Impact of AI on E-Commerce Service Quality and Consumer Satisfaction

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ABSTRACT

Artificial intelligence (AI) plays a critical role in today's technological world. It consistently provides personalized services to customers while reducing the burden of human presence. E-commerce platforms have also adopted artificial intelligence to improve their quality. This study examined the impact of AI on E-commerce service quality. It also assessed the impact of AI inclusion on customer satisfaction based on their experience, as they are ultimately the kings of the market. This study also addressed the challenges that customers may face as a result of AI in e-commerce. The study's sample size of 70 people was determined using a convenient sampling method. The research concluded that AI improves e-commerce service quality while also saving time when compared to customer service representatives. Customers also supported some of the challenges they face as a result of artificial intelligence in e-commerce. It suggested that if e-commerce service providers can address such issues, AI has the potential to propel the industry forward.

Keywords- Artificial Intelligence, E-commerce, Service Quality, Consumer Satisfaction.

INTRODUCTION

Artificial intelligence is a branch of computer science that focuses on developing machine researchers or commercial transactions involving the transfer of information over the Internet. It encompasses a wide range of business activities, from consumer-based retail through auctions and music sites to business exchanges trading goods and services between corporations, which are becoming an increasingly important aspect of business.

According to salespeople, most customers expect companies to understand their specific needs and expectations. Organizations should provide a personalized shopping experience for individual customers. Unquestionably, all of these requirements cannot be met manually. However, with the help of AI, we can share this experience on an e-commerce platform. AI can assist in analyzing their behavior on the E-commerce platform as well as the personal information they have shared with them. Using a mathematical computer-generated algorithm based on various historical data points, the same AI technology can determine an individual customer's likes and preferences and recommend products that the customer is more likely to purchase.

AI has also made business available to customers 24 *7 and has made it easier for customers to make purchasing decisions using the ARitize 3D model.

With the help of this research, we are focusing on how AI has impacted customers' experiences in terms of e-commerce service quality. Also, to know whether customers are experiencing any difficulties when using e-commerce as a result of AI.

REVIEW OF LITERATURE

1. **R. Fedorko et. al. (2022)** The paper focused on describing the essence of e-commerce and artificial intelligence, as well as their benefits. The goal is also to assess the significance of artificial intelligence and its application in the context of e-commerce based on existing research. The researcher conducted the study using secondary data. They conducted ten studies focusing on the presence of artificial intelligence in various fields. It concluded that many business scientists and experts have developed an interest in e-commerce. Artificial intelligence is expected to be

used more frequently in the context of electronic commerce, eventually becoming an integral part of all such businesses.

2. **PRABHA J. (2021)** This paper discusses the impact of artificial intelligence in e-commerce and how it is applied in various areas of e-commerce. Research keywords include e-commerce, buying and selling goods, and artificial intelligence. The data includes both primary and secondary data. A questionnaire was used as the research instrument in this study. Data analysis is performed using a simple percentage method. The sampling unit for the study is chosen using a convenience sampling method. The study's sample size was 25 People. It concludes that artificial intelligence has helped e-commerce websites provide a better user experience.

3. **Linh N. (2023)** The thesis seeks to broaden our comprehension of artificial intelligence and its transformative impact on the e-commerce landscape, specifically in addressing customer experience challenges. The overarching goal of this research is to demonstrate that AI represents a substantial opportunity for shaping the future. The empirical research component of the thesis employs a blend of qualitative and quantitative methods within a deductive research framework. The main focus of the survey was to investigate human attitudes, satisfaction levels, and overall perceptions towards AI in both everyday life and e-commerce contexts. The findings of the study indicate that harnessing AI can significantly elevate businesses' ability to enhance customer experience, attract new customers, and enhance overall prospects.

4. **Nimbalkar A. and Berad A. (2021)** This study focused on the increasing importance of AI applications in e-commerce. Artificial intelligence (AI) is a broad field of computer science concerned with developing intelligent machines capable of performing tasks that would normally require human intelligence. It analyzed AI applications in e-commerce - first, chatbots and virtual assistants that offer 24x7 support to online consumers; second, intelligent product recommendations based on knowledge of previous purchases, searched products, and online browsing habits; third, AI personalization that is based on important user insights from the generated customer data; and finally, inventory management that analyses sales trends, projected or anticipated changes in product demand AI has numerous applications in e-commerce, and retailers are heavily investing in technology to remain competitive and relevant.

STATEMENT OF PROBLEM

This paper delves into evaluating the influence of AI across various domains, emphasizing its effects on both positive and negative aspects. Specifically, the focus centers on assessing AI's impact on the quality of E-commerce services and customer satisfaction. The study not only explores the benefits but also addresses the challenges customers encounter in navigating AI-equipped E-commerce platforms. By shedding light on customer perceptions, this research aims to assist E-commerce companies in identifying areas for improvement and optimizing overall customer experience, showcasing the effectiveness of AI integration in the E-commerce sector.

RESEARCH GAP

Several researchers have studied AI inclusion in E-commerce, specifically the benefits of having AI in E-commerce, the challenges that customers face while using E-commerce as a result of AI, and the growing importance of AI in E-commerce. There has been no study that specifically examined the relationship between AI in E-commerce and customer experience in terms of service quality improvement and whether it leads to customer satisfaction. As a result, the focus of this research is on determining the impact of AI on E-commerce service quality and customer satisfaction.

SIGNIFICANCE OF STUDY

This research will aid in understanding the significance of AI in E-commerce and customer perceptions of it. It will allow E-commerce companies to better understand the benefits of having AI in E-commerce as well as the challenges that customers face as a result of AI inclusion. Understanding and addressing challenges will help e-commerce companies

improve service quality and customer satisfaction. It has provided gender and age-based customer experiences, which will aid in providing greater clarity.

SCOPE OF STUDY

➢ This study explores customer experiences with AI solutions on e-commerce platforms.
➢ The study assesses how AI affects service quality in e-commerce.
➢ This research sheds light on the challenges consumers face when using e-commerce due to AI technology.
➢ The study gathered opinions from Mumbai residents aged 21-60.

OBJECTIVES

1. To study the impact of AI on customer experience concerning e-commerce service quality.

2. To identify the complications that customers have in e-commerce as a result of AI.

HYPOTHESIS

H_0 = There is no significant difference between the age of the People and their opinion about using AI to save their time in comparison to having a customer support representative answer their questions.

H_0 = There is no significant difference between the preferred e-commerce AI solution and difficulty caused by it.

RESEARCH METHODOLOGY

Type of Research

This study employs a descriptive research design to describe, explain, and validate findings regarding the impact of Artificial Intelligence on e-commerce Service quality and customer satisfaction.

Area of Study

The research is being carried out in Mumbai.

Sampling Method

The sampling technique that was used was a Convenient sampling method.

Target Population

People from the age group of 21-60 are the target audience.

Types and Sources of Data

The current study is based on primary data collected via a structured questionnaire created in Google Forms. All closed-ended questions related to the study's objectives and hypothesis were asked.

Statistical Tool Use

Graphs are used to organize data and to display it in an easy-to-understand and remember format. The chi-square test and Kruskal Wallis Test are used to test hypotheses.

LIMITATIONS

1. A sample size of 70 is a limitation; the results may differ if the sample size is increased.

2. The research is restricted to the Mumbai.

3. The respondent's responses may be biased.
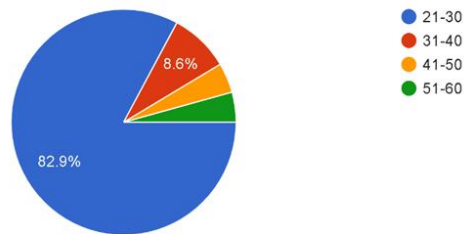
DATA ANALYSIS AND FINDINGS OF THE STUDY

1. Gender
70 responses
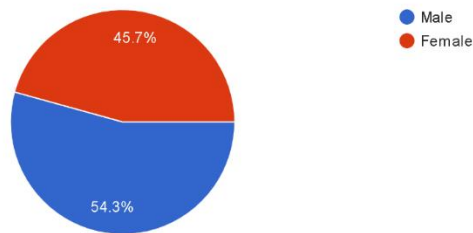
Source – Primary Data

Among the respondents who responded 45.7% are Female and 54.3% are Male.

2. Age
70 responses

Source – Primary Data

Respondents of various ages were included in the study. The majority of respondents are between the ages of 21 to 30, accounting for 82.9%. People aged 31 to 40 accounted for 8.6%. People aged 41-50 and 51-60 comprised 8.5% of all people.

3. Which e-commerce AI solution is your favorite? (use Image for this question if you can)
70 responses
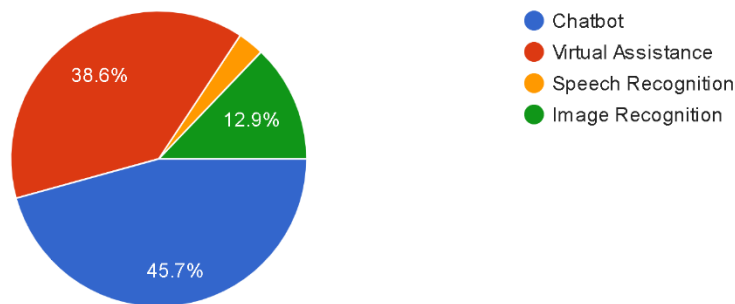
Source – Primary Data

Respondents were asked to choose their favorite AI solution, and 45.7% chose ChatBot. 38.6% chose Virtual Assistance, while 12.9% chose Image Recognition. 2.8% of respondents chose speech recognition as their preferred AI solution.


4. Do you think the use of AI in e-commerce has improved the quality of the services provided?

70 responses
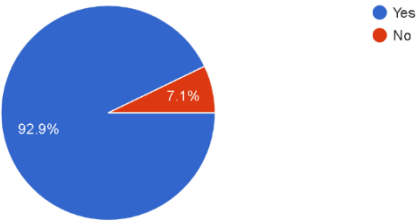
Source – Primary Data

92.9% of respondents agreed that AI in e-commerce has improved the quality of services offered by e-commerce companies. 7.1% of people opposed it.


5. Does using AI save you time in comparison to having a customer support representative answer your questions?

70 responses
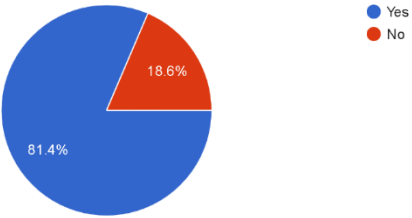
Source – Primary Data

81.4% of respondents agreed that AI saves them time when compared to getting an answer from a customer service representative. 18.6% of the population opposed the same.


8. In your opinion, what difficulty does AI cause when it comes to e-commerce?
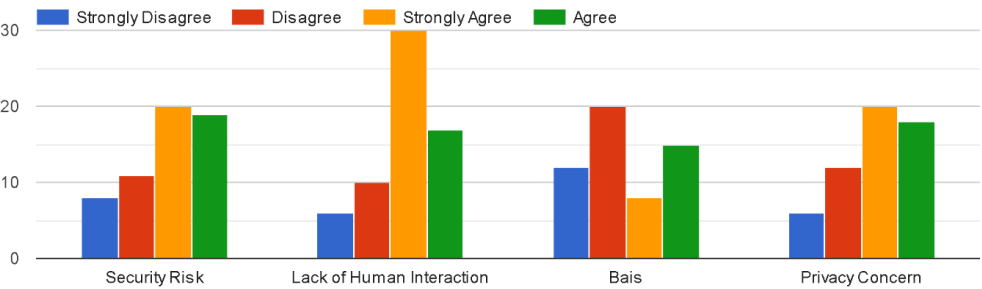
Source – Primary Data

There are four types of difficulties that respondents may face when dealing with e-commerce as a result of the inclusion of AI: security risk, lack of human interaction, Bais, and privacy concerns. The majority of respondents who support it will pose security risks. In terms of a lack of human interaction, many respondents strongly agree. When it comes to bias, most respondents disagree. The majority also agreed on the privacy concerns challenge.

7. Do you face any challenges as a result of AI in E-commerce?
70 responses
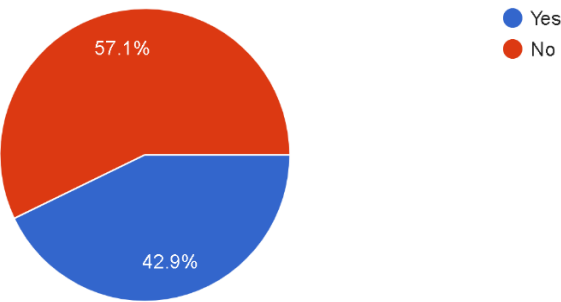
Source – Primary Data

57.1% of all respondents have not encountered any difficulties as a result of AI involvement in e-commerce. 42.9% of e-commerce users encountered challenges as a result of AI.

12. In the future, do you think AI has potential to replace human roles in E-commerce Services?
70 responses
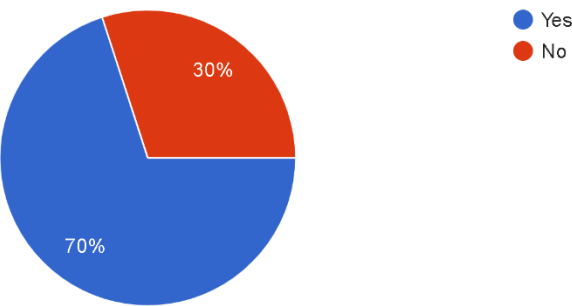
Source – Primary Data

70% of the total respondents who responded said AI has the potential to replace humans' role of customer support in E-commerce. 30% of respondents feel it cannot take the place of humans in customer support.

HYPOTHESIS TESTING

H₀ = There is no significant difference between the age of the people and their opinion about using AI save their time in comparison to having a customer support representative answer their questions

Crosstabulation - Age * Does using AI save you time in comparison to having a customer support representative answer your questions?
Count

	Does using AI save you time in comparison to having a customer support representative answer your questions?		Total
	Yes	**No**	
Age	21-30 Years	47	11	58
	31-40 Years	5	1	6
	41-50 Years	2	1	3
	51-60 Years	3	0	3
Total		**57**	**13**	**70**

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	1.137[a]	3	.768
Likelihood Ratio	1.623	3	.654
Linear-by-Linear Association	.136	1	.712
N of Valid Cases	70		

a. 6 cells (75.0%) have expected count less than 5. The minimum expected count is .56.

To test above hypothesis, Chi-square test is applied. Test result shows that chi-square value is 1.137 and p-value is 0.768 which is more than 0.05. Therefore, **null hypothesis is accepted** i.e. there is no significant difference between age of the People and their opinion about using AI save their time in comparison to having a customer support representative answer their questions. In simple words, we can conclude that **people of all age group agree that using AI saves their time in comparison to having a customer support representative answer their questions**.

H_0 = **There is no significant difference between preferred e-commerce AI solution and difficulty caused by it.**

Kruskal Wallis Test Statistics[a,b]

	Security Risk	Lack of Human Interaction	Bais	Privacy Concern
Chi-Square	2.423	4.009	2.771	1.078
Df	3	3	3	3
Asymp. Sig.	.489	.260	.428	.782

a. Kruskal Wallis Test

b. Grouping Variable: Which e-commerce AI solution is your favourite?

To test the above hypothesis, Kruskal-Wallis test is used. The result of the test shows that p-value for all the factors considered under difficulty faced while using e-commerce AI is more than 0.05. Therefore, **null hypothesis is accepted** i.e. there is no significant difference between preferred e-commerce AI solution and difficulty caused by it. In simple words, it can be concluded that **all the People have faced all the problems mentioned above while using their favorite e-commerce AI solution**.

SUGGESTIONS

AI has significantly improved the quality of e-commerce services and given consumers access to top-notch offerings. It has also made life easier for businesses that operate in the e-commerce sector by saving time, and money, and providing superior services, among other benefits. Even though AI has raised the bar, there are still some issues that businesses must address if they want to maximize customer satisfaction and win over customers to their AI-based services.

Some of the main problems or difficulties that are the subject of the study include security risks, which make individuals reluctant to divulge their personal information. E-commerce companies must pay close attention to these issues to find

solutions. The next issue is a deficiency in interpersonal communication, which people firmly endorse as a challenge. It demonstrates how customers aren't connecting with businesses directly as a result of AI. Therefore, even though AI has produced the majority of the answers, we still need to preserve some methods for creating a platform for interpersonal communication because customers believe that AI is not fit to provide solutions to all their queries. When it comes to the question of whether e-commerce is biased, the fact that large brands spend more for advertising can lead to biased outcomes. This indicates to e-commerce sites that they must be unbiased if such things exist. The final study's difficulty is privacy concerns. The majority of individuals who support AI have privacy-related issues they are reluctant to give their personal information. It's a serious area to work on.

CONCLUSION

According to the findings of the study, the majority of people—regardless of age—feel that artificial intelligence (AI) has improved the quality of services offered in e-commerce while also saving them time and simplifying their work by offering a variety of services like chatbots, virtual assistants, speech recognition, and natural language, among others. A high number of customers believe that AI has increased the accuracy of recommending similar products and provides accurate answers to queries that customers have on E-commerce websites. These services are added to enhance customer experience which leads to customer satisfaction. It shows that AI has a positive impact on service quality as well as creating customer satisfaction.

People also acknowledge that interacting with e-commerce might present some obstacles at times which leads to customer dissatisfaction. Regardless of the e-commerce service provider's selected platform, AI engagement results in various challenges this research has covered security hazards, a lack of human interaction, bias, and privacy concerns kind of issues- all of which everyone has experienced at some point in their lives. The majority of Customers also supported that many times AI is not sufficient enough to solve all kinds of queries that customers may come across while using E-commerce sites. There are still some situations where AI falls short and causes people to worry.

We cannot ignore the fact that our poll shows that AI has decreased customer connection with businesses. Many customers think there's a good chance AI will replace human customer support in e-commerce if developers can smooth out some of the issues that customers are facing presently.

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