

AI-Powered Online Recommendations and Consumer Purchase Decision-Making: An Empirical Investigation (With Reference to Arts and Science Colleges of Chennai City)

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Abstract—Digital marketing has changed the way in which businesses interact with consumers, promote their products, and affect people's decisions to make a purchase via online channels. The incorporation of Artificial Intelligence (AI) into digital marketing has also improved personalised product recommendations, promotional approaches, and interaction with consumers. The present study looks at the impact of online product recommendations based on Artificial Intelligence on consumers' intent to buy. It was carried out with students from Arts and Science colleges in Chennai City, India, and primary data were gathered from 212 people using a structured questionnaire. Purposive sampling was used to choose the participants. The data collected were analysed using Percentage Analysis, Factor Analysis, Mean-based Ranking, and Multiple Regression Analysis with the assistance of SPSS.

The results show that promotions for products on YouTube have a significant effect on respondents' awareness and on their intention to purchase. Of all the factors that influence purchase decisions, product price turned out to be the most important, followed by the availability and convenience of payment methods. The study also shows that consumers' awareness of online product promotions and of product recommendations driven by AI makes a significant contribution to their purchase decisions. The findings underline the increasing importance of AI-powered digital marketing in shaping consumer preferences and purchase intentions and offer useful insights for marketers who want to create personalised and consumer-focused online promotion strategies.

Index Terms—Artificial Intelligence, purchase intention, online product recommendations.

I. INTRODUCTION

Digital Marketing is a term used for interactive marketing of goods and services by turning the views into a customer and retain them. Artificial Intelligence is one of the forms of Digital marketing. The use of Artificial Intelligence in Digital Marketing is limitless. Artificial Intelligence is a method of computer science which teaches computers how to analyse and emulate human communication and behavior. Artificial intelligence has the potential to influence both warm leads (those who are familiar with the brands) and cold leads (those who are unfamiliar with the brands). The consumer spends a lot of time in searching for the right product which is said to be the purchase duration. Businesses which are engaged in e-commerce prefer the customer who have short purchase duration. According to Forbes, 84% of marketing businesses have utilized the Artificial Intelligence and Machine Learning in 2018 for attracting the customers. According to survey conducted by Deloitte global in 2020 showed that three of the top five Artificial Intelligence objective were marketing – oriented. According to BCC Research, machine learning enabled solution would grow at the rate of 43.6%, almost reached \$ 8.8 billion by 2022. This study aims to examine the effect of Artificial Intelligence in the purchase decision of consumers through online.

II. LITERATURE REVIEW

Monica Pticek and Damir Dobrinic (2019)¹ studied on the topic The Impact of Artificial Intelligence on

Purchasing Decisions. The purpose of the study was to explore the awareness of Artificial Intelligence and its impact on customer's purchasing decision in both present and future. The study showed that customers had a positive perception towards Artificial Intelligence and there was a willingness to adapt Artificial Intelligence in their purchasing process. It was also found that only 42% of the people believed that AI would influence their mind purchasing decisions. It was also found that the reason for the same was that the people were not aware of the Artificial Intelligence. The study also stated that the respondent's level of education had a greater impact on the Purchasing decisions.

Luo.X, Tong.S, Fang.Z and Qu.Z (2019)² Studied Frontiers: Machines Vs Humans: The impact of Artificial Intelligence Chatbot disclosure on customer purchases. The motive of the study was to exploits field experiments data on the customers who got outbound sales call from chatbots.

The study proved that chatbots or human workers are four times more effective than inexperienced workers and as effective as skilled labour. It also stated that the purchase was reduced by more than 79.7% as the chatbot identity was disclosed before the machine-customer conversation. It also stated that chatbot had decreased the call length due to non-response bias and hangups.

V.Kumar, Bharathrajan, Raj Kumar Venkatesan, JimLecinski (2019)³ focused on the Understanding the role of AI in Personalized Engagement Marketing. The object of the study was to explore the role of Artificial Intelligence in supporting Personalised Engagement Marketing by providing personalized marketing.

The study revealed that AI technology helped to generate realtime learning and helped Managers to understand the customer value proposition over time. Providing curated products based on AI technology helped the business to retain customer and able to have competitive advantage.

Beyari.H and Garamoun.H (2022)⁴ pointed out their study on "The effect of Artificial Intelligence on End User online purchasing decisions: Towards an integrated conceptual framework".

The objective of the study was to investigate into the effect of selected Artificial Intelligence tools and the consideration set on the end-user purchasing intentions of convenient and shopping products. The researchers used Unified theory of acceptance and use of technology theory. The study revealed that the three-consideration set such as machine learning, product recommendation and purchase had an impact on the purchase decisions.

III. OBJECTIVES OF THE STUDY

- 1.To know the demographic profiles of the respondents.
2. To find out the importance of sources of influencers influencing product recommendations.
- 3.To identify the relative importance of attributes in online recommendations.
4. To categorize the underlying latent dimensions of influencers influencing online based recommendations.
- 5.To identify the level of online based recommendations influencers influencing the purchase decisions

IV. RESEARCH METHODOLOGY

The study explores the impact of consumer attention towards the online product recommendations in customer's buying intention. The study is limited to college students in Chennai city. Research Design is a research strategy which frames the method in which data would be collected and analyzed. In this study, Descriptive research design is adopted. The data is collected through a primary method through a properly structured questionnaire.

Purposive sampling technique is used. The questionnaire was circulated to students who are pursuing their Under-Graduation and Post-Graduation in Chennai city.

The demographic profile of the student was categorized and analysis has been made. Mean based ranking has been applied on the sources in which the product recommendations are made.

Multiple regression has been performed to know the significance of the purchase intention through individual qualities factor on the attention towards product recommendation.

V. ANALYSIS AND DISCUSSION

Table 1. Demographics of the Respondents

Type of Educational Institution	Self-financing college	27 (12.7%)
	Deemed university	8 (3.8%)
	Government college	8 (3.8%)
	Government aided college	169 (79.7%)
Monthly family income	0-20k	82 (38.7)
	20-40k	59 (27.8%)
	40-60k	26 (12.3%)
	60-80k	20 (9.4%)
	>80k	25 (11.8%)
Stream of Education	Arts	37 (17.5%)
	Language	6 (2.8%)
	Commerce	146 (68.9%)
	Science	23 (10.8%)
Education qualification pursuing	UG	152 (71.7%)
	PG	60 (28.3%)
Gender	Male	122(57.5%)
	Female	90 (42.5%)
Age (In years)	Mean	19.90
	Median	20.00
	Mode	19.00
	Skewness	0.624

Table 2 Result of Mean based ranking

Sources	Mean	Rank
Google ad works	3.59	3
Face Book	2.68	4
Twitter	2.31	5
Youtube	4.00	1
Instagram	3.88	2

Table 2 indicates the sources in which the online product recommendations are being published. The table clearly specify the sources which attracts the attention of the consumer to purchase the products and are ranked based on the mean values.

The most attracting sources considered by the respondents is YouTube with the mean value of 4 followed by Instagram (3.88), Google ad works (3.59), Facebook (2.68) and lastly Twitter (2.31) on the order of their rank.

The multiple regression has been applied to study the significance of the purchase intention and individual quality factors on the attention towards product recommendation and the result are shown in tables 3 and 4.

Table 3 – Model Summary and ANOVA Results of Multiple Regression Analysis

Model	Sum of Squares	D f	Mean Square	F	Sig.
Regression	472.074	13	36.313	18.085	<0.001**
Residual	397.563	198	2.008		
Tot al	869.637	211			
Model	R	R ²	Adjusted R	Standard Error of Estimate	
	0.737	0.543	0.513	1.417	

** Significant at 1% LOS

Table 4 – Determinants significantly influencing the consumer's purchase decision

Determinants Significantly influencing the consumer's purchase decision		Unstandardized Coefficients		Standardized Coefficients	t value	p value	Inference
		B	Std. Error	Beta			
1	(Constant)	0.147	2.034		0.072	0.943	
	Awareness Influencer	0.213	0.041	0.306	5.149	0.000	S
	Interest Influencer	0.076	0.045	0.101	1.684	0.094	NS
	Recommendation and Review Influencer	0.341	0.045	0.478	7.632	0.000	S
	Price	-0.080	0.157	-0.034	-0.507	0.613	NS

Quality	-0.020	0.158	-0.010	-0.124	0.901	NS
Quantity	0.004	0.164	0.002	0.026	0.979	NS
Offers/Rewards	0.082	0.139	0.038	0.592	0.554	NS
Payment options	-0.174	0.127	0.077	-1.376	0.170	NS
Product reviews	0.100	0.132	0.049	0.755	0.451	NS
Age (In years)	0.006	0.115	0.004	0.053	0.958	NS
Gender	0.154	0.204	0.038	0.756	0.450	NS
Educational qualification pursuing	0.123	0.348	0.027	0.353	0.725	NS
Monthly family income (In Rs.)	-0.096	0.073	-0.065	-1.303	0.194	NS

S- Significant NS- Not Significant

Table 3 indicates that the independent variable significantly predicts the consumer's buying Behavior, $F(13,198) = 18.085$ and the significance value is 0.000. Since the significant value is less than 0.05 reject the null hypothesis and accept the alternative hypothesis. Hence, there is significant relationship between the consumer perceptions towards online product Recommendations and purchase intention among the customer. The value of R^2 is 0.543 shows that the model explains 54.3% of the

variance in buying intention. The result of the coefficient showed that the Awareness influencer ($p=0.000$) and review, recommendation influencer ($p=0.000$) has significantly influenced the purchase intention of the consumers.

To understand the underlying dimensions of the 10 AI based recommendation variables the factor analysis has been applied. The Principal Component Analysis of Extraction Method and Rotation Method of Varimax with Kaiser Normalization has been used in the factor analysis and presented in Table5.

Table 5-Descriptive Statistics, Communalities and MSA of AI based recommendation variables

Factors and % of variables explained	Variables	Mean	S. D	Communalities	MSA	Factor Loading
Awareness Influencer (21.469%)	Expert's Interaction	3.140	1.291	0.770	0.697	0.867
	Personal Information	2.940	1.301	0.621	0.723	0.761
	Misleading Advertisement	3.550	1.161	0.371	0.825	0.522
Interest Influencer (21.306%)	Wish List	3.990	0.941	0.594	0.848	0.727
	Previous Purchase	4.050	0.975	0.542	0.792	0.713
	Chat Box	3.680	0.992	0.614	0.832	0.679
	Similar Advertisement	4.150	0.829	0.439	0.848	0.603
Recommendation & Review Influencer (18.945%)	Continuous Purchase	3.480	1.137	0.815	0.728	0.804
	Purchase Duration	4.020	1.103	0.666	0.814	0.723
	Word of Mouth	3.510	1.206	0.739	0.767	0.707
KMO-MSA = 0.776, Total % of variance explained = 61.72						
Bartlett's Test of Sphericity chi-square value of 640.37 with d f of 45 and P value of < 0.001						

Table 5 shows that the range of communalities of the 10 AI based recommendation variables from 0.371 to 0.815 and MSA ranges from 0.723 to 0.848 reveals that the variables are eligible to be factorized. KMO – MSA lies above 0.05 (0.776) and Bartlett's test of Sphericity chi-square value of 640.37 with df of 45 with P value < 0.001 indicates that the individual variables are qualified to apply factor analysis.

Three factors are extracted and explained that total variance is about 61.72 %. The most dominant factor1

is labelled as Interest influencer followed by Review, Recommendation influencer and Awareness influencer.

VI. FINDINGS & SUGGESTIONS

1. The AI based recommendations creates the awareness about the product followed by interest and review & recommendations. The AI model should be retained and encouraged to create awareness.

2. The AI recommendations are more in you tube when compared to other sources. The social media advertisers should focus more on YouTube. Hence, results in increased purchase decision.
3. The consumers are more influenced by the Awareness factors followed by the Review, recommendation factors rather than Interest factors. This asserts that awareness and review can influence the purchase decision.
4. The marketers should take the cue that reviews & recommendations are better influencers. Therefore, care must be taken in getting positive reviews which enhances the increased purchase decision.

VII. LIMITATIONS OF THE STUDY

- The study was conducted only in Chennai city.
- The research was carried out in a short duration of time. Therefore, the sample size and other parameters were selected accordingly in order to complete the work within the given time.
- The research was based on the purchasing behavior of products only and ignored the services.
- The data was collected only from the college students who were pursuing their Under-Graduate and Post- Graduate.

VIII. CONCLUSION

The use of internet is growing in a rapid way. People started depending more on the online platforms for their day-to-day requirements. The marketers trying to use this opportunity to promote their product online. The research paper aims to study the impact of online product recommendation in consumer's purchase intentions. The study mainly focus on the influence of online product recommendation in college students in Chennai city. The study revealed that the there is significant relationship between the customer attention towards such recommendations and buying behavior. Their level of awareness and review and recommendations plays a major role influencing their behavior.

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