

A STUDY ON IMPACT OF AI ON E-COMMERCE IN MUMBAI REGION

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ABSTRACT

AI is the use of computers that can do things that only humans can do, such as thinking, making decisions, and solving problems.

In today's world, artificial intelligence (AI) refers to a vast array of technologies that drive many of the products and services we use on a daily basis – from TV show recommendations to chatbots providing real-time customer support. But is AI really what most of us think it is? If not, why do we keep hearing the term 'AI' so often? In this article, researcher will cover everything you need to know about AI, what it does, and how it is used in e-commerce. Researcher will cover some of its advantages and disadvantages as well as impact of artificial intelligence(AI) on e-commerce.

Keywords - E-commerce, Artificial Intelligence (AI).

INTRODUCTION

The rapid increase of artificial intelligence (AI) in various industries has led to significant changes in the way businesses operate, particularly in the area of e-commerce. With the increasing adoption of AI-powered technologies, such as machine learning, natural language processing, and computer vision, e-commerce companies are leveraging AI to enhance customer experiences, improve operational efficiency, and gain a competitive advantage in the market. The impact of AI on e-commerce is multifaceted, with potential benefits including improved product recommendations, enhanced customer service, and more efficient supply chain management. However, the integration of AI also raises concerns about job displacement, data privacy, and the potential for bias in decision-making processes.

E-COMMERCE

E-commerce means the buying and selling of goods and services over the internet, which is also known as electronic commerce. It involves transactions conducted over an electronic network, such as the internet, mobile devices, or other digital platforms.

E-commerce can take many forms, including:

- 1. B2B (business-to-business) e-commerce:** Transactions between businesses, such as a company purchasing raw materials or supplies from another company.
- 2. B2C (business-to-consumer) e-commerce:** Transactions between a business and an individual consumer, such as an online store selling products to a customer.
- 3. C2C (consumer-to-consumer) e-commerce:** Transactions between individuals, such as online marketplaces where individuals buy and sell goods and services.

AI IN E-COMMERCE

AI in e-commerce refers to the use of Artificial Intelligence (AI) technologies to improve the online shopping experience, automate processes, and drive business growth. AI in e-commerce can be applied in various areas, including Personalization, Chatbots and Virtual Assistants, Product Search and Recommendations, Inventory Management, Customer Service, Predictive Analytics, Content Generation, Fraud Detection, Image Recognition.

IMPORTANCE / NEED FOR THE STUDY

Despite the growing importance of AI in e-commerce, there is a lack of comprehensive research on the impact of AI on various aspects of e-commerce, including customer behavior, business performance, and the overall digital landscape. This research aims to investigate the impact of AI on e-commerce, with a focus on understanding the ways in which AI is changing the way consumers interact with online retailers, as well as the implications for businesses and policymakers. By examining the current state of AI adoption in e-commerce, identifying best practices and challenges, and exploring the potential benefits and drawbacks of AI-driven e-commerce, this study aims to provide insights that can inform business strategies and policy decisions.

PROS AND CONS OF AI

There are many of the possible benefits and troubles AI may pose.

PROS

1. Greater delicacy for certain unremarkable tasks, similar as assembling vehicles or computers.
2. Dropped functional costs due to lesser effectiveness of machines.
3. Increased personalization within digital services and products.
4. Bettered decision- making in certain situations.
5. Reduced Human errors.
6. Capability to induce new content, similar as textbook or images.

CONS

1. Job loss due to increased robotization.
2. Implicit for bias or demarcation as a result of the data set on which the AI is trained.
3. Possible cybersecurity enterprises.
4. Lack of translucency over how opinions are arrived at, performing in lower than optimal results.
5. Implicit to produce misinformation, as well as inadvertently violate laws and regulations.

LITERATURE REVIEW

1. **Linh Nguyen (2023)**- Artificial Intelligence in E-commerce. This study focused on AI application as a solution to improve customer experience in e-commerce. The study aims to understand AI and explore how it has revolutionized the e-commerce in improving customers experience. The results of the study suggest that integrating AI technology with e-commerce can highly enhance customer satisfaction and experience.

2. **Parag Dhanani & Tank Savji** - A report on the impact of Artificial Intelligence on E-commerce. This study aims to identify types, advantages, challenges of AI technologies used in e-commerce and also focused on analysing the future developments and trends of AI technology on e-commerce. The result of research shows that AI has enabled businesses to improve their customer experience, optimize business operations but the automation of certain jobs leads to job losses and displacement of human workers.

RESEARCH OBJECTIVES

1. To examine the impact of AI-powered tools on consumer behavior, including purchase decisions, loyalty, and overall satisfaction.
2. To assess the potential benefits and drawbacks of AI-powered chatbots and virtual assistants in e-commerce.

HYPOTHESIS

H0 - AI can't improve customers satisfaction in E-commerce.

H1- AI can significantly improve customers satisfaction in E-commerce.

H0 - AI-powered features are not important and helpful to the customers.

H1 - AI-powered features are important and helpful to the customers.

SCOPE OF STUDY

The scope of the study is to find the impact of AI on e-commerce platform in relation to the customers satisfaction, experience. It is an attempt to study and understand the current state of AI adoption in e-commerce, identification of benefits and importance of AI in e-commerce platform to the customers.

RESEARCH METHODOLOGY

The main objective of the study is to examine impact of AI- powered tools on consumer behavior, satisfaction and experience. The research instrument in the study is survey questionnaire. The data was collected through google form. The sample size for the study was 28 respondents

SOURCES OF DATA

The researcher conducted this research on the basis of Primary as well as secondary data.

Primary Data- Primary data is being collected from survey method through google form.

Secondary Data- Secondary data was collected from different research journals, articles, websites etc.

LIMITATIONS OF THE STUDY

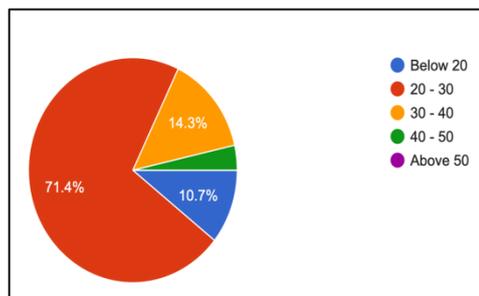
There are some limitations to this research study i.e. Study on Impact of AI on E-commerce in Mumbai region that are as follows -

1. This research was conducted only in mumbai region so the results may change in another city of the country.
2. Sample size was very small (28 respondents), so the result might change in case of large sample size.

DATA ANALYSIS AND INTERPRETATION

The following questions were asked to the respondents through survey method.

1. **Age -**

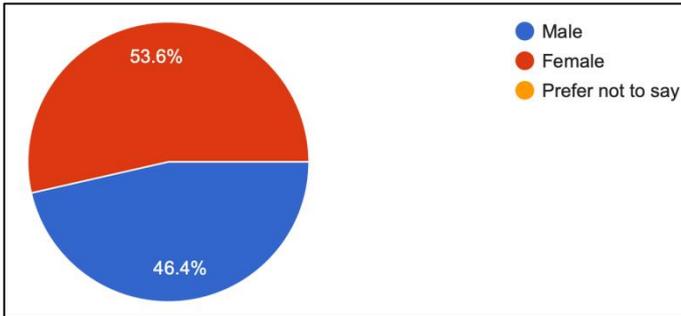


Sr. No.	Responses	No. of Respondents	Percentage
1.	Below 20	3	10.7%
2.	20 - 30	20	71.4%
3.	30 - 40	4	14.3%
4.	40 - 50	1	3.5%
5.	Above 50	-	-
	Total	28	100%

Analysis and Interpretation of Data

From the above data and pie chart, it can be observed that out of all the respondents 3 belongs to the age below 20, 20 belongs to the age group of 20-30, 4 belongs to the age group of 30-40 and 1 belong to the age group of 40-50. No one is their from the age group of above 50. So majority of the respondents belongs to the age group of 20-30 years.

2. Gender -

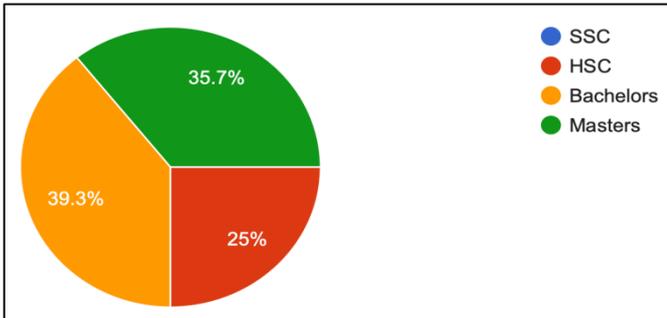


Sr. No.	Responses	No. of Respondents	Percentage
1	Male	13	46.4%
2	Female	15	53.6%
3	Prefer not to say	0	-
	Total	28	100%

Analysis and Interpretation of Data

From the above data researcher observed that, out of all the respondents 13 were male and 15 were female. That means 46.4% were male respondents and 53.6% were female respondents.

3. Highest Qualification -

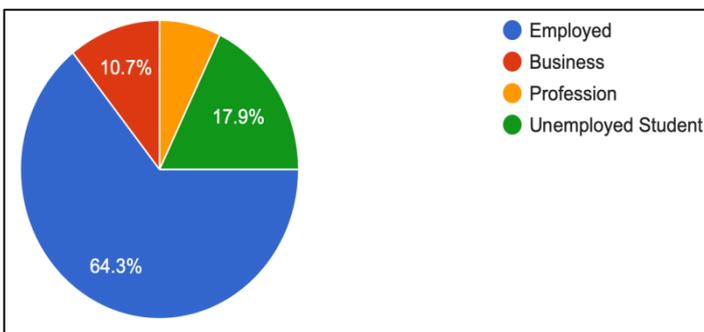


Sr. No.	Responses	No. of Respondents	Percentage
1	SSC	-	-
2	HSC	7	25%
3	Bachelors	11	39.3%
4	Masters	10	35.7%
	Total	28	100%

Analysis and Interpretation of Data

The next question were asked about the highest qualification of respondents. Out of 28 respondents 7 have HSC, 11 have Bachelors degree and 10 have Masters degree as their highest qualification.

4. Occupation-

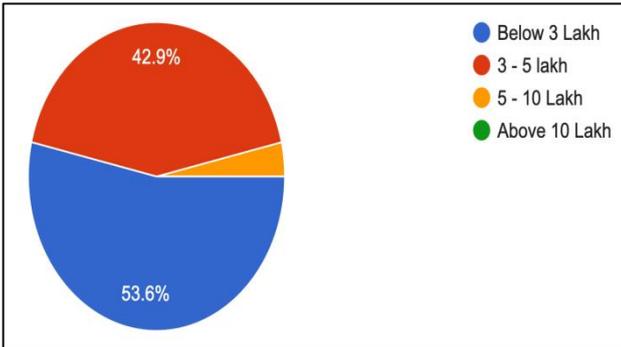


Sr. No.	Responses	No. of Respondents	Percentage
1	Employed	18	64.3%
2	Business	3	10.7%
3	Professional	2	7.1%
4	Unemployed Student	5	17.9%
	Total	28	100%

Analysis and Interpretation of Data

The next question was about occupation of respondents. Out of all the respondents, 18 were employed in various sectors, 3 respondents have their own business, 2 were professionals and remaining 5 were unemployed students.

5. Annual Income-

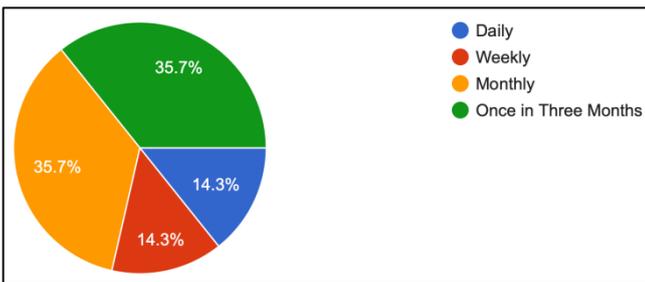


Sr. No.	Responses	No. of Respondents	Percentage
1	Below 3 Lakh	15	53.6%
2	3-5 Lakh	12	42.9%
3	5- 10 Lakh	1	3.5%
4	Above 10 Lakh	-	-
	Total	28	100%

Analysis and Interpretation of Data

From the above data researcher observed that among all the respondents, 15 were having annual income below 3 lakh, 12 were having annual income between 3 to 5 lakh, and only 1 respondent have income above 5 lakh. Maximum respondents belongs to the income group of below 3 lakh.

6. Online purchase frequency-

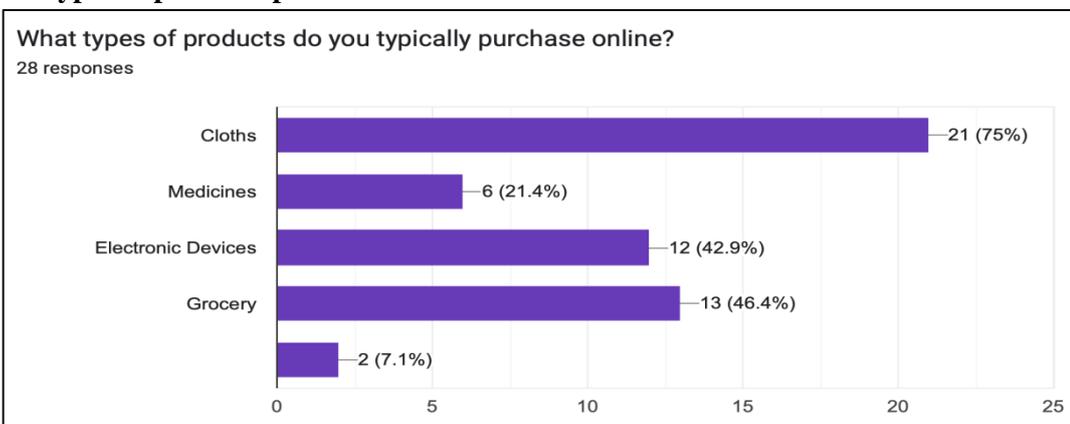


Sr. No.	Responses	No. of Respondents	Percentage
1	Daily	4	14.3%
2	Weekly	4	14.3%
3	Monthly	10	35.7%
4	Once in three months	10	35.7%
	Total	28	100%

Analysis and Interpretation of Data

The next question were asked to the respondents was how frequently they do online purchase. The above pie chart and table shows the answers to this question. 4 respondents do online purchase on regular basis, 4 respondents on weekly basis, 10 on monthly basis and remaining 10 do online purchase once in three months.

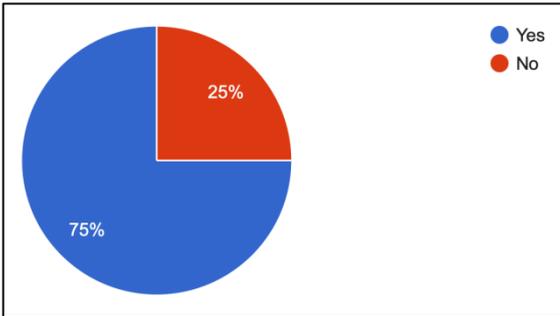
7. Types of products purchase online-



Analysis and Interpretation of Data

The next was asked about types of product respondents typically buy online. From the above graph it can be seen that 75% of the respondents buy cloths online, 21.4% of the respondents buy Medicines, 42.9% buy Electronic devices, 46.4% buy Grocery and 7.1% respondents buy other things online.

8. Interaction with AI-chatbots -

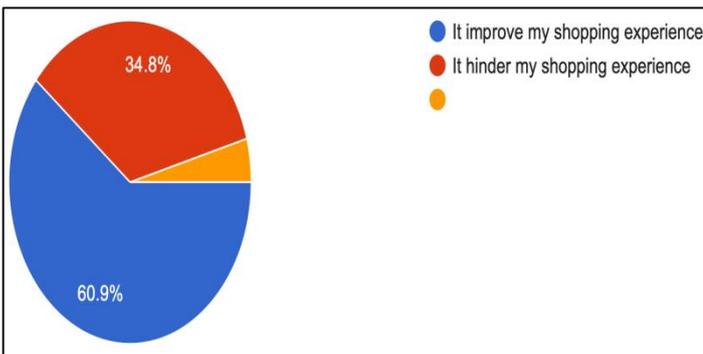


Sr. No.	Responses	No. of Respondents	Percentage
1	Yes	21	75%
2	No	7	25%
	Total	28	100%

Analysis and Interpretation of Data

The next question asked to respondents was, Have you interacted with AI- Chatbots while online shopping. The researcher observed that out of all the respondents 21 said yes and 7 said no. So maximum respondents i.e. 75% were interacted with AI-chatbots or Virtual Assistant while online shopping.

9. Shopping experience with AI -

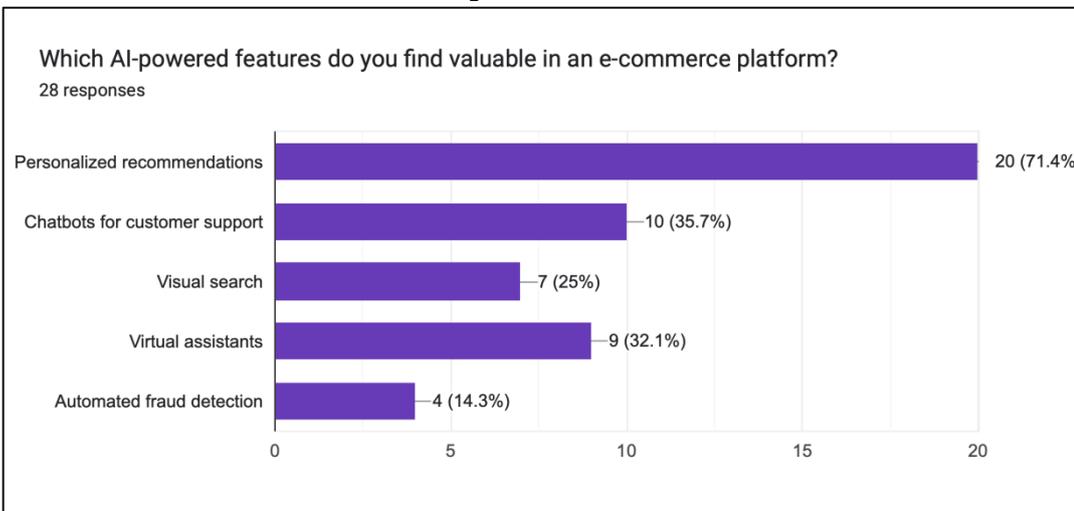


Sr. No.	Responses	No. of Respondents	Percentage
1	It improve my shopping experience	14	50%
2	It hinder my shopping experience	8	28.6%
3	Blanks	6	21.4%
	Total	28	100%

Analysis and Interpretation of Data

Out of all the respondents 14 respondents think that AI has improve their shopping experience while 8 said that AI has created hindrance in their shopping and remaining 6 doesn't responded to this question. Almost 50% respondents said AI has improve their online shopping experience.

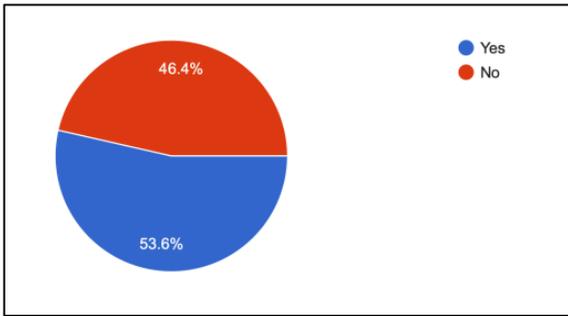
10. Valuable feature in E-commerce platform-



Analysis and Interpretation of Data

Researcher asked next question regarding valuable features of AI in e-commerce platform. 71.4% respondents think Personalized recommendations is most valuable feature, 35.7% think Chatbots for customer support is valuable, 25% think Visual Search is valuable, 32.1% think Virtual assistant and 14.3% think Automated fraud detection is most valuable feature of AI in e-commerce.

11. Use of AI-chatbots/Voice assistant to make online purchase-

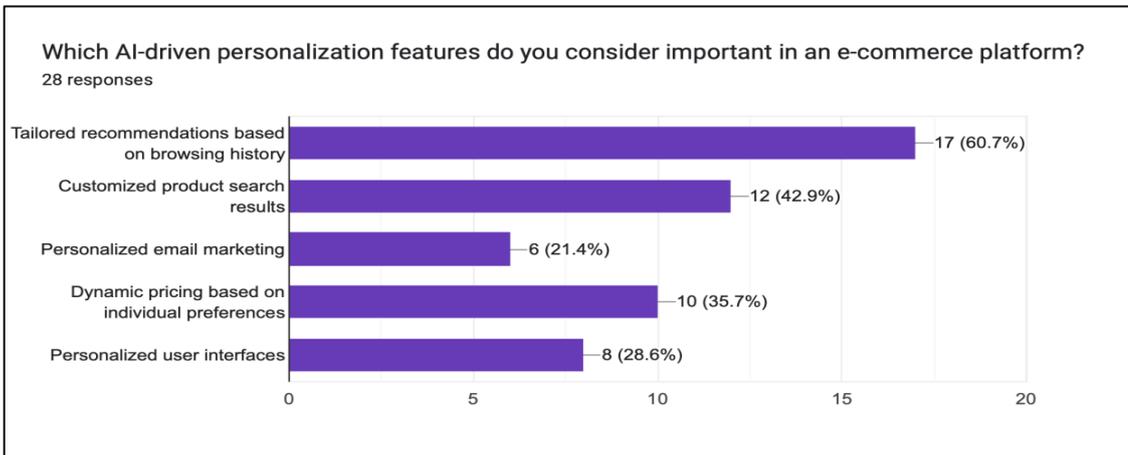


Sr. No.	Responses	No. of Respondents	Percentage
1	Yes	15	53.6%
2	No	13	46.4%
	Total	28	100%

Analysis and Interpretation of Data

From the above data and pie chart, it can be observed that 15 respondents have used AI-powered voice assistant like Alexa or Google Assistant to make online purchase while remaining 13 respondents said no.

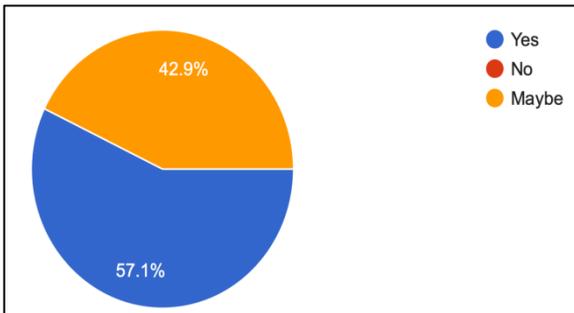
12. Important AI feature in E-commerce platform-



Analysis and Interpretation of Data

The next question was asked that, Which AI personalization feature you consider important in an e-commerce platform. 60.7% said Tailored recommendations based on browsing history, 42.9% said Customized product search results, 21.4% respondents said Personalized email marketing, 35.7% said Dynamic pricing based on individual preferences and 28.6% respondents said Personalized user interfaces is most important feature of AI in e-commerce platform.

13. Enhancement of efficiency of E-commerce platform-

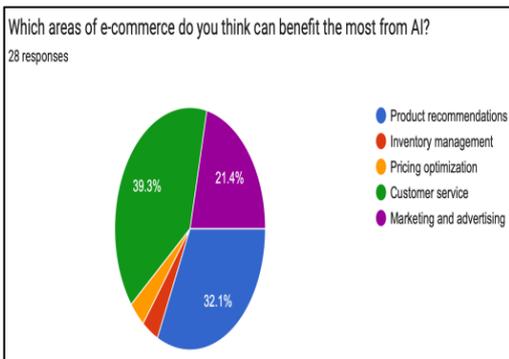


Sr. No.	Responses	No. of Respondents	Percentage
1	Yes	16	57.1%
2	No	-	-
3	Maybe	12	42.9%
	Total	28	100%

Analysis and Interpretation of Data

From the above data and pie chart researcher observed that 16 respondents i.e. 57.1 % believed that AI can enhance the efficiency of e-commerce platform while 12 respondents i.e. 42.9% was not sure about it.

14. Benefits of AI-

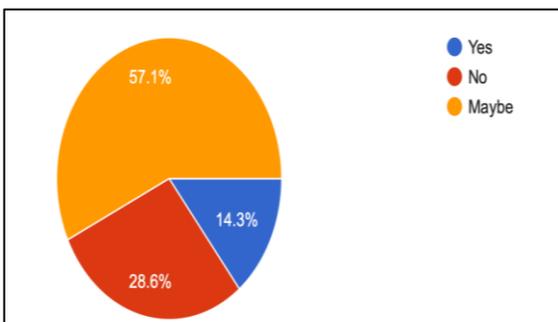


Sr. No.	Responses	No. of Respondents	Percentage
1	Product recommendation	9	32.1%
2	Inventory Management	1	3.5%
3	Pricing optimization	1	3.5%
4	Customer services	11	39.2%
5	Marketing & Advertising	6	21.4%
	Total	28	100%

Analysis and Interpretation of Data

The next question asked to the respondents was, which areas of e-commerce do they think can benefit the most from AI and the results are as follows- 9 respondents i.e. 32.1% think that AI can be beneficial for Product recommendation, 1 respondents each think it is beneficial for Inventory management and Price Optimization, 11 respondents i.e. 39.2% think that AI can be beneficial for providing better Customer services and remaining 6 respondents think that it is beneficial for Marketing & Advertising.

15. Trust On AI for making online purchases-

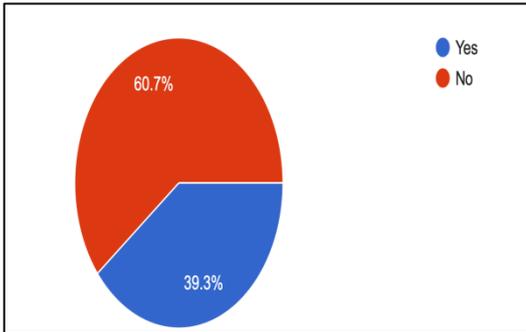


Sr. No.	Responses	No. of Respondents	Percentage
1	Yes	4	14.3%
2	No	8	28.6%
3	Maybe	16	57.1%
	Total	28	100%

Analysis and Interpretation of Data

The researcher asked to the respondents that would they trust AI virtual assistant for making purchases on their behalf. 4 respondents said yes they can trust on AI and 8 respondents said no while remaining 16 were not sure about it.

16. Purchase based on recommendation of AI-

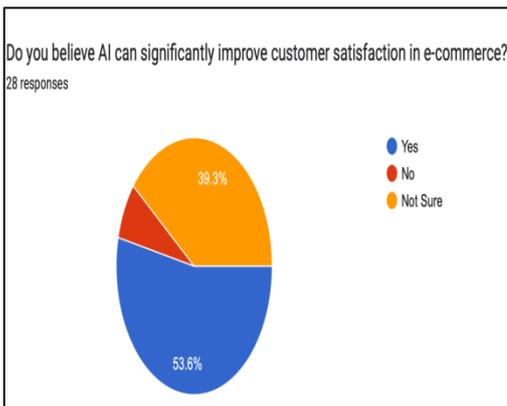


Sr. No.	Responses	No. of Respondents	Percentage
1	Yes	11	39.3%
2	No	17	60.7%
	Total	28	100%

Analysis and Interpretation of Data

Out of all the respondents 11 said yes they had already made purchase based on AI recommendation while remaining said no they have not made yet. So majority of the respondents have not made any purchase based on recommendation from AI system.

17. AI can improve customer satisfaction in E-commerce-

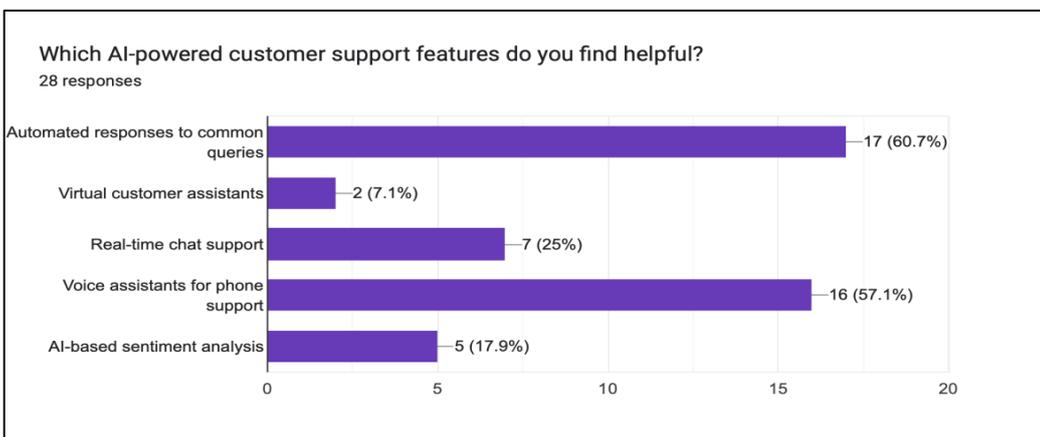


Sr. No.	Responses	No. of Respondents	Percentage
1	Yes	15	53.6%
2	No	2	7.1%
3	Not Sure	11	39.3%
	Total	28	100%

Analysis and Interpretation of Data

Out of all the respondents, 15 said yes to that they believe AI can improve customers satisfaction in e-commerce. 2 respondents said no and remaining 11 respondents were not sure. Maximum respondents i.e. 53.6% believe that AI can significantly improve customer satisfaction in e-commerce.

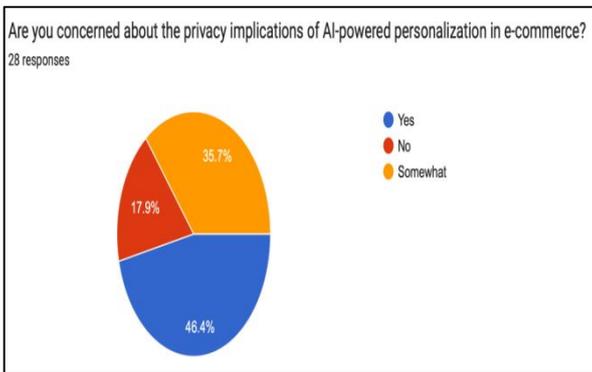
18. Helpful customer support feature-



Analysis and Interpretation of Data

Resercher asked question to the respondents that which AI powered customer support feacture do they found helpful. 60.7 % respondents found out that Automated responses to common queries is helpful feature, 7.1% found that Virtual customer assistant is helpful feature, 25% found that Real-time chat support feature is helful, 57.1% found out that Voice assistant for phone support is helpful feature while 17.9% respondents found out that AI-based sentiments analysis is helpful feature. So maximum respondents found out Automated responses to the common queries is most helpful AI-powered customer support feature.

19. Privacy implication of AI in E-commerce-



Sr. No.	Responses	No. of Respondents	Percentage
1	Yes	13	46.4%
2	No	5	17.9%
3	Somewhat	10	35.7%
	Total	28	100%

Analysis and Interpretation of Data

Research asked to the respondents that are they concerned about the privacy implication of AI personalization in e-commerce. 13 respondents were really concerned about privacy implication, 5 respondents were not concerned while remaining 10 respondents said they are somewhat concerned about privacy implication of AI-powered personalization in e-commerce. So maximum respondents i.e. 46.4% were concerned about privacy implication

FINDINGS OF THE STUDY

1. Maximum respondents i.e 71.4% belongs to the age group of 20 to 30 years.
2. Majority of the respondents were female.
3. All the respondents were well educated as everyone has atleast completed their HSC.
4. Most of the respondents i.e. 64.3% were employed in different sectors.
5. Maximum respondents belongs to the income group of below 3 lakh.
6. Most of the respondents buy cloths or readymaid garments online.
7. 75% of the respondents have interacted with AI -powered chatbots/virtual assistant while doing online purchase.
8. 50% of the respondents said that AI has improved their online shopping experience.
9. More than 70% of the respondents found out Personalized recommendation feature of AI most valuable and Tailored recommendation based on browsing history feacture important.
10. 57% of the respondents think that AI can enhance the efficiency of e-commerce platform.
11. Most of the respondents think that AI can be beneficial for providing better Customer services.
12. Maximum respondents are not sure about trust factor in AI.
13. Maximum respondents think that AI can improve customer satisfaction in e-commerce.
14. Maximum respondents i.e. 46.4% were concerned about privacy implication of AI--powered personalization in e-commerce.

CONCLUSION

The main objective of the research is to examine impact of AI- powered tools on consumer behavior, satisfaction and experience. From the above study and findings the research come to know that AI can enhance the efficiency of e-commerce platform and improve satisfaction. It can be beneficial for providing better customer services. But people are concerned about privacy implication and because of that they are not ready to trust on AI.

SUGGESTION

1. Sample size for the study was very small, so the result might change for large sample size.
2. The study has concentrated only on the operations of AI in e-commerce platforms in general and concentrated only on perfecting client experience.
3. AI is constantly growing, and more and more new operations are being created and developed. therefore, it's necessary to update new thing compass. It's recommended that farther exploration be conducted on other artificial intelligence operations similar as ChatGPT. Also, there are so numerous diligence and areas where being applied AI technologies.

REFERENCE

<https://www.ijert.org>

<https://www.bigcommerce.com/articles/ecommerce/ecommerce-ai/>

Questionnaire for Primary Data Collection.

Survey on Impact of AI on E-commerce

1. Name

2. Age

- a) 20 - 30
- b) 30 - 40
- c) 40 - 50
- d) Above 50

3. Gender

- a) Male
- b) Female
- c) Prefer not to say

4. What is your highest level of education?

- a) SSC
- b) HSC
- c) Bachelors
- d) Masters
- e) Phd

5. What is your occupation?

- a) Employed (Public/Private)
- b) Business
- c) Profession
- d) Unemployed Student

6. Annual Income

- a. Below 5 Lakh
- b. 5 - 10 Lakh
- c. Above 10 Lakh

7. How often do you shop online?

- a. Weekly
- b. Monthly
- c. Once in three months

8. What types of products do you typically purchase online?

- a. Ready-made garments
- b. Medicines
- c. Electronics Devices
- d. Other

9. Have you ever interacted with an AI-powered chatbot or virtual assistant while shopping online?

- a. Yes
- b. No

10. If yes, what was your experience like?

- a. It improve my shopping experience
- b. It hinder my shopping experience

11. Which AI-powered features do you find valuable in an e-commerce platform?

- a. Personalized recommendations
- b. Chatbots for customer support
- c. Visual search
- d. Virtual assistants
- e. Automated fraud detection

12. Have you ever used an AI-powered voice assistant(e.g. Alexa, Google Assistant) to make a purchase online?

- a. Yes
- b. No

13. Which AI-driven personalization features do you consider important in an e-commerce platform?

- a. Tailored recommendations based on browsing history
- b. Customized product search results
- c. Personalized email marketing
- d. Dynamic pricing based on individual preferences
- e. Personalized user interfaces

14. Do you believe AI can enhance the efficiency of e-commerce platforms?

- a. Yes
- b. No
- c. Maybe

15. Which areas of e-commerce do you think can benefit the most from AI?

- a. Product recommendations
- b. Inventory management
- c. Pricing optimization
- d. Customer service
- e. Marketing and advertising

16. Would you trust AI-powered virtual assistants for making purchases on your behalf?

- a. Yes
- b. No
- c. Not sure

17. Have you ever made a purchase based on a recommendation from an AI-powered system?

- a. Yes
- b. No

18. Do you believe AI can significantly improve customer satisfaction in e-commerce?

- a. Yes
- b. No
- c. Not sure

19. Which AI-powered customer support features do you find helpful?

- a. Automated responses to common queries
- b. Virtual customer assistants
- c. Real-time chat support
- d. Voice assistants for phone support
- e. AI-based sentiment analysis

20. Are you concerned about the privacy implications of AI-powered personalization in e-commerce?

- a. Yes
- b. No
- c. Somewhat