Artificial Intelligence and Customer Engagement in Social Commerce

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Abstract

This study investigates the artificial intelligence (AI) and its customer engagement behavior within the context of social commerce. The research identifies a significant and positive relationship between AI-driven viral marketing and consumer purchasing decisions. Findings indicate that customers derive substantial benefits from viral marketing efforts conducted on social media platforms, including Facebook, Twitter, YouTube, and personal blogs. The study reveals that consumer buying behaviors are profoundly shaped by information shared within trusted social circles, with AI tools optimizing the targeting and personalization of marketing messages. To examine the factors influencing consumer behavior and satisfaction in an online shopping environment, the study employs various statistical analyses on a sample of 636 participants. An Independent Samples t-test highlights significant differences in shopping experience perceptions across groups, while One-Way ANOVA reveals noteworthy variance in trust and security levels among different occupational categories. The Kaiser-Meyer-Olkin (KMO) measure and Bartlett's Test confirm the adequacy of the data for factor analysis. Descriptive statistics provide insights into mean scores and variability across different demographic segments. The findings emphasize the critical role of AI in enhancing the convenience of online shopping experiences, ensuring customer satisfaction, and maintaining trust and security. By leveraging AI technologies in viral marketing, businesses can foster positive consumer behaviors and attitudes, ultimately driving higher engagement and increased sales in the social commerce landscape.

Keywords:*Artificial Intelligence, Viral Marketing, Customer Buying Behavior, Social Commerce*

Introduction

The digital revolution has fundamentally re-shaped marketing strategies, introducing innovative channels for engaging customers. Among the most impactful developments is viral marketing, a technique that leverages social networks to rapidly disseminate promotional messages. By capitalizing on the inherent social dynamics of platforms such as Facebook, Instagram, YouTube, WhatsApp, and Telegram, viral marketing enables brands to exponentially expand their reach through user-generated content sharing. With billions of people worldwide actively engaging in social media, these platforms have evolved from mere communication tools to powerful business ecosystems, facilitating direct interactions between brands and their target audiences. The interactive nature of social media fosters real-time engagement, feedback, and relationship building, making viral marketing particularly effective as it harnesses the power of word-of-mouth and peer influence elements that often hold more sway than traditional advertising.

The rise of social commerce, defined as the intersection of social media and e-commerce, further amplifies the impact of viral marketing on customer purchasing behavior. Social commerce platforms empower users to discover, discuss, and purchase products within a unified social environment, streamlining the buying process and enhancing the overall customer experience. Features like shoppable posts, integrated payment systems, and peer reviews facilitate informed purchasing decisions based on recommendations from social connections. In this landscape, the integration of artificial intelligence (AI) plays a crucial role. AI tools and technologies, including machine learning and social media analytics, enable marketers to analyze user behavior, predict trends, and optimize campaigns for maximum impact. Platforms such as TikTok, Instagram, and YouTube have become fertile ground for viral content, with their algorithms favoring engaging and shareable posts that resonate with users.

The influence of viral marketing on customer buying behavior is multifaceted. The rapid spread of promotional content enhances brand visibility and awareness, while endorsements from peers or influencers bolster trust and credibility, increasing the likelihood of consumer engagement and purchases. Furthermore, the emotional appeal and entertainment value often embedded in viral

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campaigns forge positive associations with brands, driving customer engagement and loyalty. This study aims to explore the factors that drive viral marketing and analyze its impact on consumer decision-making, particularly in the context of social commerce and the integration of artificial intelligence. By examining this convergence, we seek to uncover insights that can inform more effective marketing strategies and enhance the customer experience in an increasingly digital marketplace. This study investigates Artificial Intelligence and customer engagement in social commerce.

Research Problem Statement

Viral marketing has emerged as a powerful strategy in the digital age, utilizing the rapid dissemination of information through social networks to promote products, services, or ideas. However, its effectiveness is often hindered by various challenges and uncertainties. A significant issue is the unpredictability of virality; despite careful planning and execution, many campaigns fail to achieve the desired viral effect. This unpredictability is exacerbated by the dynamic and fragmented nature of online platforms, where user behavior is continuously shaped by shifting trends and algorithms.

The saturation of content on social media makes it increasingly difficult for any individual campaign to stand out and capture user attention. Ethical considerations also pose challenges, as some viral marketing tactics may verge on manipulation or sensationalism, which can harm brand reputation. The lack of control over messaging once it goes viral can result in misinterpretations or negative backlash, undermining the original intent of the campaign. Furthermore, effectively measuring and attributing the success of viral marketing remains a complex task, complicating efforts to quantify return on investment (ROI) and optimize future marketing initiatives.

The integration of artificial intelligence (AI) offers potential solutions to enhance viral marketing strategies and better understand customer buying behavior within social commerce. By leveraging AI technologies, businesses can improve targeting and personalization, thereby increasing the likelihood of content going viral. However, to fully harness the potential of AI in viral marketing, businesses must navigate these complexities and risks while ensuring ethical practices and effective measurement strategies. Thus, while the role of AI in enhancing viral marketing is promising, understanding its implications and addressing the associated challenges is crucial for maximizing its effectiveness in driving customer engagement and purchase decisions.

Review of Literature

Abdul et al. (2017) examines the impact of technology on marketing strategies, emphasizing viral marketing, sales promotion, and social media. The study highlights the benefits of viral marketing, such as reduced costs and increased credibility, and distinguishes between monetary and non-monetary promotions in sales. It also explores how social media enhances customer relationships and brand loyalty, detailing the sampling and data collection methods used.

Hendrayati&Pamungkas (2020) explored marketing communications, advertising, internet marketing, and social media. They emphasized the role of marketing communications in building consumer relationships and described advertising as crucial for conveying product messages. Internet marketing was highlighted for converting online visitors into offline buyers, while social media was presented as a platform for direct interaction and quick promotional responses. The study underscores the benefits and significance of these marketing components in business.

Sawaftah et al. (2020) examined the relationship between viral marketing, electronic word of mouth (E-WOM), and customer purchase intention in Northern Cyprus' smartphone industry. The study reviewed the impact of viral advertising and E-WOM on consumer behavior, emphasizing brand image and age influences. It aimed to test the effectiveness of viral marketing on smartphone purchase intention and identify the most impactful dimension.

Hamade (2021) discusses the impact of viral marketing on consumer buying behavior in Lebanon, focusing on the shift from traditional word-of-mouth to electronic word-of-mouth (e-WOM) on social media and the use of influencers. The study analyses how various types of viral marketing content on social media affect customer decisions, considering the influence of friends' and families' comments, shares, and likes. It aims to provide insights into Lebanese consumer purchasing behavior and the effectiveness of viral marketing for marketers.

Greeshma & Chandru (2021) examined the impact of viral marketing on consumer behavior and factors influencing its perception in Coimbatore city, with a sample size of 100 respondents. The study utilized tools such as simple percentage analysis, rank analysis, chi-square test, and weighted average analysis, and was conducted from January to March 2021. Primary data was collected via questionnaires, while secondary data came from articles, books, magazines, and newspapers. The research emphasized the cost-effectiveness and success of viral marketing strategies in various business sectors.

Bin Ismail et al. (2022) investigated key elements in viral marketing that influence consumer purchase intention, focusing on perceived informativeness, entertainment, irritation, source credibility, and incentives. The study highlights a gap in understanding the relationships between these elements and purchase intention. It notes contradictory evidence on the impact of informativeness and the varied effects of entertainment and irritation on consumer perception. Additionally, the credibility of the marketing source and the use of incentives are identified as important factors influencing purchase intentions, despite limited research support.

R. Rupalee (2022) examined viral marketing and its impact on consumer behavior, highlighting its effectiveness in promoting products and services through social media. Using a questionnaire with 100 respondents, the study found that while viral marketing creates awareness, it has limited impact on purchasing decisions, though customers are likely to share product details with others. The paper identifies factors driving viral marketing and discusses its effectiveness compared to traditional marketing, including types like pass-along, buzz marketing, and incentivized viral.

(*Aiolfi, 2023*)discusses the adoption of smart speakers and voice assistants, focusing on Italian users' intention to use these devices. It explores how individuals interact with smart speakers and the factors influencing their attitude and intention to use them. The study applies a structural equation Modeling approach and confirms the validity of the Technology Acceptance Model (TAM) in understanding the adoption of smart speakers. The results show that perceived usefulness, ease of use, enjoyment, and task technology fit positively influence attitudes towards smart speakers, which in turn affect the intention to use them. However, perceived privacy risk, innovativeness, and social attraction do not significantly impact attitudes. The findings have implications for the retail sector and highlight the potential of smart speakers to revolutionize the customer journey and marketing strategies.

(*H.A. Dimuthu Maduranga Arachchi& Gihan Samarasinghe, 2023)*examines the impact of embedded artificial intelligence (AI) in mobile smart speech recognition (MSSR) on consumer purchase intention (PI) in the fashion retail industry. The study finds that perceived usefulness, perceived ease of use, and perceived enjoyment of AI-MSSR positively influence consumer attitudes towards AI. These attitudes, in turn, positively affect consumer smart experiences, ultimately impacting purchase intentions. Furthermore, the study shows that consumer innovativeness and generations X and Y moderate the relationship between AI-MSSR and consumer purchase intention. The findings contribute to the understanding of technology adoption, consumer behavior, and generational differences in the context of AI-MSSR in fashion retail.

Geofakta Razali et al., (2023) presented the impact of viral marketing and social media marketing on purchasing decisions on Instagram. It highlights the transformation of the internet into a tool for business transactions and global connectivity, leading to enhanced efficacy in promoting goods and topics. The focus is on Instagram Adds, an application popular for creating and sharing short videos,

and its role in viral marketing. The text also emphasizes the potential for digital platforms to alter society, the economy, and business practices.

Bhowmik & Chowdhury (2024) studied the relationship between viral marketing, brand loyalty, and consumer purchase intention for cosmetic products in Agartala, India, using data from 300 participants and mediation analysis. The results showed that brand loyalty partially mediates the relationship between viral marketing and purchase intention, emphasizing its importance in consumer behavior in the cosmetics industry. The study offers valuable insights for marketers to optimize strategies in the local market and underscores the significance of viral marketing in creating authentic consumer connections and driving brand advocacy.

Methodology

Sample and Data collection

A scientific approach to research methodology is critical for carefully evaluating the research challenge. This research is both descriptive and analytical in nature. The survey method is being used to gain valuable insights into the Artificial Intelligence and customer engagement in social commerce. The proposed research relied based on primary data. The primary data is gathered from regular and frequent Facebook users, as well as other social commerce users, who are over the age of 18. A survey technique was used to collect data and obtained 636 respondents will be conducted with virtual simple random sampling techniques. The primary data is collected through well-structured questionnaire. The questionnaire issued through Facebook, Instagram and Snapchat users. The questionnaire is framed with 3 sections. The structured questionnaire including dichotomous, multiple choice and semantic differential questions. The first section of the questionnaire is framed to obtain the socio-economic background of Social Commerce platform users, the second, third and fourth section of questionnaire is designed in Linker’s 5-point scale used for gathering the Artificial Intelligence and customer engagement in social commerce.

Demographic Details of the respondents

The demographic details of the respondents explain the socio-economic status of the customers involved in the based-on features of the population. The study has involved various demographic variables like age, gender, educational qualification, occupation, monthly income and family members. This following part explains the various diverse characters based on impact of viral marketing and its influence on customers' purchasing behaviour in the study are classified.

Personal Profile of the respondents

In order to ascertain the personal profile of the respondents, the researcher considered the place of residence, gender, age, marital status, educational qualification, occupation, monthly income, types of family and family size which has been considered for frequency distribution to extract the clear shape and arrangement of the sample units. The following frequency distribution clearly reveals the Viral Marketing and Its Influence on Customers' Purchasing Decisions with respective demographic factors of the respondents.

S. No	Demographic Factor	Classification	Frequency	Percentage %
1	Gender	Male	305	48.0
		Female	331	52.0
		Total	636	100
2	Age	18-30years	230	36.2
		31-40years	305	48.0
		41-50years	52	8.2
		above 50years	49	7.7
		Total	636	100
3	Educational qualification	School level	16	2.5
		Diploma	34	5.3
		UG Level	88	13.8
		PG Level	328	51.6
		Professionalist	170	26.7
		Total	636	100.0
4	Occupation	Student	139	21.9
		Professional	130	20.4
		Businessman	69	10.8
		Govt Employee	66	10.4
		Non-Govt Employee	109	17.1
		Home maker	68	10.7
		Others	55	8.6
		Total	636	100.0
5	Marital Status	Married	421	66.2
		Unmarried	215	33.8
		Total	636	100.0
6	Nature of Occupation	Salaried	403	63.4
		Unsalaried	233	36.6
		Total	636	100.0
7	Monthly Income	Below 10000	183	28.8
		10000-20000	167	26.3
		20001-30000	47	7.4
		30001-40000	23	3.6
		Above 40000	216	34.0
		Total	636	100.0
8	Family Members	Below 3 Members	47	7.4
		3-5 Members	519	81.6
		Above 5 Members	70	11.0
		Total	636	100.0
9	Place of Residence	Urban	346	54.4
		Semi Urba	68	10.7
		Rural	222	34.9
		Total	636	100.0

Table No.1. Description of the Respondents
Source: Primary Data

Gender: The above table reveals that 48.0% of the respondents are male and 52.0% of the respondents are female.

Age: From the above frequency distribution using simple percentage analysis it is found that the sample unit dominated by 36.2% of respondents belong to the age group between 18-30years,

48.0% of the respondents belong to the age group between 31-40 years, 8.2% of the respondents belongs to the age group between 41-50 years 7.7% of respondents belong to above 50years.

Educational qualification:: The above 2.5% of the respondents have only complete their school level and 5.3% of the respondents have complete their Diploma, 13.8% of the respondents have complete their UG level education, Maximum 51.6 % of the respondents have complete their PG level education and 26.7% of the respondents have complete their Professional Degree.

Occupation:

While 21.9% of the respondents are students and 20.4% of the respondents are professionals, 10.8% of the respondents are businessman, 10.4% of the respondents are Govt employees, 17.1% of the respondents are non-govt employees, 8.6% of the respondents belongs to others.

Marital Status: The table also depicts the maximum of 66.2% respondents is married and 33.8% of the respondents are unmarried people.

Nature of Occupation: Maximum 63.4% of the respondents of the respondents are salaried and 36.6% of the respondents are unsalaried.

Monthly Income: It is noticeable that a maximum of 28.8% respondents comes under the monthly income category of below 10000 and 26.3% of the respondents comes under 10000 – 20000, 7.4% of the respondents comes under 20001 – 30000, 3.6% of the respondents comes under 30001 – 40000 and 34% of the respondents comes under above 40000.

Family Members: From the above table 7.4% of the respondent's family size below 3-member, maximum of 81.6% of the respondents are in the family size of 3-5 members and 11% of the respondent's family size is above 5 members.

Place of Residence: 54.4% of the respondents belongs to urban area, 10.7% of the respondents in semi urban area and 34.9% of the respondents in rural area.

Results and Discussion

To Investigate the Factors that Drive Viral Marketing

The study employed factor analysis and reliability testing to explore the underlying dimensions and assess the internal consistency of items related to consumers' perceptions and behaviors toward online shopping platforms. The analysis identified several distinct factors that shape the shopping experience, including customer satisfaction, purchase decisions, trust, and security. These findings provide valuable insights into the primary influences on consumer behavior in e-commerce, offering a comprehensive understanding of the key elements that impact purchasing decisions and perceptions of online shopping.

Kaiser-Meyer-Olkin (kmo) and Bartlett's test: The Kaiser-Meyer-Olkin Measure of Sampling Adequacy evaluates the shared variance among variables, with values approaching 1 denoting strong viability for factor analysis. Bartlett's Test of Sphericity assesses whether the correlation matrix deviates significantly from an identity matrix, where a p-value below the 0.05 threshold implies the correlations are suitable for factor analysis. Collectively, these assessments determine the sampling adequacy and overall appropriateness of the dataset for factor analytical procedures.

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		**.861**
Bartlett's Test of Sphericity	Approx. Chi-Square	15014.837
	Df	300
	Sig.	.000

Table No. 2. KMO and Bartlett's Test
Source: Primary Data

The results of Bartlett's Test of Sphericity demonstrate a p-value of 0.000, which is below the 5% significance threshold, leading to the rejection of the null hypothesis. This implies that the

correlation matrix does not resemble an identity matrix. Furthermore, the Kaiser-Meyer-Olkin Measure of Sampling Adequacy should exceed 0.70, indicating that the dataset contains a sufficient number of variables for each factor. In the present case, the KMO value is 0.861, confirming the adequacy of the sample for factor analysis.

	Initial	Extraction
Comprehensive Information at Single Window	1.000	.514
Frequent Ads Changed My Opinion	1.000	.681
Appealing Advertisements	1.000	.733
Impact of Product Images	1.000	.542
Ease of Understanding Product Use	1.000	.729
Recommendations from Acquaintances	1.000	.629
Encourages Repeat Purchases	1.000	.726
Product Trustworthiness	1.000	.696
Guaranteed Purchases	1.000	.574
Easily Identifiable Fake Products	1.000	.732
Familiarity with the Product	1.000	.732
Comfortable Shopping Experience	1.000	.731
Extensive Product Selection	1.000	.665
Hassle-Free Return Policy	1.000	.527
Convenient Product Comparison	1.000	.749
Received Valid Coupon Code	1.000	.785
Timely Offers	1.000	.660
Attractive Festival Offers	1.000	.610
High-Quality Offered Products	1.000	.702
Offer Duration	1.000	.577
Multiple Payment Options	1.000	.600
Credit Facility (EMI)	1.000	.648
Secure Payment System	1.000	.705
Personal Information Privacy	1.000	.753
Fast Transactions	1.000	.590
Extraction Method: Principal Component Analysis.		

Table No. 3. Communalities
Source: Primary Data

The table provide, the communalities should be greater than 0.5. This indicates that the items or factors listed share a significant amount of common variance, which suggests that they are well-defined and meaningful statements for the context in which they are being used. Statements with communalities greater than 0.5 are considered to have a strong connection to the underlying factors they represent, ensuring the reliability and validity of the overall construct. This threshold ensures that the statements are not only relevant but also contribute effectively to the analysis, providing clear and reliable insights.

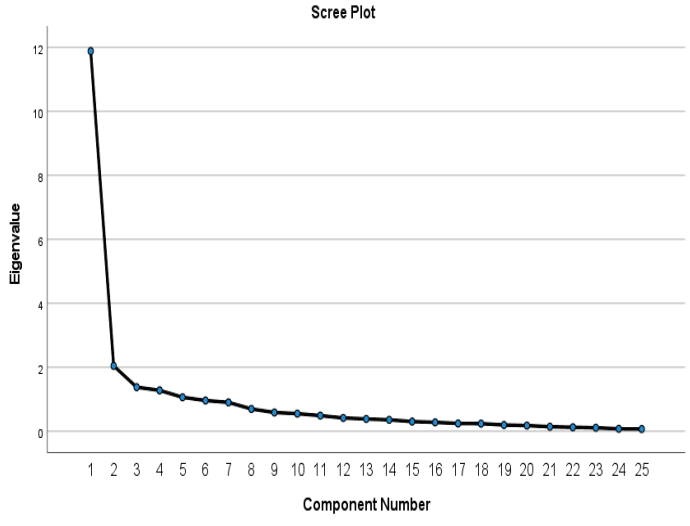
Variance Decomposition

This section presents a detailed analysis of all extracted components, including their eigenvalues, the proportion of variance explained by each component, and the cumulative variance accounted for by the factors. Notably, the first component explains 47.545% of the total variability in the dataset, underscoring its significant influence. The second component captures 8.184% of the variance, followed by the third and fourth components, which contribute 5.520% and 5.122%, respectively. Crucially, the remaining variables demonstrate no notable statistical significance, suggesting they do not substantially impact the overall variance in the analysis.

Table No.4. Total Variance Explained									
	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	11.886	47.545	47.545	11.886	47.545	47.545	4.820	19.279	19.279
2	2.046	8.184	55.729	2.046	8.184	55.729	4.184	16.738	36.017
3	1.380	5.520	61.249	1.380	5.520	61.249	4.149	16.596	52.613
4	1.281	5.122	66.371	1.281	5.122	66.371	3.439	13.758	66.371
5	1.064	4.256	70.627						
6	.963	3.852	74.479						
7	.904	3.618	78.097						
8	.699	2.795	80.892						
9	.589	2.355	83.247						
10	.553	2.212	85.458						
11	.491	1.962	87.421						
12	.418	1.670	89.091						
13	.386	1.546	90.637						
14	.359	1.437	92.073						
15	.305	1.221	93.294						
16	.281	1.122	94.417						
17	.246	.983	95.400						
18	.241	.962	96.362						
19	.198	.792	97.154						
20	.180	.720	97.874						
21	.144	.575	98.449						
22	.127	.506	98.956						
23	.111	.445	99.400						
24	.078	.314	99.714						
25	.071	.286	100.000						
Extraction Method: Principal Component Analysis.									

Scree Plot

The scree plot provides a graphical depiction of eigenvalues plotted against all factors. This visual representation serves as an invaluable tool for discerning the optimal number of factors to retain. The crucial point of interest is the location where the curve starts to flatten out.



(Source: Primary Data)

Eigenvalue: Eigenvalues represent the proportion of variance associated with each component or factor in the analysis. It is important to note that the sum of eigenvalues may not always equal the total number of items analysed. This discrepancy arises because each item contributes equally to the overall variance, whereas eigenvalues quantify the amount of variance explained by each component, which can vary.

Table No. 5. Rotated Component Matrix[a]

	Component			
	1	2	3	4
Shopping Experience				
Convenient Product Comparison	.783			
Ease of Understanding Product Use	.700			
Extensive Product Selection	.692			
Comfortable Shopping Experience	.684			
Fast Transactions	.668			
Comprehensive Information at Single Window	.574			
Customer Satisfaction				
Received Valid Coupon Code		.784		
Timely Offers		.701		
Credit facility (EMI)		.666		
Easily Identifiable Fake Products		.629		
High-Quality Offered Products		.601		
Hassle-Free Return Policy		.500		
Purchase Decisions				
Frequent Ads Changed My Opinion			.805	
Encourages Repeat Purchases			.778	
Appealing Advertisements			.775	
Impact of Product Images			.648	
Recommendations from Acquaintances			.593	
Trust and Security				
Personal Information Privacy				.807
Familiarity with the Product				.722
Product Trustworthiness				.594
Secure Payment System				.508
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.				
a. Rotation converged in 12 iterations.				

(*Source: Primary Data*)

The presented table depicts the rotated component matrix derived from a principal component analysis utilizing Varimax rotation, which converged after 12 iterations. This matrix illustrates the clustering of variables into distinct components, providing valuable insights into the underlying data structure. The analysis has identified four principal components.

The first component, Shopping Experience encompasses several variables that collectively define the overall shopping experience for customers. Key factors in this component include convenient product comparison (.783), ease of understanding product use (.700), extensive product selection (.692), a comfortable shopping experience (.684), fast transactions (.668), and comprehensive information available at a single window (.574). These elements are crucial as they enhance the convenience and satisfaction of the shopping process for consumers. The second component, Customer Satisfaction is composed of variables that directly impact how satisfied customers are with their shopping experience. Significant factors here include receiving a valid coupon code (.784), timely offers (.701), the availability of credit facilities such as EMI options (.666), the ability to easily identify fake products (.629), the overall quality of products offered (.601), and a hassle-

free return policy (.500). These aspects contribute to building a positive shopping experience and ensuring customer loyalty.

The third component, Purchase Decisions highlights factors that influence customers' decisions to make purchases. This component includes the impact of frequent advertisements changing opinions (.805), encouragement of repeat purchases (.778), the appeal of advertisements (.775), the impact of product images (.648), and recommendations from acquaintances (.593). These factors play a significant role in shaping consumer behavior and driving purchase decisions. The fourth component, Trust and Security addresses the elements that build trust and ensure security for customers. This includes personal information privacy (.807), familiarity with the product (.722), trustworthiness of the product (.594), and a secure payment system (.508). These variables are essential in fostering a secure and trustworthy environment for customers, which is crucial for maintaining their confidence and ensuring repeat business.

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Shopping Experience	Equal variances assumed	.000	.985	2.545	634	.011	.20228899	.07948510	.04620308	.35837490
	Equal variances not assumed			2.550	633.232	.011	.20228899	.07933200	.04650336	.35807462
Customer Satisfaction	Equal variances assumed	.350	.554	-.843	634	.400	-.06676576	.07923646	-.22236342	.08883189
	Equal variances not assumed			-.843	630.957	.400	-.06676576	.07919585	-.22228510	.08875357
Purchase Decisions	Equal variances assumed	1.518	.218	1.366	634	.172	.10842756	.07934765	-.04738844	.26424356
	Equal variances not assumed			1.362	617.655	.174	.10842756	.07961141	-.04791430	.26476942
Trust and Security	Equal variances assumed	9.634	.002	1.500	634	.134	.11762463	.07839263	-.03631597	.27156523
	Equal variances not assumed			1.508	632.475	.132	.11762463	.07797497	-.03549652	.27074578

Table No.6. Independent Samples Test
(*Source: Primary Data*)

The four identified components group variables exhibiting similar response patterns, enabling a comprehensive understanding of the multifaceted dimensions that shape shopping behaviors and customer perceptions. This analytical approach facilitates the identification of crucial areas for improvement and strategic prioritization to enhance the overall customer experience.

Assessing Variations Between Independent Groups

The Independent Samples Test assesses whether there is a significant difference between the means of two unrelated groups. It compares the average values of a variable across these groups,

accounting for variability within and between groups. This test is commonly used to evaluate if the differences observed are statistically significant or if they could have occurred by chance. It relies on assumptions like normality and equal variances to produce reliable results.

The table summarizes the results of t-tests conducted to examine the mean differences between two groups across the four identified components.: Shopping Experience, Customer Satisfaction, Purchase Decisions, and Trust and Security. For Shopping Experience both equal variances assumed and not assumed t-tests are significant ($p = .011$), indicating a significant difference between the group means. In contrast, Customer Satisfaction shows no significant difference ($p = .400$) regardless of variance assumptions. Similarly, PurchaseDecisions shows no significant difference ($p > .172$) under both assumptions. Lastly, for Trust and Security despite a significant Levene's test ($p = .002$) indicating unequal variances, the t-tests also show no significant difference ($p > .132$). These results highlight that only the Shopping Experience component has a statistically significant difference between the group means.

Analysis of Variance for Single Independent Variable

Analysis of Variance is a statistical technique employed to assess the mean differences among three or more independent groups, ascertaining if any statistically significant disparities exist between them. This method examines whether the variability within each group diverges substantially from the variability across groups. This analytical approach is instrumental in determining whether distinct treatment conditions or categorical classifications exert differential influences on the outcome variable.

The table showcases the outcomes of Levene's tests for the Trust and Security component, assessing various statistical metrics: mean, median, median with adjusted degrees of freedom, and trimmed mean. The significant p-values across all tests—0.001 for the mean, 0.016 for the median, 0.016 for the median with adjusted degrees of freedom, and 0.002 for the trimmed mean—indicate substantial differences in variances among the groups. This finding suggests a violation of the homogeneity of variances assumption, a critical prerequisite for conducting a one-way ANOVA on the Trust and Security component.

Table No.7. Group Statistics

	Gender	N	Mean	Std. Deviation	Std. Error Mean
Shopping Experience	Male	305	.0878858	.97662728	.05592152
	Female	331	-.1144032	1.02374906	.05627034
Customer Satisfaction	Male	305	-.0822151	.99177415	.05678882
	Female	331	-.0154494	1.00427141	.05519975
Purchase Decisions	Male	305	.0632294	1.04115474	.05961635
	Female	331	-.0451982	.95992731	.05276238
Trust and Security	Male	305	.0641381	.91853309	.05259505
	Female	331	-.0534865	1.04732350	.05756611

(*Source: Primary Data*)

The one-way ANOVA table for the Trust and Security component reveals a statistically significant effect of the independent variable on Trust and Security levels. The between-group sum of squares is 31.657 with 6 degrees of freedom, while the within-group sum of squares is 588.998 with 629 degrees of freedom. The mean square for the between-groups is 5.276, whereas for the within-groups, it is 0.936. The F-statistic is 5.634 with a p-value of 0.000, indicating a highly significant difference among the group means. These results suggest that Trust and Security levels vary substantially across the different groups analysed.

		Levene Statistic	df1	df2	Sig.
Trust and Security	Based on Mean	3.637	6	629	.001
	Based on Median	2.619	6	629	.016
	Based on Median and with adjusted df	2.619	6	584.063	.016
	Based on trimmed mean	3.625	6	629	.002

Table No.8. Tests of Homogeneity of Variances

Table No. 9. ANOVA					
Trust and Security					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	31.657	6	5.276	5.634	.000
Within Groups	588.998	629	.936		
Total	620.654	635			

(*Source: Primary Data*)

Trust and Security								
	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Student	139	.2544030	.94524498	.08017463	.0958735	.4129326	-2.07009	1.89798
Professional	130	.0325813	.92876401	.08145799	-.1285854	.1937479	-2.07009	1.85013
Businessman	69	-.1480955	.93790568	.11291058	-.3734051	.0772140	-2.07009	1.40323
Government Employee	66	-.0582769	1.05399322	.12973760	-.3173808	.2008270	-2.07009	1.71346
Non-Government	109	.1041792	.95705784	.09166952	-.0775257	.2858841	-2.08184	1.89798
Home maker	68	-.5364571	1.16476323	.14124829	-.8183899	-.2545243	-2.07009	1.71346
Others	55	.0263444	.77667057	.10472624	-.1836191	.2363078	-1.48291	1.74676
Total	636	.0029216	.98863977	.03920212	-.0740599	.0799030	-2.08184	1.89798

Table No. 10. Descriptives
(Source: Primary Data)

The Descriptive Statistics table for the Trust and Security component reveals the mean scores and variability for different groups. Students have a mean score of 0.254 with a standard deviation of 0.945, indicating relatively high variability and a broad range of scores. Professionals have a lower mean score of 0.033 and also show considerable variability (0.929). Businessmen, Government Employees, Non-Government employees, and Homemakers exhibit mean scores close to or below zero, with varying degrees of standard deviation. Homemakers have the highest variability (1.165), while others show the lowest variability (0.777). The overall mean for all groups combined is nearly zero (0.003), with a standard deviation of 0.989, suggesting that the Trust and Security scores are fairly consistent across the sample but vary widely within each group.

Conclusion

Viral marketing on social media platforms has emerged as a powerful mechanism for fostering a substantial customer base. However, consumer buying behavior in response to viral marketing exhibits significant variation owing to several influential factors. Educational attainment can shape how customers perceive and react to viral marketing campaigns, with individuals holding advanced degrees tending to adopt a more critical and discerning approach. Additionally, age represents a salient factor, as younger consumers exhibit a heightened receptivity to viral trends compared to older demographics. The residential locale also plays a role in shaping buying behavior, as urban customers are often more exposed to and influenced by viral marketing than those in rural settings. Furthermore, gender differences contribute to variations in customer reactions, with distinct preferences and buying patterns observed between men and women.

Existing research suggests that viral marketing on social media has a substantial and constructive effect on online consumer purchasing patterns, augmenting customers' inclination to acquire products. The appeal of viral marketing resides in its cost-efficiency, expedience, and user-friendliness, enabling businesses to effectively reach a global consumer base. The swift propagation of information through social media channels can considerably heighten customer interest in products, thereby driving heightened engagement and sales volumes.

However, viral marketing strategies face several challenges. A significant concern is the spread of misleading information from unscrupulous marketers, which can foster scepticism and mistrust among consumers. False claims regarding product prices, quality, and other characteristics can undermine the credibility of legitimate businesses. This scepticism is especially harmful when introducing new products, as prior exposure to misleading messages can obstruct promotional efforts. Therefore, it is essential for businesses to tackle these challenges by ensuring that their viral marketing strategies uphold integrity and transparency, thus fostering and maintaining customer trust.

The research has demonstrated a considerable and constructive association between viral marketing and consumer purchasing preferences, with individuals principally deriving advantages from viral marketing through social networking sites and social media platforms, including Facebook, Twitter, YouTube, and personal blogs. These platforms enable the dissemination of information through word-of-mouth, which substantially shapes consumer buying conduct. Consumers exhibit a proclivity to heed and participate in discussions about products and services within their social networks, frequently forwarding viral messages to close contacts, comprising friends, family, and colleagues.

These dynamic underscores the potency of word-of-mouth marketing in the digital landscape. When consumers receive product information from credible sources, they exhibit a heightened propensity to be influenced in their purchasing decisions. The research suggests that social media not only amplifies these personal recommendations but also augments the overall efficacy of viral marketing endeavours. By harnessing the interconnectedness of social networks, businesses can attain substantial impact in promoting their products and services, ultimately driving elevated engagement and increased sales volumes.

In this context, the role of artificial intelligence (AI) becomes crucial in enhancing viral marketing strategies. AI can optimize the targeting and personalization of marketing campaigns by analysing user behavior and preferences, thereby increasing the likelihood of content going viral. By employing AI-driven analytics, businesses can better understand customer sentiments and tailor their approaches to meet the evolving needs of their audience. Ultimately, integrating AI into viral marketing strategies will empower businesses to navigate the complexities of social commerce more effectively, driving customer engagement and improving buying behavior in an increasingly competitive landscape.

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