

# *The confluence of AI and retail: a case study of continuous transformation*

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# The Confluence of AI and Retail: A Case Study of Continuous Transformation

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**Abstract:** Evolving digital technologies and unprecedented competition generates numerous challenges to traditional retailers. The emergence of innovative business models in the competitive surroundings disrupt the retail industry. The main objective of the present study is to evaluate the challenges in adopting AI in the retail and influence of AI such as a footfall counting system on consumers' purchasing decision and performance are investigated. The theory of disruptive business models are analysed to identify the key disruptors. The present study executes mixed method approach, where quantitative analysis use SPSS and qualitative analyse data using thematic analysis. This method employs interview form to gather data. The current study implements quantitative analysis employing the SPSS software and survey method is adopted to collect data from the retailers using a structured questionnaire. Purposive sampling approach has been embraced for analysis. The intention behind the technique is to collect data related to the perception of retailers concerning the adoption of AI in the sector of retail. Descriptive statistics, ANOVA, correlation and one sample T-test are performed in research. The outcomes of the study reveals the impact of digital technologies on the improvised consumer experiences, growth and sustainability in the retail sector. Furthermore, the study also evaluate the challenges faced in implementation of the digital platform in the retailing. And also recommend the retailers to implement an effective framework in the retail industry to enhance customer satisfaction. Finally, the research study aids the retailer to achieve the sustainable business strategy in the competing business environment through AI.

**Key words:** Artificial intelligence, Customer, Retailers, purchasing decision, Consumer experience

## 1. Introduction

### 1.1 Theoretical Background

Artificial intelligence (AI) is an innovative technology across the world in various industries, revolutionizing the approach business interact with consumers and operate in the market (Duan, Edwards, & Dwivedi, 2019). In industrial revolution, the retail sector also significantly evolved. First, customers enjoyed low-price products in the retail 2.0 and thus, more shopping stores were opened. In retail 3.0, customers enjoy online purchasing globally using the internet and consequently shopping behaviour of people has changed as shopping is possible without visiting stores in person. The next change in retail improves and simplifies the lives of consumers. Retail 4.0 include technologies such as internet of things (IOT), AI, big data analytical and cloud computing. AI has potential to replace workers in some jobs, while office and home application are managed through mobile apps due to IOT applications. All these technologies were introduced to satisfy consumers' demand. Hence, the present retail sector is an integration of innovation, people and technology with enormous advancements, converting systems to smart and intelligent establishments. The advancements help the customer in shopping irrespective of crisis without recognizing the variation among online

retail and physical stores, as several technologies have implemented in the offline and online shopping stores for better customer experience. This dynamic evolution in shopping behaviour has made the retailers to realize that technologies has a major part in enhancing customer experience, business performance and competitive advantage (Har, Rashid, Te Chuan, Sen, & Xia, 2022).

AI is considered as a disruptive innovation that has offered momentum for a transformation in various industry through many rapid advancement for last decade. Even though, AI is around for many years, it has become famous lately (Duan et al., 2019). As, AI create value for business through supporting the retailers to forestall future promotion, demands, services, and good delivery to the consumer. In the retail sector, AI assists retailers in expecting consumer demand, customer engagement, personalisation, price optimization and store operation automation. AI has increase stock reduction, efficiency and online sales for retailer who adopted AI tools. In retailing, AI has a disruptive part and consumers expect AI oriented online purchasing choices and suggestion in physical store. Advantages of AI automation and technologies in retailing are for new and branding consumer recruitment, personalisation, loyalty, predicting demand, planning for supply chain, enhancing advertising, marketing and merchandising, increasing customer engagement and efficiency in offering service. AI-based techniques and technologies such as Chatbots, Robots, bots, virtual reality, computer vision, machine

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learning, augmented reality, deep learning along with IOT change the in-store as well online retailing environment (Pillai, Sivathanu, & Dwivedi, 2020).

After recognizing the fact that consumers are reporting high level of acceptance towards AI-based tools and technologies such as assistant, the rise of AI has created challenges and opportunities for companies across the various sectors including retail and cornered retailers to accept the change. Especially, The global crisis has pushed many organisation to quickly make investments in AI to improve firm's logistics, customer management and manufacturing (Bonetti, Montecchi, Plangger, & Schau, 2023). Huge platforms such as Amazon has created business and replaced physical stores. Thus, an important role of AI's disruption contributes to a changes in productivity among competitors. Moreover, retailer without AI system find difficult to process and collect a large amount of data from a diverse of sources like customer reviews, interactions, purchase and websites (Mahmoud, Tehseen, & Fuxman, 2020). As retailers are busy and rapidly make distribution channels, ignore to optimize the consumer shopping experience. Consequently, retailer took initiative to implement AI technology to fix unsatisfied customer during purchasing and emphasize a form of value in purchasing experience (Lu, Cheng, Tzou, & Chen, 2023). Retailers reluctant to adopt AI has been in competitive disadvantage since, ability to predict consumers precisely and timely is possible with AI systems.

AI supports retail system to collaborate in order to enhance inventory engagement, predicting, customer experience and much more. AI offer retailer almost real time intelligence. Analysis can provide new business perception. Intel technologies enables intelligent display advertisements, improved inventory control, endless kiosks, automated self-checkout and smart shelving (NAGAMALLESWARA, Srinivas, Challa, & Narayana, 2023). Voice assistants and chatbots are information system of AI technologies which has capability to replicate human intellect. Since, systems are automated, assistance are provided to consumers effectively regardless of time and enhance the in-store purchase experience while also decreasing the burden of employees (Kamoonpuri & Sengar, 2023). Chatbots has significant influence through addressing deficiencies and problems in online retailing and mitigating the objective nature and threats associated with purchasing. This AI technology enhances the effectiveness and efficiency through substituting and complementing employees using technology based learning that makes workers important for advancing experiences in service.

Retail chatbots offer innovative methods to purchase using a conversation medium which captures the user's

attention and encourage more consumer to browse, offering with information related to products. In addition, attempting in several ways to sell the purchases (Chen, Le, & Florence, 2021). Physical and digital shopping channels operate and use different approaches, with AI, online and offline retail can be synchronized. There are various features regarding AI in the business to sustainably perform. Hence, the present study emphasis on a significance of implementing AI in retail along with challenges and its association with consumers.

## **1.2 Significance of the study**

Retailers embrace advanced technologies to obtain a competitive edge through ensuring effective processes. Inventory management has a vital role in the industry and technology significantly change the way retailers handle their inventory. Adopting technologies such as operating systems and software is essential for staying relatable in a rapidly changing industry to connect with customers effectively. AI models rapidly integrate new data and forecast changes in consumers to find demand changes, behaviour and pattern. Exploring the confluence of AI and retail is important because of practical advantages and threats associated with integrating AI in the retail industry. The present study highlights the benefits and challenges that arise from implementing AI in retail, emphasizing the significance of employing AI in business. The confluences demonstrates the revolution in sales representing how AI transform customer experience and retail operations. Moreover, the synergy among retail and AI can improve consumer experiences particularly AI based applications such as personalised customer service, predictive analytics, cashier-free checkouts, demand forecasting and more. Overall, studying the integration of AI in retail sectors enables opportunities to use AI power, customer interaction and revolutionizing work processes.

## **1.3 Problem Identification**

Technology is transforming many industries including retail. It is essential that organisation stays updated with rising enhancements and change technologies. AI helps retailers to offer better customer experience. Development limits from decreasing purchasing time with automated checkouts to several personalised offers to provide anytime service with chatbots. AI suggests best location to place the products in retail store which ensure the consumers' revisit to the shop. Not understanding the confluence of AI and retail can result in potential disadvantages and missed opportunities in the retail industry. The lack of examining integration of AI in the retail sector may lead to fail retailers in leveraging the benefits of AI integration like enhanced consumer experience, optimised decision making procedure and increase operational efficiency. In addition, without a better understanding of the risk and challenges associated

with employing AI in retail, business may even face obstacles in embracing to technological advancement and maintaining competitive advantage in the market. Furthermore, neglecting the exploration of AI integration in retail could hinder retailers from adopting innovations, meeting evolving customer demands effectively and optimizing processes. Thus, the present study examines the confluence of AI and retail.

#### 1.4 Objective of the research study

The present study emphasizes to evaluate the confluence of AI and retail industry. The research objectives of the current study are,

- To overview the significance of implementing AI in the retail sector.
- To evaluate the challenges of integrating AI and retail in the digital world
- To assess the relationship of AI and purchasing decision of consumers in the retail sector
- To recommend the framework for the effective implementation of AI in the retail sector

#### 1.5 Research Hypothesis

##### Hypothesis 1

H1: The implementation of AI has positive impact on the retail sector.

H1<sub>0</sub>: The implementation of AI has no positive impact on the retail sector.

##### Hypothesis 2

H2: Challenges of integrating AI and retail are prevalent in the digital world.

H2<sub>0</sub>: Challenges of integrating AI and retail are not prevalent in the digital world.

##### Hypothesis 3

H3: There is a significant association among AI and purchasing decision of consumers in the retail sector.

H3<sub>0</sub>: There is no significant association among AI and purchasing decision of consumers in the retail sector.

#### 1.6 Paper Organisation

The paper is organized in the following order in which Section 1 provides elaborated introduction regarding the benefits of merging AI in the retail sector. Furthermore, the introduction section illustrates the significance of research. In section 2, prevailing research works related to current study will be reviewed. The current study's research methodology will be elucidated in the section 3. In section 4, the outcome of the analysis will be discussed. In section 5, the outcome of the analysis will be discussed with existing studies and limitation of the present study

will be elaborated. Finally, in section 6, the brief conclusion regarding the current study will be discussed along with future recommendations.

## 2. Literature review

The existing study (Srivastava & Pal, 2024) determined to measure the significance customers attach to AI attributes such as face recognition, chatbots, smart parking, cashier-free retail stores and virtual fitting room. The prevailing study examined the particular purpose of implementing these attributes for shopping. An experiment method named conjoint was implemented using fractional design and consumers were provided with 14 profiles consisting AI attributes with its ranges to rank based on their visiting preferences. The findings of result demonstrated, retail chatbots has attained the first rank and a most significant attribute. The found rank order was face recognition, virtual fitting, smart parking and cashier free retail stations. Customers prefer chatbots and face recognition in the stores for service. The study concludes, consumers significantly varies in preferences regarding AI-based features.

Aside from the sheer speed and business intelligence, AI technology has ability to offer the digital transformation in the industry is setting effective business compared to unproductive companies. The existing study (Fu, Chang, Lin, Teng, & Huang, 2023) examined the selection and evaluation mechanism for effective adoption of AI technology in the sector of retail. The identification of factors and multifaceted measurements allowed retailers to implement AI technology successfully and maintain a competitive advantage. The study implemented quantitative research approach and collected data through survey method from senior managers of retail stores using questionnaire. The outcome indicated, major factors for the adoption of AI in the retail. The high management focus more on factors associated with business performance compare to internal functional efficiency. The study determines, retailers are more concerned on organisation and technology matter which are under retailer's limit rather than concentrating on other environmental aspects which are uncontrollable factors in the business.

Retailer always seek ways to stay competitive in the market. To boost interest, retail are expected to differentiate products and provide customer compelling experiences and service. Through integrating varies technologies to understand more market perception, retailer lead with new innovations. The existing study (Calvo, Franco, & Frasquet, 2023) explored the significance of AI in configuring and improving the Omnichannel consumer experience. The prevailing study implemented explorative design and collected data from 82, which included retail managers in high position,

Omnichannel consumers and AI consultants through in-depth interview. The outcome demonstrates, AI in Omnichannel has association with customer experience through flexibility, consistency and personalisation. This proves, influence of AI on customer experiences which paved the way for better understanding of customer experience and AI in retail.

AI creates better demand prediction. Through mining perception from consumer, competitor and marketplace data. AI tools predict marketplace shift and make changes to strategies, marketing and merchandising. The existing study (Cao, 2021) explored AI benefits to retailer including strategies, offering solutions and value creation. The study used grounded theory of multiple case analysis from 54 AI implemented and adopter retailers from a period of 2008 to 2018 to examine the organization's AI benefits. Resulted, 5 strategies for AI based data management were found and 28 AI solution which influenced business's process involving the four logic creation such as hyper-personalisation, automation and complementarity. The study concludes, retail managers develop a better strategies while adopting AI in business.

The transformation to retail industry is the future of business which utilized digital technologies such as augmented reality assistance for shopping to improve consumer shopping experience. Though, The conventional study (Zimmermann et al., 2023) determined to investigate the influence of smart phone augmented reality purchasing assistant application, that are used for personalised suggestions along with explainable AI features on consumer shopping experiences. The mixed methodology was employed which includes both qualitative and quantitative approach. Considered online experiment with 252 respondents. The finding of the analysis resulted, augmented reality assistant for shopping has positive influence on customers' perception of in-store shopping experiences. The prevailing study demonstrated, shopping assistant offers a better opportunity to improve customers' purchase experience as it provides recommendations to make decisions in shopping.

AI in e-retailing allows to enhance customer satisfaction along with understanding the consumer requirement better, resulting to increased adoption of technology among consumers. Managers utilize AI technology to forecast customer buying behaviour precisely and enhance the service. The existing study (Bhagat, Chauhan, & Bhagat, 2023) determined to explore the features affecting AI practical implacability and its influence on customer's purchase intention in online platform. Implemented a technology model to explore various features affecting customers' purchase intention in e-retailing. The model demonstrated the integration of AI in retailing through business organisation. Furthermore,

examined subjective norms, consciousness and faith as constructs that improve the AI implacability. The outcome revealed AI positively impact customer's purchase behaviour. The consciousness towards online shopping influenced customer to analyse and shop the products on grounds of usefulness and merit of the items.

Many technological advancement such as self-service AI and technologies are disrupting the retail sector through changing purchase and consumption habits along with entire retail experience. There are some risks and threats associated with AI implementation. The conventional study (Giroux, Kim, Lee, & Park, 2022) focused on examining the ways individuals morally act towards AI and self service agents. In addition, the study demonstrated customers' moral behaviours and concern differences during interaction with humans vs. technologies. Experiment method was applied through considering different sample sizes and method for analysis. The findings determined AI technologies assist in decreasing operating prices which led to a positive result for customers through increasing competency and efficiency. However, people are most likely has low moral standards towards AI technologies compare to humans. More human-like machine has a significant impact on moral standards than non-human like machines. This concludes, consumers' has different moral and social standards towards human vs. technologies.

#### **Research Gap:**

- The existing study (Zimmermann et al., 2023) has limited evaluation approach to online and not discussed the actual utilization of the technology in physical stores.
- The existing study (Giroux et al., 2022) has limited data collection through offering experimental scenarios in digital platforms and not deliberated regarding realistic AI manipulation.
- The existing study (Cao, 2021) has limited to secondary data and not considered primary which may have contributed for better understanding.

### **3. Research Methodology**

#### **3.1 Research Design**

The research design is deemed as the implementation of several processes, instruments and procedures to attain data for the purpose of research. The complete framework and the research flow of the current study is uncovered in the design. The research design is stated as the complete structure or plan which leads the conducting research process. It is a precarious component of research and provides an outline for how a study has been carried out,

containing the techniques and methods that are applied to analyse and congregate data. A well-organised research study is important for determining the research objectives are acquired and the outcomes are reliable and valid. It incorporates the suitable way of approach for the current research through answering the questions (Baur, 2019).

The current study utilizes quantitative and qualitative research approach as one in implementing mixed methodology for congregating data. Quantitative through a questionnaire and qualitative using interview questions. The research instrument utilized in this current study is questionnaire and interviews. It helps to capture the data regarding the confluence of AI and retail. The present study utilize quantitative research methodology for collecting data using questionnaire (Alber, 2020). The questionnaire framed will be on basis of study variables and questions to execute the analysis (Mohajan, 2020). The questionnaire is the process method in primary data accumulation to conduct a survey. Primary data collection provides researchers to have charge over the whole process of collecting data from planning methodology of the research to choosing the sample size and gathering the data. The quantitative research conduct survey using questionnaire to gather primary data from retailers (Sürücü & MASLAKÇI, 2020). Subsequently qualitative method provides deep understanding of the research study problem and data of qualitative approach gives a depth to study (Dawadi, Shrestha, & Giri, 2021).

### 3.2 Study Area

The research is accompanied retailers who are enthusiastic in the participation of the interview and survey. It helps for productive accomplishment of the current research. The interview and survey is held with the support of the respondents. The individuals who participated in the interview and survey for this research are people functioning in the retail industry. This will improve the significance of the research purpose. Hence, this makes the process of collecting data easier.

### 3.3 Sample Size and population

Sample size is referred as the number of observations or respondents involved in the study. The strong research design requires determined precise size of the sample. Instead of selected sample size, the final sample size decides the information's value for the quantitative method. For any sort of study, the size of sample must be decided critically with a perception of obtaining precise and generalized result (Stratton, 2021). In the present study, the appropriate sample engagement will be selected to extent of getting the information related to intended objective (Lakens, 2022). Sample unit is regarded as extraction of smaller group of data from population for the research sample. Similarly, the current study collect data

from 100 participants for quantitative and 9 respondents for qualitative to gain information regarding the confluence of AI and retail. Proper selection technique is a very important role in research (Berndt, 2020). The researchers congregate and examine the data and then define the conclusions and hypotheses that depend on trends and patterns examined from the data. The aim is to collect the empirical indication and processing for the research. This approach is applied often in descriptive or exploratory research, the aim is to collect information and produce new insights without restricting the existing concepts. Examples of sampling such as opportunistic and convenience sampling (Farrugia, 2019).

The current study applies purposive sampling method to select respondents. The purposive sampling select a sample in accordance with the relevant experiences and information to the research purpose. It consist of choosing cases or participants for the research depends on the precise characteristics or criteria that matches the research objectives (Campbell et al., 2020).

### 3.4 Research instrument

The current study will accumulate data with the aid of structured questionnaire from retailers for quantitative approach. The questionnaire method is the straight and easiest way to gather data from the chosen participants. In this technique, the respondents are conferred with a list of questions with connected recommendations to guide them to select. The current research embraces the questionnaire method to gather data. These mode is commonly applied to evaluate the quantitative data. The questionnaire is categorized into two types namely a structured questionnaire and unstructured questionnaire. Hence, the present study embrace a structured questionnaire to collect data from the carefully chosen respondents. The present study also use interview questions to accumulate data for a qualitative approach.

### 3.5 Data Analysis

Mixed Method approach involves gathering, analysing and interpreting both qualitative and quantitative data in one research study. The research phases are synergistic with qualitative phase impacting the quantitative phase or vice versa. This approach gives outcomes in a comprehensive accepting of the occurrence under research because of the combination of qualitative and quantitative data. This research approach is suitable for research with a purpose of explaining or describing in detail.

Quantitative approach is the type of research method that involves collecting numerical data and scrutinizing the data according to the research purpose and hypothesis testing. It is regarded as the systematic phenomenon for congregating data and executing statistical &

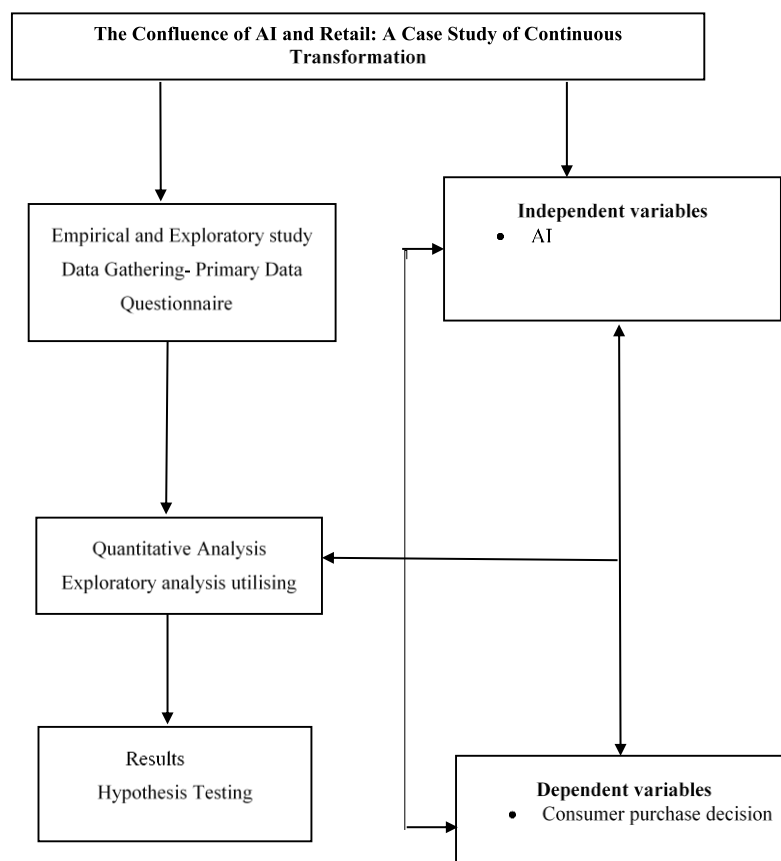
mathematical technique. The key purpose of quantitative method is to examine the correlation between study variables and offer anticipated results (McLeod, 2019). This technique is applied to gather data from respondents and define the outcomes to targeted population (Dzwigol, 2020). The quantitative approach collects data from the participants through a survey, face-face interviews, close-ended questionnaire and online polls from a huge circle. The Likert-Scale and various forms in the questionnaire are employed to analyse the results of the participants. The quantitative method reveals the result of the gathered data in numerical value. The quantitative method generates reliable and accurate results.

The quantitative data analysis method is used for current study and analysed data which has been gathered using a structured questionnaire from sample respondents. The data are recorded utilizing Excel sheet for revealing study variables. The software tool known as SPSS is utilized for analysing the study variable in Excel sheet. The outcome of the study is estimated using approaches known as ANOVA, One sample T-test and correlation test.

Qualitative methodology is defined as the market research analysis, which targets on gathering data through conversational and open-ended communication. It is multi-method in a focus, naturalistic method and involved as an interpretative method to its subject matter (Maxwell, 2021). This meant, qualitative scholars study the things in

natural settings, trying to create a sense of it, to interpret or in phenomena in the forms of meanings where the people bring to them. A qualitative analysis focuses on inappropriate and insubstantial data, which is difficult to collect and measure. In general, a qualitative analysis is descriptive nature and used to estimate the subject quality rather than subject quantity. It is also defined as categorical analysis where the data can be partitioned or grouped depending on the categorizations. This kind of analysis is worked with descriptions not in numerals in the estimation.

Qualitative analysis gather data analyses and interpret from people response (Kandel, 2020). The qualitative methodology embraces the interview process method to collect data regarded to the research variable from the selected respondents. In-depth interview is used by researcher to ask a question among particular respondents either through face-to-face interview or mass communication for revealing the information regarding the research topic. This interview instrument is used to collect descriptive data for research. The data gathered through the interview are examined with the aid of thematic analysis. This methodology described the participants' emotions, opinions, meaning and experience in a descriptive manner. It is related as the research of one's meaning or cases that provides data regarding to the respondents.





SPSS software is a familiar software due to some general characteristics including user manual. This is well-documented, uncomplicated to observe the instruction simplicity and its language. In SPSS, the basic functionalities conferred is a statistical program, which is intended for quantitative data analysis. This includes modeller programming, text analysis, bivariate statistics, cross-tabulation and frequencies of the survey. With the help of SPSS (Statistical Package for Social Science) software, the result of the present study will be effective for verifying the study variables. The progress incorporated in the current study is demonstrated in Figure 1. The result of the study variables' frequency will be established in the tables and figures whereas frequency test, regression evaluation, and ANOVA evaluation will be

performed to evaluate the designed hypothesis of the present study.

In Thematic analysis, the responses from the interview is analysed based on the questions asked to them. The important keywords are obtained based on the responses of the interviewee. Each question and the obtained keywords from the respondents are related to the current study on the confluence of AI and retail.

4. Results

4.1 Demographic data

100 retailers are considered as the participants in the present study survey. The demographic particulars of the contributors are illustrated below:

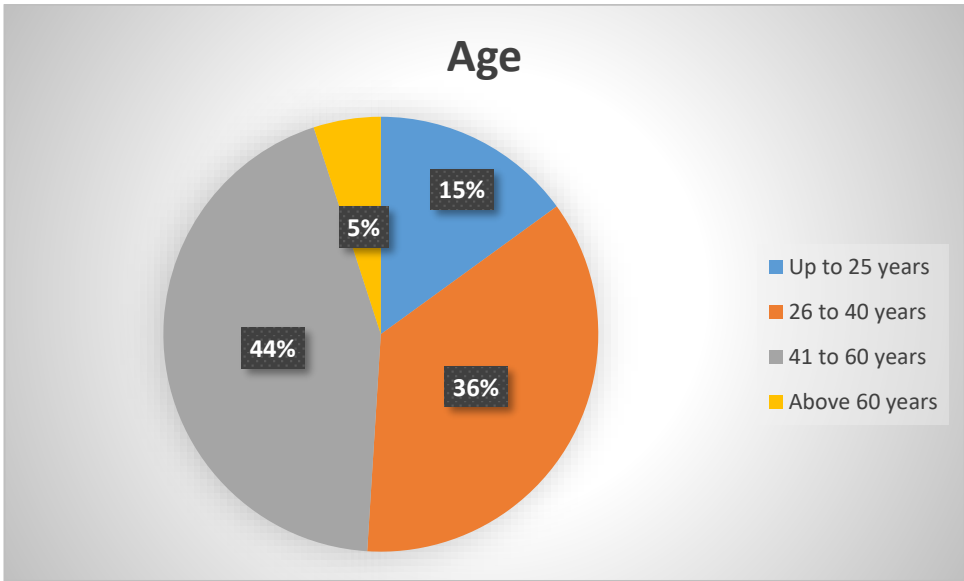


Fig 1 Age

Figure 1 illustrates age of the retailers. Most of the respondents are from age group of 41-60 old years. This group contributes more for the research study compare to

the other age category. Such groups share more knowledge regarding the convergence of AI in the retail industry.

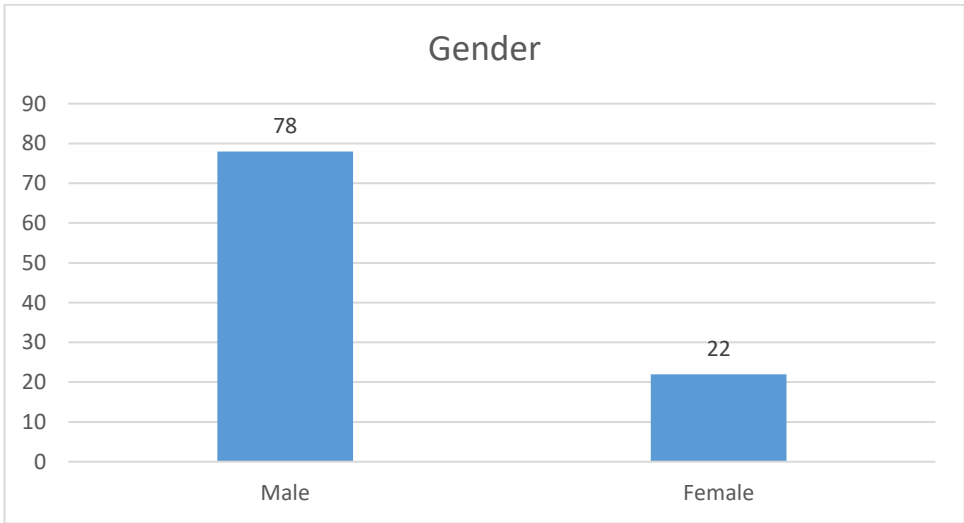


Fig 2 Gender

Figure 2 demonstrates gender of retailer participated in the survey. Many of the participants are male and this group contributes more for the research study compares to

## 4.2 Statistical analysis

### Hypothesis 1

**H1: The implementation of AI** has positive impact on the retail sector.

**H1<sub>0</sub>: The implementation of AI** has no positive impact on the retail sector.

female retailers. Their contribution enhances the research to be more precise and accurate.

### One-way ANOVA

It is utilized for determining the impact social media and research objective on dependent variable and also to investigate the variation (Liang, Fu, & Wang, 2019). The current study adopted one-way ANOVA for evaluating the impact of AI in the retailer sector.

**Table 1** Descriptives  
Best possible customer experience

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Strongly Agree	47	1.72	.926	.135	1.45	2.00	1	5
Agree	31	1.94	.727	.131	1.67	2.20	1	5
Neutral	11	2.36	.674	.203	1.91	2.82	1	3
Disagree	8	3.00	1.195	.423	2.00	4.00	1	4
Strongly Disagree	3	1.67	.577	.333	.23	3.10	1	2
Total	100	1.96	.920	.092	1.78	2.14	1	5

**Table 2** ANOVA

	Sum of Squares	df	Mean Square	F	Sig. (S)
Between Groups	13.353	4	3.338	4.499	.002
Within Groups	70.487	95	.742		
Total	83.840	99			

The table 2 illustrates the significant influence of AI in the retail sector. The above table also demonstrates AI provides better customer experience through decreasing the purchasing time with help of automated checkouts to personalised discounts with chatbots. The p-value of the analysis is .002. The outcome of one-way ANOVA demonstrates that the integrating AI in retail has a significant impact on the sector.

**H1: The implementation of AI has positive impact on the retail sector** is proved from above analysis.

### Hypothesis 2

**H2: Challenges of integrating AI and retail** are prevalent in the digital world.

**H2<sub>0</sub>: Challenges of integrating AI and retail** are not prevalent in the digital world.

### One Sample T-test

T-Test is defined as a numerical test applied to compare the significant means of two sets of data. It is generally used to test the hypothesis mean values based on the dependent and independent variable.

**Table 3** One-Sample Test

Test Value = 0					
t	df	S (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
				Lower	Upper

AI learning models create new vulnerabilities and AI systems being prone to unexpected errors or undetectable attacks. Collecting and using personal information for marketing purposes has always raised privacy concerns, but these concerns are growing in AI contexts.	19.772	99	.000	2.070	1.86	2.28
	19.193	99	.000	2.040	1.83	2.25

The table 3 determines the difficulties in implementing AI for retail business. The above table demonstrates the vulnerabilities of AI such as being prone to cyber-attack and privacy concern. The T-test determines the p value is .000. The result of the analysis proves the prevalence of challenges in integrating AI into the retail sector.

**H2: Challenges of integrating AI and retail are prevalent in the digital world** is proved from the above analysis.

### Hypothesis 3

H3: There is a significant association among AI and purchasing decision of consumers in the retail sector.

H3<sub>0</sub>: There is no significant association among AI and purchasing decision of consumers in the retail sector.

### Bivariate correlation

Bivariate correlation is generally used to define the consequence that two or more phenomena happen at the same time and hence they are associated.

**Table 4** Correlations

		Insights into consumer buying behaviour are the foundation on which marketers rely to determine marketing tactics and forecast sales.	AI relies on such insights to provide retailers with product presentation and cataloguing recommendations.
Insights into consumer buying behaviour are the foundation on which marketers rely to determine marketing tactics and forecast sales.	Pearson Correlation	1	.584**
	S (2-tailed)		.000
	N	100	100
AI relies on such insights to provide retailers with product presentation and cataloguing recommendations.	Pearson Correlation	.584**	1
	S (2-tailed)	.000	
	N	100	100

The table 4 demonstrates the association among AI and purchasing decision of consumers in the retail sector. The outcome of correlation test p value is .000. The above table illustrates insights obtained from AI regarding consumer behaviours are useful in marketing and forecasting. AI supports retailers to approach consumers which influence the purchase decision of the customer depending on the tactics used in the retail sector.

**H3: There is a significant association among AI and purchasing decision of consumers in the retail sector** is verified from the above analysis.

### 4.3 Thematic analysis

The responses from the interview is analysed based on the questions asked to them. The important keywords are obtained based on the responses of the interviewee. Each

question and the obtained keywords from the respondents are listed below.

### Hypothesis 1

**H1: The implementation of AI** has positive impact on the retail sector.

**H1<sub>0</sub>: The implementation of AI** has no positive impact on the retail sector.

### Customer experience and operation efficiency

The participants of the interview revealed the enhanced consumer experience and operational efficient through AI in the retail. Most of the respondents expressed offering personalisation, customer care support through chatbots improved the customer experience. Using automating repetitive task and predictive analytics has increased sale which enhanced operational efficiency. Rest of respondents reveal AI can be integrated and generated in both offline and online which helps to increase efficiency of business. These responses illustrate AI has significant impact on the retail industry, particularly through enhancing the operation efficiency and consumer experience.

**H1: The implementation of AI has positive impact in the retail sector** is proved from above analysis.

### Hypothesis 2

**H2: Challenges of integrating AI and retail** are prevalent in the digital world.

**H2<sub>0</sub>: Challenges of integrating AI and retail** are not prevalent in the digital world.

### Key challenges in implementing AI solutions

The response of participants illustrates that there exist some difficulties in the practice of integrating AI and retail in the digital world. According to respondents 'data privacy' and security concerns are the most significant challenges. This largely affect the implementation of AI in the retail industry. Some respondents indicate that 'workforce concern' as a major difficulty faced. This makes employees to feel insecure regarding their job which may affect the efficiency of the operation. Few respondents listed choosing appropriate technologies and data concerns as other major challenges because it might reduce the performance and generate inaccurate prediction.

**H2: Challenges of integrating AI and retail are prevalent in the digital world** is proved from the above analysis.

### Hypothesis 3

**H3: There is a significant association among AI and purchasing decision of consumers** in the retail sector.

**H3<sub>0</sub>: There is no significant association among AI and purchasing decision of consumers** in the retail sector.

### AI support in understanding consumer behaviour and preferences

The respondents have expressed association among AI and purchasing decision of consumer in the retail sector. Most of the respondents stated that analysing a vast amount of data, AI discover patterns, preferences, behaviour and interaction of the consumer which widely helps in personalisation and enhance the customer experience. Few respondents also expressed that predictive analytics algorithms help in customization along with increasing consumer loyalty. Also, based on response, it is revealed significant association between AI and customer purchasing decisions in the retail industry.

**H3: There is a significant association among AI and purchasing decision of consumer in the retail sector** is verified from the above analysis.

## 5. Discussion

The current study's outcome represents the confluence of AI and retail. AI offered many benefits to retails which illustrated the significance of implementing AI in the retail sector. Data privacy, security and workers concern are the major challenges of integrating AI in the retail industry of digital world. Customers are influenced due to retailer strategies and approach which are enhanced because of AI implementation in the retail business. The thematic and statistical analysis test demonstrates the significance, prevalence and association among AI and retail.

The existing study (Lorente-Martínez, Navío-Marco, & Rodrigo-Moya, 2020) illustrates the implementation of customer facing (CF) in-store technologies in retail enterprises. The outcome determines, attitude directed towards such technology as a main component for the adoption of CF. The present study demonstrates AI significance, prevalence in retail and its association with consumers rather than focusing on one technology. The outcome of the current study reveals, the importance of adopting technologies in the retail sector.

The conventional study (Guha et al., 2021) determines the effect of AI and examines senior manager must adopt AI including factors. Result demonstrates, lot of value creation is obtained from non-customer facing application than customers facing one. The present study illustrates the significance of AI in retail through explaining the benefits. The relationship of AI and customer's purchase decision were analysed and found to have significant association.

The existing study (Weber & Schütte, 2019) demonstrates the popular AI advantages in the industry. The value

included core operations of retail organization are examined to find the possible usage and the adoption in market. The outcome showed there are various ranges to use AI such as marketing and replenishment with advantage of predicting upcoming events. Similarly, the present study discussed the benefits of AI along with vulnerabilities of AI which makes adoption of AI challenging to retailer and consumer in a context of acceptance.

The existing study (Du & Xie, 2021) discussed inconsistencies of AI in consumer markets including opportunities and ethical challenges. The outcome revealed a major challenges of AI in an aspect of ethics were biases, consumer privacy, ethical design and cyber security. The prevailing study suggests companies to engage social responsibilities to shape the ethical concern in AI. Similarly, the current study illustrates the implementation of AI in retail industry along with challenges. In addition, the present study discusses the influence of AI on retail consumers. The outcome determined, AI has some major challenges and positively influence the consumer in the retail shopping.

### 5.1 Limitation

The foremost constraint of the present study is that the contributors of the research are retailer. Hence, the consequences might lack in generalizability. Human activities are an ever changing module that cannot be remained constant. Therefore, the outcome of the study always varies with the understanding of the challenges and opportunities regarding the confluence of AI and retail. Though, the inference provided by the research can be valuable to the retailers to implement effective AI to obtain successful outcome.

### 6. Conclusion

The retail industry has undergone numerous digital transformation for years. As, technology advancement increase accuracy, efficiency and speed across the retail business. AI has a vital role in a rapidly developing retail sector due to its predictive analytics system and advanced data which are assisting retailer to make data driven decision. AI has empowered retail businesses with high quality information and data which is leveraged into enhanced new opportunities and retail operation. The present study examines the confluence of AI and retail. Since, countless retailers has adopted to technologies and some still are not sure about the implementation of AI in the business. There are some challenges in integrating AI in retail sector such as data privacy and security concerns which make adoption of AI difficult in retail industry and retailers hesitant. The current study also investigates the association of AI and consumers in an aspect of purchase decision. AI influence the purchase decision of consumers in retail through offering strategies to retailer in attracting

customers to the store. Furthermore, the present study recommends the effective implementation of AI in the retail industry.

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