Integration of Artificial Intelligence Technology Towards E-Services Among Online Clothing Websites

Sharon Sophia. J, J. Clement Sudhahar

Abstract: Online Apparel Industry is one of the growing industries among many other online markets. The industry is moving towards a major technological shift due to new and innovative tools such as Artificial Intelligence (AI), Virtual Reality (VR) and Augmented Reality (AR). Customer Experience Management is highly influenced by gaining customer satisfaction via integrated AI technology for providing efficient customer service. This study emphasizes the intervention of AI technology with online clothing websites such as Jabong and Myntra. The findings explore that Customer Relationship Management (CRM) Services, Personalization services, Visual Assistance and Fit Intelligence Services are enhanced from AI tools that lead to Customer Satisfaction and Customer Retention. The research utilized non-probability Judgmental Sampling and snowball sampling where the respondents belong to Tamil Nadu State and were genuine online customers who purchase clothes from online clothing websites.

Keywords: Online Apparel Industry, Artificial Intelligence Technology, Customer Satisfaction, Customer Retention

I. INTRODUCTION

Indian e-commerce industry is found to be developing and it is reaching to a growth extends. It is expected to stand as the second-largest country in e-commerce market by 2034 (Sep, 2019; Source: www.ibef.com). Increasing online shoppers, young demographic profiled consumers who are highly interested in online shopping behavior, etc., is the major reason behind the growth of the e-commerce sector. The sector is forwarded to many technological shifts especially in fashion e-commerce. According to India Brand Equity Foundation data, the nline apparel industry holds 29 percent of share which stands in a second position whereas electronics is currently leading in the first position with 45 percent of share in India. Online Apparel Industry faces high challenge and competition due to increasing trends, technological transitions, penetration of different brands and new entrants in the online apparel market.

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Marketers need to focus on building strategies exclusively integrating technologies such as Artificial Intelligence, Augmented Reality, Virtual Reality, etc., to create a valuable customer shopping experience in online fashion markets. This paper mainly focuses on analyzing the importance of integrating Artificial Intelligence Technologies with online apparel industry that provides an efficient service for customers. It is important to build the online apparel business by adding the trends and innovative measures such as the creation of an omnichannel strategy, linking the social networking platform with their websites, assisting the customers with 24 hours chatbots, providing personalization services, creating a quality visual, etc. The technological transition, especially in the online fashion industry has the potential to acquire new customers also this helps in customer retention and brand building.

II. LITERATURE REVIEW

Wang (2014) analyzes Artificial Intelligence Applications in the online clothing segment. The technical components such as Neural Networks, Genetic Algorithms, and other AI tools are applied in the business process. The above said technical tools are enacted as inputs whereas the services such as style consultant services, Fit Intelligence Services, Personalization Services, Online Community is developed. This helps in the efficiency of service and builds customer satisfaction.

Sobhihah et.al (2015) examines e-commerce firms in the service aspects that motivate customer satisfaction, belief, and loyalty. Customer service is an important feature that should be built with proper applications. Customer Engagement Services, Website interface properties, and other reliable services leads to customer satisfaction.

Ryding et.al (2016) emphasize their findings on customer satisfaction drivers. Three dimensions were found out as a key for customer satisfaction such as product quality, service quality, and digital in-store interaction. This, in turn, builds the brand and also builds customer loyalty.

Chung et.al (2018) studies the e-services influencing customer satisfaction. The researchers portray five-dimension model whereas chatbot is utilized. They are Interaction, Entertainment, Trendiness, Customization and problem-solving. Chatbot plays a vital role in customer engagement where online Industry can utilize the tool to develop the system.

Shankar (2018) investigates the influence of AI in the retailing industry. Retailing sector can implement AI for both remodeling the business process and also analyze the customer experience.

The Researcher forefronts the services, personal assistance and personalization which is resulted from implementing AI technology in business. This strengthens proper Customer Relationship Management.

Johnson (2019) states that Artificial Intelligence is an integral technology with the apparel industry. AI can help in improving the innovative service measures such as tailoring customer needs, 24 hours of customer assistance with chatbot tools and personalization services. This indicates the efficiency of service.

Joshi et.al (2019) portrays the role of innovation in gaining customer satisfaction. The researcher states that Virtual Reality, Augmented Reality, and Artificial Intelligence plays a key innovation role in providing unique service for customers and thereby they get satisfied. Customer satisfaction leads to customer delight and customer retention that values customer experience.

Kelnar (2019) researched the future of Artificial Intelligence in the fashion industry. It can bring out the productivity in service with efficacy and cost beneficiary. The impact of AI can result in personalization services and also it provides recommendations based on an individual's style and their need.

Liang et.al (2019) explores their study on Artificial Intelligence technology in the fashion industry. The AI tools stimulate the consumers positively towards purchase behavior with the specific websites.

Sujata et.al (2019) explains the applications of AI tend to enhance customer experience. Chatbots, virtual assistance, Emotion detection are the AI-based personalization tools that favor customer experience and leads to customer satisfaction.

III. SIGNIFICANCE OF THE RESEARCH

The study is signified with uniqueness that examines Artificial Intelligence-based services, and its integration with online clothing websites. The predictors such as AI Chatbots, Personalization, Visual Assistance, and Fit Intelligence Service are aligned with AI Technology. These components build customer satisfaction and thereby leads to customer retention. This research provides recommendations and implications that will simultaneously contribute to the inputs for industry and society.

IV. HYPOTHESES OF THE RESEARCH

Based on the literatures examined by the researcher, the hypotheses for this research is as follows:

H1: There is a significant relationship between Artificial Intelligence services and Customer Satisfaction.

H2: There is a significant impact of Customer Satisfaction on Customer Retention.

V. OBJECTIVES OF THE RESEARCH

The objectives of the research mentioned below are framed to attain the findings:

1. To identify the online clothing brands penetrating among customers.

2. To analyze the Artificial Intelligence services in customer satisfaction.

3. To develop a Structural Equation Modeling framework related to Artificial Intelligence services, Customer

satisfaction that leads to customer retention.

VI. RESEARCH METHODS

This study is done for online clothing websites and the respondents were online customers. A Questionnaire was used as Research Instrument for data collection which was done completely through online channels. The scales utilized in the research instrument were 5-point Likert scale which indicates 5 as "Strongly Agree" and 1 as "Strongly Disagree". The online clothing brands included in this research were Jabong, Myntra, and other brands based on customers choice and preference. The study was done utilizing non-probabilty Judgmental sampling and snowball sampling. The questionnaire was sent to the customers who belong to the age group of 21-40. The respondents were identified from social networking communities such as Facebook, Linkedin, and other online community groups. Using Snowball sampling one respondent registers his or her opinion and refers the study to their well-known online community among Tamil Nadu. The total responses gathered were 310 which was valid and reliable. To analyze the data, SPSS version 25.0 statistical software package was utilized. The data were analyzed with Frequency analysis, Pearson Correlation and the Structural Equation Modeling was done using AMOS Software.

VI. DATA ANALYSIS AND INTERPRETATION

Reliability Analysis

The researcher has total of 310 respondents and the below reliability data shows the scale consistency of the questionnaire.

Table A.1 – Reliability Result

Cronbach's Alpha	Cronbach's Alpha based on Standardized Items	No of Items
.841	.851	11

Source: Computed by the researcher

From the above reliability results Table A.1, the Cronbach's Alpha value of .841 shows that the scale has high level of internal consistency. Therefore, all the questions were found reliable for conducting the research.

Frequency Analysis: Customer Profile

Table A.2 – Frequency Results

Components	Categories	Frequency
Gender	Male	174
	Female	136
Age	21-25	141
	26-30	105
	31-35	43
	36-40	21

Educational Qualification	UG	147
	PG	84
	Doctorate	42
	Others	37
Marital Status	Married	177
	Unmarried	133

Source: Computed by the researcher

(i) From the table A.2, demographic components were analyzed as it shows that 56 percent of them are Males and 43.8 percent of them are females who purchase clothes through online websites.

(ii) The demographic results show that number of customers that is about 45.4 percent of them belong to 21-25 age category who highly purchases clothes from online websites, 33.8 percent of them belong to 26-30 category where more number of working peoples belong to this category. 13.8 percent and 6.7 percent belong to 31-35 and 36-40 age category.

(iii) The customers' Educational Qualification details follow as 47.4 percent of them done and doing UG and 27 percent of them done and doing PG. 13.5 percent of them done and doing Ph.D where they are high profiled customers and 11.9 percent of them done and doing other categories of education such as technical qualification and certification qualification.

Table A.2 (*Continued*) **– Frequency Results**

Components	Categories	Frequency
Occupation	Student	152
	Private Employee	88
	Government Employee	18
	Business	44
	Others	8
Income Status	Less than Rs.15000	32
	Rs.15000-25000	65
	Rs.25001-35000	62
	Rs.35001-45000	51
	Rs.45001-55000	42
	Rs.55001-65000	37
	Above Rs.65000	21

Source: Computed by the researcher

(i) From the above data, it can be understood that 49 percent of the customers are students where they are highly interested to do online shopping whereas 28.3 percent of them are working employees in a private firm. 5.8 percent, a smaller proportion shows the government employees who also like to shop via online websites and 14.1 percent of them are business customers.

(ii) The income status of the customer shows that 20.9 percent of them earn Rs.15000 to 25000 per month and 20 percent of them earn Rs.25001 to 35000 that does not have a major difference. Income status does not have any impact on the buying pattern via online websites.

Table A.3 – Customer Activities with Online Shopping

Components	Categories		Frequency
Frequency of Purchase	Once or twice every month		20
	Once or twice in two months		48
	More than thrice in 3 months		74
	Occasional / based on the need		168
Medium of Purchase	Direct Websites		33
	Mobile Application		277
Favorite Clothing Website	Jabong		74
	Myrntra		132
	Others	Lime Road	41
		Amazon / flipkart	32
		Club Factory	12
		Ajio	7
		Social Media Communities	12
Influencing Service	24 hours Customer Engagement		112
	Personalization Service		55
	Visual Assistance		52
	Fit Intelligence service		91

Source: Computed by the researcher

(i) Table A.3 shows Customer activities with online shopping. 54.1 percent of them purchase via online shopping occasionally or based on their requirement and 23.8 percent of them purchases more than thrice in three months. 15.4 percent of them purchases once or twice in two months and 6.4 percent of them purchase once in a month. However high number of customers purchases occasionally.

(ii) Also, it is noteworthy that 89.3 percent of them purchases their clothes through mobile application and only 10.6 percent of them shops from direct websites.

(iii) Customers' favorite websites were analyzed from where they do online shopping. It was found that 42.5 percent of them purchases from Myntra and 23.8 percent of them likes to buy from Jabong. 33.5 percent of the customers likes other websites such as Amazon, Flipkart, Lime Road, Club Factory, Reliance Ajio, and other social media communities-based shopping portals.

(iv) Finally, the AI-based service that influence customers are 24 hrs customer engagement, personalization service, visual assistance, Fit intelligence. Among these services, 24 hours service is highly preferred by 36.1 percent of customers and 29.3 percent of them prefers Fit Intelligence service. 17.7 percent of them prefer personalization services and 16.7 percent of them prefer virtual assistance service.

Pearson's Correlation Analysis

It is a statistical measurement that explores the relationship between two variables. Marketers can gain knowledge on the aspects that leads to the benefit of their company.

Table A.4 shows the correlation values between Services and Customer Satisfaction and Table A.5 shows the correlation values between Customer Satisfaction and Customer Retention.

Table A.4 Pearson's Correlation Results between Services and Customer Satisfaction

	S1 and CS	S2 and CS	S3 and CS	S4 and CS	S5 and CS
Pearson Correlation	.756	.730	.881	.761	.702
Sig (2-tailed)	.000	.000	.000	.000	.000
N	310	310	310	310	310

Source: Computed by the researcher

From the above Correlation results that was measured between services and customer satisfaction, the R value of each independent and dependent variable is above .7. Therefore, there exists a significant relationship between services and customer satisfaction.

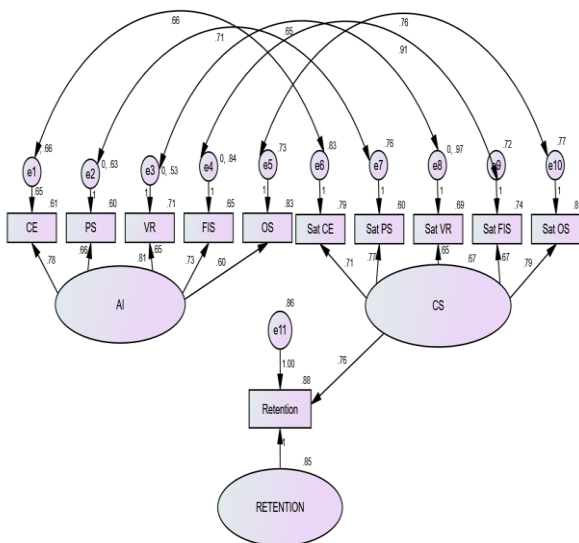**Table A.5 Pearson's Correlation Results between Services and Customer Satisfaction**

	CS1 and Ret	CS2 and Ret	CS3 and Ret	CS4 and Ret	CS5 and Ret
Pearson Correlation	.639	.742	.773	.714	.683
Sig (2-tailed)	.000	.000	.000	.000	.000
N	310	310	310	310	310

Source: Computed by the researcher

From the above Correlation results that was measured between services and customer satisfaction, the R value of each continuous variable is above .6. Therefore, there exists a significant relationship between services and customer satisfaction.

Structural Equation Modeling

Fig A.1 SEM Model

Fit Statistics	Acceptable Level	Observed Level
Chi-Square	<5	3.780
GFI	>0.90	0.94
AGFI	>0.90	0.93
CFI	>0.90	0.92
TLI	>0.90	0.94
RMSEA	<0.08	0.05
RMSR	<0.08	0.03

Source: Computed by the researcher

The values notified in Chi-Square = 3.780 which is greater than 0.05 which is acceptable, GFI = 0.94 indicates good model fit, AGFI = 0.93 indicates that the model is acceptable, CFI = 0.92 that explores a good model fit, TLI = 0.94 shows that it is a good model fit, RMSEA = 0.05 indicates a good model fit and RMSR = 0.03 reflects that the model is acceptable and good.

VII. RESULTS AND DISCUSSION

The results of data analysis show a clear idea where the marketers and researchers have to concentrate on the futuristic growth. Below mentioned a few discussions on the observed results.

(i) From table A.2 and A.3, the demographic components show that majority of the young profiled consumers are interested and they are the customers to buy clothes from online websites.

(ii) Students show a high commitment and followed by them private employees also prefer to purchase via online shopping websites.

(iii) It was observed that the income status of customers does not have a greater impact on the buying behavior of consumers.

(iv) Customers' online activities were analyzed. From table A.3, customers' frequency of purchase from online websites shows that the majority of them purchase occasionally and remaining customers shop on a regular basis.

(v) The penetration of brands among customer indicates how many of them committed with each website of the apparel category. The Majority of them like to buy from Myntra and followed by it Jabong. Myntra is also currently leading in our country and acquires many customers. Also, most of them shop from websites such as Amazon, Flipkart, Reliance Ajio, Lime Road, etc.

(vi) The influencing service among customers was reviewed. Customers are influenced by 24 hours customer engagement, Fit Intelligence services, followed by it personalization services and visual assistance which also has higher impact.

VIII. SUGGESTIONS AND RECOMMENDATIONS

Based on the results, the suggestions are posted below those highlight technologies that have the potential to develop online websites.

(i) Chatbots Technology: Using Chatbots technology, customer engagement can be done at any time (24*7). Artificial Intelligence acts as a basis for chat bots service where technology intervenes as humans and chats with customers to solve their issues.

(ii) Personalization: Personalization services offers a valuable service that caters the need of every individual customers. It recommends the products to customers based on their previous search and also gives customer personal assistance.

(iii) Fit Intelligence Service: It provides consultancy services such as clothes size advisor, style, and color suggestions through Virtual Reality and Augmented Reality techniques.

(iv) Virtual Assistance: With the help of Augmented Reality and Virtual Reality, customers can be served with proper virtual assistance with clarity and quality picturization.

The above suggestions are recommended with below mentioned points:

1. Implementing chatbots helps to gain proper CRM and customer retention. It also leads to acquiring new customers for their service.

2. Providing personalization services delights the customer and makes the customers to get satisfied.

3. Fit Intelligence Application can be provided to value the customer shopping experience with uniqueness.

4. The Augmented Reality and Virtual Reality Applications can create a competitive service also it can highlight the differentiation.

IX. IMPLICATIONS

Implications are contributed to society, industry, and academia.

Social Implications

The study highly prioritizes for consumers. Consumers can be benefited by Technological service. Also, if the technology is implemented for proper cause, use and in proper time, then the increase of disruptive technology can be reduced. Therefore, the recommended technologies in this research mainly focuses to deliver the customer needs individually.

Industrial Implications

Offering innovative technologies creates business differentiation and increases penetration among consumer market. This improves potential sales and growth in profit.

Academic Implications

The academicians can gain knowledge on multidisciplinary measures on technology that portrays AI, AR, and VR in this study. Also, the research can come up with innovative measures for many other online-based businesses.

X. CONCLUSIONS AND FUTURISTIC STUDY

This research paper explored the importance of integrating technology with apparel websites, especially in the clothing segment. Customers need to evaluate the product before they finally decide to buy. Therefore, technology helps in assisting customers in the pre-purchase process, especially the contributions of Artificial Intelligence tools play a vital role in building Customer Relationship Management, Customer Satisfaction, and Commitment. The Marketers to design their strategies technological-oriented that creates uniqueness and gain competitive advantage.

Further studies can focus on different sectors such as online, grocery market, online automobile sector, online food industry, where AI technology will create a positive impact in those areas. Researchers can contribute their analyses on those areas.

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Retrieval Number: B7266129219/2019©BEIESP
DOI: 10.35940/ijitee.B7266.129219
Journal Website: www.ijitee.org

1566

Published By:
Blue Eyes Intelligence Engineering
& Sciences Publication

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Resume in Brief:

Total Experience Industry – 7 Academia - 20	**27** **Years**	Research Publications **Scopus Indexed - 11** Citations – 964 **H- index -** 4	70
Book Publications	8	**Ph.D Produced**	**7**
Case Studies	34	**Funded Projects**	**3**
Book chapters	7	Monograph	2
		Editorial Boards	3
Consultancy	8	Board of Studies Member	4
Workshops	16	International workshops	2
International MOU Association Tie- ups Industry Collaborations	3 3 6	Programs Organized FDP- 17 Executive Development Programs - 2 Management Development Programs – 6 ENDP – 4 Seminars-22	51
Educational Awards	5	International Workshops - Conducted	2
Research Awards	2	Seminars attended QIP Programs attended	54 3