

*Full Length Research Paper*

# **Artificial Intelligence (AI) applications in on-line shopping in India**

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Retailing in India has attracted many global players and has reached nearly 350 Billion USD according to KPMG in 2010. While the retail environment is experiencing a significant growth, Indian consumer tastes and preferences are also changing rapidly forcing retailers to grow in numbers and formats. Technological advances and expansion of internet have also paved the way for electronic retail channels. India, as an emerging economy, offers substantial opportunities for e-retailers. In addition, Internet shopping offering more flexibility, interactivity, customization and low risk during the pandemic reached remarkable popularity in the country. Particularly since the outbreak of Covid-19, major on-line sellers have been attracting more and more customers. In the light of growing on line shopping, retailers have embraced a variety of technologies to engage their customers during their on-line shopping experience. Artificial intelligence is an area which clearly facilitates this for the retailers. In this study, the aim is to better understand how use of artificial intelligence tools during on-line shopping leads to customer satisfaction and loyalty. The intent is to provide recommendations on the most effective Artificial Intelligence tools to use for decision makers at companies and retailers. The scope of the study is artificial intelligence tools used in-on line retail in India.

**Key words:** Artificial Intelligence, on-line shopping, Indian on-line retail market.

## **INTRODUCTION**

Artificial intelligence (AI), as described in the book "Artificial Intelligence: A Modern Approach (AIMA)" (Russell and Norvig, 2020), is often used to describe machines (or computers) that mimic "cognitive" functions that humans associate with the human mind, such as "learning" and "problem-solving". AI's presence in India has been growing so that industries have started investing in AI research and development. According to a study by PwC India (Price water house Coopers Private Limited India, 2020), amidst the global pandemic, India

has noted the highest increase in the use of AI at 45% usage increase compared to developed countries like the US, UK and Japan.

Technological advances and expansion of internet have also paved the way for electronic retail channels. India, as an emerging economy, offers substantial opportunities for e-retailers. In addition, Internet shopping offering more flexibility, interactivity, customization and low risk during the pandemic reached remarkable popularity in the country. Particularly since the outbreak

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of Covid-19, major on-line sellers have been attracting more and more customers.

One channel of retail marketing is the digital/online platform. The e-commerce industry is growing more significant due to enhancements in technology and the global COVID-19 pandemic. This has changed consumer behaviour and forced both the retailer and the shopper to use the available technologies in a short period. Deloitte; in their article "2021 Retail Industry Outlook and the New Rules of Retail" (Deloitte, 2020), foresees that this online shopping preference will remain with us even after all this is over.

In India, the retail industry is one of the largest and fastest-growing industries contributing to more than 13% of countries GDP and 10% of the total employment (Bhaskar and Harshitha, 2017). The large consumer demographics and high domestic consumption in India allow the online shopping industry to flourish. Digital retailing acts as a differentiator and a competitive edge on the growing Indian retail industry. The power of digitization has empowered customers and clients with global access to a wide variety of products and information. In fact, the Indian retail industry, similar to global retail trends, is seeing the expansion of e-commerce in urban areas and reaching rural areas, driven by economical internet options and rural population switching to smartphones (Akamai, 2018).

Further advancements in technology such as artificial intelligence will require the retail industry to adapt and evolve to survive against the growing competition constantly. PwC sees that India's retail and consumer industry is taking initiatives for broader adoption of AI, with 86% of the firms investing in identifying more pilots for AI implementation (PricewaterhouseCoopers Private Limited India, 2020). Currently, the retail industry is leveraging AI to hyper-personalized customer experience, and PwC foresees that AI-augmented customer service chatbots will be the trend in the future.

The research aims to gauge customers' awareness of AI tools and their application in their daily life regarding digital retail marketing. Furthermore, the study aims to analyze the interdependence between usage of AI tools in digital marketing and customer satisfaction/loyalty and measuring a sense of safety among customers.

The key research objective is to better understand how use of artificial intelligence tools during on-line shopping leads to customer satisfaction and loyalty in India. One of the expected outcomes for this study is to provide recommendations about the most effective Artificial Intelligence tools to use for decision makers in on line retail industry in India.

## LITERATURE REVIEW

### Retail marketing

Retail marketing is the different methods or processes

used by retailers to spread awareness about their products to entice people into buying them. Or in other words, they are the methods used to make the people interested in the products and buy them. Retailers promote their goods by using these processes to make the customers interested in trying them. These strategies and methods create the initial interest in a product in the minds of the customers.

The market competitiveness forces routine checking and implementation of new strategies, or else the products will face the risk of being rejected from the markets. Consumers will go looking for alternatives if they feel like they are not getting enough benefits for the money spent. Customers expect the retailers to be ready with products that exceed or at least match their expectations (Wong and Sohal, 2003).

The size of operations and marketing concentration in many industrialized economies has increased dramatically. Each organization has a different way of providing customers with its goods and services. It is refer to it as the 'Format' in the retail situation, which the retailer adopts to meet the final customer (Sinha and Kar, 2010). Companies today face emerging technology, shorter life cycles of goods, globalization, and stronger competition. There are several ways that various retailers do business. For what reasons, a customer today knows which shop to visit. A retailer is mindful of the fact that, through various formats, a consumer assigns different value and significance to a single attribute (Azeem and RRK, 2015).

The e-commerce industry, which was already getting big, has only become much larger with the pandemic that has affected the whole world. Most customers are concerned about the health and safety of their families and have turned to online stores to buy things. The retail industry was also affected by this change in consumer behavior. The pandemic has forced the people to adapt to the use of technology in a short period. The effects of this will remain with us even after all this is over (Deloitte, 2020).

### On-line retail marketing

On-line retail marketing is the entire process of purchasing an item on the internet. This process usually begins when a person looks for a product that they would like to purchase and ends when they receive it, this includes browsing through various options, selecting and paying for the product.

According to Kristensen (2020), e-commerce sales were estimated to reach about 4.2 Trillion dollars in 2020. There are about 2.05 billion people using e-commerce websites to purchase items that they require. Digital retail marketing continues to grow rapidly and is being adopted by most industries. From fashion and cosmetics to the food industry, the presence and need for the adoption of

a digital alternative is becoming more important. In this paper, we will provide further research into digital retail marketing both worldwide and specific to India.

The retail industry is evolving and so are the various retailing options. This is partly due to changing consumer lifestyles and competition in the market. However, a major reason for the shift in technology and its advancements. Many opportunities can be exploited to improve the retail industry. An e-commerce site cannot provide the full integrated consumer experience alone, and neither can the traditional retail stores which are why they must integrate. There are many live examples of this like Amazon's physical stores, H and M online store, and so on (Sheth, 2020).

Further advancements in technology such as the introduction of artificial intelligence, blockchains, virtual reality, and more will require the retail industry to constantly adapt and evolve for them to survive against the growing competition. This movement has already begun as we can experience with the introduction of self-checkouts, artificial intelligence-driven chatbots, and so much more (Sheth, 2020).

Digital retailing has been changing the habit of the consumers and retailers alike and can expand business opportunities for them. There have been different studies conducted by people to explore the impact of digitization on the retailing business and how digital retailing revolves around consumer.

### ***The evolution of traditional retail stores***

Sheth (2020) believe that the retail industry is slowly shifting from being location and convenience-based to providing an integrated value-added service, a large part of this shift has been enabled by technology. He observed that brick-and-mortar stores are shutting down, in part since they can't compete with online competitors. The online competitors have the luxury of being more flexible and adapting to changes in the market faster than the traditional retail stores. The online stores can customize various aspects of the customer experience. The e-commerce merchants can observe every individual customer's behavior and tailor the offers and promotions accordingly.

This is further confirmed by (Saroj, 2018) in his paper, with the introduction of online retail stores, there was a decline in physical stores. The reality suggests that online retail marketing has become an essential mode of retail for Indians.

### ***Impact of technology and digital innovations***

Digital innovations have been gradually transforming the corporate landscape since the advent of the Internet in the early 1990s. Technology has been one of the

governing factors in global growth, globalization, and sales expansion. Technology has made it practical to lower trade boundaries. In context, digital technology in retail is an indispensable tool for forming, supporting, and efficiently meet the requirements of customers with speed, ease, and utility (Gajjar, 2020).

Due to the increase in the use of digital payments and smartphones, online retail will continue to grow. At present, customers are becoming more familiar with online payment methods (Saroj, 2018).

The paper by (Evanschitzky et al., 2020) offers a review of digital transformation research with an emphasis on retailing and consumer-facing digital technology roles, such as customer journey management, on the one hand, evaluating the effect of sensory marketing and the use of service robots, on the other hand, and their strategic implications for business models such as sterilization.

The retailing effect of digitalization revolves around the offered product/service portfolio, as well as discovering new and better ways to manage relationships with clients, staff, suppliers, and other stakeholders in the network. The best-practice examples demonstrate how to give their customers a high shopping experience; certain retailers have continued to benefit from the specific qualities of physical and digital touchpoints. While these two studies offer some answers to the above research questions, further study is needed to better understand the diverse consumer journeys of today and to deal effectively with the emerging digital touchpoints that will emerge in the future (Evanschitzky et al., 2020).

### **Retail industry in India**

In India, the retail industry is one of the largest and fastest-growing industries contributing to more than 13% of countries GDP and 10% of the total employment (Bhaskar and Harshitha, 2017). The large consumer demographics and high domestic consumption in India allow the online shopping industry to flourish. Digital retailing acts as a differentiator and a competitive edge on the growing Indian retail industry. The power of digitization has empowered customers and clients with global access to a wide variety of products and information. In fact, the Indian retail industry, similar to global retail trends, is seeing the expansion of e-commerce in urban areas and reaching rural areas, driven by economical internet options and rural population switching to smartphones (Akamai, 2018).

Further advancements in technology such as artificial intelligence will require the retail industry to adapt and evolve to survive against the growing competition constantly. PwC sees that India's retail and consumer industry is taking initiatives for broader adoption of AI, with 86% of the firms investing in identifying more pilots for AI implementation (PricewaterhouseCoopers Private

Limited India, 2020). Currently, the retail industry is Leveraging AI to hyper-personalized customer experience, and PwC foresees that AI-augmented customer service chatbots will be the trend in the future.

India comprises of 120 million Internet users, compared to the worldwide 1 billion Internet users in 30 aspiring nations (www.mckinsey.com n.d.), and internet access is very high despite the geographic location. Shoppers in India's urban areas have turned to online shopping, seeing as the domestic and cross border online retailers have increased (Akamai, 2018). However, a proportion of the population still doesn't have enough insight into online retailing due to different problems like lack of internet facilities, and lack of trust on payment gateways (Sharma and Gupta, 2017) (Mani Cand G, 2019) inferred that a consumer's trust in their payment methods highly impacts the customer's attitude towards purchasing online, which is why the online retail marketer should ensure that they highlight their payment options and the safety of the consumer's transactions. Despite the above stated, no study has been conducted to explore the "real-time" attitude of the population towards the AI tools in digital marketing and identify factors, that contribute to low levels of sense of safety and lack of trust considering payment methods among the population in rural and urban India.

Furthermore, India is forecasted to the youngest country globally (Saroj, 2018) and 42% of people between the ages of 26 to 30 prefer to shop online. This clearly indicates that young people are more aware of new buying genres and are interested in e-shopping. (Mathur and Sharma, 2014) the independence of gender/age and usage of AI tools has not been yet explored among India's population.

In addition to the aforementioned (Mani et al., 2019) noted that a few of the factors that influence a customer's choice of online store and product are referrals, family, income, age, and gender. However, they stated that the lack of physical contact in e-commerce forces online retailers to analyze their customers' behavior more carefully to understand what influences their choices. It would be very interesting to determine factors that lead to decisions on whether to use AI tools like a virtual assistant, chatbot, online payment etc. among India's general population.

Noteworthy, that in last decade, AI tools have been better integrated into digital retail marketing in India and companies have been using various tools like a virtual assistant, chatbot, and voice search to improve brand recognition among customers and influence their purchasing decision. However, whether the application of AI tools in marketing enhances customer satisfaction and loyalty has not yet been explored in the Indian market.

Therefore, there is a considerable need for surveys targeting the AI phenomena in the Indian market and measuring its application, specifically in digital retail marketing. Studies should be planned to further

reconnoiter the level of awareness of the general public in India on AI tools and their attitude towards its usage. The factors determining the customers' purchasing decisions regarding online shopping should be explored through gender, age, income, and geographic lenses.

### **On-line retail marketing environment in India**

India is currently the fifth largest retail destination worldwide making it one of the most prominent markets. According to (Sharma and Gupta, 2017) e-retailing accounts for 10% of total e-commerce activities in India. India retail business is predicted to roughly double from US\$ 600 billion in 2015 to US\$ 1 trillion by 2020 followed by expansion in sales, urbanization. This is due to the large and growing population of India. (Gajjar, 2020) At present, the big online retailers in India are Amazon US, Rakuten Japan, Flipkart India, Alibaba (Saroj, 2018).

Favorable demographics provide opportunities for online retailers in India. India is forecasted to the youngest country in the world, which means this group prefers online shopping (Saroj, 2018). In the developed world, online shopping is quite common these days than it was about 5 years ago and it is gaining its market in India comprising 120 million Internet users compared to the worldwide 1 billion Internet users in 30 aspiring nations.

The survey has found that 42% of people between the ages of 26 to 30 prefer to shop online; this clearly indicates that young people are more aware of new options for buying genres and are interested in e-shopping (Mathur and Sharma, 2014).

### **Competitive edge and customer satisfaction**

Gajjar (2020) discussed how digital retailing can act as a differentiator and a competitive edge on the growing Indian retail industry. It was noted that online retailing revolves around customer-centric initiatives which include delivery modes, returns policy, customer loyalty programs, and deployment of digital technology to customers in a unified manner.

This means that customer satisfaction is at most important to digital retailing.

### **Government policies**

In India, the government is promoting the use of debit or credit cards for payments which is efficient. The increase in the use of smartphones and online payment applications serves as a convenient cash-free and card-free transaction medium (Saroj, 2018). The Indian government trade policies help in drawing foreign direct

investment (FDI) to the retail sector (Gajjar, 2020).

### **Use of the internet and mobile accessibility**

Due to the increasing use of the internet by people and the accessibility of mobile internet connections at cheaper rates, online shopping habits are gaining rapid market and growing every year. Awareness about digital retail marketing is also increasing (Mathur and Sharma, A Study of Online Shopping Habits of Consumers in India, 2014).

The gap between online and offline modes of marketing is reducing day by day owing to the rapid growth of e-commerce and in particular, mobile e-commerce was the main reason for that (Sharma and Gupta, 2017).

### **Challenges of on-line retail marketing in India**

#### ***Perceived risks***

Mani et al. (2019) researched the perception that the Indian public had towards online shopping. They wanted to verify if the risks and benefits perceived by the consumer had an impact on their attitude towards online shopping and if it affected their shopping behavior while buying products online. They further outlined that the perceived risks that they considered for the sake of this research was: financial risk, product risk, and return risk. Whereas, the benefits were listed as website quality, convenience, trust, and price. They surveyed 680 people in India. From their study, they were able to find that perceived risk has a negative influence on the attitude and behavior of consumers that shop online whereas, the perceived benefits had a positive impact on the same. They confirm that online shopping has great potential if the online retail marketers can ensure the safety of financial transactions, the quality of their products, prompt delivery, efficient customer care services, etc.

#### **Competitive markets**

As observed by Fornari et al. (2018), the online channel has initiated a new cycle in competitiveness among the retailers characterized by shoppers increasing nomadism around physical and digital touchpoints. In India alone, there are many foreign online retailers like Amazon, Alibaba which are already competing with local retailers like Flipkart and Snapdeal (Saroj, 2018).

#### ***Lack of knowledge and awareness***

According to (A.T Kearney and PwC report) India still stands in 5th place which means there is much room for

improvement. A proportion of the population still doesn't have enough insight about online retailing owing to different problems like lack of internet facilities, lack of trust on payment gateways (Sharma and Gupta, 2017).

There is a strong lack of understanding of how modern multisensory technologies could help to simulate service interactions through multisensory representation, with a focus on digital sensory marketing (Evanschitzky et al., 2020).

Mani et al. (2019) and Saroj (2018), also place importance on raising awareness amongst the target consumers about e-commerce. There are various digital platforms available that is, websites, e-commerce, Search engine marketing (SEO and SEA), affiliate marketing, social media websites (YouTube, Instagram and Facebook), Mobile apps, Big data and RFID, AI, and VR that can help the company combat the issue of lack of awareness and can be used to promote a company (Schoni, 2017).

#### ***Trust in payment gateways***

Mani et al. (2019) inferred that a consumer's trust in their payment methods highly impacts the customer's attitude towards purchasing online which is why the online retail marketer should ensure that they highlight their payment options and the safety of the consumer's transactions. This is also reinforced in the above point by Sharma and Gupta (2017).

#### ***Technology***

Saroj (2018) observed in his paper, that there is a slow development in different technologies (like online infrastructure, digital payments). It is known that customers mostly respect recommendations made by service employees, however it is uncertain if advice offered by digital technologies such as robots can impact a consumer's decisions (Evanschitzky et al., 2020).

#### ***Covid-19 and its effects on retail marketing***

As an effect of Covid-19 pandemic, health and safety are the primary purchase drivers for consumers, influencing - what, where, and how of purchases. Adoption of digital and technological tools which would have traditionally taken years has occurred in a matter of months (Sides and Skelly, 2021). The study conducted by interviewing 15 retail executives, 15 retail subject-matter specialists augmented by consumer survey studies revealed how retailers should focus to maximize their investments in 2021. Similar studies conducted by McKinsey and Company also echoed the findings on digital space (Greg and Sajal, 2020).

### **Digital differentiation**

Digital differentiation is the key as all retailers have jumped the digital bandwagon, the key lies in how a retailer can differentiate its digital offerings. The competition does not only lie between the mass merchandisers and other retailers. But the shopper journey begins at the search engines, social media channels and online-only retailers as number of digital native consumer grows. Hence retail marketing is now about forging new alliances and exploring newer business models like subscriptions or memberships to create an omni-channel experience (Sides and Skelly, 2020).

### **Omni-channel customization**

Omni-channel experience where the shopper journey is an amalgamation of channel journeys bases on convenience has led to customization expectations and awareness across the channels. Newer ways of engaging through influencer marketing by livestreams and events is creating ways to increase engagement where person-to-person connection moves online (Sides and Skelly, 2020).

McKinsey and Company (2020) states that the digital and omnichannel penetration has grown by 10% across multiple categories. Countries with moderate conversion rates for online shopping has increased whereas countries with high penetration of online shopping have seen an increase in the share of wallet. Methodology followed in gauging the consumer behaviour is by employing consumer pulse surveys in 45 countries, between June 15th, 2020 and June 21st, 2020 (Greg and Sajal, 2020).

### **Artificial intelligence use in retail in India**

Simulation of the activities of the brain has always been a subject of interest to scientists, philosophers and artists. Theories and mathematics behind artificial intelligence (AI) have existed for quite some time. However, recent advances in computing power have made this subject very real for us (Sudipta, 2018). Things which were only possible in theory now with AI are actual happening, we can now predict things; derive outcomes using powerful AI models.

AI is generally, the computer can do anything as same as the human: it never replaces the human brain. AI's applications seem to rise faster because of multiple factors; the first reason is the Concepts of machine learning, neural networks, big data and artificial intelligence (AI) are shaping new digital consumer worldwide. Through the Internet of Things (IoT), low-cost sensors, mobile devices, one can generate, store, transmit

and process the high volume, high speed and high variety data. It is the third factor (Srivastava, 2018).

The importance of AI in India is increasing from the year 2018 and there is an expectation of an increase in CAGR by 39% from US\$1176 million in 2019 to US\$11789 million by 2025 (Market, January 09, 2020). There are various startup companies, which have emerged in India by 2018. According to a report by Zinnov global management consulting, around 170 startups have received an investment of approximately US\$36 million (Srivastava, 2018).

The opportunity for AI is in over 18 industries in India which includes Bank and finance, Supply Chain, Healthcare, e-commerce and more. (Market, January 09, 2020). Indian IT companies like TCS and Infosys are involved in developing various AI-based solutions for their problems. Government of India is investing in R and D of AI to support the development; that program is called as "National Program on Perception Engineering" (Srivastava, 2018).

### **Applications and opportunities**

Literature reveals that experts are looking for a new set of jobs that will emerge during the process. The newly created jobs required highly skilled workers, so the existing workers would have to be retrained or must go through a transition phase. Artificial Intelligence and computer science differ from each other as AI lays importance on observation and action. Its importance is seen in machine learning. Machine learning in simple terms refers to setting algorithms and coding to the work done as programmed. Biggest examples of machine learning are robots, self-driving car, virtual assistant (Haenlein and Kaplan, 2019).

There is a huge opportunity in the Indian market for AI as they can use talent within the country and can build a successful Information Technology industry. AI can help in important programs of the government of India like Digital India, Make in India, and Skill India. To become powerful in AI, India Development needs to implement it in Applications and Infrastructure, Policy and Regulations, Research and Development and Human Resource Development (Srivastava, 2018). The existing development in the Indian economy is due to integral AI policies in India. The ongoing development of AI is due to innovation encouragement for different technologies (Marda, 2018).

There are several applications for AI in the present scenario, some of them are Healthcare, Education, Cyber Security, Law, Finance, Information browsing, Transport, Virtual assistants, E-commerce, Customer care and Business strategy.

According to Haenlein and Kaplan (2019), in the future, use of Artificial Intelligence will increase fundamentally and will impact firms as well as daily lives. When it comes

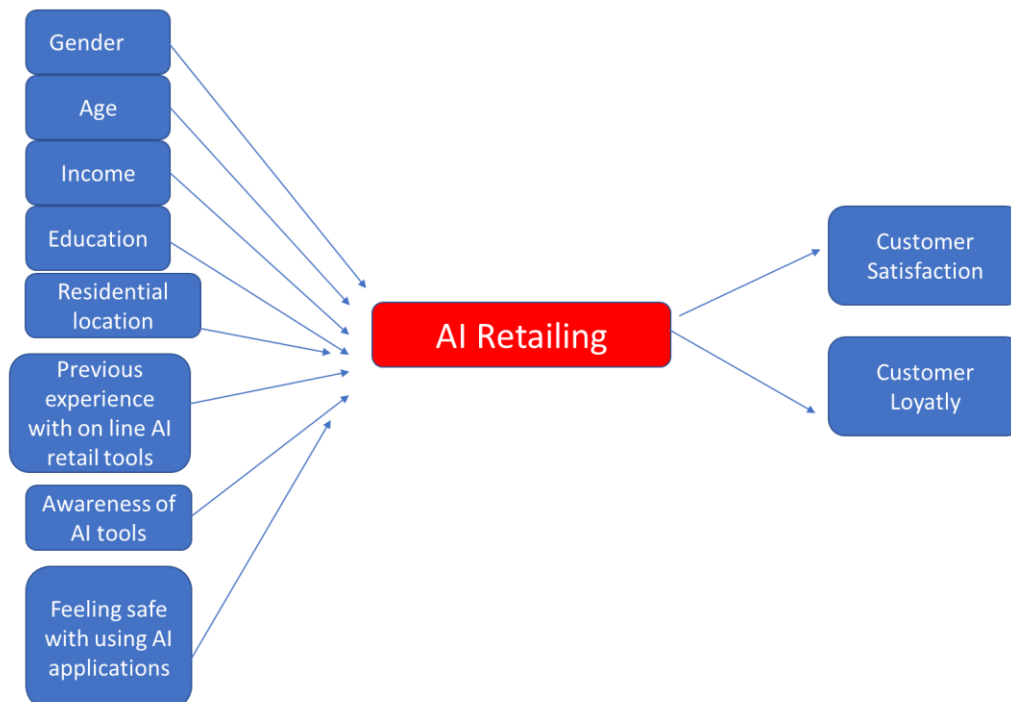


Figure 1. Conceptual model.

to organization, use of AI is seen in the human resource management system. It enables decision making among employees and employers (Haenlein and Kaplan, 2019).

With the increase in accessibility of the Internet in India, there is an increase of 33.5 percent in the Advertising Industry in India as of 2020 with a value of approximately INR 225 Billion. India is also one of the newest and largest growing markets for Digital Marketing (Umesh and IJAR SCT, September 2020).

## METHODOLOGY

This study has been carried out with an empirical, quantitative and descriptive nature. 270 surveys have been completed on line during the month of February to March 2021 in Urban India. The on-line survey was created using the Google Survey platform. Convenience sampling supported with snow ball technique was deployed and the respondents had to be between the ages of 18-40 and regular users of on-line shopping tools and platforms. Data collected was manually coded and ran through SPSS program for Statistical analysis.

In order to answer the research questions, descriptive statistics and correlation analyses were used to conclude with Central Limit Theorem indicators and verify the significance of correlation between variables identified in the conceptual model.

Research questions were transformed into hypotheses to test relationships between different variables and verify below presented conceptual model.

### Research questions

1) What are the advantages and disadvantages of online shopping?

2) What are the leading AI applications that customers are aware of in India?

3) What are the reasons online users in India prefer using AI tools?

4) To what extent does gender/education/income/geographic area/age affect the usage of AI tools in retail marketing by customers?

5) To what extent do customers feel safe using AI tools?

6) To what extent does the usage of AI tools in digital retail marketing lead to customer satisfaction?

7) To what extent does the usage of AI tools in digital retail marketing lead to customer loyalty?

### Conceptual model

The study consists on quantitative primary data collection among on line retail shoppers in India and is of descriptive and causal designed to verify below self-developed conceptual model (Figure 1).

## RESULTS AND DISCUSSION

### Frequencies

90 % of respondents indicated that they are aware of AI tools for on line retail. 64.7% of participants revealed that they have previously use AI tools while shopping on line. A little over 90% of respondents expressed that they moderately use AI tools for on line shopping. Nearly 61% of respondents are aware of chatbots while a significant ratio of 87% is accustomed with on line payment. Google assistant is the most used virtual assistant with over 60%

while electronics and clothing are the most shopped items with 60% + ratings. Respondents also indicated that they prefer paying with debit/credit cards on line with a response rate of 71.4%. In terms of intention to recommend AI enabled on line shopping, the answer was an overwhelmingly in favor (very likely) of it with 92.3%. Respondents did not express a high intention to continue using AI enabled on line shopping in the future with 15% which was very interesting despite their positive experiences. One of the major reasons seems that respondents have privacy and security issues related to on line shopping as the response rate to this matter was 24% with nearly 50% being neutral. On matters of customer satisfaction, respondents indicated that they prefer on line customer satisfaction with 71% but do not perceive it to be an enhanced experienced with only 24% agreeing with the proposed statement. Also participants responded neutral to being a more satisfied customer when using AI enabled on line shopping platform with 49%.

Some other key findings are as follows:

- 1) Gender and usage of AI tools among customers in India are interdependent.
- 2) Age group and usage of AI applications during online shopping in India are interdependent.
- 3) Education and usage of AI tools among customers in India are interdependent.
- 4) Geography and usage of AI tools among customers in India are interdependent.
- 5) AI applications in online shopping platforms increase customer satisfaction.

### Conceptual model verification

R can be considered as one of the qualities of prediction of the dependent variables which in case is customer satisfaction. As R value (0.615) is inclined towards 1 one can say that the model is efficient and reliable.

### Customer satisfaction equation

The overall customer satisfaction can be calculated by forming the equation using this coefficient. The equation can be formulated as follows:

Overall Customer Satisfaction = 1.869 + 0.049\*Age + 0.019\* Annual Income -0.112 \* Gender – 0.0868\* Level of Education + 0.006\* Area of Living + 0.086\* Awareness of AI – 0.176\*Ever Used AI + 0.037\* Hesitant to Use of AI due to Data Leakage – 0.025\* Hesitant to Use of AI due Increase in Financial Risk + 0.566\* Feeling Safe while using AI for Shopping Transactions.

This model is used to predict the loyalty of a customer

towards an online shopping experience that uses various AI applications such as chatbots, voice assistants, etc. Multiple linear regressions have been used to analyze the data since it have a single dependent variable and multiple independent variables. Dependent variables are those whose values we want to predict, and the independent variables are those variables used to predict the value of the dependent variable.

Loyalty of the customers towards AI application while shopping based upon demographics, AI applications, Awareness, Lack of trust of AI technology-based decisions.

### Variables used

Table 1 shows the variables which have been used as dependent and independent variables. These variables were fed into SPSS for analysis and model formation.

**Dependent variables:** After using AI, I intend to continue shopping online with AI.

### Independent variables:

- 1) I feel completely safe while using AI applications for online shopping transactions.
- 2) Annual household income.
- 3) Gender.
- 4) Hesitance in using AI applications in online shopping due to increased risk of financial security.
- 5) Last level of education completed.
- 6) Awareness of AI (Artificial Intelligence) tools for on-line retail.
- 7) Where do you live?
- 8) Have you ever used AI applications (Chatbots, Voice Assistant (Google Assistant, Siri, and Alexa), etc. during online shopping?
- 9) Age group.
- 10) Hesitance in using AI applications in online shopping due to the perceived risk of private data leakage.

### Model summary

#### Observations

Table 2 shows the Model summary. The “R” column is called the multiple correlation coefficients. R is one measure of the quality of the prediction of the dependent variable. A value of 0.668, in this case, indicates a good level of prediction. The R-value can range from 0 to 1 (~ Value near 1 – Good level of prediction, a value near 0 - Not a Good level of prediction) The “R square” represents the R2 value and is known as the coefficient of determination which is the proportion of variance in the



**Table 1.** Conceptual model verification.

Model summary				
Model	R	R square	Adjusted R square	Std. error of the estimate
1	0.615	0.378	0.352	0.706

**Table 2.** Model summary.

Model	R	R Square	Adjusted R square	Std. error of the estimate
1	0.668a	0.447	0.424	0.667

**Table 3.** Statistical significance.

Model		Sum of squares	df	Mean square	F	Sig.
1	Regression	86.740	10	8.674	19.470	0.000b
	Residual	107.367	241	0.446		
	Total	194.107	251			

dependent variable that can be explained by the independent.

### Statistical significance ANOVA<sup>a</sup>

#### Observation

The F-ratio in the ANOVA table (see above) tests whether the overall regression model is a good fit for the data. Table 3 shows that the independent variables statistically significantly predict the dependent variable. Also, the significance level ( $p$  value) as highlighted in yellow is less than 0.05 concludes that regression model is a good fit of the data.

### DISCUSSION

Some additional results of the research should be mentioned and can be summarised as the following:

- 1) AI applications enhance the customer experience in their online shopping, thus leading to loyalty.
- 2) AI Application use in India enhances the customer experience in their online shopping, thus leading to loyalty and further suggesting that consumers will continue shopping online after using AI applications.
- 3) Consumers do feel safe while using AI tools in their online purchase. And overall, Neutral and Disagreeing reactions accounts for 72.6% which conveys that most people do not perceive AI applications as a risk to their privacy.

4) AI applications do not increase or pose security risks according to the survey respondents.

5) Online consumers aged between 18-45 years in India do not perceive AI applications as a security risk

6) People do not prefer live customer interaction over use of online customer service.

7) Online consumers aged between 19 to 45 years in India, prefer support provided online through AI, Chatbots, etc. rather than having a live customer interaction.

8) AI applications usage incidence with online retail AI awareness.

9) Online AI awareness helps to increase the usage of AI applications.

Although much of the initial questions have been answered, following are key areas that need to be considered as limitations of the study and inspiration for further research.

1) The study has been conducted in urban India and may need to be repeated in suburban and rural India to be more representative of the Country socio-economic profile. In addition, random sampling was used to collect 270 where snow ball technique was also applied creating bias in respondents' profile being recent college graduate or current students. The sample size also could be boosted in future studies.

2) The study has been conducted during the Pandemic and respondents are limited to the 18-40 years old. Older generations may have been over looked given their level of education and awareness with internet and on-line shopping.

3) No analyses have been carried out to understand the impact of individual artificial intelligence tools on customer satisfaction and customer loyalty which needs to be investigated in future studies.

4) Based on the literature review, India comprises 120 million Internet users, compared to the worldwide 1 billion Internet users in 30 aspiring nations (www.mckinsey.com n.d.), and internet access is very high despite the geographic location. Shoppers in India's urban areas have turned to online shopping, seeing as the domestic and cross border online retailers have increased (Akamai, 2018). However, a proportion of the population still doesn't have enough insight into online retailing due to different problems like lack of internet facilities, and lack of trust on payment gateways (Sharma and Gupta, 2017) and (Mani et al., 2019).

## Conclusion

The loyalty model has been verified. Since the R-value is inclined to 1, and can be said that the model is an appropriate fit. A multiple regression model was used to analyze loyalty based on demographics, AI applications, Awareness, Lack of trust of AI technology-based decisions. These variables statistically significantly predicted loyalty towards usage of AI applications while shopping online. A general form of equation for finding loyalty can be formulated as below:

$$\text{Loyalty} = 1.444 - 0.005 * \text{Age} + 0.019 * \text{Annual Income} - 0.121 * \text{Gender} + 0.027 * \text{Last Level of Education} + 0.038 * \text{Area of Living} + 0.107 * \text{Awareness of AI} - 0.228 * \text{Usage of AI} + 0.074 * \text{Hesitant to Use of AI due to private data leakage} + 0.063 * \text{Hesitant to Use of AI due to increase Financial Risk} + 0.578 * \text{Feels Safe while using AI for Shopping Transactions}.$$

## CONFLICT OF INTERESTS

The author has not declared any conflict of interests.

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