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Artificial intelligence integration in online shopping

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Abstract
Artificial Intelligence, (AI) In the E-Commerce Sector, it's less about humanoid robots and more about the educational technology and algorithms that provide the base for AI. AI can help in making data-driven decisions to optimise pricing by helping today's online merchants to deliver optimised customer satisfaction products based on their past behaviour. As a result, customers connect with the right product, in the right place, at the right time to reduce e-commerce returns.
The objective of this paper is to analyse the effect of Artificial Intelligence on the consumers in e-commerce(online shopping) the sample of 40 participants was taken from different age groups: (16-24 years), (25-40 years) and (41-60 years) and the findings were analysed through a One sample T-test between the overall population as well as different age groups and Regression to find the relationship about the usage of e-commerce platforms and awareness about the artificial intelligence used in the digital shopping between both genders.
With respect to the gender-wise analysis, the (t-value) is -0.18469 which is insignificant at p <.01 and <0.5 values respectively. The study also shows that young adults are most skilled in comparison with the other two age groups. They are more prone to use artificial intelligence in every mode of their lives.

Keywords: customer behaviour, online shopping, artificial intelligence

Introduction
Artificial intelligence has transformed over the years in various industries as a high-end technology, with a tendency to replace non-automated industries. Customer service on the cell phone and internet has always been a hand-operated profession, resulting in a huge waste of the human workforce due to the requirement for a one-on-one discussion between experts and consumers. Virtual robot customer assistants are known as chatbots based on artificial intelligence technology.
The NITI Aayog's national policy for artificial intelligence lays out the path forward for harnessing artificial intelligence (AI) capability in a variety of industries. Artificial Intelligence methods and initiatives aid India in solving societal requirements in sectors such as healthcare, education, agriculture, smart cities and infrastructure, including smart mobility and transportation, by utilizing such dynamic data. Electronics were prevalent in practically every produced thing in the globe around the turn of the twenty-first century. Data gathering, processing, and computing power have all advanced dramatically in recent years. Intelligent systems may now be used for a wide range of jobs and decision-making in order to improve connection and productivity [1].

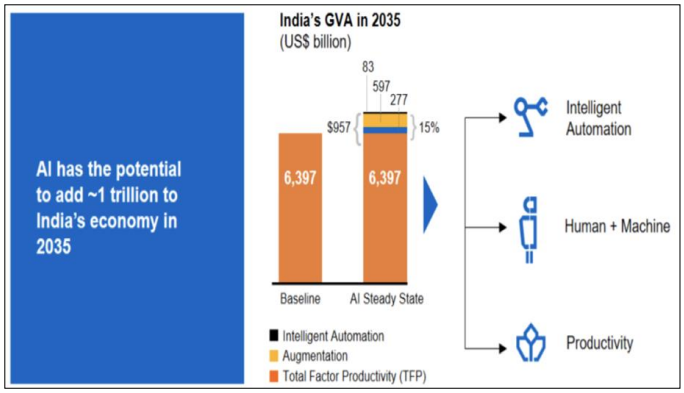

Fig 1

Fostering AI research and application at the national level can be aided by fostering AI within academia. It will push the boundaries of technology by creating new knowledge and developing applications [1].
It is not possible to find any sector which is not touched by AI, the technology ranging from day to day life gadgets to high-end technology products. Robots are performing daily tasks like the consumer can even give

commands to a robotic mop to clean the house. Alexa, Google Home and Siri on our mobile devices are taking commands from humans and performing the simplest tasks also.

On online shopping platforms, there are 24 *7 chatbot assistants. "Chatbots can be defined as a type of software application which makes use of AI to have online chat conversations via text or speech medium with people visiting the website. It is these chatbots which further direct the people to a live human agent who will assist further." Chatbots clear almost 95% of usual questions asked by customers [2].

Artificial Independence helps in sales, for eg If there is an advertisement for women, then it won't appear for men; reduces the advertising expenditures for companies. AI can help in sales forecasting by helping people and experts to analyse a huge volume of customer data so that one can get useful and proper insights regarding the same [2].

AI has become an effective tool for meeting fast-changing customer demand and increasing sales efficiency in the past few years. It helps the online merchants in getting the customer's views and recommendations as the customers have faith in the usage of AI in online websites. They also need to understand how to best employ AI to enhance online spending and buy frequency, since the value of time and cost efficiency in purchasing has lately become increasingly important. In this sense, internet shopping is a handy option for people to purchase the items they want [3].

Many firms, like Nykaa, employ Color Iq, which scans a customer's complexion and gives customised foundation and concealer suggestions, while Lip IQ does the same for finding the appropriate lipstick for the consumer. It saves time for the customers as they avoid trial and error and can choose the right product. Customers will be able to use virtual trial rooms to help them to buy the exact product and locate the proper size and product, which will help to minimise e-commerce returns, enhance retail supply chains, and increase personalization for brand distinction.

One of the most fascinating possibilities will be the ability to shop in the metaverse. As a result, several fashion businesses are exploring methods to participate in the metaverse vision to provide real-time, immersive, and interactive experiences.

Artificial intelligence in virtual reality will provide significantly deeper experiences, in addition to the growing demand for virtual apparel. It will be feasible to establish virtual closets where users may save their existing items and receive fresh and more tailored outfit recommendations, that is technology's endless possibility. AI store assistants will be able to analyse and remember our purchasing patterns, as well as provide us with personalised style advice based on our prior purchases.

AI technologies will improve creativity and deliver never-before-seen retail experiences in the metaverse as they advance. As the digital fashion trend grows, outfit generating applications will emerge as a new industry for metaverse fashionistas to explore. Artificial intelligence-based outfit generating systems will design virtual garments that are distinct from those found in the real world. People in the metaverse would be exposed to whole new fashion experiences if AI algorithms became creative in designing new digital ensembles. One of Myntra's AI efforts aims to create a fashion assistant that can communicate in a common language and make recommendations for different situations. The assistant's first usage would be for assistance, such as (a user asking) where is my order, or (instructing) to cancel the order [4].

Objectives

The sample of 40 participants was taken from different age groups: (16-24 years), (25-40 years) and (41-60 years) which analyzes the impact of artificial intelligence on consumers in e-commerce (online shopping). The study was conducted in the form of an experiment, where the participants were asked to fill an online questionnaire where the findings were analysed through one sample T-test between the overall population as well as different age groups (16-60) and regression to find the relationship about the usage of e-commerce platforms and awareness about the artificial intelligence used in the digital shopping.

Analysis of Questionnaire and Findings of One-Tailed T-Test

A sample of 40 participants was taken to see the usage and understanding of artificial intelligence in online shopping used by males and females of different age groups respectively.

Table 1: One Sample T-Test

Variable	Mean	STD. Deviation	STD. Error Mean	t -value
USE OF OS	1.55	.597	.94	16.241
DISCOUNT	4.05	.932	.147	27.474
AI EFFECTIVE	3.95	.876	.138	28.531
AI FREE	3.85	.802	.127	30.352
RATE	3.60	1.033	.163	22.045
BEST INTEREST	3.40	1.257	.199	17.110
AI PURCHASE	2.50	.679	.107	23.274
AI QUALITY	3.54	.854	.137	25.886
AI ENJOY	3.68	1.047	.166	22.193
AI PRIVACY	2.28	.816	.129	17.631

In the opinion of Table 2, uses a one-sample t-test with the sample of 40 participants and divides them into different age groups from (16- 60) to see the usage and understanding of artificial intelligence in digital shopping in males and females with their means, standard deviation and standard error mean respectively**.**

Table 2: One Sample T-TEST (Different Age Groups)

Age Groups	Mean	Standard Deviation	Standard Mean Error
16-24	69.59	11.2	7.94
25-40	43	5.886	3.397
41-60	31.2	10.375	3.009

Table 3: Anova

		Sum of Squares	df	Mean Square	F	Sig
USE OF OS	Between Groups	9.025	21	.430	1.587	.163
	Within Groups	4.875	18	.271		
	Total	13.900	39			
DISCOUNT	Between Groups	18.525	21	.882	1.033	.477
	Within Groups	15.375	18	.854		
	Total	33.900	39			
AI EFFECTIVE	Between Groups	18.733	21	.892	1.438	.220
	Within Groups	11.167	18	.620		
	Total	29.900	39			
AIFREE	Between Groups	17.058	21	.812	1.818	.102
	Within Groups	8.042	18	.447		
	Total	25.100	39			
RATE	Between Groups	24.933	21	1.187	1.282	.299
	Within Groups	16.667	18	.926		
	Total	41.600	39			
BEST INTEREST	Between Groups	22.725	21	1.082	.501	.935
	Within Groups	38.875	18	2.160		
	Total	61.600	39			
AI PURCHASE	Between Groups	9.125	21	.435	.881	.613
	Within Groups	8.875	18	.493		
	Total	18.000	39			
AI QUALITY	Between Groups	21.900	21	1.043	1.043	.468
	Within Groups	18.000	18	1.000		
	Total	39.900	39			
AI ENJOY	Between Groups	18.900	21	.900	.679	.804
	Within Groups	23.875	18	1.326		
	Total	42.775	39			
AI PRIVACY	Between Groups	15.933	21	.759	1.360	.257
	Within Groups	10.042	18	.558		
	Total	25.975	39			

Findings

The study has taken 10 factors to have a better understanding of the usage of artificial intelligence in e-commerce to know how AI is helping the consumers to continue online shopping-

Usage of online shopping.

Artificial Intelligence (AI) helps in the selection of products in online shopping.

Concerns of the Consumer- (Time Delivery, Return Policy, Review of Product)

Method of payment -(COD, Debit/Credit Card, UPI)

Online shopping offers greater discounts and rewards.

Consumers believe that AI used in Online Shopping would make shopping more effective.

The consumer believes that using AI in online shopping will be free of effort

Rating the experience with Artificial Intelligence online shopping?

AI works in the consumer's best interest

Ability to make online purchases with Artificial intelligence-powered platforms

Perceiving the quality of the products in AI-powered online platforms

Are AI-powered online platforms enjoyable?

Does AI lead to consumers' privacy and data breach?

Null Hypothesis H_0: $u_A = u_B$.

1. There is no statistical difference and relationship seen in the awareness of artificial intelligence used in e-commerce platforms in all the age groups.
2. There is no statistical difference and relationship seen in the awareness of artificial intelligence used in e-commerce platforms in both the genders (males and females) in different age groups.

Alternate Hypothesis H_a: $u_A \neq u_B$

1. There is a statistical difference and relationship seen in the awareness of artificial intelligence used in e-commerce platforms in all the age groups.
2. There is a statistical difference and relationship seen in the awareness of artificial intelligence used in e-commerce platforms between males and females of different age groups.

According to the Null Hypothesis, Artificial intelligence has a greater role in e-commerce. The study examines which gender category has a better understanding of AI. With the data provided above, the survey had 10 factors on which the knowledge of males and females was analysed with their means, standard deviation and standard error mean respectively. With respect to the analysis, the (t-value) is -0.18469 which is insignificant at $p < .01$ and < 0.5 values respectively. In accordance with these values, it is clear that both genders have an equal understanding of artificial intelligence, yet due to the less ratio of sample; the study has failed to accept the null hypothesis and hence there is a Type I Error. Females have few constraints using online modes of shopping. As most females are concerned with the quality of the product, they prefer buying the product in real-time (in front of their eyes). Female respondents believe in buying the products through cash on delivery mode as they have reservations regarding privacy and data breach.

In the age group of {16-24} - (t-value) of -50.75994 and (p-value) being significant at <.01 for a one-tailed test shows how in this particular age group, the respondents have the best understanding of Artificial Intelligence. The respondents are attracted to all the things that AI has to offer in e-commerce. AI helps them to find suitable products and shows a wide range of products from different websites online. AI helps the respondents by providing them with great discounts and offers. And that is why they are always inclined toward online shopping.

Within the age bracket of {25-40}-(t-value) of -26.743696 and the (p-value) is significant at <.01. The study analysed that in this age group, male respondents are somewhat more aware than females of Artificial Intelligence in e-commerce.

However, for the age group of {41-60}-(t value) of -0.93819, is insignificant at $p < .01$. The study proved that the respondents lack the knowledge of using Artificial Intelligence in e-commerce. Although, it seems that this age group relies more on human customer assistants rather than chatbots available online. The standard deviation is more due to the high number of respondents in this age bracket. At present time, the scope of artificial intelligence is less but in due course of time, artificial intelligence will be used in both online and retail shopping; then the respondents will have to learn the usage of AI in shopping.

Conclusion

The study formed its own set of questions and conducted a survey of 40 participants of different age groups and gender, the study shows that young adults are most skilled in comparison with the other two age groups. They are more prone to use artificial intelligence in every mode of their lives. Using Artificial Intelligence on online websites made respondent's lives easier as the information was readily available to them. This study has analysed three age groups (16-24 years), (25-40 years) and (41-60 years), and it was observed that the youngest age group (16-24) has the best understanding of Artificial Intelligence In E-commerce (online shopping) Though, it was also observed that through the guidance of young children around the older generation, a lot of older adults do get inclined to use digital shopping and try to understand how Artificial Intelligence works. This will lead to the minimization of shoe leather costs as they don't have to go to the market every time they have the urge to buy something. They can buy the products sitting in their own home and their convenience. Artificial intelligence provides the option for a wide range of products through various websites for all classes of people.

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