ₹15,000	Rarely	Rarely	8	8	8.40	8.40	−0.40	−0.40	0.16	0.16	0.019	0.019
₹20,000 – ₹25,000	₹20,000 – ₹25,000	Weekly	Weekly	6	6	4.50	4.50	+1.50	+1.50	2.25	2.25	0.500	0.500
₹20,000 – ₹25,000	₹20,000 – ₹25,000	Monthly	Monthly	8	8	6.75	6.75	+1.25	+1.25	1.56	1.56	0.231	0.231
₹20,000 – ₹25,000	₹20,000 – ₹25,000	Occasionally	Occasionally	7	7	7.75	7.75	−0.75	−0.75	0.56	0.56	0.072	0.072
₹20,000 – ₹25,000	₹20,000 – ₹25,000	Rarely	Rarely	4	4	6.00	6.00	−2.00	−2.00	4.00	4.00	0.667	0.667
Above ₹25,000	Above ₹25,000	Weekly	Weekly	4	4	1.80	1.80	+2.20	+2.20	4.84	4.84	2.689	2.689
Above ₹25,000	Above ₹25,000	Monthly	Monthly	4	4	2.70	2.70	+1.30	+1.30	1.69	1.69	0.626	0.626
Above ₹25,000	Above ₹25,000	Occasionally	Occasionally	2	2	3.10	3.10	−1.10	−1.10	1.21	1.21	0.390	0.390
Above ₹25,000	Above ₹25,000	Rarely	Rarely	0	0	2.40	2.40	−2.40	−2.40	5.76	5.76	2.400	2.400
										X^2 Total =	X^2 Total =	13.522	13.522

Table 5: Chi-Square Test Result Table

Number of Rows	4 income groups	4
Number of Columns	4 frequency options	4
Formula	df = (Rows−1) × (Columns−1)	(4−1) × (4−1)
Degrees of Freedom	3 × 3	9

Calculated χ^2 Value	13.522
Degrees of Freedom (df)	9
Level of Significance (α)	0.05 (5%)
Table / Critical Value	16.919
Calculated < Critical	13.522 < 16.919
Result	Null Hypothesis Accepted

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Hypothesis Statement & Conclusion

Null Hypothesis (H_0)	There is no significant association between Income Level and Online Shopping Frequency
Alternate Hypothesis (H_1)	There is a significant association between Income Level and Online Shopping Frequency
Calculated χ^2 Value	13.522
Critical Value at df=9, α=0.05	16.919
Result	Since 13.522 < 16.919, H_0 is Accepted and H_1 is Rejected
Conclusion	At 5% level of significance, there is no significant association between income level and online shopping frequency among respondents in Coimbatore District

V. FINDINGS OF THE STUDY

The findings suggest that people from different income groups tend to shop online with

1. The Chi-square test was conducted to examine whether there is a relationship between income level and online shopping frequency among respondents in Coimbatore District.
2. The calculated Chi-square value is 13.522 with 9 degrees of freedom at a 5% level of significance.
3. The critical (table) value is 16.919.
4. Since the calculated value (13.522) is less than the critical value (16.919), the null hypothesis (H_0) is accepted and the alternative hypothesis (H_1) is rejected.
5. This result indicates that there is no statistically significant association between income level and online shopping frequency among the respondents.
6. similar frequency, and income level does not significantly influence how often they purchase products online.
7. Therefore, online shopping behaviour among the respondents appears to be independent of their income level in this study.

Suggestions

1. E-commerce platforms should focus more on young consumers, as they represent the majority of online shoppers.

2. Companies should improve AI-based recommendation systems and personalized services to enhance customer shopping experiences.

3. More awareness programs about Artificial Intelligence in e-commerce should be conducted to increase customer knowledge.

4. E-commerce companies should strengthen online payment security systems to increase customer trust.

5. Platforms should take strong measures to protect customer data and privacy to reduce users' concerns.

IX. Conclusion

The study wraps up by saying that bringing artificial intelligence into e-commerce has really changed how people shop online in Coimbatore District. Most of the people we asked were young, and they shop a lot on places like Amazon and Flipkart. It seems like a bunch of them know about those AI things, you know, like suggesting products or chatbots that help out, and even ads that feel personal. That stuff makes shopping better, I think. Social media helps get the word out about all this AI in shopping sites. Trust in these AI platforms is sort of in the middle for most folks, though. They worry about privacy and keeping data safe, which makes sense. But AI does good things for payments, like that OTP code to verify, spotting fraud, and watching transactions closely. It builds up confidence for customers. Overall, AI pushes e- commerce forward in a positive way, helping it grows. Looking ahead, the future for AI in e- commerce looks pretty good. Most people we talked to like the idea of it expanding. If we get more awareness going, tighten up security, and make services smoother, AI could keep making things more efficient. It might not be perfect yet, but that part stands out as promising.

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