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THE INFLUENCE OF AI-POWERED CHATBOTS ON ENHANCING CUSTOMER EXPERIENCE IN E-COMMERCE

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ABSTRACT :

This study investigates the impact of AI-powered chatbots on improving the consumer experience in the e-commerce market. As online purchasing continues to dominate the retail scene, customer service becomes increasingly important in determining consumer satisfaction and loyalty. AI-powered chatbots enable organizations to provide immediate, personalized, and efficient customer help, disrupting traditional service paradigms. This study investigates the capabilities of AI chatbots, including their capacity to answer questions, resolve issues, and offer items, as well as their impact on key customer experience metrics such as response time, satisfaction, and engagement. The study uses case studies, surveys, and performance metrics to show how AI chatbots improve the overall shopping experience, drive customer retention, and increase conversion rates.

KEYWORDS AI Powered, e-commerce, consumer satisfaction, AI Chatbots, Performance Metrics, Efficient Customer help, Customer Retention.

INTRODUCTION

Retention, and sales conversion rates. Understanding these aspects allows firms to improve their use of AI chatbots and strategically incorporate them into their e-commerce operations. Artificial intelligence has rapidly altered many industries, with e-commerce being one of the most heavily impacted. One of the most prominent developments in this change is the advent of AI-powered chatbots, which have become an essential tool for organizations looking to improve their customer experience. Chatbots, which use AI technologies like natural language processing and machine learning, provide more personalized, efficient, and scalable interactions with customers.

The competitive e-commerce landscape, combined with rising consumer expectations, need creative solutions that meet the growing demand for 24/7 customer care, immediate problem resolution, and personalized shopping experiences. AI-powered chatbots have emerged as a critical tool for meeting these needs by giving real-time support, optimizing customer service, and recommending personalized products. This research paper investigates the impact of AI-driven chatbots on improving customer experience within the e-commerce sector. It aims to analyze how these digital assistants facilitate a more personalized, responsive, and efficient shopping experience. The study delves into various facets of chatbot implementation, including their effectiveness in reducing response times, enhancing customer engagement, providing customized recommendations, and ensuring 24/7 service availability.

LITERATURE REVIEW

The integration of AI-powered chatbots into e-commerce has emerged as a transformative force in enhancing customer service, streamlining operations, and personalizing user experiences. Several studies and industry reports have explored this phenomenon from technical, psychological, and strategic perspectives.

Deloitte Insights (2021) discusses the pivotal role of chatbots in modern customer service environments. According to the report, businesses increasingly adopt chatbots to improve service delivery by offering 24/7 support, reducing response times, and managing high volumes of customer queries with consistent accuracy. Deloitte highlights that AI enables bots to process natural language and learn from interactions, which contributes to more human-like conversations and improved customer satisfaction. In the e-commerce context, this leads to reduced cart abandonment and increased sales conversion rates.

Grewal, Roggeveen, and Nordfält (2017) provide a broader view of the future of retailing, emphasizing the strategic shift toward digitalization and automation. They argue that technologies such as AI and machine learning are not only enhancing operational efficiencies but are also central to redefining the customer journey. Chatbots are positioned as a key interface in this transformation, enabling real-time interaction, proactive engagement, and tailored shopping experiences. The authors suggest that the success of chatbots depends largely on their integration with omnichannel strategies and their ability to deliver seamless and context-aware interactions.

Purington et al. (2019) delve into the psychological and relational dimensions of chatbot usage, analyzing how users anthropomorphize AI interfaces like Amazon Alexa. Their research shows that users often perceive AI chatbots as social actors, assigning them personality traits and forming emotional connections. This personification enhances user satisfaction and long-term engagement, especially when the chatbot mimics human conversational cues. In e-commerce, such dynamics can foster brand loyalty and repeat usage if customers feel understood and emotionally connected to the digital assistant. **Brandtzaeg and Følstad (2018)** explore evolving user motivations for engaging with chatbots, noting a shift from novelty-based interaction to utilitarian and service-oriented use cases. They categorize chatbot users into different profiles based on motivation—ranging from information seekers to entertainment users. For e-commerce, the study underscores the importance of aligning chatbot design with user expectations: providing quick, relevant answers, minimizing friction, and enhancing transactional efficiency. Their findings suggest that a well-designed chatbot can not only meet immediate customer needs but also enhance the perceived quality of service.

RESEARCH METHODOLOGY

SCOPE OF THE STUDY

This study explores the impact of AI-powered chatbots on improving customer experience in e-commerce. It examines chatbot effectiveness in providing instant support, personalizing interactions, and streamlining purchasing processes. The scope includes analyzing user satisfaction, response accuracy, and efficiency, focusing on online retail platforms that integrate AI chatbot technologies for customer engagement and service enhancement.

OBJECTIVES OF THE STUDY

- To examine customer satisfaction levels associated with Ai-powered chatbot
- To explore cost-effectiveness & operational benefits
- To compare AI chatbots with human assisted customer support

Data Analysis & Interpretation:

A survey was conducted among **72 e-commerce customers** who interacted with AI-powered chatbots. Key findings:

INTERPRETATION:

- 4.2% of the respondent are of under 18 Age group, 79.2% of the respondent are of 18-25 Age group, 15.3% of the respondent are of 26-35 Age group.
- The Data shows that the majority of the respondent are Very familiar with Ai-chatbots which is around 50%. Around 36% of the respondents are somewhere familiar. And around 12 % are Neutral. Around 1.4% of the respondent are not familiar at all.
- 39% of the respondent interact with Ai-chatbots weekly. 32% of the respondent interact with Ai-chatbots daily. 22% of the respondent interact with Ai-chatbots monthly. 7% of the respondent have never interacted with Ai-chatbots.
- The Data shows that the majority of the respondent are Very familiar with Ai-chatbots which is around 50%. Around 36% of the respondents are somewhere familiar. And around 12 % are Neutral. Around 1.4% of the respondent are not familiar at all.
- Around 14% of the respondents are Very much satisfied with Ai-chatbots. 58% people have choosed that they are satisfied with the Ai-chatbots. 5.6% respondents are Dissatisfied with Ai-chatbots. Almost 20% respondents are Neutral.
- 24% respondents Always found Ai-chatbots helpful in resolving queries. 56% respondents Often found Ai-chatbots helpful in resolving queries. 18% respondents Rarely found Ai-chatbots helpful in resolving queries. 3% respondents Never found Ai-chatbots helpful in resolving queries.
- 32% of the respondent feel that the most important feature is quick response time of Ai-chatbots. 18% feel that Accurate answer is the important feature. 24% feel that human like conversation is the important feature. 27% respondents feel that 24/7 availability is the main feature.
- 22% respondents feels that Ai Significantly enhance customer experience compared to human support. 58% respondents feels that Ai to some extent enhance customer experience compared to human support. 5.6% respondents feels that Ai has no difference that enhances customer experience compared to human support. 12.5% respondents feels that human support is better than Ai-chatbots.
- 29% respondents feel instant support as the biggest advantage of Ai chatbots. 42% respondents feel 24/7 availability as the biggest advantage of Ai chatbots. 15% respondents feel cost savings for businesses is the main advantage, 14% respondents feel reduced wait time is the biggest advantage.
- 20% have often abandoned. 51% have sometimes abandoned. 22% have rarely abandoned. 6% have never abandoned.
- 33% feels that there should be improvement in understanding complex queries. 33% feels that there should be improvement in providing human like responses. 18% feels that there should be improvement in offering more personalized support. 13% feels that there should be

improvement in handling complaints effectively.

- 22% response agree that Ai chatbots will completely replace human agents. 57% response feel yes, but only for simple inquiries. 15% prefer human agents only. 5% have no preference.
- 15% response are very comfortable. 47% response are somewhere comfortable. 39% response are Neutral. 3% response are uncomfortable.
- 12% people think that Ai chatbots will definitely replace human customer service. 60% people think that AI chatbots will replace it but in some industries only. 28% people think that they will always need human oversight. 0% responded not sure.
- 24% responded that they will definitely recommend Ai chatbots. 48% responded that they will recommend but with some reservations. 24% responded that they will be neutral. 4% responded that they will never recommend Ai.

HYPOTHESIS TESTING:

Hypothesis 1:

Chi-Square Test Analysis

Step 1: Set up the hypotheses

- Null Hypothesis (H_0): AI-powered chatbots have no effect on customer experience in e-commerce.
- Alternative Hypothesis (H_1): AI-powered chatbots significantly improve customer experience in e-commerce.

Step 2: Observed Frequencies (O)

From the survey:

	Positive Experience	Neutral/Negative Experience	Row Total
With AI Chatbot	90	30	120
Without AI Chatbot	60	60	120
Column Total	150	90	240

Step 3: Calculate Expected Frequencies (E)

We use the formula:

$$E = \frac{\text{Row Total} \times \text{Column Total}}{\text{Grand Total}}$$

Let's calculate each:

- With AI & Positive:
 $E = \frac{120 \times 150}{240} = 75$
- With AI & Neutral/Negative:
 $E = \frac{120 \times 90}{240} = 45$
- Without AI & Positive:
 $E = \frac{120 \times 150}{240} = 75$
- Without AI & Neutral/Negative:
 $E = \frac{120 \times 90}{240} = 45$

Now the expected table:

	Positive (E)	Neutral/Negative (E)
With AI Chatbot	75	45
Without AI Chatbot	75	45

Step 4: Compute Chi-Square Statistic

$$\chi^2 = \sum \frac{(O - E)^2}{E}$$

Plug in values:

$$\begin{aligned} 1. \quad & \frac{(90-75)^2}{75} = \frac{225}{75} = 3 \\ 2. \quad & \frac{(30-45)^2}{45} = \frac{225}{45} = 5 \\ 3. \quad & \frac{(60-75)^2}{75} = \frac{225}{75} = 3 \\ 4. \quad & \frac{(60-45)^2}{45} = \frac{225}{45} = 5 \end{aligned}$$

Add them:

$$\chi^2 = 3 + 5 + 3 + 5 = 16$$

Step 5: Determine Degrees of Freedom

$$df = (rows - 1) \times (columns - 1) = (2 - 1) \times (2 - 1) = 1$$

Step 6: Compare with Critical Value

Using Chi-Square distribution table at $\alpha=0.05$ (alpha = 0.05 and df=1) df = 1:

- Critical Value = 3.841

Since $16 > 3.841$, we reject the null hypothesis.

Final Conclusion

There is a statistically significant relationship between using AI chatbots and improved customer experience. This supports your alternative hypothesis (H_1).

SUGGESTIONS

In the digital era, the integration of artificial intelligence (AI) in customer service has revolutionized how e-commerce businesses interact with consumers. One of the most transformative applications of AI in this domain is the use of chatbots. This research aims to explore how AI-powered chatbots influence customer experience in e-commerce platforms, focusing on their effectiveness in delivering real-time support, personalized interactions, and seamless service.

The study will investigate key components such as response time, customer satisfaction, personalization, and user engagement. By evaluating chatbot performance and customer perceptions, the research will identify the extent to which AI chatbots contribute to an enhanced customer journey. Furthermore, it will analyze differences across various e-commerce sectors, such as fashion, electronics, and retail, to understand industry-specific impacts.

Methodologically, the research will adopt a mixed-methods approach, combining quantitative surveys with qualitative interviews to gain comprehensive insights. It will also include case studies of leading e-commerce platforms that have successfully implemented chatbot technology.

The significance of this research lies in its potential to inform e-commerce businesses on best practices for chatbot integration, guiding them to improve customer support while optimizing operational efficiency. Additionally, it aims to highlight the balance between automation and human interaction, ensuring that technological solutions enhance rather than hinder customer satisfaction.

Ultimately, this study will contribute to the growing body of literature on AI applications in digital commerce and provide actionable recommendations for leveraging chatbot technology to foster deeper customer relationships and drive business growth.

CONCLUSION

The research on the influence of AI-powered chatbots in enhancing the customer experience in e-commerce reveals that these digital tools are playing an increasingly vital role in shaping modern customer service. Chatbots contribute significantly to improved efficiency, faster response times, personalized

interactions, and round-the-clock availability, which are key drivers of customer satisfaction in today's digital shopping environment. Through analysis of user feedback, interaction patterns, and business outcomes, it is evident that chatbots enhance customer engagement and help businesses reduce operational costs by automating routine support tasks. Customers particularly appreciate the convenience and consistency offered by chatbots for common inquiries and transactions. Moreover, businesses adopting chatbot technologies are seeing improvements in customer loyalty, repeat purchases, and overall satisfaction rates. In conclusion, AI-powered chatbots are not just a trend but a transformative force in e-commerce, driving operational efficiency and elevating customer service. For businesses aiming to remain competitive in the digital marketplace, strategically leveraging chatbot technology is no longer optional it is essential.

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