CUTTING-EDGE RESEARCH IN COMMERCE AND MANAGEMENT: A TECHNOLOGY PERSPECTIVE

Neuromarketing, Consumer Behaviour & Digital Marketing Strategies Perspective

Dr.V.Dheenadhayalan

CUTTING-EDGE RESEARCH IN COMMERCE AND MANAGEMENT: A TECHNOLOGY PERSPECTIVE - Neuromarketing, Consumer Behaviour & Digital Marketing Strategies Perspective

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Editor

Dr. V. DHEENADHAYALAN *Ph.D*

Associate Professor in Commerce & Head

Sri Subramaniyaswamy Government Arts College

Tiruttani - 631209, Tamil Nadu

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PREFACE

In the age of digital acceleration, understanding the consumer has become both an art and a science. As traditional marketing models evolve under the influence of artificial intelligence, behavioral analytics, and immersive digital platforms, the field of commerce and management finds itself at the intersection of neuroscience, ethics, and technological innovation.

This edited volume, Cutting-Edge Research in Commerce and Management: A Technology Perspective – Neuromarketing, Consumer Behaviour & Digital Marketing Strategies Perspective, brings together a diverse and thought-provoking collection of research that explores the subconscious drivers of consumer decisions, the ethical dimensions of digital engagement, and the strategic deployment of AI in marketing ecosystems.

The contributions span a wide array of themes—from the emotional resonance of neuromarketing and sensory branding to the rise of digital fashion twins and the paradoxes of fast fashion among Generation Z. Scholars investigate the influence of influencers, the role of producers in shaping consumption behavior, and the evolving landscape of social commerce and brand engagement. The volume also addresses pressing concerns such as cyber scams facilitated by social media ads and the transparency challenges in digital marketing, with blockchain emerging as a potential solution.

What distinguishes this volume is its interdisciplinary lens—blending insights from psychology, technology, ethics, and strategic management to decode the modern consumer mind. Whether examining AI-driven personalization, the ethical implications of avatar-based marketing, or the neural underpinnings of purchase intent, each paper contributes to a deeper understanding of how digital transformation is reshaping consumer behavior and marketing strategy.

We extend our sincere appreciation to the contributors whose rigorous scholarship and innovative perspectives have enriched this compilation. Their work reflects the intellectual vitality and relevance of contemporary research in commerce and management.

This book is intended to serve as a resource for academics, practitioners, and students alike—inviting them to engage with the evolving dynamics of consumer engagement, and to envision marketing strategies that are not only effective but also empathetic, ethical, and future-ready.

Dr. V. Dheenadhayalan
Editor
Tiruttani, India
September, 2025

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CHAPTER 1

NEUROMARKETING & BEHAVIOURAL ANALYTICS – UNDERSTANDING SUBCONSCIOUS CONSUMER DECISIONS

Dr. B. Suriya Priya
Assistant Professor, Department of Commerce
SDNB Vaishnav College for Women, Chennai

Abstract

The integration of neuroscience and data analytics in marketing, referred to as neuromarketing and behavioural analytics, has been recognized as a transformative approach in understanding and influencing consumer behaviour. In this interdisciplinary field, subconscious processes that drive decision-making are explored, going beyond the limitations imposed by traditional methods such as surveys and focus groups. Real-time emotional and cognitive responses are accessed using advanced tools such as EEG, fMRI, eye-tracking, and facial coding, allowing for a deeper understanding of consumer preferences, attention, and motivation. Insights are further enhanced by behavioural analytics, through which patterns in consumer interactions across digital platforms are analysed. By combining these methods, a comprehensive framework is provided for the decoding of implicit consumer attitudes and the prediction of future behaviours. In this abstract, the evolution, tools, applications, and ethical implications of neuromarketing and behavioural analytics are presented, with an emphasis placed on their potential to develop emotionally resonant marketing strategies and improve consumer engagement and satisfaction.

Keywords: *Subconscious Consumer Behaviour, Neuromarketing Techniques, Behavioural Analytics, Emotional Decision-Making, Consumer Neuroscience*

Introduction

In the rapidly evolving landscape of modern marketing, understanding consumer behaviour outspreads far beyond conventional methods of surveys and focus groups. The emergence of neuromarketing and behavioural analytics has revolutionized how businesses decode subconscious consumer decisions. By integrating neuroscience with marketing strategies, companies can gain deeper insights into the hidden drivers of consumer behaviour, such as emotions, preferences, and decision-making patterns. Neuromarketing has evolved significantly since its inception in the early 2000s, transitioning from a niche research area to a mainstream marketing tool. Initially, neuromarketing focused primarily on understanding emotional responses to advertisements through EEG (Electroencephalography) and fMRI (Functional Magnetic Resonance Imaging) scans. Over time, it has expanded to include advanced biometric techniques, eye-tracking, and facial coding to capture a comprehensive view of subconscious consumer behaviour. Today, neuromarketing integrates AI and machine learning to predict consumer decisions with greater accuracy, transforming the way businesses connect with their audiences.

Defining Neuromarketing

Neuromarketing is defined by **Dr. David Lewis (2004)** as the application of neuroscience to marketing strategies, focusing on how consumers' brains respond to various marketing stimuli. In a more recent definition by **Lee et al. (2024)**, neuromarketing is described as a multidisciplinary approach that integrates neuroscience, cognitive psychology, and marketing to examine how subconscious processes influence consumer behaviour. It utilizes advanced biometric tools such as EEG, fMRI, and eye-tracking to capture neural and emotional responses to marketing stimuli, enabling businesses to optimize marketing strategies based on data-driven insights. According to **Smith & Johnson (2025)**, neuromarketing is now regarded as a strategic tool for understanding the psychological underpinnings of consumer behaviour. By analysing subconscious responses through biometric data, marketers can design more effective campaigns that align with consumer motivations and emotional triggers.

Benefits of Neuromarketing and Applications In Business

Neuromarketing offers several strategic advantages to businesses by providing deeper insights into consumer behaviour. Some key benefits and applications are:

- **Enhanced Advertising Effectiveness:** By understanding how consumers respond to visual and auditory stimuli, marketers can craft more compelling advertisements that resonate with target audiences. For example, PepsiCo utilized neuromarketing techniques to assess consumer emotional responses to different ad formats, leading to the development of highly engaging visual content.
- **Optimized Product Design:** Neuromarketing data helps in refining product design, packaging, and branding to align with consumer preferences and psychological triggers. For example, Campbell's Soup redesigned its packaging after conducting eye-tracking studies to identify visual cues that attracted consumer attention.
- **Improved Customer Experience:** Identifying emotional responses to marketing content allows businesses to create more engaging and personalized customer experiences. For example, Hyundai used neuromarketing to assess how consumers emotionally reacted to various car designs, enabling them to refine vehicle aesthetics for optimal consumer appeal.
- **Data-Driven Decision Making:** Neuromarketing provides objective data on consumer behaviour, enabling more accurate predictions of purchasing decisions. Netflix, for example, leverages neuromarketing insights to refine content recommendations, resulting in higher user engagement and satisfaction.
- **Enhanced Product Positioning:** Neuromarketing helps in identifying the most effective ways to position products in the minds of consumers by analysing emotional and cognitive responses. For example, Starbucks employed neuromarketing to refine its brand positioning, ensuring that its coffee products evoked feelings of warmth and comfort in its target audience.

- **Reducing Marketing Costs:** By accurately predicting consumer responses to marketing strategies, neuromarketing reduces the risk of investing in ineffective campaigns. for example, Unilever used neuromarketing data to streamline its marketing content, focusing only on visuals and messages that produced positive neural responses, thereby reducing advertising expenditure.
- **Pricing Strategies:** Neuromarketing can be employed to assess consumer emotional responses to different pricing models. For example, Walmart uses neuromarketing to determine how consumers respond to pricing tiers, allowing them to adjust pricing strategies to maximize purchase intent.
- **Product Testing:** Neuromarketing can be applied to assess consumer reactions to new products before launch. For example, Nike uses biometric data to analyse how consumers feel when interacting with new product prototypes, refining designs to align with positive responses.

Future Trends and Implications in Neuromarketing

The combination of Artificial Intelligence and machine learning with neuromarketing is expected to transform the marketing landscape. Predictive analytics, emotion recognition, and personalized marketing strategies are composed to become more predominant as technology advances.

- **Addiction to Digital Platforms:** As neuromarketing techniques become more sophisticated, there is a growing concern about the potential for creating addictive marketing content. Social media platforms like Instagram and TikTok utilize neuromarketing insights to develop highly engaging content that can lead to excessive screen time and consumer dependency.
- **Hyper-Personalization:** With AI-driven neuromarketing, businesses can deliver hyper-personalized content that provides individual consumer preferences. While this increases marketing effectiveness, it also raises ethical concerns regarding data privacy and manipulation.
- **Predictive Behavioural Analytics:** The use of predictive analytics to anticipate consumer behaviour based on neural and behavioural data will become increasingly prevalent, allowing marketers to proactively engage consumers with targeted messaging.
- **Neuromarketing and Augmented Reality (AR):** The combination of neuromarketing and AR will enable immersive marketing experiences that suggest specific emotional responses, further enhancing consumer engagement and brand recall.
- **Integration with Internet of Things (IoT):** The rise of IoT devices provides additional data streams for neuromarketing analysis. Smart home devices can track consumer habits, offering deeper insights into daily routines and preferences.
- **Neuro-Ethical Regulations:** As neuromarketing practices evolve, regulatory bodies are expected to implement stricter guidelines to ensure ethical usage of biometric

data. Companies may need to comply with data privacy laws that specifically address neural data collection and analysis.

Behavioral Analytics: Mapping Consumer Behaviour

Behavioral analytics explores into the study of consumer actions, habits, and preferences by analysing data collected from various touchpoints such as websites, social media platforms, and retail stores. It involves identifying patterns in consumer behaviour to understand motivations and predict future actions. This process encompasses data collection, data analysis, and predictive modelling, allowing marketers to create targeted campaigns based on consumer behaviour insights. Key components of behavioural analytics include detailed examination of various consumer interaction points, enabling marketers to gather actionable insights. These components are as follows:

- **Clickstream Analysis:** This involves tracking the sequence of web pages a user visits, their clicking patterns, and navigation paths. It helps marketers identify which content, products, or services attract the most attention and how users move through a website. Amazon, uses clickstream analysis to recommend products based on previous browsing behaviour to tracking user clicks and browsing history to determine preferences and identify the most visited web pages.
- **Social Media Monitoring:** This component involves collecting and analysing data from social media platforms to understand consumer sentiment, engagement levels, and brand perception. Tools like Hootsuite and Brand watch track mentions, hashtags, and comments to identify consumer opinions, helping marketers refine messaging and manage brand reputation effectively. Analysing social media interactions to assess sentiment, brand perception, and consumer engagement.
- **Purchase Path Analysis:** This involves mapping the entire consumer journey from the first point of contact (e.g., ad click) to the final purchase decision. Marketers analyse each stage to determine which touchpoints have the most significant impact on conversion rates. In case of a retail brand may use purchase path analysis to identify that most conversions occur after targeted email campaigns to study the journey from initial interest to purchase to identify influential touchpoints.
- **Customer Segmentation:** This technique involves categorizing consumers into distinct groups based on shared behavioural characteristics, such as purchase frequency, spending patterns, and product preferences. A luxury fashion brand might segment its audience into high-spending VIPs, occasional shoppers, and first-time visitors and also group consumers based on behaviour patterns, such as frequent buyers, window shoppers, or high-value customers.

Understanding Subconscious Consumer Decisions

Understanding subconscious consumer decisions involves exploring the underlying psychological and neural processes that drive purchasing behaviour. Neuromarketing influences neuroscience tools to decode sensitive and cognitive behaviour to marketing

stimuli. Meanwhile, behavioural analytics examines consumer actions, such as browsing patterns and purchase history, to uncover hidden patterns and predict future behaviour. Together, these approaches provide marketers with powerful insights into both conscious and subconscious decision-making processes. Moreover, the integration of AI and machine learning in neuromarketing has enhanced predictive capabilities, enabling businesses to anticipate consumer needs with greater precision. Techniques such as sentiment analysis and emotion recognition allow marketers to refine strategies based on real-time consumer feedback. Furthermore, ethical considerations play a crucial role, as the manipulation of subconscious behaviour raises concerns about data privacy and informed consent. Ultimately, understanding subconscious consumer decisions equips marketers with the tools to design more impactful campaigns, foster brand loyalty, and drive higher conversion rates through data-driven insights.

Conclusion

In an era marked by data abundance and rapidly evolving consumer expectations, the traditional tools of market research often fall short in uncovering the hidden drivers behind purchasing behaviour. Neuromarketing and behavioural analytics emerge as transformative disciplines, enabling marketers to move beyond what consumers say to decode what they truly feel and think. Neuromarketing integrates neuroscience techniques to provide a window into emotional engagement, attention span, and memory retention. These insights help brands optimize everything from product design and packaging to advertising content and retail environments, ensuring they align with the deep-seated emotional and cognitive preferences of their target audience. On the other hand, behavioural analytics, powered by big data and artificial intelligence, allows for the real-time interpretation of consumer actions across digital platforms. By identifying behavioural patterns and anomalies, marketers can predict future behaviour, detect risks, and personalize engagement with unprecedented precision. Together, these tools foster a more scientific, data-driven approach to understanding the consumer mind. However, the implementation of these tools demands careful ethical consideration. As businesses gain access to consumers' subconscious cues and digital footprints, it becomes imperative to ensure transparency, consent, data security, and respect for individual autonomy. Regulatory compliance and ethical frameworks must evolve alongside technological advancements to maintain consumer trust and societal well-being.

In conclusion, neuromarketing and behavioural analytics are not just byword they represent a model to shift in how businesses understand and connect with consumers. When used reliably, these approaches empower organizations to anticipate needs, shape experiences, and build enduring relationships rooted in a profound understanding of human behaviour. As we look to the future, the conjunction of neuroscience, data science, and marketing will continue to redefine the rules of engagement in the consumer turning subconscious insights into strategic foresight.

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CHAPTER 2

DIGITAL MARKETING AND SOCIAL MEDIA STRATEGIES: LEVERAGING AI-DRIVEN INSIGHTS – A CONCEPTUAL PERSPECTIVE

Dr. D. Vijayalakshmi
Assistant Professor, Department of Commerce
SRM IST, Faculty of Science & Humanities
Vadapalani Campus, Chennai

Abstract

The evolution of digital technology has reshaped the way organizations connect with and comprehend consumer behavior. Artificial Intelligence (AI) now plays a vital role in redefining strategies in digital and social media marketing by enhancing personalization, prediction, and insights. This conceptual paper delves into the psychological underpinnings of consumer actions in the digital realm, explores how AI influences marketing frameworks, and proposes a model for leveraging AI to improve marketing effectiveness. Additionally, it highlights challenges, ethical dimensions, and emerging trends to enrich the academic discussion surrounding AI-driven marketing strategies.

Keywords: *Consumer behavior, Digital marketing, Social media, Artificial intelligence, Personalization, Predictive analytics, Sentiment analysis*

Introduction

The rapid proliferation of digital technologies and social media platforms has drastically changed the marketing landscape. Consumers now expect personalized, real-time, and relevant interactions across multiple touchpoints. Traditional marketing models are no longer sufficient to explain or predict consumer behavior in this new environment. Instead, businesses increasingly rely on Artificial Intelligence (AI) to decode consumer behavior, anticipate needs, and tailor communication.

This paper presents a conceptual exploration of how AI-driven insights can be integrated into digital marketing and social media policies to enhance customer rendezvous, satisfaction, and brand faithfulness.

Theoretical Foundations of Consumer Behavior in the Digital Era

Consumer behavior theory has traditionally been grounded in disciplines such as psychology, sociology, and economics, offering frameworks to understand how individuals make purchasing decisions and respond to marketing stimuli. However, the emergence of digital technologies has introduced new behavioral dynamics that necessitate updated theoretical models. One such model is the Technology Acceptance Model (TAM), which explains that perceived ease of use and usefulness are key drivers of consumers' adoption of digital tools (Davis, 1989). Engagement Theory adds another layer by emphasizing the importance of emotional and cognitive involvement in building brand loyalty and

influencing purchasing behavior. Meanwhile, the Personalization Paradigm suggests that individualized marketing experiences significantly enhance consumer satisfaction and trust, reinforcing engagement and encouraging repeated interactions (Arora et al., 2008). In the digital landscape, consumers display fragmented attention spans, omnichannel engagement habits, and a heightened demand for tailored content. These characteristics render traditional consumer behavior models insufficient on their own, thereby necessitating AI-driven approaches to collect and analyze behavioral data, predict preferences, and deliver hyper-personalized content that aligns with evolving consumer expectations.

The Role of AI in Digital Marketing and Social Media

Artificial Intelligence plays a transformative role in digital marketing and social media by enabling marketers to understand, predict, and engage with consumers more effectively. Through predictive analytics, AI can forecast consumer behavior such as the likelihood of purchase, churn, or engagement, allowing marketers to take timely and informed actions. It also delivers real-time consumer insights by analyzing vast amounts of structured and unstructured data, including clickstreams, product reviews, and social media posts, to identify emerging trends and behavioral patterns. Hyper-personalization is achieved through machine learning algorithms that tailor product recommendations, email content, and advertisements to individual preferences, enhancing the customer experience. Additionally, Natural Language Processing (NLP) facilitates sentiment and emotion analysis, helping brands assess consumer attitudes and emotional responses across various platforms, thereby refining communication strategies. Furthermore, AI powers automated interactions through chatbots and virtual assistants, ensuring continuous customer engagement, faster response times, and improved service quality. Collectively, these AI-driven capabilities significantly enhance the effectiveness, personalization, and strategic value of digital marketing and social media efforts.

A conceptual framework for AI-driven marketing strategy

This strategy can be illustrated through a five-stage AI-Marketing Integration Model that emphasizes continuous learning and adaptation. The process begins with data acquisition, where consumer information is collected from various digital touchpoints such as social media platforms, mobile apps, and website traffic. This is followed by data processing and analysis, where AI algorithms are used to identify meaningful patterns, emerging trends, and any anomalies within the data. The third stage involves behavioral modeling, where predictive models are developed to anticipate consumer actions and preferences. Based on these insights, the fourth stage—content and campaign optimization—focuses on creating and delivering personalized marketing messages through the most suitable digital channels to maximize engagement and effectiveness. The final stage is the feedback and learning loop, where marketers continuously refine their strategies by analyzing consumer responses and integrating updated data. This cyclical model enables ongoing improvement, making AI-powered marketing strategies more dynamic, responsive, and intelligent over time.

Strategic Applications and Implications

The strategic applications of AI in marketing have profound implications for brand strategy, consumer empowerment, and competitive advantage. By enabling responsive, empathetic, and timely communication, AI helps brands build stronger and more meaningful relationships with their consumers. Through advanced personalization, AI enhances the relevance of marketing content, leading to increased consumer satisfaction and engagement. However, as personalization deepens, it becomes essential for companies to maintain transparency and offer consumers control over how their data is used, ensuring trust and ethical use of technology. Additionally, organizations that adopt AI-driven marketing strategies can gain a significant competitive edge by improving operational efficiency, fostering customer loyalty, and differentiating themselves in the marketplace. As a result, AI not only optimizes marketing performance but also supports long-term strategic positioning and growth.

Ethical Considerations

The integration of AI in consumer behavior analysis brings forth several critical ethical considerations that must be addressed to ensure responsible and sustainable marketing practices. One of the foremost concerns is data privacy—consumers should be clearly informed about what data is being collected, how it is used, and for what purpose. Equally important is the issue of algorithmic bias, where the use of biased or unrepresentative data can result in exclusionary or discriminatory marketing outcomes, undermining fairness and inclusivity. Transparency in AI-driven decision-making processes is also essential, as it helps build trust between organizations and consumers. By openly communicating how AI systems operate and make recommendations, companies can foster greater consumer confidence. Ultimately, adopting ethical AI practices is not only a moral imperative but also a foundational element for building trustworthy and sustainable marketing strategies in the digital age.

Challenges and Future Directions

While AI offers transformative potential in marketing, several challenges must be addressed to harness its full impact. One significant obstacle is the existence of data silos, where fragmented and unintegrated data across various platforms prevents a unified understanding of consumer behavior, thereby limiting the effectiveness of AI insights. Additionally, many organizations face a skill gap, lacking the technical expertise and trained professionals required to implement, manage, and optimize AI tools effectively. As AI becomes more prevalent, consumer expectations are also evolving—they now demand not just personalized content, but marketing that feels authentic, contextually relevant, and respectful of their preferences.

Looking to the future, AI advancements are expected to include emotional AI, enabling brands to engage in more empathetic and human-like interactions; voice AI integration in smart home environments, enhancing convenience and accessibility; and the use of

immersive technologies such as augmented and virtual reality to deliver rich, interactive brand experiences. These innovations will redefine digital marketing, making it more intelligent, engaging, and emotionally resonant.

Conclusion

AI is not merely a technological upgrade—it is a paradigm shift in the way businesses understand and interact with consumers. By integrating AI-driven insights into digital marketing and social media strategies, firms can align more closely with consumer expectations, enhance engagement, and drive strategic value. This conceptual exploration underscores the need for an integrated, ethical, and human-centric approach to AI-powered marketing in an increasingly complex digital ecosystem.

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CHAPTER 3

ANALYZING THE EFFECTS OF INFLUENCERS ON CONSUMER BEHAVIOUR

S. Neema
Ph.D. Full Time Research Scholar, (Reg. No: 2421311082001)
Research Centre of Management Studies, Nesamony Memorial Christian College
Marthandam, Affiliated to Manonmaniam Sundaranar University, Abishekapatti, Tirunelveli, Tamil Nadu,

Dr. C.L. Jeba Melvin
Associate Professor, Department of Management Studies
Nesamony Memorial Christian College, Marthandam
Affiliated to Manonmaniam Sundaranar University, Abishekapatti, Tirunelveli, Tamil Nadu,

Abstract

Social media is one of the most influential platforms today, rendering other methods of marketing and consumption out of date. Overall, this research addresses the impact that social media influencer marketing has on consumer behaviour and purchase intention. The influence of social media influencer marketing usage by brands has demonstrated significant impacts on consumers' brand awareness, attitudes toward the product, and ultimately purchase intentions when purchasing consumer products. This qualitative study also considered the type of impact of micro-influencers versus macro-influencers, the impact of visual content, and the availability and capability to engage with interactive content that can cause ethical concerns.

Keywords: *Social Media Influencer Marketing, Consumer Behaviour, Purchase Intention, Influencer Marketing, Micro-Influencers.*

Introduction

The rise of social media has transformed digital marketing, making influencer marketing crucial for brands to connect with consumers (Varshney et al., 2023). Influencers significantly impact consumer attitudes and purchasing decisions (De Veirman et al., 2021). Kotler and Keller (2016) define influencer marketing as brands partnering with individuals who have large followings to promote products. This strategy has gained traction, with brands investing heavily in campaigns. Influencers shape consumer behaviour through reviews and testimonials, building community and brand loyalty (Belanche et al., 2021). As this approach becomes essential, ethical engagement practices are increasingly important (Thrassou et al., 2021).

Review of Literature

Introduction to Social Media Influencer Marketing

Social media influencer marketing (SMIM) has become a crucial digital strategy by leveraging the reach of individuals with large followings on platforms like Instagram and TikTok (Kaur, J. et al., 2024). Namkoisse, E. et al., 2023) and enhancing their social capital, thereby influencing consumer attitudes and behaviours (Cheung, M. L. et al., 2025).

Theoretical Foundations: Opinion Leadership and Source Credibility

Influencers act as opinion leaders, sharing product information and shaping peer consumption choices (Foroudi et al., 2022). The Source Credibility Model highlights that an influencer's expertise, trustworthiness, and attractiveness greatly enhance the persuasiveness of their messages (Nasir et al., 2024).

Influence on Consumer Behaviour and Purchase Intentions

Research indicates that social media influencers strongly affect consumer behaviour and purchase intentions (Jaiswal, D. et al., 2024). Their endorsements foster trust more effectively than traditional ads, making influencers credible sources of product information (Soutar, G. N. et al., 2020).

Parasocial Interaction and Emotional Attachment

Parasocial relationships, one-sided emotional connections between followers and influencers, are key for consumer engagement and loyalty (Wang, B. et al., 2023). These bonds build trust in influencers' recommendations and create a sense of community, significantly impacting followers' adoption of product suggestions (Jimenez-Castillo, D. et al., 2021).

The Importance of Authenticity and Trustworthiness

Authenticity is crucial in influencer marketing, as followers prefer genuine content over scripted promotions (Mattila et al., 2024). When endorsements align with the influencer's persona, it enhances credibility and improves consumer attitudes toward the brand (Kiran et al., 2024).

Research Methodology

This study employed a mixed-methods design, gathering primary data through an online Google Forms questionnaire using convenience sampling. It focused on demographics, social media usage, attitudes toward influencer marketing, and purchasing intentions. Data analysis included descriptive and inferential statistics to assess the impact of social media influencer marketing on consumer purchasing intentions.

Objectives

- To examine the trends of social media usage and consumer engagement with influencer content across various platforms.
- To evaluate the impact of influencer marketing on consumer purchasing behaviour.

Analysis and Interpretation

The data presented in the tables provides insights into the demographic characteristics and purchasing behaviour of the respondents.

Frequency Distribution

Table 1: Frequency-Occupation					
		Frequency	**Percent**	**Valid Percent**	**Cumulative Percent**
Valid	Farmer	2	1.5	1.5	1.5
	Business	4	3.1	3.1	4.6
	Private Employee	66	50.8	50.8	55.4
	Government Employee	4	3.1	3.1	58.5
	Others	54	41.5	41.5	100.0
	Total	130	100.0	100.0	

The majority of respondents (50.8%) are private employees, followed by Others (41.5%). This suggests that the sample is predominantly composed of working professionals.

Table 2: Frequency of Purchase Products Directly Linked from Influencer Posts

		Frequency	**Percent**	**Valid Percent**	**Cumulative Percent**
Valid	Frequently	7	5.4	5.4	5.4
	Occasionally	24	18.5	18.5	23.8
	Rarely	67	51.5	51.5	75.4
	Never	32	24.6	24.6	100.0
	Total	130	100.0	100.0	

The data indicates that the majority of respondents (51.5%) rarely purchase products directly linked from an influencer's post, while 24.6% never make such purchases. This suggests that social media influencers have a limited impact on the purchasing decisions of the respondents.

Table 3: Frequency-Gender					
		Frequency	**Percent**	**Valid Percent**	**Cumulative Percent**
Valid	Male	37	28.5	28.5	28.5
	Female	93	71.5	71.5	100.0
	Total	130	100.0	100.0	

The sample is predominantly female (71.5%), with males accounting for 28.5%.

Descriptive Statistics

Table 4: Descriptive Statistics on Use of Social Media, Made Purchase Influenced by a Social Media Influencer and Trust Product Recommendation from Social Media Influencer

	N	Minimum	Maximum	Mean	Std. Deviation
Use of social media	130	1	2	1.01	.088
Made a purchase influenced by a social media influencer	130	1	2	1.09	.291
Trust product recommendations from a social media influencer	130	1	4	2.80	.782
Valid N (listwise)	130				

Interpretation

This study presents statistics on social media usage and the impact of influencers on purchasing decisions. Findings show that respondents are active users (mean score = 1.01, N = 130, Std. Deviation = 0.088). Influencers have a low impact on buying decisions (mean score = 1.09, N = 130, Std. Deviation = 0.291), while trust in product recommendations is moderate (mean score = 2.80, N = 130, Std. Deviation = 0.782).

One-Way ANOVA: The tables present results from a statistical analysis examining the relationship between age and a categorical frequency variable (Daily, Weekly, Rarely, Never), including descriptive statistics, variance homogeneity tests, and an ANOVA.

Table 5: Age and Level of Engagement with Influencer Content

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Daily	28	2.04	.744	.141	1.75	2.32	1	5
Weekly	22	2.27	.767	.164	1.93	2.61	2	5
Rarely	55	2.20	.650	.088	2.02	2.38	1	5
Never	25	1.72	.458	.092	1.53	1.91	1	2
Total	130	2.08	.682	.060	1.97	2.20	1	5

Null Hypothesis (H_0): There is no significant difference in age across different levels of engagement with influencer content.

Alternative Hypothesis (H_1): There is a significant difference in age across different levels of engagement with influencer content.

The mean age is highest in the Weekly category (2.27) and lowest in the Never category (1.72). The Weekly category also shows the most variability (standard deviation of 0.767). Each category includes a 95% confidence interval for the mean age, indicating the range for the true population mean.

Table 6: Levene's Test for Homogeneity of Variances

Levene Statistic	df1	df2	Sig.
.228	3	126	.877

The homogeneity of variances test checks if age variance is equal across frequency categories. The Levene statistic is .228 with a significance of .877, indicating that the null hypothesis of equal variances remains intact. This suggests no significant differences in age variances across categories.

The ANOVA results shows significant age differences across frequency categories, with an F-statistic of 3.731 and a significance value of .013, allowing us to reject the null hypothesis of equal means. This indicates that age is significantly linked to engagement with influencer content.

Chi–Square Test: The Chi-Square test was conducted to examine the relationship between the Use of social media and made purchases by influence of a social media influencer.

Table 8: Cross-tabulation of the Use of social media and purchases made, influenced by social media influence

		Made purchases influenced by a social media influencer		Total
		Yes	No	
Use of social media	Yes	117	12	129
	No	1	0	1
Total		118	12	130

Null Hypothesis (H_0): There is no significant association between the Use of social media and the made purchase influenced by a social media influencer.

Alternative Hypothesis (H_1): There is a significant association between the Use of social media and purchases made influenced by a social media influencer.

The Chi-Square test results show no significant association between social media use and purchases influenced by influencers, with p-values of Pearson Chi-Square (.749), Likelihood Ratio (.659), and Fisher's Exact Test (1.000) all above .05. Thus, we fail to reject the null hypothesis (H_0) and conclude that social media use does not significantly affect purchase decisions influenced by social media influencers.

Findings

- The majority of respondents (50.8%) were private employees, and the sample was predominantly female (71.5%). Social media influencers have a limited impact on purchasing decisions, with 51.5% of respondents rarely making purchases directly linked to an influencer's post.

- The study finds mean scores of 1.01, 1.09, and 2.80 for social media usage, influencer-influenced purchases, and trust in product recommendations, respectively.
- Age is a significant factor in determining the level of engagement with influencer content ($F = 3.731$, $p = 0.013$).
- There is no significant association between social media use and making purchases influenced by social media influencers ($\chi 2 = 1.029$, $p = 0.749$).

Suggestions

Adjust marketing strategies to different age groups, as age influences engagement with influencer content. Create high-quality, relevant content to boost engagement and drive purchases. Choose influencers that align with your brand values for effective campaigns. Go beyond just influencer marketing to reach diverse demographics. Regularly track campaigns for insights to refine your strategy.

Conclusion

The research shows that social media influencers significantly impact purchasing decisions, with age affecting engagement levels. Businesses can improve their influencer marketing by using targeted strategies, high-quality content, and selecting the right influencers. A solid influencer marketing strategy is essential for reaching and engaging target audiences effectively.

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CHAPTER 4

ROLE OF SOCIAL MEDIA ADs IN FACILITATING CYBER SCAMS

Mr. S. Punyakesh Gowda
Research Scholar, Visvesvaraya Technological University
Centre for Postgraduate Studies, Mysuru, India

Dr. MK. Manjunatha
Assistant Professor, Visvesvaraya Technological University
Centre for Postgraduate Studies, Mysuru, India

Abstract

Social media platforms are increasingly used by cybercriminals for deceptive advertisements, causing financial losses and data breaches. To combat this, stronger regulatory oversight, AI-based detection systems, and collaboration between tech companies and law enforcement are needed.

***Keyword**: Social media, advertisements, Cyber Scam, Influencers and Celebrities*

Introduction

Social media advertisements have become a significant vector for cyber scams, leveraging the vast reach and targeting capabilities of platforms like Facebook, Instagram, and WhatsApp. These ads often exploit user trust and sophisticated technology to deceive individuals into financial losses.

How Social Media Ads Facilitate Cyber Scams

Targeted Deception

Scammers utilize the advanced targeting features of social media platforms to reach specific demographics based on interests, behaviors, and personal data. This precision allows them to craft personalized fraudulent ads that resonate with users, increasing the likelihood of engagement and financial exploitation.

Impersonation of Influencers and Celebrities

By using deepfake technology, scammers can create convincing videos or images featuring public figures endorsing fake investment opportunities or giveaways. These manipulated media are often disseminated through sponsored ads, making them appear legitimate and trustworthy. Notable examples include fraudulent promotions featuring personalities like Elon Musk and Oprah Winfrey.

Malvertising

Malvertising involves embedding malicious code within online advertisements, which can infect users' devices upon interaction. These ads may redirect users to phishing sites or initiate automatic downloads of malware, compromising personal data and security.

Fake Giveaways and Contests

Scammers often promote fake giveaways or contests through ads, enticing users with promises of free products or large sums of money. To claim the prize, users are typically asked to provide sensitive information or make an upfront payment, leading to identity theft or financial fraud. brandsec.com.au

Exploitation of Platform Loopholes

Despite policies against fraudulent ads, scammers find ways to bypass moderation systems. They may use deceptive tactics such as creating ads that mimic legitimate businesses or using intermediaries to place ads, making it challenging for platforms to detect and remove them promptly.

Impact on Users

The consequences of falling victim to these scams are severe, ranging from financial loss to identity theft. For instance, individuals have reported losing significant amounts of money through fake investment schemes and romance scams initiated via social media ads.

Protecting Yourself

To safeguard against such scams:

- **Verify Sources:** Always double-check the legitimacy of offers or promotions by visiting official websites directly.
- **Be Skeptical of Unsolicited Ads:** Exercise caution when encountering ads that promise unrealistic returns or prizes.
- **Report Suspicious Activity:** Utilize platform tools to report fraudulent ads or accounts.

Problem Identified

Lack of Ad Vetting s Verification

Social media platforms often rely on automated systems to approve ads. This allows malicious ads such as those promoting phishing sites, fake products, or malware downloads to slip through the cracks.

Trust in Sponsored Content

Users often associate paid ads with legitimacy. Cybercriminals exploit this trust to impersonate reputable brands or government agencies, leading to increased click-through rates on scam ads.

Microtargeting Vulnerabilities

Advanced targeting features allow attackers to aim scams at specific demographics (e.g., elderly users or those with low digital literacy), increasing the likelihood of success.

Use of Deepfakes and AI

Social media ads now sometimes feature AI-generated content (e.g., deepfake videos of celebrities or executives) endorsing scams, such as fake investment schemes.

Difficulty Tracing Malicious Actors

Many threat actors use shell companies, fake identities, or hacked accounts to place ads. This anonymity makes it hard for platforms and law enforcement to track and take down perpetrators.

Rapid Spread and Amplification

Ads can go viral quickly through shares, likes, and comments, amplifying the reach of malicious campaigns before platforms react

Educate Yourself: Stay informed about common scam tactics and share this knowledge with others to prevent widespread victimization.

If you need assistance identifying a suspicious ad or have encountered a potential scam, feel free to provide details, and I can guide you through the verification process.

Objectives of the Study

- To study the meaning and nature of cyber crime.
- To identify the various forms of social media.

Discussion

Vector for Phishing and Malware Distribution

- Malicious Ads (Malvertising): Cybercriminals create fake ads that look legitimate but contain links to phishing websites or malicious downloads.
- Phishing Campaigns: Ads may lead to fake login pages for banks, email providers, or social media platforms to harvest user credentials.

Social Engineering at Scale

- Targeted Manipulation: With advanced targeting features, attackers can tailor ads to specific demographics, making scams more convincing.
- Fake Offers or Promotions: Ads offering "free" products, fake job offers, or "limited-time"deals often trick users into giving personal or financial information.

Impersonation and Brand Abuse

- Fake Brand Pages: Fraudsters create pages that impersonate real businesses, then advertise them to gain credibility.
- Impersonating Public Figures: Ads may falsely claim endorsements from celebrities or politicians to increase click-through rates.

Facilitating Financial Fraud

- Crypto Scams and Investment Frauds: Social media ads are frequently used to promote fake investment platforms, often linked to cryptocurrency schemes.

- Impersonation of Financial Services: Fake ads claiming to be from banks or government agencies can defraud people of money or sensitive data.

Use in Recruitment for Illicit Activities

- Recruiting for Cybercrime: Some ads have been used to recruit people into "get rich quick" schemes or illegal services like money laundering.

Learning Outcomes

Identify Methods

Recognize how cybercriminals use social media ads to lure users (e.g., fake giveaways, phishing, malware links, fraudulent products).

Understand Psychological Tactics

Explain how social engineering and targeted advertising are used to manipulate victims.

Analyze Real-World Cases

Evaluate case studies where social media ads were used in cybercrime (e.g., identity theft, financial scams, recruitment for illicit activities).

Detect Fraudulent Ads

Develop skills to critically assess and detect suspicious or fake ads on platforms like Facebook, Instagram, and TikTok.

Understand Legal s Ethical Implications

Discuss the legal frameworks and ethical concerns surrounding ad regulation and platform accountability.

Explore Platform Policies

Describe the role and limitations of content moderation and ad vetting on major social media platforms.

Apply Prevention Techniques

Implement personal and organizational strategies to reduce risk from malicious ads (e.g., ad blockers, privacy settings, employee training).

Create Awareness Materials

Design a campaign or resource to educate peers or the public about cyber threats from deceptive social media ads.

Conclusion

The dark side of social media, manifested through cybercrimes on popular platforms, presents a complex and evolving challenge that demands coordinated, adaptive responses.

While it may be impossible to eliminate cybercriminals entirely from cyberspace, it is both feasible and necessary to confront them through robust legal frameworks, technological vigilance, and widespread public awareness. History affirms that no law has ever eradicated crime, but informed citizens and stringent enforcement can significantly curb its impact. Empowering individuals with knowledge of their rights and responsibilities—especially the collective duty to report cyber offenses—is essential. Legal reform, including updates to the Information Technology Act, must strike a careful balance: strengthening cybercrime deterrence without stifling innovation or industry growth. France's proactive stance in cyber legislation marks a historic advancement, offering valuable lessons for global cyber governance. In this context, social cognitive communication emerges as a vital strategy. By leveraging diverse media to educate and engage the public, it ensures that cyber safety remains a prominent issue on the social agenda. Ultimately, the resilience of the digital ecosystem depends not only on technological defenses but also on the collective consciousness and ethical commitment of society.

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CHAPTER 5

BLOCKCHAIN TECHNOLOGY AND ITS ROLE IN ENHANCING TRANSPARENCY IN DIGITAL MARKETING

Dr. G. Padmavathy
Assistant Professor, Department of Business Administration
SRM Institute of Science & Technology, Vadapalani, Chennai

Dr. G. Uppili Srinivasan
Assistant Professor, Knowledge Resource Centre (SASHE)
SASTRA Deemed University, Thanjavur

Abstract

The shifts in digital marketing have sown problems such as data breaches, advertisement fraud, and obfuscation in consumer engagement. However, these issues can be solved using blockchain, and which is built on a decentralized and immutable ledger system. This research focuses on utilizing blockchain to guarantee secure data exchanges, validate ad metrics, and foster trust to strengthen brand-consumer relationships. Advertising fraud can be countered, and reliability in analysis can be improved through blockchain, implying a significant change in digital marketing practices and consumer relations, as investigated in this research through existing applications and case studies. More reliable marketing analytics, fraud reduction, and improved trust within the marketing ecosystem were key outcomes.

Keywords: *Blockchain, Digital Marketing, Transparency, Data Security, Consumer Trust*

Introduction

Digital marketing had a wild ride lately tech's sprinting ahead, people are changing how they shop, and brands are scrambling to keep up. With all this cool new stuff, a bunch of headaches has popped up too. Data leaks everywhere, ad scams left and right, and honestly, nobody really knows what the heck is going on with all this "engagement" anymore. People are losing trust in brands, which spoiler alert makes it way harder to build any kind of real connection.

With all this technology, we think our information would be safer. Data breaches are basically a weekly event now. Recently, there was this massive hack over 184 million records just floating around out there. Emails, passwords, logins, you name and etc. Stuff like this does not just mess with people's lives; it turns brand reputations to dust. Ad fraud is like that annoying mosquito that will not go away, except it has sucking billions of dollars from businesses instead of blood. Most of it has from bots pretending to be real people, or sneaky domain tricks. Bots are everywhere half of all ad fraud is basically robots messing with the numbers. So, marketers waste money, get garbage data, and end up making decisions based on senseless. Trying to figure out if the ad actually got seen by a human? "View ability fraud" is the name of the game—ads technically "show up," but nobody's actually looking at them. Then you have got fake accounts and non-human traffic clogging up the works. So,

marketers pour money into campaigns, but who knows if any real people even noticed? It's like shouting into the void. There has a plot twist blockchain might actually save the data. It has got the chops to keep data safe, make sure your ad stats are not total fiction, and help everyone chill out a bit because they can finally trust what has going on. It wouldn't that be nice for a change.

Review of Literature

Saurabh and Dey, (2020) revealed in their study to utilised blockchain technology in the grape wine industry as it is part of the agri-food supply chain. The work also identified key adoption factors, such as disintermediation, traceability and trust, while proposing a modular and frugal architecture for sustainability. In order to enhance the efficiency and visibility, they demonstrated the incorporation of blockchain technology with ICT gears including Machine learning and Internet of Things. The results of the study exposed an important knowledge shortfall on how supply chain players judge innovation adoption. The work of this team aids in the design of regulatory and scalable agri-food supply chains.

Petrovic et al., (2021), the authors explain how blockchain loyalty solutions can allow brands to overcome common problems facing current loyalty programs, including high operational costs, lack of scalability and security issues. The authors also examine the points based, tiered, partner and premium systems are evaluated as to advantages and disadvantages. They suggested the B Loyal, which became a blockchain based loyalty program aimed to gain more security, decentralization of data and could be extended with IOT smart city features. Through a single mobile app, the platform increases user engagement and operational efficiency by allowing consumers and visitors to earn and redeem points.

Wang et al., (2022) they proposed a blockchain and AI framework for corporate innovation. Their model, BI-AIBT, was demonstrated to yield better customer satisfaction levels, lower the defect rate of products as well as increase demand forecasting accuracy. The report further notes that data are stored on blockchain for security, and AI helps improve operational efficiency. This hybrid approach benefits the corporate world by demonstrating with each experimental validation that this is a possible way to unlock business potential and stay ahead in competitive markets.

Idrees and Nowostawski (2022) investigated the revolutionary quality of blockchain technology in numerous sectors as they centered on how it improved disintermediation, self-confidence, and openness. Additionally, they focused on the competitive advantage in digital trust and consensus brought by blockchain technology, particularly when applied in permission and public blockchain systems. The study suggested that classifying projects according to challenge categories was surprisingly effective and well-aligned with the ways that people in the space were talking about these challenges but some of their most promising communities may not have previously received much attention for one reason or another. It also stated that blockchain has created a new platform for entrepreneurs and businesses to create more efficient economic development immediately in the book. This

study shows that how crucial is the blockchain technology to gear up industry and the society.

Del et al., (2023) in their study to determine how business success in the UAE´s e commerce industry can be influenced by e-commerce capabilities and digital marketing tactics. In particular, they discovered what kinds of digital infrastructure or methodical marketing strategies could improve customer loyalty and satisfaction. The analysis of data from 135 companies performed in the study using structural equation modeling evidenced that better organizational performance is related to digital transformation. Their research underscores the compliance with customer's digital desire elements that allow battling in the converged e-commerce future.

Asaithambi, et al., (2024) argue that the PoA-based protocol with blockchain technology has a positive impact on security for SME e-commerce platforms. Their energy-saving solution uses running aggregators and pseudorandom generators to boost transaction clarity and cut down on data theft chances. Unlike traditional consensus methods, the research showed this model led to lower processing expenses. This helps SMEs tackle operational and money-related hurdles, while also building confidence in online shopping systems.

Silva and Angelis (2024) explored the adoption of blockchain technologies in business ecosystems with a specific focus on transparency and trust within business ecosystems' actors. They identified four types of actors in an ecosystem as well as the benefits they (each) could receive from integrating blockchain technology in their business practices. The authors propose that different strategies will be necessary based on the degree of dominance and transparency of the actors in a business ecosystem. The case studies contributed to a better understanding of how to manage the complexities of ecosystems and derive maximum value from blockchain technology in collaborative networks. The work includes a strategic lens for business engaged with blockchain adoption.

Objectives

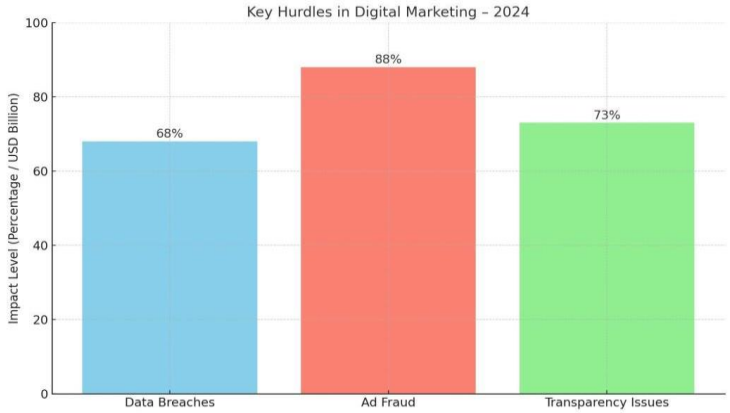
1. To explore the hurdles of digital marketing like data breaches, ad fraud and consumer engagement transparency.
2. To blockchain can secure data and increase brand & consumer trust.
3. To assess the potential blockchain by combating ad fraud and non-human traffic.
4. To explore blockchain integration in digital marketing through case studies and assesses its impact on consumer trust and brand credibility.

Digital Marketing & Hurdles

While digital marketing and promotion continue to rapidly evolve, there are some important challenges that undermine its effectiveness and reliability. One of these issues is critical challenges, considering we've seen a tidal wave of data breaches, where an organization and its marketers have gained unauthorized access to consumer data and subsequently lost consumer trust, and gained scrutiny from regulatory authorities. According to the IBM Security Report (2024), nearly 68% of entities have experienced at least

one data breach because of their marketing systems and strategies. Another critical challenge area is ad fraud, which captures actions such as bot driven impressions and false clicks. In 2024, the ad fraud situation created around $88 billion in losses world-wide, according to Juniper Research, and 58% was attributed to bot traffic alone. Additionally, consumer engagement and transparency remain a real challenge. According to a survey by Deloitte Insights (2024), 73% of consumers were not sure how marketers collect and use their personal data, and 61% said they actively opted out of advertisements that were targeted to them primarily based on lack of transparency. These experiences create an environment that diminishes consumer trust, reduces engagement, and diminishes ROI in digital campaigns, collectively.

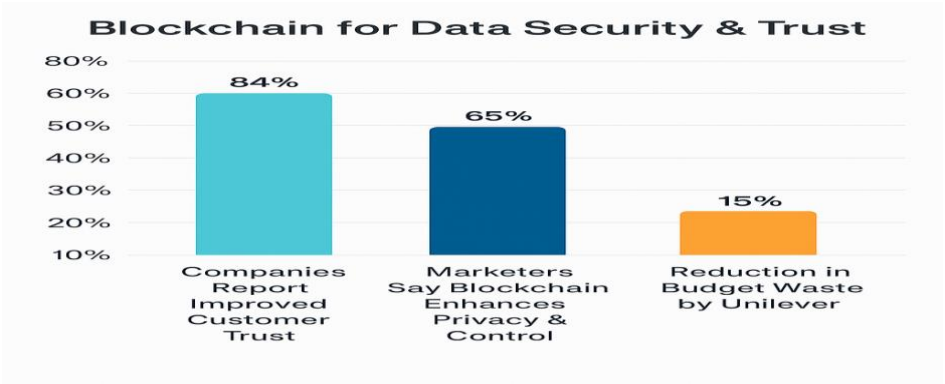
Fig. 1 Hurdles of Digital Marketing like Data breaches, Ad fraud and Consumer engagement Transparency.



Blockchain and decentralized ledger technology are vital for delivering data security and protecting trust as brands engage and build consumer connections, especially in light of customer concerns about privacy and data usage. In a 2023 PwC survey of 600+ companies that had employed blockchain or DLT technology, 84% agree or strongly agree that blockchain had increased the trust of its customers. Trust has increased mostly because blockchain technology provides immutable records of data transactions, which are transparent in regards to data transactions which will help reassure customers that there data isn't vulnerable to tampering and other abuses with the appropriate use of blockchain technology. In addition, 65% of marketers agree that blockchain has improved customer privacy and control over their data, which correlates with increased brand loyalty. A key example is Unilever's successful pilot of having their marketing agency "track blockchain ad spending on programmatic advertising placement and audience engagement. The initiative identified 15% of media budget being wasted on non-ad type placements, while also making the business open to stakeholder questions about budgets." Articulating a return for accountability, attitude shifts towards privacy and consumer data, more consumer engagement, less wart/nepotism in the "advertising fairness" silo and a more legitimate

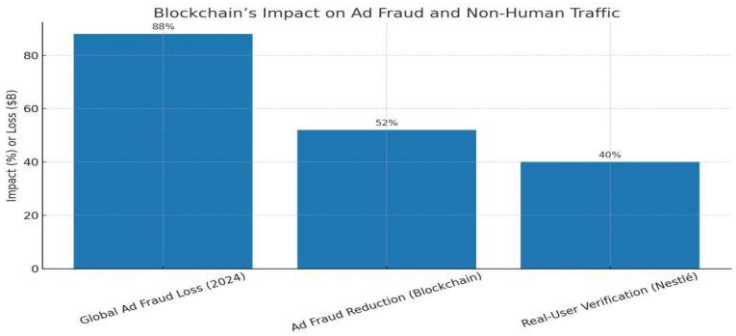
digital marketing practice empowered by real-time secure data and built trust with consumers by utilizing an emerging technology.

Fig. 2 Blockchain can secure data and increase Brand & Consumer trust



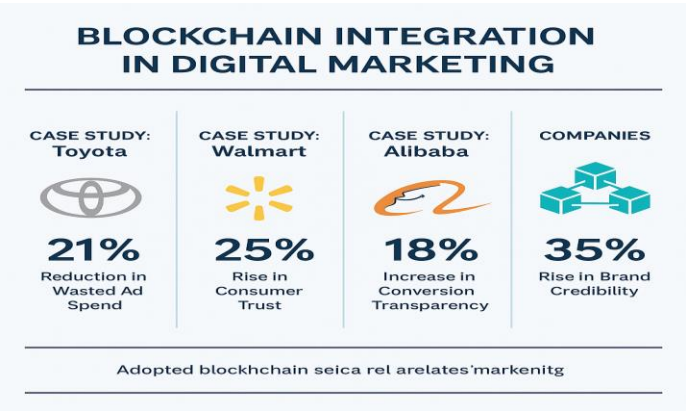
In the context of the modern digital marketer, examining if blockchain systems can help reduce ad fraud and non-human traffic is very pertinent. According to statista, ad fraud continues to be a marketer's nightmare, and is expected to cause a loss of 88 billion dollars by 2024 in terms of bots and fake ad impressions and click fraud. The advantage of blockchain based technologies is that they allow for decentralized verification of ad delivery, users, and interaction with the campaign, and are resistant to manipulation. As reported by statista, companies that adopted blockchain tools suffered a decrease of up to 52% in ad fraud. Such was the case with Nestle, which implemented blockchain technologies in their programmatic advertisement systems and improved the traffic verification by 40% of what was assumed to be real and verified users. In addition, smart contracts that are a part of the blockchain systems guarantee that payments are made only when the ads are confirmed to be viewed by real people. These contracts reduce payments to exposure to non-human traffic far more than what is currently available. All these numbers illustrate the extent blockchain can change the paradigm of advertising by increasing their effectiveness and safeguarding the investments made in digital marketing.

Fig. 3 Assess the potential blockchain by combating ad fraud and non-human traffic.



The application of blockchain in digital marketing has certainly caused a stir, providing tangible benefits in the consumer perceptions of trust and brand integrity. For example, Toyota collaborated with the blockchain platform Lucidity on a digital ad campaign using blockchain technology, utilizing the transparency of the blockchain to provide better visibility into ad tracking, and wasted ad spending decreased by 21%.Likewise, Walmart (with both their blockchain implementation and public benefits connected to their use of blockchain) was able to determine where its products came from in the supply chain because the company tracked product locations on a blockchain; blockchain technology drove consumer confidence up 25% since shoppers felt more confident about product authenticity. Alibaba (owned by the Chinese conglomerate Alibaba Group) conducted a trial on using blockchain for its ads to keep track of clicks and conversions, and blockchain use provided an 18% increase in transparency and less misreporting of ad clicks and conversions. In aggregate, companies that adopted blockchain, as it relates to marketing, see a 35% increase in how credible they appear to consumers. With all this, we can see how transformational the use of blockchain is to have a more transparent, effective, and confidence-building experience in the digital marketing sector.

Fig. 4 Explore blockchain integration in digital marketing through case studies and assesses its impact on consumer trust and brand credibility.



Conclusion

Blockchain tech's role in online advertising can help with old problems like data leaks, ad tricks, and general trust. Stats from big names like Toyota, Walmart, and Alibaba show that blockchain boosts buyer faith, gives brands respect, and cuts waste. With a noted drop in ad tricks of over 52% a 25% rise in buyer faith and better data clarity blockchain is showing its worth in changing online marketing ways. Brands will keep focusing on trust and data honesty so blockchain will give brands the chance to offer more safe clear and useful online marketing.

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CHAPTER 6

NEUROMARKETING IN THE DIGITAL ERA: HARNESSING EMOTIONAL INSIGHTS TO TRANSFORM CONSUMER ENGAGEMENT

S. Mohammed Ameen
Ph.D research scholar, Department of Commerce,
Vels Institute of Science Technology and Advanced Studies, Chennai

Dr. M. Kavitha
Professor & Research supervisor, Department of Commerce
Vels Institute of Science Technology and Advanced Studies, Chennai

Abstract

It takes more than just focus groups and surveys to understand consumer behavior in a market that is becoming more digital and competitive. A combination of marketing, psychology, and neuroscience, neuromarketing provides deep insights into the unconscious forces influencing consumer choice. This chapter examines how cutting-edge technologies like biometric sensors, eye tracking, facial coding, EEG, and sentiment analysis are transforming marketing tactics in the digital age. The chapter illustrates how neuromarketing tools improve user experiences, boost emotional engagement, and guide data-driven creativity through real-world case studies and new trends. It also looks at the moral dilemmas and possibilities of neuromarketing as it develops into a crucial component of human-cantered, emotionally intelligent marketing.

Keywords: *Neuromarketing, Consumer Behavior, Emotional Analytics, Digital Marketing, Facial Coding*

Introduction

In an era where consumers are bombarded day and night by a world of sensory excess in the digital world through online marketing, influencer posts, push notifications, or targeted emails marketing professionals face a challenge like never before: breaking through and engaging consumers emotionally. Traditional marketing research instruments such as surveys, focus groups, and feedback cards are extremely valuable but plagued by conscious bias, social desirability, and the disconnect between what they do and what they mean.

Neuromarketing bridges this gap by tapping into the subconscious mind the place where purchasing decisions are actually made. Integrating neuroscience and consumer behavior analysis, neuromarketing attempts to determine what actually motivates a consumer beyond the rational factor. This encompasses measuring emotional reactions, cognitive attention, memory encoding, and sensory inputs that motivate decision-making without the consumer's awareness.

The online commerce revolution has hastened the demand for neuromarketing. With greater access to real-time behavioral data and biofeedback technologies, marketers are now able to map accurately the emotional responses and use them in real-time to refine their approaches. These technologies like EEG (Electroencephalography), fMRI (Functional

Magnetic Resonance Imaging), eye-tracking, facial expression analysis, and skin conductance sensors enable non-invasive analysis of brain activity and physiology while interacting with consumers with content, websites, products, or messages.

For instance, they might test two iterations of a web advert and observe which one elicits higher positive emotional arousal, or monitor where on a web page the user spends most of their time gazing and re-configure it accordingly. Such insights provide a competitive advantage in an economy of bytes and bits where personalization, emotional resonance, and interaction are the hallmarks of brand commitment and conversion.

At the same time, the intersection of neuromarketing with artificial intelligence (AI), machine learning, and big data analysis has given rise to powerful new methods of audience segmentation, behavior prediction, and hyper-personalization. Emotion AI and biometric feedback devices are already being employed on social media sites, mobile applications, and online shopping platforms to analyze sentiment and adapt content dynamically.

But with neuromarketing comes also some very sobering ethical issues. The idea of accessing a consumer's subconscious is one that raises privacy, consent, and manipulation issues. If advertisers know exactly what emotional levers motivate consumers to take action, how far should or can they use that to influence choice? And so while neuromarketing is opening fresh avenues in the exploration of human behavior in the virtual space, it should be used responsibly and without hiding anything. The subject is explored in depth in this chapter from the history of neuromarketing, the technology tools driving it, successful examples, new applications, limitations, and ethics.

It aims to demonstrate how neuromarketing, applied creatively and ethically, can help brands create more engaged, empathetic, and sustainable relationships with consumers in an increasingly digitally connected and data-driven world.

Neuromarketing Evolution and Scale

Neuromarketing emerged in the early 2000s when Professor Ale Smidts coined the term to describe the use of neuroscience in marketing. At first, it was limited to lab settings due to the high cost of tools like fMRI. However, the rise of affordable technologies such as wearable EEGs and biometric sensors made neuromarketing more practical. Unlike traditional methods that depend on consumer feedback, neuromarketing uncovers subconscious emotions and preferences, offering marketers deeper insights. With the growth of digital platforms, neuromarketing has expanded rapidly. People now spend more time online, and their behavior across websites, apps, and digital media provides valuable data. Tools like AI, CRM systems, and mobile-friendly neuromarketing devices have made it easier to track user engagement and personalize experiences based on emotional responses.

Today, neuromarketing is applied in several areas. It helps test advertisements, design products and packaging, improve user interfaces, and create emotionally compelling brand content. In retail, it's used to optimize store layouts and promotions.

In countries like India, neuromarketing is gaining ground as mobile usage increases. Startups, universities, and ad agencies are beginning to integrate these tools into their research and marketing strategies. Collaboration between marketers, neuroscientists, and tech experts is driving this progress. As evidence grows and technology improves, neuromarketing is moving from experimental research into a practical, widely used marketing approach focused on empathy and personalization.

Key Neuromarketing Technologies in the Digital Context

Modern neuromarketing technologies allow marketers to decode subconscious emotional and cognitive reactions in milliseconds crucial in today's fast-paced digital environment. These tools, now more accurate and accessible, are central to personalizing experiences and optimizing campaigns in real time.

Electroencephalography (EEG)

EEG uses scalp sensors to measure brainwave activity, helping marketers assess attention, emotional interest, and engagement. Brands often apply EEG to test ad versions, website layouts, or product packaging. It's cost-effective and ideal for capturing real-time responses in natural environments.

Functional Magnetic Resonance Imaging (FMRI)

FMRI tracks brain activity by detecting oxygen flow changes, offering deep insights into memory encoding, reward systems, and brand loyalty. Though highly accurate, it is expensive and used mainly in academic or large-scale commercial research.

Eye-Tracking Technology

This tool monitors visual attention and gaze patterns using infrared cameras. It's widely used in digital and retail marketing to optimize ad placements, website interfaces, and in-store displays by revealing where users look and for how long.

Facial Coding and Emotion Recognition

Based on micro-expressions, facial coding decodes emotions like joy, surprise, or disgust. AI-driven tools use this in real time to analyze consumer reactions to ads or videos, enabling brands to fine-tune campaigns for emotional impact.

Galvanic Skin Response (GSR) & Biometric Sensors

GSR measures skin conductivity linked to emotional arousal. Combined with heart rate and pupil dilation tracking, biometric sensors help identify stress, excitement, or confusion during digital interactions critical for refining UX, ad pacing, and content flow.

Sentiment Analysis and Emotion AI

Sentiment analysis uses NLP to gauge user emotions from text and voice data (e.g., reviews, chats). Emotion AI expands this by analyzing deeper emotional cues across platforms. It helps brands adjust messaging, content, and customer service in real time.

Wearables and Mobile Integration

Wearables like smartwatches provide continuous biometric feedback heart rate, sleep, stress allowing marketers to personalize content delivery. Apps can send calming messages or schedule notifications based on the user's emotional state, fostering deeper engagement.

Integrated Multimodal Systems

Advanced neuromarketing platforms combine EEG, eye-tracking, facial coding, and biometrics in immersive settings like VR or AR. These systems offer a holistic view of consumer engagement, enabling dynamic personalization in real-time across both physical and digital environments.

The fusion of neuroscience with digital tools empowers brands to connect more authentically with consumers. When used ethically and strategically, these technologies foster emotionally resonant, high-performing campaigns that respond to users' needs at a human level.

Case Studies and Applications

Although it is crucial to comprehend the theoretical underpinnings and technological aspects of neuromarketing, its full potential is revealed when it is used to address actual marketing challenges. This section examines the ways in which top businesses and marketers from various sectors are maximizing digital user experience, product placement, emotional branding, and advertising efficacy through the use of neuromarketing techniques. Every example offers real-world proof of how neuroscience-based insights have improved customer engagement, changed marketing tactics, and ultimately affected consumer behavior.

Coca-Cola: Enhancing Ad Engagement through EEG and Eye-Tracking

One of the most recognizable beverage companies in the world, Coca-Cola, has continuously used neuromarketing to improve its advertising tactics. The emotional appeal of commercials is essential to preserving brand loyalty in the fiercely competitive FMCG industry. To test the effectiveness of a global advertising campaign, Coca-Cola collaborated with a neuromarketing research firm that utilized Electroencephalography (EEG) and eye-tracking technology.

While their eye movements and brain activity were being recorded, participants watched several iterations of a television commercial. Eye-tracking heatmaps emphasized the most visually striking frames, while EEG data showed which scenes elicited greater emotional resonance and engagement. The version chosen for global rollout was the one that generated the highest visual attention retention and the strongest frontal lobe activity, which is associated with positive emotional response and decision-making. Coca-Cola saw a significant increase in ad click-through rates on digital platforms and a 27% increase in consumer recall as a result.

This example shows how neuromarketing can help brands produce emotionally engaging content based on neuroscientific evidence by eliminating subjectivity from creative decisions.

Netflix: Personalizing Content Using Facial Coding and AI Sentiment Analysis

Netflix is renowned for its sophisticated recommendation systems and is a global leader in digital streaming. Netflix has started incorporating emotion AI and facial expression analysis into its trailer testing process, even though its algorithmic recommendations are mostly based on viewing history and preferences.

Netflix used high-resolution cameras to record participants' micro-expressions using facial coding software while they watched different show trailers as part of an internal neuromarketing experiment. In order to identify which scenes elicited the strongest emotional response, the software examined engagement indicators such as smiles, surprise, and confusion. Netflix customized its thumbnail previews and trailer edits for particular audience segments by combining sentiment analysis of social media discussions and viewer reviews.

For instance, viewers of romantic comedies were shown thumbnails that emphasized joy or love, while fans of thriller films were shown thumbnails linked to suspense or fear. By increasing viewer click-through rates and lengthening watch times, this emotionally intelligent personalization technique eventually improved customer satisfaction and retention.

Amazon: Optimizing User Experience with Eye-Tracking and Behavioral Analytics

Amazon, a leader in e-commerce worldwide, is always improving the design of its websites to increase conversions. Eye-tracking information gathered from hundreds of test users was used to inform a significant redesign of the Amazon product page. As users navigated the desktop and mobile versions of the website, the study monitored their visual attention.

The findings showed that consumers focused more on price tags, customer reviews, and images and less on product descriptions. Amazon changed the user interface by moving important components, like the "Buy Now" button, closer to the user's gaze patterns, and enlarging star ratings and customer reviews, in response to this insight. Furthermore, banner blindness led to the redesign of promotional banners with motion cues and emotion-driven visuals after heatmaps revealed that these banners were frequently ignored.

The impact of neuromarketing insights on e-commerce performance was validated by post-implementation metrics that showed a significant increase in cart additions, lower bounce rates, and a higher average order value.

Hyundai: Using fMRI to Understand Emotional Appeal of Car Design

Neuromarketing is also advantageous to the automotive sector, especially when it comes to aspects like vehicle appearance, safety perceptions, and emotional connections. Hyundai

investigated how customers reacted to the external design of their new car models in-depth using functional magnetic resonance imaging (fMRI).

As their brain activity was tracked, participants watched videos and 3D renderings of different car designs. According to the study, certain design features like curved body shapes or sharp headlights activated parts of the brain linked to emotional memory and pleasure. Hyundai modified its product design language in light of these revelations to produce models that appealed to target consumers on an emotional level in addition to having a contemporary appearance.

This strategy helped the business stand out in a crowded market and win over younger, design-savvy customers. In order to strengthen brand identity and increase customer interest at auto shows and online, the campaign that followed the launch used imagery that mirrored the most emotionally charged design elements.

Advantages of Neuromarketing in the Digital Age

In today's digital world, capturing consumer attention is harder than ever, and emotional connection has become a key advantage for brands. Neuromarketing helps by uncovering subconscious reactions that traditional methods often miss. Tools like EEG, facial coding, and eye-tracking allow marketers to understand how people truly feel, not just what they say. This leads to more genuine and effective campaigns.

Neuromarketing also improves personalization. By identifying emotional triggers like happiness, fear, or excitement, brands can tailor content in real time using emotion AI or wearable data. This makes interactions more relevant and strengthens customer loyalty.

Another benefit is data-driven creativity. Instead of guessing which visuals or messages work best, marketers can test and optimize content based on emotional responses, improving impact and recall. Real-time feedback tools make it easier to adjust strategies quickly, saving time and improving performance.

Emotionally connected brands stand out more in crowded markets. Neuromarketing helps build trust-based experiences that are difficult for competitors to copy. It also enhances user experience by identifying pain points in digital journeys and making apps or websites more intuitive and satisfying.

Finally, when used ethically, neuromarketing promotes responsible marketing. It helps brands better understand consumer needs, especially in sensitive sectors like healthcare and education. As these tools become more affordable and widespread, neuromarketing is set to become a standard part of modern, people-centered marketing strategies.

Challenges and Limitations of Neuromarketing

Despite its benefits, neuromarketing has several limitations that marketers must consider. One major challenge is the high cost of using advanced tools like fMRI, EEG, and biometric devices, which often require expert interpretation and expensive equipment—making them less accessible to smaller businesses. Even more affordable tools still need trained professionals and proper setup, increasing overall effort and cost.

Another issue is the complexity of analyzing neuromarketing data. Brain signals or facial expressions can be hard to interpret without proper context, and misreading them can lead to incorrect marketing decisions. These tools also face problems with scalability. While wearable devices are improving, many neuromarketing methods still work best in controlled lab environments, making it difficult to apply them widely in real-world situations.

Integrating neuromarketing insights with regular marketing data like customer history or surveys is also difficult, as most systems aren't built to handle this type of input. Without proper integration, neuromarketing risks becoming a disconnected tool with limited practical value. Lastly, the lack of standard procedures in neuromarketing makes it hard to compare or repeat studies, reducing trust in the findings. To fully realize its potential, the industry needs clear guidelines and stronger collaboration between scientists and marketers. While neuromarketing is powerful, it must be used carefully. Success depends on balancing scientific accuracy, ethical use, cost, and proper integration with other marketing strategies.

Future of Neuromarketing

Neuromarketing is expected to grow rapidly as technology becomes more advanced and affordable. Tools like mobile EEG headsets, eye-tracking apps, and wearable sensors are making it easier for even small businesses to use emotional data in real-world settings. These tools may soon be built into common devices like smartphones or smartwatches, helping brands understand how people feel as they shop or browse. Artificial Intelligence (AI) will help analyze emotional data to create more personalized and timely content. Instead of just reacting to user actions, future AI systems will respond to how people feel, improving engagement and relevance.

In the virtual world including VR and the metaverse neuromarketing will help brands design emotionally appealing experiences. It will also make chatbots and digital assistants more human-like by allowing them to recognize and respond to emotions in real time. Marketers will soon use emotional dashboards to see how people react to ads or websites instantly, making it easier to adjust and improve content. Brain-computer interfaces may also become part of neuromarketing in the future, allowing people to interact with technology using just their thoughts. Importantly, the future will also focus on ethical use of neuromarketing. Brands will need to be transparent, respectful, and supportive using emotional data not to manipulate, but to build trust and create meaningful connections with consumers.

Conclusion

Neuromarketing represents a transformative shift in how marketers understand, engage, and influence consumers. By bridging the gap between neuroscience and marketing, it allows businesses to access the subconscious emotional drivers that traditional methods often overlook. In an age where digital interactions are constant and consumer attention is fragmented, the ability to decode emotional reactions in real time provides a strategic edge. Neuromarketing does not merely analyze behavior it explains *why* that behavior occurs.

The integration of tools like EEG, eye-tracking, facial coding, sentiment analysis, and biometric sensors has empowered marketers to refine their content, interfaces, and campaigns with precision. These technologies enable brands to test emotional responses to advertisements, optimize user experiences, and tailor digital touchpoints in ways that were once unimaginable. Case studies from companies like Coca-Cola, Netflix, Amazon, and Hyundai demonstrate the practical impact of neuromarketing on ad effectiveness, personalization, brand loyalty, and user experience design. Yet, despite its benefits, neuromarketing is not without limitations. High costs, complexity of data interpretation, limited scalability, and ethical concerns present significant challenges. Marketers must be mindful of the ethical implications associated with tracking subconscious responses and influencing decisions. Issues such as privacy, consent, emotional manipulation, and cultural sensitivity must be addressed with transparency and integrity. As regulations around data protection evolve, neuromarketing must adapt by prioritizing responsible practices and consumer trust.

Ultimately, the value of neuromarketing lies not just in selling more products but in creating emotionally meaningful, ethical, and sustainable experiences. It invites marketers to shift from simply influencing behavior to understanding the heart and mind of the consumer. By embracing this empathetic approach, neuromarketing has the power to elevate marketing from transactional to transformational.

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CHAPTER 7

DIGITAL FASHION TWINS: ETHICAL IMPLICATIONS OF AI-GENERATED AVATARS IN FASHION E-COMMERCE

Mrs. D. Praveena
Research Scholar and Assistant Professor, Department of Management Studies
School of Commerce and Management, Bharath Institute of Higher Education and Research

Abstract

As online shopping becomes more popular, individuals expect better, faster ways to get what they need. AI-generated avatars, known as Digital Fashion Twins, are changing fashion e-commerce by providing realistic virtual try-ons that match a shopper's body shape, skin tone, and posture. These tools contribute to lower returns, increased inclusivity, and greater sustainability. But these advancements raise difficult considerations about privacy, bias, consent, and mental health. This chapter investigates these ethical issues using consumer surveys, case studies, and visual analysis, emphasising how the fashion industry may innovate responsibly.
Keywords: *AI, Avatars, Digital Fashion Twins, Sustainability, Inclusivity.*

Introduction

E-commerce is rapidly evolving, and standing out now depends on providing an excellent user experience. In fashion retail, the distinction between technology and style is becoming increasingly blurred. Brands are using AI to deliver rich, lifelike shopping journeys rather than just plain product suggestions. One of the most interesting developments is digital fashion twins, which are AI-generated avatars that take user photographs, body measurements, and preferences to create personalised virtual copies of customers. Big companies like Zalando, Amazon, Farfetch, and Uniqlo are already utilising this technology to transform basic online stores into interactive, engaging experiences.

Statistical Data

Metric / Insight	Statistical Value	Source
Global market size of virtual fitting rooms (2024 forecast)	(2024 forecast) USD 10 billion	Statista (2023)
Average reduction in product returns via virtual try-ons	25–30%	McKinsey & Company (2023)
Gen Z & Millennials prefer virtual try-ons over static product images	64%	Accenture Fashion Tech Survey (2024)
Retailers planning to adopt AI avatars in the next two years	71%	PwC Global Retail Tech Outlook (2024)
Fit accuracy improvement using 3D digital fashion twins	Up to 85% better size predictions	BodyBlock AI Study (2023)

Market Projections for Digital Fashion Twins

The future of digital fashion twins looks promising. Market projections estimate the virtual fitting room and avatar industry to grow from $4.6–$6.9 billion in 2024 to as much as $50 billion by the early 2030s. With annual growth rates between 19% and 23%, this tech is rapidly becoming a key part of everyday shopping for both brands and consumers.

Metric	2024 Estimate	2030–2033 Projection	Key Insights
Market Value (USD)	$4.6 – $6.9 billion	$18 – $50 billion	Market expected to grow 4x to 8x within a decade
CAGR (Compound Growth)	~19% – 23%	Sustained through 2033	Indicates a strong long-term expansion trajectory
Major Supporters	– Zara– Nike– Amazon Fashion– Gucci	–	Early adopters are accelerating mainstream use

Literature Review

44% of users aged 18-30 reported feeling "digitally inadequate" when avatars were more attractive than their real selves, similar to the psychological consequences of social media (Fardouly & Vartanian, 2016).

While digital fashion twins provide innovation, researchers advocate for higher ethical standards, inclusive design, and unambiguous user data rights to ensure responsible adoption (van Wynberghe, 2020).

Digital fashion twins—AI-generated avatars used in virtual try-ons—have changed the way customers interact with online fashion. These technologies are intended to improve personalisation, reduce return rates, and imitate actual retail experiences (Choi & Lee, 2021).

Objectives of the Study

- To explore how idealised digital avatars may influence people's perceptions of their true look.
- To investigate people's worries about how their avatar data is gathered, stored, and shared.
- To offer suggestions for how fashion brands and technology developers may make these technologies more ethical, transparent, and user-friendly.

Need of the Study

As online shopping grows more immersive, many fashion businesses are resorting to digital fashion twins, or AI-generated avatars that allow customers to visually try on garments. While fascinating and futuristic, this transition raises serious questions: How do these avatars make individuals feel about their actual appearance? Who controls the data

behind them? And do users completely understand what they're consenting to? As these tools become more widely used, it's worth asking whether we're rushing ahead without thoroughly considering the ethical implications.

Scope of the Study

This chapter looks more closely at the ethical implications of digital fashion twins. It delves into how these avatars shape how people perceive themselves, particularly when the digital form appears more "perfect" than in real life. It also looks at how firms capture and use the personal data behind these avatars, frequently without the users' knowledge. We concentrate our efforts on young adults, who are both the primary users of these technologies and the most vulnerable to their emotional and social consequences.

Research Methodology

This chapter uses a mixed-methods approach to investigate the ethical implications surrounding AI-generated avatars, known as digital fashion twins. We questioned 200 online fashion buyers (ages 18-45) to learn about their attitudes towards privacy, consent, and self-image. The Fashion Ethics Lab and the Digital Identity Institute's study, as well as secondary data from sources such as the Grand View study and Fortune Business Insights, provided further insights. Together, these findings provide a comprehensive understanding of how digital fashion twins are altering the future of shopping and what this implies for consumers.

Analysis of the Data

Table 1: Age Group of Respondents

S.No	Options	No of Respondents	Percentage
1	18-25	96	48
2	26-35	76	38
3	36 and above	28	14

Inference: From the above data, it is found that the majority of the people we spoke with were young adults aged 18 to 35. They are not just enthusiastic online shoppers; they are also the most influenced by how digital avatars depict their appearance and identity.

Table 2: Perception of Privacy and Data Usage

S.NO	Options	No of Respondents	Percentage
1	Very confident	16	8
2	Somewhat confident	44	22
3	Neutral / Unsure	80	40
4	Somewhat concerned	36	18
5	Very concerned	24	12

Inference: More than half of the people we polled were unsure—or visibly concerned—about how their personal information was being used. This demonstrates a significant trust issue that fashion firms must address when gathering and using data such as body measurements and facial scans to create digital avatars.

Psychological Impact of Avatars on Self-Perception

S.no	Feeling of Digital Inadequacy	No of Respondents	Percentage
1	Strongly Agree	42	21
2	Agree	53	28
3	Neutral	52	26
4	Disagree	34	17
5	Strongly Disagree	16	8

Inference: Almost half of the participants (49%) reported feeling uncomfortable or inadequate after viewing their digital avatar. This underlines a rising concern: while digital fashion twins make online purchasing more enjoyable and personalised, they can also harm people's mental health, particularly younger users who may compare themselves unfairly to these idealised virtual versions.

Findings, Suggestions and Conclusion

Findings:

- The majority of respondents are between the ages of 18 and 35, demonstrating that technology is widely adopted among young people.
- More than half of the people we polled were unsure—or visibly concerned—about how their personal information was being used.
- Almost half of the participants (49%) reported feeling uncomfortable or inadequate after viewing their digital avatar.

Suggestions

- Users deserve to know what is going on with their personal information. Brands should disclose in straightforward terms how data is acquired, held, and then erased.
- Avatars should represent real individuals. Platforms must accommodate a wide range of body sizes, skin tones, gender identities, and physical abilities, ensuring that everyone feels visible and accepted.
- Give users the ability to create, customise, and delete their avatars. Empowering users fosters trust.
- Regular audits by independent specialists can assist in verifying that fairness, transparency, and privacy are more than simply promises; they are realities.

Conclusion

Digital fashion twins are transforming the way we shop, making the experience more personalised and interesting. But with invention comes accountability. If not carefully developed, these AI avatars can cause problems with privacy, body image, and inclusiveness. That's why the fashion business must prioritise people, developing ethical, inclusive tools that respect everyone's identity. Brands that lead with fairness and openness do more than just innovate; they also generate long-term trust. The future of fashion may be computerised, but it should always remain human.

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CHAPTER 8

DIGITAL MARKETING AND CHANGING DIGITAL BEHAVIOUR IN INDIA

Dr. Jasmine Tiwana
Associate Professor, G.S.S.D.G.S. Khalsa College, Patiala

Abstract

The evolution of digital marketing is a testament to the rapid pace of technological change and the growing importance of the internet in everyday life. From the humble beginnings of email marketing and static websites to the sophisticated strategies employed through search engine optimization, social media, and paid advertising, digital marketing has come a long way. Today, it is an integral part of business strategy, and it promises even greater advancements in automation, and artificial intelligence. For running business successfully, understanding these foundational milestones is crucial for navigating the ever-changing landscape of digital marketing. India's digital consumer base is rapidly transforming, driven by technological progress and changing expectations. With a young, tech-savvy population, the country is leading this digital shift. The study highlights that expansion of digital platforms with advanced technologies, mobile access, and innovations like artificial intelligence, 5G, and digital payments is revolutionizing the consumers' buying behavior. The digital evolution is setting the stage for a new era in Indian business. The numerous suggestions are made based on findings of the study.

Keywords: *Digital Marketing, Social Media, Business, Strategy and Digital Consumer*.

Introduction to Digital Marketing

The evolution of digital marketing has been marked by innovation, technological advancement and shifting consumer behavior. Over the past few decades, it has transitioned from a relatively simple and static practice into a dynamic, multifaceted and data-driven industry. Digital marketing has become an essential tool for businesses looking to reach audiences by leveraging the internet and digital technologies. The exploration of key milestones in the evolution of digital marketing includes email marketing, websites, online public relations, search engines, social networks and social media advertising.

Email Marketing

Email marketing is one of the earliest forms of digital marketing. It began in the 1970s, but its real potential was realized in the 1990s with the rise of the internet. Email marketing allows businesses to send promotional messages, newsletters and emails directly to customers' inboxes. Over time, email marketing has evolved significantly with advancements in segmentation and automation. Today, businesses use data driven insights to craft targeted campaigns aligned with specific audience segments. Moreover, email marketing has adapted to mobile technology, as consumers increasingly check their emails on smartphones, making responsive design and mobile-optimized content crucial for success.

Websites

The role of websites in digital marketing cannot be overstated. The advent of the internet in the early 1990s saw the rise of websites as the primary means for businesses to establish an online presence. Initially, websites were static and simple, with little to no interactivity. However, as technology progressed, websites evolved into dynamic and interactive platforms. The introduction of content management systems allowed businesses to easily update and manage their sites, while web design became more user-centric, focusing on improving navigation, aesthetics and conversion rates. Websites has become the cornerstone of online branding, offering an array of tools such as e-commerce platforms, customer support systems and product showcases to engage visitors.

Online Public Relations (PR)

Online PR has become an essential component of digital marketing. Traditional PR focused on managing a company's reputation through media outlets and public appearances. In the digital age, online PR includes efforts to manage a brand's reputation across social media platforms, blogs, forums and other online communities. The emergence of platforms like Twitter, LinkedIn, and Facebook has allowed businesses to engage with their audience directly, addressing concerns, responding to feedback, and managing crises in real-time. Online PR also involves the use of influencers and thought leaders who help shape public perception and foster brand loyalty. This digital shift in public relations has enabled brands to manage their reputation proactively and in a more transparent and authentic manner.

Search Engine Marketing (SEM) and Optimization (SEO)

Search engines like Google have played a pivotal role in digital marketing. As the internet expanded, the need for users to find relevant content quickly led to the development of search engines. This sparked the rise of search engine optimization (SEO), a discipline focused on optimizing website content to improve rankings in search engine results pages. SEO practices have evolved from keyword stuffing and basic link-building strategies to more complex techniques involving user experience, mobile-friendliness, content quality and semantic search. Complementing SEO, search engine marketing (SEM), particularly through paid search ads, has become a dominant force in digital marketing. Platforms like Google Ads allow businesses to target users based on their search intent, delivering highly relevant ads to individuals who are already looking for related products or services.

Social Networks

The rise of social networks, starting with platforms like MySpace in the early 2000s and later Facebook, Twitter, and Instagram, has revolutionized digital marketing. Social networks allow brands to engage with their audiences in a more personal and interactive manner, fostering relationships and brand loyalty. Social media marketing is built on the premise of two-way communication, where brands not only promote their products but also

listen to customer feedback, address concerns, and create personalized experiences. Over the years, the use of social networks has expanded to include customer service, influencer marketing and community building, allowing businesses to connect with consumers on a deeper level.

Social Media Advertising

As social networks grew in popularity, social media advertising emerged as a powerful form of digital marketing. Platforms like Facebook, Instagram, LinkedIn, and Twitter offer businesses the ability to target highly specific demographics, behaviors, and interests. Social media ads allow businesses to reach their audience with precision, and these platforms provide rich analytics to track the performance of campaigns in real-time. Over time, social media advertising has become more advanced, incorporating artificial intelligence (AI) and machine learning to optimize ad targeting and delivery. Sponsored posts, display ads, video ads and carousel ads have all become common place, offering businesses multiple formats to engage their audience.

Literature Review

Tailor, R.K and Kaur, Simran (2023) highlighted that the increased use of web had unexceptionally forced the market to move from traditional old form to new digital marketing. They analysed the impact of digital marketing on the consumer's buying behaviour in this cut throat market. They suggested various ways for promotion of products using advanced channels like online entertainment, emails and portable applications.

Sharma, Sabin (2024) investigated the changing consumer behavior influenced by digital technologies and marketing. The study found the consumer perceptions of digital marketing, revealing positive sentiments towards content, satisfaction with social network marketing and the role of digital media in aiding decision-making. The numerous suggestions were made for tailoring marketing approaches to align with diverse consumer preferences.

Gupta, Bairistar, Puja (2025) explored the multifaceted role of digital marketing in shaping consumer preferences, decision-making processes and purchasing habits. She also examined the psychological and social dynamics at play, highlighting how technology bridges the gap between brands and consumers. The findings underscored the transformative power of digital marketing in building brand loyalty, enhancing consumer engagement, and driving sales in a competitive global marketplace.

Research Methodology

Research Methodology is the framework to conduct the research work in systematic manner by reflecting objectives of the study and methods of data collection to achieve the end objectives of the study.

Objectives of the Study

1. To study the key milestones in the evolution of digital marketing.
2. To study the digital consumer and changing digital behaviour in India.
3. To make numerous suggestions to promote digital marketing in India.

Data Collection

For studying the key components of digital marketing and changing behaviour of consumer, data has been collected from the secondary sources such as websites, books, journals and so on.

The Rise of Digital Consumer in India

In recent years, the landscape of consumer behavior has dramatically shifted, with technology playing an increasingly central role. A new category of consumers, often referred to as the "digital consumer," has emerged. These individuals interact with brands, products, and services predominantly through digital platforms, driven by the proliferation of smartphones, internet connectivity and evolving digital technologies. In India, this shift is particularly pronounced, as the country has witnessed a rapid digital transformation, largely due to affordable internet access and a growing young, tech-savvy population. The emergence of the digital consumer has had profound implications for businesses, marketers and even the social fabric of the nation.

In the past, traditional brick-and-mortar stores were the primary point of interaction between consumers and businesses. Today, digital platforms have become the go-to place for shopping, entertainment, communication, and financial transactions. This shift is particularly evident among the younger demographic, with millennials and Gen Z leading the charge.

New Technology and its Impact on Digital Consumer Behaviour

Advancements in technology have played a key role in shaping the behavior of digital consumers in India. The introduction of 4G and 5G networks has not only made internet access faster but also more affordable. This has facilitated the widespread use of mobile apps, e-commerce platforms, online banking and entertainment services like Netflix, Amazon Prime and YouTube. Consumers are now able to access a wealth of Information and products at their fingertips, fundamentally altering how they make purchasing decisions and engage with brands.

For instance, e-commerce giants like Amazon and Flipkart have witnessed a surge in demand, particularly during sales events like 'Prime Day' or 'Big Billion Days'. What was once a luxury for urban elites is now a commonplace activity for rural consumers as well, thanks to the affordability of smartphones and cheaper data plans. The ease of online shopping, home delivery, and cashless payments has made the digital marketplace more attractive to a wider audience. Furthermore, the rise of AI-driven technologies such as chatbots, personalized recommendations, and voice assistants (e.g., Google Assistant and

Amazon Alexa) has enhanced the digital shopping experience. These tools enable consumers to discover products faster, make better-informed decisions, and interact with brands in more convenient and customized ways. For instance, Indian e-commerce platform Myntra uses AI to provide tailored recommendations based on browsing history, ensuring a more engaging shopping experience.

The Changing Digital Behaviour in India and Social Media Platforms

The digital consumer in India is Not only more connected but also more informed and empowered. Social media platforms, especially WhatsApp, Instagram, and Facebook have become essential tools for consumers to discover new products, read reviews and even communicate directly with brands. This shift has forced businesses to reconsider traditional marketing strategies, placing greater emphasis on digital advertising, influencer marketing and customer engagement through social media. A growing trend in India is the use of 'hyperlocal' services, where consumers prefer businesses that offer products or services tailored to their regional tastes and needs. For example, online grocery platforms like BigBasket and Grofers provide fresh produce and other daily essentials with delivery services that cater to specific local preferences. Similarly, Zomato and Swiggy, which specialize in food delivery, offer a range of cuisines that cater to diverse Indian tastes, from North Indian delicacies to regional specialties like Bengali sweets or South Indian dosas. Moreover, the adoption of digital wallets and UPI (Unified Payments Interface) for cashless transactions has revolutionized consumer behavior. Indian consumers are increasingly using platforms like Paytm, Google Pay and PhonePe for day-to-day transactions, reducing their reliance on cash and moving towards a more seamless, secure, and efficient payment ecosystem. The government's push for a "Digital India" has played a significant role in promoting digital payment systems, enabling consumers from all economic backgrounds to embrace cashless transactions.

Discussion and Implications

The findings emerging out of the study are summarized as:

1. **Evolution of Digital Marketing:** Digital marketing has grown from simple emails to a complex, data-driven field. It includes SEO, social media and personalized advertising. Businesses use digital tools to reach and engage targeted audiences. This shift marks a major transformation in marketing strategies.
2. **Importance of Mobile and Internet Penetration**: India's digital growth is fueled by affordable smartphones and cheap data. The internet users, access is no longer limited to urban areas. Rural and semi-urban regions are rapidly coming online. This expansion is reshaping consumer engagement patterns.
3. **Rise of the Digital Consumer**: Consumers now prefer digital platforms for shopping, communication and payments. They are more informed, tech-savvy, and demand faster, smarter experiences. Millennials and Gen Z are leading this shift. Their preferences influence how businesses operate online.

4. **Social Media as a Marketing Powerhouse**: Platforms like Instagram, Facebook and WhatsApp drive customer interaction. Brands use social media for engagement, feedback, and relationship building. Influencer marketing and targeted ads are widely used. These tools help businesses stay relevant and responsive.
5. **Growth of Digital Payments**: Cashless transactions through UPI, Google Pay and Paytm are booming. Consumers across all income groups are adopting digital wallets. This trend supports faster, safer and more convenient payments. Government initiatives have further boosted digital payment adoption.

The following suggestions are made on the basis of findings of the study:

1. **Focus on Mobile-First Strategies:** Given India's high smartphone penetration, businesses must prioritize mobile-friendly platforms. Websites, emails and advertisements should be optimized for smaller screens and fast loading. Developing mobile apps or Progressive Web Apps (PWAs) can enhance user experience and retention and ensures wider reach, especially among rural and younger consumers.
2. **Leverage Localized and Regional Content:** India's linguistic and cultural diversity requires businesses to adapt marketing to regional audiences. Using local languages, culturally relevant imagery and region-specific campaigns can improve engagement. Platforms like YouTube, ShareChat and Moj are effective for regional outreach.
3. **Invest in Social Media Engagement and Influencer Marketing:** Social media should be treated as a primary channel for consumer interaction and brand building. Brands should engage actively through content, stories, live sessions and prompt customer support. Collaborating with micro and macro influencers boosts authenticity and helps target niche markets.
4. **Promote and Integrate Digital Payment Options:** To stay competitive, businesses should integrate a variety of digital payment methods like UPI, wallets and cards. Encouraging digital transactions through discounts or rewards can boost online sales. For small businesses, easy-to-use payment systems can attract more customers from rural and semi-urban areas.
5. **Align with Government Initiatives like Digital India:** Businesses should align their digital strategies with national programs for promoting digital literacy and infrastructure. Collaborations with public digital campaigns can also enhance visibility, especially in untapped markets.

Conclusion

The digital consumer in India represents a rapidly evolving demographic, shaped by technological advancements and shifting consumer expectations. With a large, young and tech-savvy population, India is at the forefront of this transformation. The rise of digital platforms, mobile connectivity and new technologies like AI, 5G and digital payments is reshaping the way consumers interact with businesses and make purchasing decisions. As this trend continues to evolve, businesses will need to remain agile, leveraging the latest

technological tools and understanding the nuanced preferences of digital consumers in India. At the same time, it is essential to recognize the growing importance of customer engagement, personalized experiences and localized offerings in a diverse and dynamic market like India. Ultimately, the digital consumer is driving a paradigm shift that promises to redefine the future of business in the country.

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CHAPTER 9

THE DIGITAL MIRROR: HOW SOCIAL MEDIA SHAPES HEALTH, ENTERPRISE AND SOCIAL NORMS

Dr. Komaldeep Kaur Randhawa
Assistant Professor, GSSDGS Khalsa College Patiala, Punjab

Abstract

Social media serves as a platform for individuals worldwide to share their opinions and discuss various issues. To understand its full implications, it is essential to define social media: it refers to the interaction among individuals or groups who produce, share, and exchange ideas, images, videos, and other content through the internet and virtual communities. Today, children are growing up amidst mobile devices and social networking sites such as Twitter, Facebook, and previously Orkut, making social media an integral part of their lives. These networks are reshaping how young people interact with their parents, peers, and technology. On the positive side, it offers valuable tools for professionals, enabling them to market their skills and explore business opportunities effectively. Conversely, there are significant risks associated with online communities, such as cyberbullying – a form of harassment conducted through electronic means. This paper explores the diverse effects of social media, focusing on its influence across various fields including health, business, education, society, and youth. It aims to provide a comprehensive analysis of how social media impacts society in both positive and negative ways.

Keywords: *Social Media, Business, Society, Mobile Devices, Education, Cyberbullying.*

Introduction

Social media refers to online platforms that enable individuals to build networks or relationships with others who share similar personal or professional interests, activities, backgrounds, or real-life connections. The impact of social media on young people is profound and growing. Adolescents frequently use laptops, tablets, and smartphones to monitor updates from friends and family on platforms like Twitter and Facebook. As technology advances, individuals are increasingly exposed to diverse lifestyles, and social networking sites can help young people enhance their social skills.

Social media is a form of web-based communication that allows users to engage in conversations, share information, and create content. It encompasses various formats, including blogs, micro-blogs, wikis, social networking sites, photo-sharing sites, instant messaging, video-sharing platforms, podcasts, widgets, virtual worlds, and more. Billions globally utilize social media to connect and share information(2).

On a personal level, social media facilitates communication with friends and family, provides access to new knowledge, supports personal interests, and offers entertainment. Professionally, it helps expand expertise and build networks within one's industry. For businesses, social media serves as a platform for engaging with customers, obtaining feedback, and enhancing brand visibility.

Social media presents an innovative opportunity with vast potential for growth. Organizations are leveraging these platforms to improve their practices, advertise, and communicate more efficiently. Instead of relying solely on traditional media for news, people can now access real-time information through social networking sites, tracking global events more conveniently.

Review of Literature

Youth and teens, as the future builders of society, are growing up in what is known as the Net Generation. They are adept at using modern technology, including smartphones, MP3 players, digital cameras, video games, iPads, e-readers, and personal computers. Social media has both positive and negative effects.

This research is based on secondary data collected from online sources, various research papers, and Google searches. Additionally, data was gathered through on-site observations, interviews, and questionnaires to assess the general usage of social media.

The paper explores a range of social networking sites and their impact on various domains, including business, health and society. It examines the positive and negative aspects of social media and provides guidelines for managing its adverse effects on sectors chosen.

Impact of Social Media on Medical and Health

Social media provides healthcare professionals with tools to share information, promote healthy behaviors, and engage with the public. It offers platforms for educating and interacting with patients, students, and colleagues. Social media can potentially enhance health outcomes, expand professional networks, increase awareness of medical advancements, motivate patients, and provide health information to communities(4).

Physicians frequently use social media to read news, listen to experts, research medical advancements, discuss patient issues with colleagues, make referrals, disseminate research, market their practices, and engage in health advocacy(5). The impact of social media on healthcare systems is significant, influencing both developed and developing regions. It helps improve healthcare delivery and empowers individuals and communities.

Positive Effects of Social Media on Health

- Sharing doctor's prescriptions with friends, family, and colleagues.
- Consulting doctors online anytime and anywhere.
- Exchanging suggestions about diseases and symptoms among peers.
- Accessing information in developing regions.
- Receiving support and mutual accountability through online health forums(6).
- Supporting health-related causes.
- Assisting health services in prioritizing critical cases.
- Increasing accountability to consumers.
- Providing more data for health researchers.

Negative Effects of Social Media on Health

- Risk of incorrect self-diagnosis.
- Potential breaches of privacy.

Impact of Social Media on Business

Social media has become a key tool for business promotion, enabling organizations to create relationships, build brands, and engage with audiences. It enhances organizational performance by achieving business goals and increasing annual sales(6). Social media provides a platform for two-way communication between companies and their stakeholders, allowing businesses to advertise and interact with clients on a personal level.

A. Positive Effects of Social Media on Business

- Understanding customer needs more effectively.
- Promoting businesses globally.
- Building sales and customer loyalty through regular interaction and timely customer service.
- Providing rich customer experiences.
- Gaining competitive insights through social media monitoring.
- Facilitating faster and easier content sharing about businesses.
- Attracting new customers by offering various services.
- Increasing market insight and staying ahead of competitors.
- Raising customer awareness for better product understanding.

B. Negative Effects of Social Media on Business

- Social media is not entirely risk-free for businesses, as fans and followers are free to express their opinions, which can sometimes lead to negative feedback that harms the company's reputation.
- Negative customer reviews can be damaging.
- Managing social media can be highly time-consuming.
- The internet is increasingly saturated with content, making it difficult for businesses to stand out.
- Mistakes made on social media can be challenging to correct.
- Many large organizations have fallen victim to cyberattacks.
- An ineffective online brand strategy can lead to significant negative consequences and damage to the brand's reputation.
- Maintaining a social media presence requires dedicated staff to consistently update pages and profiles with relevant content.
- Many businesses struggle to measure the impact and effectiveness of their social media marketing efforts.

Impact of Social Media on Society

Social media has significantly impacted society by transforming how people communicate and interact online. It offers opportunities for individuals to reconnect with old friends, colleagues, and acquaintances, and to make new connections, share content, and exchange media(3). Social media also influences societal lifestyles.

A. Positive Effects of Social Media on Society

- **Connectivity**: Social media's primary advantage is its ability to connect people across the globe, regardless of location or background. It facilitates learning and sharing of ideas with anyone.
- **Education**: Social media provides valuable resources for students and educators. It enables learning from experts and professionals in various fields without geographical constraints or costs.
- **Support**: Social media allows individuals to share their challenges and seek help, whether in the form of advice or financial assistance, from their network.
- **Information and Updates**: Social media keeps users informed about global events and developments. Unlike traditional media, which can be biased, social media offers a platform for accessing a broader range of perspectives and factual information through research.
- **Advertising**: Social media provides an unparalleled platform for promoting businesses to a global audience. This broad reach can help increase profits and achieve business goals more effectively.
- **Noble Causes**: Social media is also a powerful tool for supporting charitable causes. It allows people to quickly raise awareness and gather contributions for those in need.
- **Building Communities**: Social media facilitates the creation of communities by connecting individuals with shared beliefs and interests from diverse backgrounds. This enables people to discuss and share information relevant to their communities.
- **Cost-Effective Marketing**: Traditional marketing methods such as radio, TV commercials, and print ads are becoming obsolete due to their high costs. Social media offers a free way for businesses to reach their target audience, requiring only time and effort.
- **Popularity Among Content Creators**: Platforms like Twitter, Facebook, and LinkedIn are increasingly popular among bloggers, article writers, and content creators. These sites allow them to connect with informed audiences and expand their reach, as their content gets shared within social networks, boosting their visibility.
- **Information Exchange**: Social media enables students and professionals to share and exchange knowledge with like-minded individuals and seek feedback on various topics.

- **Meeting New People**: Social media helps users connect with people they might not meet in person, facilitating new relationships and interactions.
- **Opportunities for Writers and Bloggers**: It provides a platform for writers and bloggers to engage with their audience and promote their work effectively.
- **Uniting for Common Goals**: Social media brings people together on a large scale to achieve specific objectives, fostering positive societal changes.

B. Negative Effects of Social Media on Society

- **Cyber Harassment**: According to Pew Center reports, many young people have fallen victim to online bullying. The anonymity of fake accounts makes it easy for individuals to engage in harassment, spreading threats and rumors that can disrupt social harmony.
- **Hacking**: Personal information and security are at risk of being compromised through hacking(5). There have been instances where accounts on platforms like Twitter and Facebook were hacked, leading to the unauthorized posting of content that impacted individuals' lives.
- **Addiction**: Social media can be addictive, negatively affecting personal lives and leading to wasted time that could be spent on more productive activities.
- **Fraud and Scams**: There are numerous cases of fraud and scams facilitated through social media platforms, posing significant risks to users.
- **Reputation Damage**: Social media can easily tarnish someone's reputation through the spread of false information and rumors.
- **Distraction and Dependence**: Excessive time spent on social media can lead to a loss of focus on important tasks and reliance on digital platforms rather than acquiring practical life skills.
- **Impact on Children**: Children can be heavily influenced by social media if exposed to inappropriate content, including violence and explicit material, which can affect their behavior(6).
- **Privacy Risks**: Users often share too much personal information, which can pose risks even with stringent privacy settings. Content such as videos and photos can be easily downloaded and shared, potentially leading to privacy breaches.

Conclusion

As technology evolves, social media has become an integral part of daily life for many individuals and communities. It enhances collaboration and offers numerous benefits for students and businesses. However, social media also presents challenges, including the potential spread of false information, negative impacts on education and business performance, privacy concerns, and exposure to harmful content(7). To maximize the benefits of social media while mitigating its negative effects, individuals are encouraged to embrace its positive aspects and remain vigilant against its pitfalls. By doing so, we can better harness the advantages of emerging technologies.

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CHAPTER 10

CONSUMER BEHAVIOUR & MARKETING: NEUROMARKETING, PERSONALISATION

Mr. Abhijeet Patil
Assistant Professor, Dr. D. Y. Patil Institute of Management and Entrepreneur Development
Varale, Pune, Savitribai Phule Pune University

Abstract

Neuromarketing and personalization are technology-driven approaches that provide insights into consumer behavior, enabling marketers to craft more effective campaigns. Neuromarketing uses brain imaging techniques to analyze emotional and automatic responses, while personalization uses AI to tailor offerings and communications. Both approaches aim to improve customer engagement and conversion, but must balance innovation with data privacy and fairness.

Keywords: *Neuromarketing, consumer behavior, brain imaging techniques, data privacy and personalization*

Introduction

Consumer behaviour encompasses how individuals select, purchase, use, and dispose of products, reflecting their needs, desires, and aspirations. It integrates insights from psychology, sociology, anthropology, and economics to explain not only what consumers buy but *why* they buy it. In the digital age, technology has become a pivotal factor shaping consumer preferences and expectations. For instance, NielsenIQ notes that online reviews, social media, and personalized digital experiences now greatly influence purchasing decisions. Understanding consumer behaviour is therefore essential for effective marketing, as it enables firms to tailor products and messages to meet consumer needs. In this chapter, we examine two cutting-edge, technology-driven approaches — neuromarketing and personalization — that provide novel insights into consumer behaviour and allow marketers to craft more effective campaigns.

Neuromarketing: Unveiling the Consumer's Subconscious

Traditional market research relies on surveys, focus groups, and self-report measures, which capture only conscious opinions. Neuromarketing, by contrast, applies neuroscience and cognitive science to marketing questions, probing consumers' subconscious brain responses In essence, it "studies how our brains react to [marketing] stimuli". By tracking physiological and neural signals, neuromarketing aims to reveal automatic, non-conscious drivers of decision-making. As Chaudhary (2023) observes, the goal of neuromarketing is to understand "how the brain is physiologically affected by advertising and marketing strategies". Neuromarketing thus offers a direct route to influencing behaviour by focusing on emotional and automatic responses. In contrast to the rational "Homo economicus" model, neuromarketing acknowledges that much of consumer decision-making occurs

unconsciously. By leveraging neuroscience tools, marketers can tap into these hidden processes to craft more effective ads, designs, and promotions.

Common neuromarketing techniques include:

- **Functional Magnetic Resonance Imaging (FMRI):** Captures blood-flow changes in the brain while consumers view ads or products, revealing deep neural activation patterns.
- **Electroencephalography (EEG):** Records electrical brain activity in real time, indicating which stimuli trigger engagement or emotional arousal.
- **Eye-Tracking**: Monitors where consumers look on a package or screen, measuring visual attention and salience.
- **Facial Coding and Biometrics**: Analyses facial expressions and physiological signals (like heart rate or skin conductance) to infer emotional reactions.

Together, these tools allow marketers to quantify responses that traditional surveys miss. For example, neuromarketing research can predict which ad elements will capture attention, how much memory recall an image elicits, or which packaging design most strongly engages the reward system. As one review notes, by studying brain signals "neuromarketing tools can forecast how consumers will make decisions" and even influence behavior. In practice, this might involve tracking a viewer's pupil dilation to gauge interest or measuring frontal brain activity to infer likeability.

Neuromarketing rests on well-established neuroscientific principles. Emotions are known to play a crucial role in buying decisions. "One of the key theories underlying neuromarketing is emotional decision-making," since consumers' choices are strongly driven by feelings rather than pure logic. A classic study by Shiv and colleagues demonstrated this: hungry participants showed elevated activity in the nucleus accumbent (a reward centre) and were more prone to impulse purchases. Such findings underline how situational emotions (like hunger) can override rational plans, an effect neuromarketing seeks to exploit. The concept of mirror neurons — brain cells that fire both when we act and when we see others act — also informs neuromarketing. Mirror neurons underlie empathy and social learning, helping explain why viewers may "vicariously" feel excitement or trust when watching an ad. For instance, seeing someone smile after using a product can subconsciously induce a similar positive feeling in the viewer's own brain. Overall, neuromarketing acknowledges that decisions emerge from an interplay of unconscious and conscious phases, challenging simplistic models and giving marketers a richer understanding of the consumer mind.

The field of neuromarketing is relatively young (emerging in the early 2000s) but rapidly growing. It was pioneered by visionaries like Harvard's Gerald Zaltman, and formalized by the Neuromarketing Science & Business Association in 2012. Today, major brands and market research firms around the world integrate neuroscience into marketing strategies. For example, companies may test multiple packaging designs with EEG headsets to choose the version that elicits the strongest positive neural response. In India, too, multinational and domestic firms are beginning to adopt these methods (as discussed below). The

neuromarketing market is expected to grow substantially, reflecting companies' interest in deeper consumer insights.

Neuromarketing applications are already transforming marketing tactics. In advertising, firms use brain data to optimize visuals and messaging. One strategy is emotion-driven advertising: by measuring viewers' emotional engagement via EEG or facial coding, marketers can refine commercials to maximize positive responses. In product design, neuromarketing helps select colours and shapes that resonate subconsciously. For example, studies have shown that warm, natural colours on a product can evoke health or freshness associations in consumers. Packaging scientists may use eye-tracking and GSR to choose imagery and hues that attract attention and convey intended qualities. Even store layouts and digital interfaces are informed by neuromarketing: observing where shoppers look first or what captures mobile users' attention can guide the arrangement of products and banners. In short, neuromarketing seeks to align marketing stimuli with the brain's innate responses.

Despite its promise, neuromarketing raises important ethical considerations. Critics warn that manipulating subconscious responses could violate consumer autonomy or privacy. As scholars have pointed out, ethical application requires care with data and sensitivity to context. For instance, brain imaging data are highly personal; protocols must ensure that neurological information is kept secure and not misused. Cultural context is also crucial: what triggers positive reactions can differ across cultures, so neuromarketing in India must respect local norms and values. Thus, experts emphasize responsible use: neuromarketing techniques should be applied in ways that are transparent and culturally informed. Firms should avoid deceptive manipulations (e.g. subliminal messages without consent) and maintain consumer trust. Overall, as neuromarketing expands, developing ethical standards and regulatory guidance will be as important as the technology itself.

Personalization: Tailoring Marketing to the Individual

Personalization in marketing refers to the practice of leveraging consumer data to customize offerings and communications for each individual. Rather than sending generic messages to broad audiences, personalized marketing uses analytics and AI to deliver *one-to-one* experiences. Ramya et al. (2025) describe personalization as "a cornerstone of AI-powered marketing," allowing businesses "to tailor content, recommendations, and advertisements based on individual user behaviour". In other words, personalization means that the message, product suggestion, or price a consumer sees are influenced by what the company knows about that person – their preferences, past purchases, demographic data, or online behaviour.

The goal of personalization is to make marketing relevant and engaging on an individual level. According to McKinsey (2025), 71% of consumers now expect companies to deliver personalized interactions, and 76% become frustrated when personalization is absent. In practice, personalization often manifests in features like "recommended for you" sections, customized email content, or tailored promotions. For example, e-commerce platforms use

algorithms to suggest products based on a user's browsing and purchase history. Streaming services recommend movies or songs by matching user profiles with content metadata. Even traditional advertising can be personalized: a retailer might send discount coupons via SMS only to shoppers who bought similar items in the past. By meeting consumers' desire for relevance, personalization can significantly enhance engagement. Studies show that when personalization is executed well, it not only improves customer experience but also boosts conversion rates and brand loyalty.

Key Personalization Techniques and Technologies include:

- Recommendation Engines: Collaborative filtering and machine learning algorithms analyse vast user data to suggest products or content. For instance, Amazon's "customers who viewed this also viewed…" or Netflix's "because you watched X…" are powered by recommendation engines. These systems learn patterns in viewing or purchase history to make individualized suggestions.
- Data-Driven Segmentation: Marketers group consumers into detailed micro-segments based on behaviour, demographics, or psychographics, then target each segment with tailored offers. As McKinsey notes, AI can be used to tailor discounts and promotions to specific customer groups (e.g. loyalty tiers or life-cycle stages). By analysing purchase propensities, companies can allocate sharper discounts or special deals to high-value segments, maximizing ROI.
- Dynamic Web and App Content: Websites and apps dynamically adapt what each visitor sees. This may involve changing homepage banners, rearranging product displays, or personalizing search results in real time. For example, news websites may re-order headlines according to a reader's interests. McKinsey observes that personalized communications can be accompanied by "dynamic recommendations that update in real time for individual customers based on their purchasing or browsing history".
- Customized Messaging: Personalized emails, texts, and advertisements address customers by name and reflect their preferences. Email marketing platforms can insert user-specific product recommendations or content blocks. Ad networks target social media or search ads using past behaviour signals. A person who frequently researches fitness gear, for instance, may be shown promotions for athletic apparel.
- AI-Generated Creative: Emerging tools use generative AI to craft tailored content. Marketers can automatically generate thousands of ad variations, each with customized copy, images, or tone designed for different audience segments. McKinsey highlights that generative AI enables scaling of highly relevant messages with "bespoke tone, imagery, copy, and experiences" at high speed This allows companies to maintain brand consistency while still personalizing creative elements for different customer groups.

In India's online retail sector, personalization has become especially important to engage diverse consumers. A case study of Indian e-retail finds that companies use a variety of

techniques — product suggestions, dynamic pricing, tailored content, and user segmentation — to suit different customer preferences. Due to India's cultural variety and varying purchasing power, personalization strategies often account for language, region, and consumer category. For example, an e-commerce site might display different festive deals in different states or use local languages in communications. According to Manju (2022), Indian retailers have invested in the technical foundations for personalization, including collaborative filtering algorithms, machine learning models, and real-time data analytics. These technologies enable "individualized shopping experiences" that respond to each user's needs in the moment.

There is strong business value in personalization. Studies indicate that personalized marketing can substantially improve customer engagement and conversion. McKinsey reports that targeted promotions (as opposed to broad, undifferentiated offers) can meaningfully boost performance. One retailer that shifted from mass promotions to personalized, data-driven offers saw a 1–3% increase in sales and margins. Another real-world example saw a 3% uplift in annualized profit margins after implementing targeted campaigns. These gains arise because personalization reduces marketing waste (by not over-discounting uninterested customers) and increases relevance (driving more purchases from engaged customers). In India, too, evidence suggests that personalized recommendation systems and loyalty-based offers help convert browsers into buyers and enhance repeat purchase rates.

Despite its benefits, personalization entails challenges. Chief among these are privacy and trust issues. Collecting and analysing consumer data raises questions about consent and data security. In response, regulatory frameworks like GDPR and emerging Indian data protection laws require companies to handle personal information responsibly. Ramya et al. (2025) note that AI-driven marketing must balance innovation with data privacy and fairness, warning of "ethical concerns regarding data privacy, algorithmic biases, and consumer trust". In practical terms, marketers must ensure transparency (letting consumers know how their data is used), obtain permission, and safeguard information. Additionally, overly aggressive personalization can backfire; consumers may feel manipulated if ads are too intrusive or eerily specific. Thus, ethical guidelines (such as limiting data collection to what is necessary) are as crucial for personalization as they are for neuromarketing.

Integrating Neuroscience and Personalization: A Holistic View

Neuromarketing and personalization are distinct tools, but they can reinforce each other. Neuroscience insights can inform personalization strategies, and vice versa. For instance, neuromarketing studies might reveal that certain visual elements or emotional triggers strongly engage a particular segment. Marketers can then personalize content for that segment by incorporating those elements. An ad platform might adjust on-the-fly, showing the version of a creative that previously generated the highest neural engagement for similar users. In this way, understanding *what* in the marketing message resonates at the brain level (via neuromarketing) can guide *how* to tailor that message to different groups.

From a technology perspective, both fields draw on advanced analytics and AI. Modern personalization engines could, in theory, incorporate biometric or attention data. For example, a smartphone-based eye-tracking module could adapt a user interface to follow the user's gaze patterns. While such applications are largely experimental today, the convergence of AI, IoT sensors, and neuroscience hints at future possibilities. Generative AI can blend these insights by automatically creating variations of content optimized both for algorithmic profiles and neural impact. Academic research is even exploring brain-computer interfaces (BCIs) that might one day feed consumer neural responses back into digital marketing systems.

The overarching trend is toward ever more individualized marketing. Companies are deploying deeper learning models to predict consumer behaviour, as highlighted by recent reviews of AI in marketing. The shift from mass marketing to 1:1 personalization is clear: brands that once broadcast generic ads are now striving to communicate in the language of each customer. Yet, as this transformation unfolds, ethical and privacy safeguards must keep pace. Data-driven personalization and neuromarketing both rely on intimate consumer information — be it past purchases or neural patterns — and must operate transparently to maintain trust. Ultimately, the integration of neuroscience and personalization promises more effective and relevant consumer experiences, but the success of these cutting-edge strategies will depend on how responsibly they are used.

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CHAPTER 11

FAST FASHION-LED LIFESTYLE MARKETING AND THE PARADOX OF SUSTAINABILITY AMONG GENERATION Z: AN EXPLORATORY ANALYSIS

Rahul Roy
Former Student, Bachelor of Commerce (Honours), Batch of 2022-25
Postgraduate and Research Department of Commerce
St. Xavier's College (Autonomous), Kolkata

Dr. Shivaji Banerjee
Senior Assistant Professor, Postgraduate and Research Department of Commerce
St. Xavier's College (Autonomous), Kolkata and Guest Faculty - University of Calcutta

Abstract

*In today's fast-paced world, Generation Z presents a unique challenge for fashion brands. They are driven by lifestyle choices, drawn to affordable and trendy fashion, yet increasingly conscious of the environment. Their consumer behaviour reflects a tension between fast fashion preferences and concern for sustainability. This study, titled "**Fast Fashion – Led Lifestyle Marketing and the Paradox of Sustainability Among Generation Z: An Exploratory Analysis**", aims to explore how brands can balance Generation Z's expectations with environmental responsibility, encouraging a shift toward slow fashion.*

Keywords: *Lifestyle, Sustainability, Fast Fashion, Brands, Generation Z, Consumer Behaviour, Slow Fashion*

Introduction and Background of the Study

Lifestyle marketing links products to consumer values using social media, experiences and celebrities, but often fuels overconsumption. Fast fashion offers trendy clothes fast with cheap labour and materials, pushing materialism and harming workers and the planet. Brands like H&M, Zara and Zudio thrive on hype. Sustainable fashion responds with fair wages, eco-friendly production and lasting quality. Slow fashion promotes minimalism, better materials and craftsmanship to cut long term impact.

Rationale and Importance of the Study

This study shows how clothing has shifted from a basic need to a symbol of lifestyle and status. It explores how Generation Z is influenced by trends, celebrity endorsements, brand image and social media. It also highlights fast fashion's environmental impact through raw material use, labour exploitation and waste. With Generation Z leaning toward sustainability, the study suggests ways brands can adopt ethical practices to meet their needs and promote responsible fashion.

Review of Literature

1. **(Annie Williams, 2022)** in their research titled, "**Adolescent Generation Z and sustainable and responsible fashion consumption: exploring the value-action gap**" wanted to explore Generation Z's value-action gap in sustainable fashion through three themes, examining choices across buying, use and disposal.
2. **(Brewer, 2019)** in his study titled, "**Slow Fashion in a Fast Fashion World: Promoting Sustainability and Responsibility"** states fast fashion grew the industry but caused emissions and social harm. The study urges slow fashion and ethical practices.
3. **(Mayasari, 2019)** in her work, titled "**The Influence of Fashion Lifestyle, Sales Promotion and Self-image to Impulse Buying Behaviour and Customer Satisfaction**" speaks about how fashion lifestyle and promotions trigger impulse buying, boosting satisfaction. Buyers may repurchase even without discounts as needs evolve.
4. **(Cline, 2012)** through her research work, "**Overdressed: The Shockingly High Cost of Cheap Fashion**" highlights that demand fuels cheap fashion, causing waste and labour abuse. Thrifting, renting and slow fashion offer mindful alternatives.
5. **(Kant, 2012)** in "**Textile dyeing industry an environmental hazard"** states Colour outshines fabric but dyeing pollutes. Synthetic dyes harm air, water and life. Only sustainable methods can slow the damage.

Research Gap

- Most global studies focus on one or two aspects like lifestyle marketing, fast fashion or their link with sustainable fashion.
- This study examines how lifestyle marketing and fast fashion are connected, their impact on the environment and Generation Z and aims to promote a more sustainable future.

Research Objectives

- To identify the role of social media, influencer marketing, celebrity endorsements and brand image in promoting fast fashion.
- To analyze Generation Z's awareness of sustainable fashion, measure the effectiveness of sustainable lifestyle marketing on them and study the ease of adopting alternative fashion consumption models.

Research Methodology

Research Design

This study uses quantitative methods 28-question survey, including 8 demographic questions, was created using Google Forms and shared with Generation Z through social media platforms like WhatsApp and LinkedIn across locations.

Type of Data

Majorly primary data has been used in this research work which has been collected from the questionnaire. Secondary data has also been utilized while conducting this study.

Sample Size

The sample size of this study is 250 people.

Target Group

The target group of respondents in this study is Generation Z, i.e., it includes those people who are born between the years, 1997 and 2012.

Geography

No geographic restrictions were placed on the sample size while collecting data so as to get more and diverse responses in order to attain a transparent solution to the research problem.

Sampling

The sampling technique for this research work is Mixed, i.e., both Purposive and Snowball sampling techniques have been used.

Hypothesis Testing

Certain research objectives have been deciphered using Hypothesis Testing via Chi Square.

Software

SPSS or Statistical Packages for Social Sciences has been used in this research work for analyzing data.

Hypothesis Testing: 1

Objective: To determine whether consumers who consider sustainability while making clothing purchases also opt for thrifting/second-hand clothing.

Null Hypothesis (H_0): Consumers who consider sustainability while making clothing purchases do not opt for thrifting/second-hand clothing.

Alternate Hypothesis (H_1): Consumers who consider sustainability while making clothing purchases also opt for thrifting/second-hand clothing.

Since, the p-value > 0.05 (Level of Significance), it can be concluded that there is insufficient evidence to reject H_0. Thus, there is no significant relationship between consumers who consider sustainability while making clothing purchases and they opting for thrifting/second-hand clothing

Chi-Square Tests			
	Value	Df	Asymptotic Significance (2-sided)
Pearson Chi-Square	7.332[a]	4	.119
Likelihood Ratio	7.939	4	.094
N of Valid Cases	250		
a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 5.96.			

Crosstabulation analysis shows that among those considering sustainability, 23 thrifted, 55 did not and 9 were unsure. Among those not considering sustainability, 18 thrifted, 71 did not and 3 were unsure. For those unsure about sustainability, 14 thrifted, 48 did not and 9 were unsure.

Consideration of sustainability while making clothing purchases * Consideration of thrifting/second-hand clothing purchases Crosstabulation

			Consideration of thrifting/second-hand clothing purchases			Total
			Maybe	No	Yes	
Consideration of sustainability while making clothing purchases	Maybe	Count	9	48	14	71
		Expected Count	6.0	49.4	15.6	71.0
	No	Count	3	71	18	92
		Expected Count	7.7	64.0	20.2	92.0
	Yes	Count	9	55	23	87
		Expected Count	7.3	60.6	19.1	87.0
Total		Count	21	174	55	250
		Expected Count	21.0	174.0	55.0	250.0

Phi Coefficient: 0.171; Cramer's V: 0.121. This suggests a weak relationship between consumers who consider sustainability while making clothing purchases and they opting for thrifting/second-hand clothing.

Symmetric Measures			
		Value	Approximate Significance
Nominal by Nominal	Phi	.171	.119
	Cramer's V	.121	.119
N of Valid Cases		250	

Hypothesis Testing: 2

Objective: To determine whether the urge to update wardrobe as per trends depends on gender.

Null Hypothesis (H_0): There is no relationship between gender and the urge to update wardrobe as per trends.

Alternate Hypothesis (H_1): There is a relationship between gender and the urge to update wardrobe as per trends.

Since, the p-value > 0.05 (Level of Significance), it can be concluded that there is insufficient evidence to reject H_0. Thus, there is no significant relationship between gender and the urge to update wardrobe as per trends.

Chi-Square Tests			
	Value	Df	Asymptotic Significance (2-sided)
Pearson Chi-Square	6.870[a]	4	.143
Likelihood Ratio	6.955	4	.138
N of Valid Cases	250		
a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 5.60.			

Crosstabulation analysis shows most females update their wardrobe frequently (33) or occasionally (37), while most males do so occasionally (49) or rarely (44).

Gender * Urge to update wardrobe as per trends Crosstabulation								
			Urge to update wardrobe as per trends					Total
			Always	Frequently	Never	Occasionally	Rarely	
Gender	Female	Count	5	33	6	37	19	100
		Expected Count	5.6	26.4	8.4	34.4	25.2	100.0
	Male	Count	9	33	15	49	44	150
		Expected Count	8.4	39.6	12.6	51.6	37.8	150.0
Total		Count	14	66	21	86	63	250
		Expected Count	14.0	66.0	21.0	86.0	63.0	250.0

Phi Coefficient: 0.166; Cramer's V: 0.166. This suggests a weak relationship between gender and the urge to update wardrobe as per latest trends as the values are closer to 0.

Symmetric Measures			
		Value	Approximate Significance
Nominal by Nominal	Phi	.166	.143
	Cramer's V	.166	.143
N of Valid Cases		250	

Hypothesis Testing: 3

Objective: To determine whether gender of the consumer affects the willingness to reduce clothing purchases to promote sustainability.

Null Hypothesis (H_0): There is no relationship between gender and the willingness to reduce clothing purchases to promote sustainability.

Alternate Hypothesis (H_1): There is a relationship between gender and the willingness to reduce clothing purchases to promote sustainability.

Since, the p-value < 0.05 (Level of Significance), it can be concluded that there is sufficient evidence to reject H_0. Thus, there is a significant relationship between gender and the willingness to reduce clothing purchases to promote sustainability.

Chi-Square Tests			
	Value	Df	Asymptotic Significance (2-sided)
Pearson Chi-Square	11.018[a]	2	.004
Likelihood Ratio	11.154	2	.004
N of Valid Cases	250		
a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 20.00.			

Crosstabulation analysis shows more females than expected chose 'Yes' (44 vs 34.4 expected) and more males chose 'No' (81 vs 68.4 expected).

Gender * Reducing clothing purchases to promote sustainability Crosstabulation

			Reducing clothing purchases to promote sustainability			Total
			Maybe	No	Yes	
Gender	Female	Count	23	33	44	100
		Expected Count	20.0	45.6	34.4	100.0
	Male	Count	27	81	42	150
		Expected Count	30.0	68.4	51.6	150.0
Total		Count	50	114	86	250
		Expected Count	50.0	114.0	86.0	250.0

Phi Coefficient: 0.210; Cramer's V: 0.210. This suggests that gender has some influence on the willingness to reduce clothing purchases to promote sustainability but is not a very strong relationship.

Symmetric Measures			
		Value	Approximate Significance
Nominal by Nominal	Phi	.210	.004
	Cramer's V	.210	.004
N of Valid Cases		250	

Secondary Data Analysis

- Lifestyle brands group consumers by AIO – Activities, Interests and Opinions – to serve them more effectively. Lululemon applies this with revenue projected at US$12.5 billion by 2026 (smile.io, 2025).
- Fashion uses 60% plastic, causes 10% of carbon emissions and dumps one truck of clothes every second (United Nations Environment Programme, 2019). Washing adds 5,00,000 tons of microfibres yearly (Ellen MacArthur Foundation, 2017).
- As per Quantis (Quantis, 2018) and World Bank (World Bank, 2020), textiles use 215 trillion litres of water and cause 20% of industrial wastewater. Cotton, most extensively used natural fibre used in global fashion worsens the crisis.
- Chemical dyes pollute water, harm health and cut fishing. Of 100 billion garments made, 87% are dumped and under 1% recycled. Fashion emits 2 to 4% of global emissions and recycles only 0.3% of its input (Earth Day, 2025), (Circle Economy, 2024).
- (George Washington University, 2021) states that fast fashion exploits cheap labour in countries like Bangladesh. Only 2% of 75 million workers earn a living wage. Abuse is common. During Covid-19, brands cancelled US$40 billion in orders, causing job losses.
- According to (Times Of India, 2023), sustainable fashion is growing. Thrifting appeals to Gen Z, with resale projected to reach US$351 billion by 2027.

Findings and Conclusion

This study confirms a direct link between lifestyle marketing and fast fashion consumption, highlighting how Generation Z is influenced by pricing, social media, influencers, brand image, peer pressure and trends. It strongly recommends adopting slow fashion to address the negative impacts of fast fashion and urges stakeholders to prioritise sustainability over profit. While slow fashion requires legal, social and technological support, consumers and brands can take small steps by reducing consumption, avoiding the demonstration and Veblen effects and choosing sustainable clothing whenever possible.

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CHAPTER 12

INVOLVEMENT OF ARTIFICIAL INTELLIGENCE IN NEURO MARKETING IN APPROACHING THE CUSTOMER

Dr. K. Sriprasadh
Assistant Professor, Faculty of Science and Humanities
SRM Institute of Science and Technology, Vadapalani

Abstract

Neuromarketing uses artificial intelligence algorithms to understand customer behavior and decision-making, focusing on hormones like Testosterone, Estrogen, Progesterone, Cortisol, Dopamine, and Oxytocin. AI can improve operations and decision-making, but requires ethical considerations, data security, and balancing innovation with privacy rights.

***Keywords**: Neuromarketing, Artificial intelligence, algorithms and decision-making*

Introduction

Neuromarketing is the novel approach to meet the customer mind to prove the marketing product to be purchased by the customer. Through this approach product sellers can reach the people, to make them to buy the product. In this artificial Intelligence algorithms made in to read the behavior of the user. Artificial Intelligence involves Machine learning and Deep Learning algorithms to read the human of the customer .

Neuromarketing and Its Nature:

This process study involves in activity of brain, responses physiologically and the process of decision making .These all factorial aspect involved in marketing the product and while designing the product.

Importantly the major idea about the neuromaketing is to understand, how human brain is thinking in various situations, while purchasing product.in other words, while purchasing a product what are hormonal activity in human while buying a product.

There are five hormones are involved in buying a product, they are Testosterone, Estrogen and Progesterone (listed together because it's their interplay more than their individual action that matters), Cortisol, Dopamine, Oxytocin.

Testosterone

Testosterone makes an impact in the consumer's behavior; even androgens make the impact in the behavior of consumers

Testosterone

Testosterone drives aggressive, risk-taking behavior. For this reason, a buyer with high testosterone levels is likely to be less risk-averse, but more likely to challenge a salesperson. Testosterone levels can fluctuate over the course of a day or week or month, based on

internal factors as well as external factors such as stress and exercise. In general, testosterone levels tend to be higher in the morning after waking, and lower later in the day.Contrary to common understanding, both women and men produce testosterone, though men tend on average to have higher levels of it.

Estrogen and Progesterone

The interplay of these two hormones shifts over time. This dynamic influences mood and the tendency toward risk. Their relationship also affects how individuals approach problems. It impacts their willingness to take chances. Current understanding of these interactions is limited. However, some studies suggest higher progesterone relative to estrogen correlates with quicker decisions. Both sexes produce these hormones. Women generally exhibit higher amounts. Their levels also change throughout a monthly cycle.

Cortisol

Cortisol, often called the stress hormone, also signals excitement. This hormone makes individuals wary of risk. It also reduces openness to new situations. Cortisol production rises during stressful periods. It is also known as the "fight or flight" hormone. High cortisol can cause sweating and anxiety. It may also prompt a desire to fight or flee.A stressed buyer might seek change quickly. However, a buyer reacting to a proposed change with high cortisol may argue. They might also avoid your sales team. Cortisol levels change during the buying process. They peak at the commitment stage. Levels remain high just before and after this point.

Dopamine

Dopamine drives many addictions. Your phone use is one example. A notification brings a pleasure boost. So does winning in a game.Sales pros get dopamine from fresh leads. They feel it when buyers advance. Closing a deal is a big reward. Sales teams often use rewards. They use praise and pay plans. This taps into dopamine, often without knowing it.
Buyers feel dopamine too. Excitement about new shoes or a car causes it. But these dopamine hits fade fast. They are hard to keep going. This makes dopamine tricky. It is harder to manage in big business deals. These sales take a long time. Dopamine can then hurt your sale. Your buyer might chase new ideas instead. They may not follow your sales plan.

Oxytocin

Oxytocin is known as the "bonding hormone." It creates feelings of connection. This hormone is released during kind acts. It appears when trust is present. It also flows when we share openly. Positive feedback enhances this feeling.Sellers try to release oxytocin. They aim for this in buying situations. Taking clients to dinner works. Golf outings can also trigger it. Gift baskets for holidays help. High oxytocin levels reduce caution. Buyers are then more open to new ideas.Oxytocin has longer-lasting effects than dopamine, and is a more useful

hormone in large, complex deals and is the reason that warm relationships are so important in complex b2b sales.

Buyer and Seller Hormones often Conflict at Different Points of the Buying Cycle

Hormone mismatches can disrupt sales. A seller anticipates success. Dopamine rises with this feeling. Oxytocin increases from trust. They expect to win the deal. Buyers, however, grow cautious. They risk money and effort. This raises cortisol and anxiety. A fight or flight response may occur. Buyers may choose the status quo. They might pick a safer, worse option. Sellers feel joy. Buyers feel stress. Unaddressed, this gap causes problems. Sellers might alienate buyers. This increases buyer cortisol further. It triggers last-minute doubts. Hormonal shifts affect risk. They impact change openness and mood. Conflicting buyer and seller hormones create friction. This halts the buying process. Knowing this helps sales teams. They can better understand buyers. This leads to empathetic responses. It builds trust. Map the buyer's journey. Identify cortisol-raising points. Add steps to boost oxytocin. Smooth the buyer and seller experience. Membrain can map your process. It helps implement new steps. Make buyers feel good. Contact us for a demo.

Role of Artificial Intelligence in stimulating the Business

AI is crucial for today's businesses. It improves how companies operate. AI also aids decision-making. It boosts a company's competitive edge. Many industries now use AI. Finance, health, and retail rely on it. AI helps businesses succeed.AI makes operations more efficient. Automation is key here. Predictive analytics and machine learning are also important. These tools reduce manual work. They also cut down mistakes. AI systems automate many tasks. Robots in manufacturing are a good example. They make production better. This lowers costs and boosts output.

AI also improves how decisions are made. It analyzes large amounts of data. This provides useful information. AI helps humans make better choices. AI systems give managers real-time data. This leads to smarter business moves. Doctors use AI for diagnoses. It helps them plan treatments. This improves patient health.Businesses that use AI well gain an advantage. They often beat rivals. They innovate more. Customers are more satisfied. They capture larger market shares. Early AI adopters lead the way.

Adopting AI offers businesses a significant advantage. Retailers using AI for recommendations improve customer experiences. This boosts satisfaction and loyalty note AI's business benefits are large. Yet, challenges must be met for full potential. Solving these issues helps companies use AI opportunities.AI deployment requires ethical thought. Algorithmic bias must be corrected. Transparent processes build user trust (Diakopoulos, 2016). Data security is vital with AI use. Firms must protect private data. They balance innovation with privacy rights AI integration creates a skills gap. New worker skills are needed. Companies must train staff. This prepares them to work with AI.

AI tools can ease the customer service load on your staff. Chatbots and auto-reply systems can manage many simple customer questions. Using these tools for basic tasks helps

sort and direct customer requests.However, letting these tools completely replace human service harms your company's image. AI cannot truly substitute for human interaction; customers recognize this distinction.Over-reliance on automated service makes customer interactions impersonal. This can weaken your brand's message and lower customer happiness. Longer waits for human help give customers time to think about leaving. In markets where switching is easy, these waits cost clients and money.

Large language models such as ChatGPT produce vast quantities of keyword-rich text rapidly. This allows for faster content creation for websites, blogs, and marketing efforts. However, your rivals also utilize this technology. Without human oversight and novel concepts, your content may become bland and indistinguishable. Your message gets lost. Your unique selling points vanish.AI models cannot invent concepts; they reuse existing ones. Replacing human writers with generic AI content risks losing your brand's distinct voice.

Businesses use AI for data analysis. AI can process data much faster than people. AI tools are not perfect, however. They can make errors, even on easy tasks. For example, ChatGPT-3.5 incorrectly stated that nine shirts would take nine hours to dry. It wrongly assumed a direct link between shirts and time. ChatGPT-4 fixed this error. It correctly said nine shirts would also take three hours. These types of mistakes show AI's limits. Human review is still vital for data analysis. You need to find errors and add important context. Without it, your company might make bad choices.

AI can create standard legal forms. Yet, it struggles with risk. It cannot gauge intangibles. Undefined factors are also a challenge.AI lacks human knowledge. It does not have intuition. These are vital for complex issues. Legal, financial, or strategic matters require them. AI cannot ask deep questions. It cannot make careful judgments. Only experienced humans can do this. Humans are needed for context. AI may draft a legal paper. It will not grasp your business's unique factors. It will not know your risk limits. It will not understand industry politics.Relying too much on AI courts errors. Such mistakes can be very costly for your company.

Generative AI is now common in web design and branding. These tools make visuals very quickly. However, GenAI misses a key creative element: taste. It cannot judge aesthetics. GenAI cannot decide what looks good. Human input is required for these judgments. Without human direction, creations may lack originality. They might also fail to resonate with people. Consider that some AI tools use your data. Be cautious about sharing company information.

Companies see AI's great promise. However, rushing adoption poses dangers. Replacing human skills with AI presents a bigger risk.Wise and planned steps are essential for AI use. AI should be added slowly. A partner offering human oversight is best. This balanced way uses AI's power. It also saves unique human qualities.

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CHAPTER 13

THE INFLUENCE OF SENSORY MARKETING ON CONSUMER BEHAVIOR: A NEUROMARKETING PERSPECTIVE

Dr. P. Brindha
Assistant Professor, School of Management,
Department of Management Studies, VISTAS, Pallavaram, Chennai

Dr. A. Navitha Sulthana
Assistant Professor, School of Management,
Department of Management Studies, VISTAS, Pallavaram, Chennai

Abstract

This study uses a neuromarketing technique to investigate how sensory marketing affects customer behavior. Using the five senses – sight, hearing, smell, taste, and touch – sensory marketing aims to improve customer experiences. EEG, eye tracking, and GSR are examples of neuromarketing methods that are used to analyze subconscious reactions to sensory stimuli. The study emphasizes how auditory and olfactory signals elicit emotional reactions, while visual aspects like color and design draw attention. Experiences with taste and texture enhance brand loyalty and recall even more. Multisensory approaches boost customer engagement and impact purchasing decisions, according to research. The significance of matching brand identity with sensory cues is emphasized throughout the article.

Neuromarketing provides deep insights into the emotional and cognitive effects of sensory components. With the help of this research, marketers may create campaigns that have a significant impact. Additionally, it talks about how ethical issues affect consumer choices. The paper ends with recommendations for additional research as well as real-world applications.

Keywords: *Sensory Marketing, Neuromarketing, Consumer Behavior, and Neuropsychology in Marketing.*

Introduction

Traditional marketing strategies that just emphasize product attributes or logical argumentation are insufficient to sway consumer choices in the current marketing environment. Consumers today are more and more influenced by experience and emotional aspects. Using one or more of the five human senses—sight, sound, smell, taste, and touch—sensory marketing has become a potent tactic for developing immersive and memorable brand experiences. Strategic use of sensory components in marketing campaigns can influence perceptions, elicit feelings, improve brand memory, and eventually influence consumer behavior.

This study explores the intersection of sensory marketing and neuromarketing to investigate how various sensory inputs influence consumer behavior at a neurological and psychological level. It examines the effectiveness of individual senses as well as the combined impact of multisensory experiences in shaping purchase decisions. The

integration of neuromarketing insights into sensory marketing strategies enables brands to connect with consumers on a deeper, more meaningful level, creating lasting impressions that go beyond the product or service itself.

Review of Literature

In recent years, sensory marketing has attracted a lot of attention due to its capacity to produce engaging customer experiences. In order to affect consumer perception and behavior, it is described as a marketing strategy that appeals to one or more of the five senses (Krishna, 2012). According to academics, sensory stimuli have the power to arouse feelings, mold memories, and strengthen brand associations.

With visual components including color, style, and packaging having a significant influence on customer attention and product evaluation, sight is frequently the most prominent sense in marketing (Labrecque & Milne, 2012). According to eye-tracking research, appealing images improve brand remember and engagement (Wedel & Pieters, 2008).

Another important factor in customer behavior is sound. Background music has been shown to affect mood, perceived waiting time, and shopping speed (Yalch and Spangenberg, 2000). Additionally, brand familiarity and loyalty are improved by consistent audio branding (Kellaris & Kent, 2004).

Strong emotional reactions and memories have been reported to be evoked by smell. According to Herz (2004), fragrance is a powerful motivator for consumer behavior because olfactory cues are processed in the limbic system, the brain's emotional center. In retail settings, recognizable and pleasant fragrances can boost customer intent to buy and dwell duration (Spangenberg et al., 1996).

In the food, cosmetics, and textile industries, taste and touch are particularly important. According to Krishna and Morrin (2008), tactile perceptions like warmth and texture have a big impact on customer happiness and product assessment. Although taste is frequently industry-specific, it has a significant impact on consumers' emotional attachment to food brands (Rozin, 2006).

EEG, FMRI, and GSR are examples of neuromarketing tools that have improved our knowledge of how the brain processes sensory inputs. According to research by Plassmann et al. (2008), price and brand signals cause changes in brain activity, indicating that complex interactions between sensory and cognitive elements influence consumer choices.

Behavioral analytics complements these insights by providing data on consumer interactions, preferences, and engagement patterns. When combined with neuromarketing, it offers a holistic view of both conscious and subconscious consumer behavior (Lee et al., 2007).

Tools Used in Neuromarketing

- Electroencephalography, or EEG, measures brainwave activity to identify emotional reactions, engagement, and attentiveness.

- By tracking blood flow in the brain, fMRI (Functional Magnetic Resonance Imaging) can identify the areas of the brain that become active when exposed to marketing stimuli.
- Eye tracking: Monitors gaze patterns to determine regions of focus and visual attention on packaging or ads.
- Galvanic Skin Response, or GSR, uses variations in skin conductivity to gauge emotional arousal.

Impact of Each Sense on Consumer Behavior:

- **Visual Marketing:** Visual elements like color schemes, logos, and packaging play a vital role in capturing attention and shaping brand perception. Warm colors may evoke excitement, while cooler colors can promote calmness (Labrecque & Milne, 2012).
- **Auditory Marketing:** Background music and brand sounds influence the emotional environment of a retail or digital space. Faster tempos may increase shopping speed, while slower ones encourage lingering (Yalch & Spangenberg, 2000).
- **Olfactory Marketing:** Scents are processed in the limbic system, the emotional center of the brain. Pleasant and familiar smells increase time spent in stores and can enhance brand recall (Herz, 2004).
- **Gustatory Marketing:** Taste contributes to product loyalty, especially when combined with emotional experiences. Brands like Coca-Cola and Cadbury create strong gustatory connections with consumers.
- **Tactile Marketing:** Touch influences perceived product quality. Soft textures may imply comfort or luxury, while weight can suggest durability (Krishna & Morrin, 2008).

Applications in Business and Branding

- Multisensory store designs that use background music, thoughtful lighting, and smell diffusers are examples of applications in business and branding retail.
- Digital marketing: Using both visual and aural cues in apps and internet advertisements.
- Food and Hospitality: Using flavor and aroma to enhance visitor experiences.
- Product packaging: Using visual components and tactile materials to affect shelf attractiveness.

Conclusion

When paired with data from neuromarketing, sensory marketing offers brands a powerful way to engage with customers more deeply. Businesses may produce memorable experiences, encourage emotional involvement, and favorably impact purchasing decisions by appealing to the senses and triggering subconscious reactions. The future of marketing

will continue to change as technology develops and behavioral data and neuro-insights are integrated.

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CHAPTER 14

PRESENT-DAY CONSUMPTION BEHAVIOUR - THE ROLE OF PRODUCERS IN INFLUENCING THE CHOICE OF CONSUMERS

Mary Abraham
Ph.D Research Scholar in Commerce
Mahendra Arts & Science College (Autonomous) Kalipatti PO., Namakkal Dt. Tamil Nadu.

Dr. K. Selvaraj
Research Supervisor, HOD Commerce Department
Mahendra Arts & Science College (Autonomous) Kalipatti PO., Namakkal Dt. Tamil Nadu.

Abstract

Consumption is the most discussed area in modern economic and business fields because there is a big shift in the way the consumers consume in the past to the way the consumers do consume in modern times. To be more specific traditional or olden days consumption was happened to be limited, need based consumption where consumers focus more on utility level and its price rather than the present-day consumers focus on not only utility and price but also about the observation of others and appreciation from the society and people with whom they are associated with. In these highly dynamic, ever-changing times of consumerism and consumption trends, there is a hidden but strong role played by the producers in controlling the consumer's choices or decisions towards a product to choose or not to choose. Even though the modern consumer is highly active alert and knowledgeable about the product and other matters related with the product like price comparison, quality comparison, warranty comparison, still the consumer can be easily fooled by the level of producer's strategy in marketing the products and taking them close to the people along with promoting the positive opinion in the minds of the prospective consumers.

Keywords: *Consumption, Producer, Consumerism, Modern, Comparison*

This chapter is going to throw the light on concept of -how consumer's choice is thoroughly influenced by the Producer/seller in the modern market. There is an unexpected and dynamic shift of the production and consumption based on the consumer's need to the producer's choice or seller's choice. Since there is too much dependency and attachment to the advancements in day-to-day market conditions along with the unavoidable dependency on technology of every customer particularly in cities. Now producer or seller is very confident in deciding about the kind of the products (includes services), quality of the products and price of the product. How this producer's role in influencing the consumer's choice have an impact on the financial side of the consumers and nation as a whole. There is a new trend in marketing called *Murketing* is visible in modern market and the pattern of consumption by the modern population where they focus more on looks of the product and others appreciation towards product while they choose a product or use a product by and large they are irrational in the product selection.

Murketing concept was introduced by the institutional economist Philip Mirowski to denote the kind of changes that are took place with regarding the consumption patterns and modern consumers are concerned.

In good olden days there was a trend from the barter system to till the recent times shopping is happened to be one of the most interesting and exciting activities of the consumers particularly Indian women can be taken as best example on various occasions they go in groups along with friends and family members and spend lots of time in selection of the shop where to purchase, then the selection of the products and quantity as well along with eating outside like road side pani puri and some ice creams. This is how the Indian women happened to help to the shopping culture and tradition to survive in and continue for the decades to come by contributing to the business as a whole. In this process always there was a high priority for the consumer and his choice, when people walk through the streets where shops are kept open and waiting for the buyers, these people are invited by the shop owners and some of the sales executives with so much respect and patience. Sales executive shows great willing to explain the features and quality conditions of the products in the shop and convince the persons in the shop and make them as consumers of the product by requesting the consumers for their valuable feedback. There was consumer's supremacy observed in the selling points.

In present-day consumption there is a great shift in the priority of the consumer to the choice of the producer (sellers also). As there is a great dependency of the consumers on the sellers and producers and distanced from the traditional way of life and conditions like village living and non-dependency on cultivation, aversion to the traditional life, too much of dependency on the technology for purchasing and transportation and even for reading news makes the consumers to depend on the producers and sellers rather than stay stern with their needs and specification which actually they have been using or they are trying to consume. For example, a consumer for a long time using a particular shampoo and that product was withdrawn from production, now what could be the consumer's options? Consumer may go for the alternative product; Consumer may stop buying shampoo for ever. But in most of conditions consumer go for the substitute rather than not going for the product. This example can give us the knowledge about the producer's role in consumer's choice and options that consumer has. Irrespective of the income levels consumer's choices are strictly under the influence of the producers only because modern consumers are the victims of brand loyalty and social pseudo appreciation.

Let's examine one more example of the process of producers dominates the consumer's choice or preferences. Initially, people utilise products like salt, neem sticks etc for brushing their teeth and there was no knowledge of the about neither the toothbrush nor toothpaste. But slowly tooth paste manufacturer started introducing the tooth paste and toothbrush with a slogan of criticizing the people who are using the salt or neem sticks as uneducated and uncivilized but now the same toothpaste manufacturer is asking –"Do you have salt in your toothpaste" and also campaigning for the idea of electric toothbrush as well. There is another step in this producer's dominant production ideas toothpaste manufacturer is introducing

neem toothpaste. So, the producer of toothpaste and toothbrush who stopped the consumers using the traditional neem sticks or salt to brush their teeth but now the same producer is re-introducing the same traditional materials through their modern products and convincing the consumers to go for that product.

Transition of the consumers from the landline phone usage to the uncontrollable dependency of consumers on the 5G android mobile phones is the total producer's choice of making profit and continuous business with the consumers. When there were land line phones, only servicing the phones when they were not working properly and also usage is quite minimised basically a need-based utility and conversation with the friends and family members, even in a business place also. So, land line service providers felt the business is very negligible level and profit levels are minimised. Immediately the producers took the challenge of introducing the wireless connectivity by bringing a cellular mobile phone with basic features like calling, messaging but no internet connectivity. Compact, handy model very small and easy to carry the instrument. But, the instruments like Nokia 1100, Sony T180 like models are very sturdy and long-lasting battery and no much complaints. As the customers buy these mobile phones there is no necessity for them to go in touch with seller or producers very frequently, this has seriously made the producers to rethink about the features of mobile instruments. Then the producers introduced the mobile phones with music, camera and internet connectivity but slow in utility because the speed of the internet is very substandard. Still producers would like to take to other level introduction of high-speed internet connectivity accordingly improve the device capacity like speed, ram, storage etc. Finally modern society is the prisoner of the small hand-held device from which they see this world. Now the consumers of the android or IOS devices are the life time business providers to the instrument manufacturers, software developers, app developers and accessories manufacturers as well.

Modern society is the victim of the producer's domination in the decisions made by the consumers and their choice of goods or services. It need not be consumer's need-based consumption but producer's need-based consumption. How successfully this society is controlled, guided, influenced by the producer's community. It is true to say that the producer is the changing agent of society but it is beyond the control of the consumer, producer gained the influence over the consumers consumption pattern and approach towards every product or service society is utilising today.

Reasons for the shift in the priority of the consumer to the choice of the producer (sellers also)

1. Too much of brand addiction.
2. Irrationality of the consumers.
3. Growing dependency on technology.
4. Lack of availability of substitutes to the products/services.
5. Urban life style and impact of western culture.
6. Modernization and acceptance of new devices.
7. Income levels of the consumers.

8. Nature of the product.
9. Demonstration effect.
10. Profit motive of producers.
11. Long time usage of the same product and brand.
12. Consumer's positive opinion about the product.

Explanation:

1. **Too much of brand addiction:** Consumers are very much addicted to some branded products and brands as well, because of which producers are easily able to stop the product which has been produced and supplied by them for a long time. Even though they stop the product that consumers have been using, they can introduce another product instead of the old product, consumers will continue to shift to the new product of the same brand. This is how producers are having upper hand in controlling the consumer's choices.
2. **Irrationality of consumers:** In modern times irrationality of the consumers is continuously growing and changing way of thinking towards consumption along with the standard of living of even economically disadvantaged consumers also helping the producers to gain the control over the preferences of consumer by reducing the options and varieties of products or services.
3. **Growing dependency on technology:** Most of the consumers are depending on the technology for their consumption needs like verifying the features of the products and options of services along with the comparison with other products and services also making the producers to have determining capacity on the consumer's choice.
4. **Lack of availability of substitutes to the products/services:** Some of the products have no substitutes because of which producer can do anything with that product and its components, still consumers will continue purchasing the same product due to the utility they expect from that product. This is how consumer's choice was restricted by the producers.
5. **Urban life style and impact of western culture:** Consumers living in urban areas and thinking some of the products as the symbol of the posh life style and also too much imitation of western way of life with the products and habits is promoting the producer's domination in the selection process of the products by consumers.
6. **Modernization and acceptance of new devices:** There are variety of new devices along with the comfort and the best utility under the label of consumerism and modernisation also causing for the producers to take the lead in influencing the consumer's choice**.**
7. **Income levels of the consumers:** The recent growth in the income levels of the consumers and their changes approach towards the consumption also helping for the producers to increase the prices abnormally and with drawn the production the economy products and services, still continue making profit with the same old consumer base.

8. **Nature of the product:** The features of the product, quality levels and significance for which that product is known, the dependency level of the consumer also helping indirectly to the producer to have confidence in product diversification or withdrawn of the production or introduction of the changes in the product and relaunch of the product with increased price level.
9. **Demonstration effect:** Consumers are easily influenced by the demonstration effect very easily in modern times because of the consumer's imitation nature, producer have the confidence to bring any level change in the product and still continue his business without profit getting negatively affected.
10. **Profit motive of producers:** Producers are very much craving for making profit and aiming for profit maximisation also is one of the important reasons behind the producer's influence over the product choice of the consumers rather than the needs of the consumers.
11. **Long time usage of the same product and brand:** As some of the consumers are using long time the same product or brand is leading to the appreciation by consumer. This is helping the producers to have serious lead on the consumer's choices**.**
12. **Consumer's positive opinion about the product:** Consumers developed positive opinion about the functioning of the product and its features and they will have strong determination to continue with the same product or brand; it is also helping the producer to have controlling power over the consumer's choices.

Implications of dominant Producer's role in consumer's choice:

There are variety of implications or effects can be observed in the economy and society due to the dominant producer's role in the preferences of consumers. Those effects can be better explained under the following heads.

1. **Product diversification:** Due to the Producers' role in consumer's choices market is loaded with the diversified product range with variety of features and differentiated prices.
2. **Too many choices to the consumers:** Consumers are provided with the too many options of products or services but they are at the producers' discretion only.
3. **Reduction of Savings:** Producer's influence over the consumer's choices will lead to enhancement in the consumption expenditure and in turn there will be a fall in the savings level of the consumers.
4. **Exploitation of natural resources:** Dominant producer's role in consumer's choice will cause for too much of exploitation of the resources by the producers.
5. **Boost the profit level of the Producers':** Producers' will have a great scope for making abnormal or super normal profit for a long time.
6. **Minimisation of Welfare:** Too much profit making by producers may cause for neglecting the welfare of the society by minimising the consumer goods (food

products, medicines etc.) production and enhancing the social appreciation seeking products.

7. **Imports may rise:** As the consumers are convinced with the international products and producers' it may lead to increase in imports and decrease in local products usage.
8. **Advertisement expenditure:** There is every possibility to have a rise in the advertisement expenditure by the producers or sellers to convince and continue the consumer base for the given product line or brand.
9. **Competition among the producers:** There will be high competition among the producers and sellers in the process of retaining the existing consumers and gaining the new consumer support as well**.**
10. **Price increase:** In this entire process of the producer's dominant role in consumer's choice is the hike in price along with enhanced profit margin can be experienced or observed in economy.
11. **Commercialisation:** At every level of the Production to consumption there is too much commercialisation can be visible in this regard.

Major Effect (Income/Savings/Capital Formation)

As the producers started influencing the consumer's choice there is a major need arises for the increase in incomes of the people in order to cater to the rising prices and market dynamics as well. As the prices are increasing it is not so easy to have increased salaries or wages. It is clear that there is a wage and price influencing each other mutually and lead to greater level where it is impossible to control the price because there is not only producer's profit maximisation factor alone but also aspects like inflation also will be causing for market price rise uncontrollably.

This is the major phenomena of developing countries and the people in developing societies. As the producers are playing a strong hidden convincing role in consumer's choices or priorities it is very difficult for the poor or middle-income population to become rich or stable in their economic life. Like wise the country with such population always continue to be in the developing status only because there is very less savings and more consumption expenditure which is actually not becoming the source of revenue to the country or government. Due to the more international producers or sellers located in the developing countries major share of the consumption expenditure of native citizens is going out of the country. This logic is seriously ignored by the developing countries because they are under the pressure of international funding agencies like IMF, IBRD, IDA and trade agencies like WTO. As the developing countries are depending on these developed nations and international funding agencies there is a little scope or freedom for the countries to counter the shrewd international trade policies of developed countries and hidden agenda of international cooperative and monetary agencies.

Freedom of consumers need not be always protected but the necessity of the country to shift from the developing status to the developed status need to be highlighted by the

government. Government must educate the people to go for savings and help the capital formation which may help foe increasing the investment and employment opportunities. Employment opportunities can help the people to have more income possibilities, this will lead to enhanced standard of living and access to the better quality of life , slowly country can improve its economic status and stand with the equal level of developed countries.

Ethical factor in Production

Every producer is looking forward for the best profit irrespective of the quality or utility of the product they introduce in the market. But the producers with responsibility towards the value of the amount spent by the consumer on their products and to match the satisfaction of the consumer about the product is the ethical responsibility of the producer. As the consumer is convinced about the product or brand, it doesn't mean consumer is convinced for ever. He always has options in the market because the product is always having close substitutes. At the same time producers must have some level of ethics in the products they produce and market because business is not just one day or one sale, it is a long-term promise by the producer and expectation of the consumer. So, producer has to blend ethics in his production and marketing strategies by following more transparent ways to make quality products and live up to the expectations of customers too.

Conclusion

From the days of barter system to the most modern advancement in the economy, the production and consumption have undergone many stages and diversification of strategies by the producers. But it is always observed either openly or hidden manner it is the producer have exercised serious impact over the consumer's whims and fancies and convinced the consumer with the available options and products only. But at the same time by observing the needs of the consumers only producers have brought more changes in the quality, quantity, price, availability, access level and also innovation in the products or services. In present-day consumption there is a unavoidable strong role of the producers rather than the consumer's thoughts or conveniences. In fact what is good for health? what is not good for health? what is the meaning of advancement? what to wear? how to wear, what to eat? What is the definition of good health? Where to go? When to go? What to visit? Where to stay? Which vehicle to purchase? Which mobile phone to purchase? Etc. all the questions are clearly answered by producers only.

Modern consumer is the producer's believer and have blind faith in the producer's literature and also strongly believes in the concept of "*price is proportionally equal to Quality of the product or service"* So, modern consumers go largely with the pricy products and trendy products without much discussion or detailed research about the product and its quality.

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CHAPTER 15

DECODING THE CONSUMER MIND: THE RISE OF NEUROMARKETING AND PERSONALIZATION IN MODERN MARKETING

V. Chandralekha
Assistant Professor, Department of Management Studies
Jaya College of Engineering and Technology, Poonamallee, Chennai, Tamilnadu, India

Dr. B. Krishnakumar
Corresponding Author, Professor and Head, Department of Management Studies,
Jaya College of Engineering and Technology, Poonamallee, Chennai, Tamil Nadu.

Abstract

Technological advancements have fundamentally reshaped the landscape of consumer behavior and marketing. This chapter explores the pivotal roles of neuromarketing and personalization in understanding and influencing consumer decision-making processes. Neuromarketing leverages neuroscience to uncover subconscious consumer responses, while personalization employs artificial intelligence and data analytics to tailor marketing strategies to individual preferences. By synthesizing theoretical insights, practical implementations, and ethical considerations, this chapter provides a comprehensive overview of how these innovations are transforming marketing practices in the digital age.

Keywords: *Technological advancements, consumer behavior, marketing, Consumer Mind and Neuromarketing*

Introduction

The intersection of neuroscience, data analytics, and digital marketing has significantly transformed the study of consumer behavior. Traditional models that focused primarily on rational decision-making are now complemented by approaches that examine emotional and subconscious influences. Neuromarketing and personalization are two such methodologies that have gained prominence. Neuromarketing aims to understand the implicit processes driving consumer decisions, while personalization ensures that marketing efforts are contextually and individually relevant. Together, these approaches facilitate more effective consumer engagement and strategic decision-making in contemporary marketing.
Understanding Consumer Behavior in the Digital Era

Consumer behavior in the digital age is shaped by instantaneous access to information, peer reviews, social media influence, and algorithmically generated recommendations. The modern consumer is both a recipient and co-creator of brand value, often engaging in feedback loops that inform product development and marketing strategies. This participatory model necessitates a deeper understanding of both conscious preferences and unconscious motivations. Emerging technologies enable marketers to analyze vast amounts of behavioral data, offering unprecedented insights into consumer psychology.

Moreover, the proliferation of mobile devices and voice-enabled technologies, such as virtual assistants, has fostered the emergence of "always-on" consumers. These individuals expect seamless, intuitive, and consistent interactions across various digital touchpoints. The consumer journey has transitioned from a linear, funnel-based model to a dynamic, circular, and non-linear pathway. Modern marketing strategies must therefore account for micro-moments, cross-channel behaviors, and individualized preferences. Consequently, marketers are increasingly combining big data analytics with psychographic segmentation to develop deeper behavioral insights and deliver adaptive messaging.

Neuromarketing: Decoding the Consumer Mind

Neuromarketing applies neuroscientific methods to assess how consumers respond to marketing stimuli at a subconscious level. Techniques such as functional Magnetic Resonance Imaging (fMRI), Electroencephalography (EEG), and eye-tracking are employed to measure neural and physiological reactions. These insights are utilized in optimizing advertisements, product packaging, and branding strategies. For example, brain scans have shown that brand perception can significantly influence product preferences, even overriding objective evaluations such as taste or quality.

Additionally, neuromarketing tools such as eye-tracking have been extensively applied in the optimization of website layouts and digital interfaces. For instance, studies reveal that users' gaze naturally gravitates toward human faces and prominently placed call-to-action buttons, providing marketers with valuable data to redesign their user interfaces for enhanced engagement. Likewise, facial coding and galvanic skin response measurements offer real-time feedback on emotional arousal during product or ad exposure. These insights allow companies to pre-test their campaigns and make evidence-based adjustments to maximize emotional resonance and conversion potential.

Personalization: Tailoring the Experience

Personalization refers to the strategic adaptation of marketing content and offerings based on individual consumer data. By leveraging customer relationship management (CRM) systems, machine learning algorithms, and real-time analytics, marketers can deliver experiences that align with user behavior and preferences. This approach not only enhances customer satisfaction but also improves conversion rates and brand loyalty. Notably, Amazon’s recommendation system exemplifies the commercial efficacy of personalization, reportedly contributing to over one-third of its total revenue.

Personalization has evolved beyond simple name customization to include dynamic pricing, AI-generated content, and real-time contextual targeting. For example, brands now use weather data to recommend seasonal products or adjust promotional messaging based on time-of-day usage patterns. Personalized loyalty programs, which provide individualized rewards and gamified experiences, have also been shown to increase customer lifetime value. These advanced strategies foster a sense of exclusivity and emotional connection, encouraging long-term consumer engagement and advocacy.

Integration of Neuromarketing and Personalization

The convergence of neuromarketing and personalization creates a powerful framework for emotionally resonant and context-specific marketing. While neuromarketing identifies emotional triggers and subconscious preferences, personalization ensures that these insights are translated into customized consumer experiences. Platforms such as Spotify effectively utilize this integration, using both behavioral data and emotional cues to curate personalized music experiences that enhance user engagement.

Ethical Considerations

Despite their advantages, neuromarketing and personalization raise critical ethical concerns. The collection and use of biometric and behavioral data pose significant privacy risks. Moreover, the potential for manipulation—particularly when targeting emotional vulnerabilities—necessitates stringent regulatory oversight. Ethical marketing practices must prioritize transparency, informed consent, and data protection, particularly in light of global regulations such as the General Data Protection Regulation (GDPR).

A growing body of academic literature emphasizes the need for ethical frameworks that embed the principles of fairness, accountability, and transparency (FAT) into marketing technologies. In particular, organizations must recognize the implications of algorithmic bias, where personalization systems may unintentionally reinforce stereotypes or exclude marginalized groups. Furthermore, companies should commit to providing users with clear opt-out mechanisms, ethical data sourcing, and explainable algorithms. Such measures not only ensure regulatory compliance but also cultivate consumer trust, which is critical in an age of increasing data consciousness.

Future Trends and Implications

Future developments in neuromarketing and personalization are expected to be driven by advancements in artificial intelligence, affective computing, and immersive technologies such as augmented reality (AR) and virtual reality (VR). These innovations promise to create more adaptive and empathic marketing systems capable of real-time emotional analysis and response. Organizations that adopt these tools responsibly will be better positioned to achieve competitive advantage in a rapidly evolving digital marketplace.

Conclusion

Neuromarketing and personalization represent the frontier of marketing science, offering transformative potential in understanding and influencing consumer behavior. Their integration enables businesses to deliver emotionally engaging and individually relevant experiences. As these practices become increasingly sophisticated, ethical considerations must guide their implementation to ensure sustainable and consumer-centric innovation in the digital economy.

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CHAPTER 16

ANALYZING THE IMPACT OF SOCIAL MEDIA ADVERTISING ON CONSUMER PURCHASE BEHAVIOUR IN THE FAST MOVING CONSUMER GOODS SECTOR

V. Abisha Lalini
Ph.D. Full Time Research Scholar, (Reg. No: 241131108003)
Research Centre of Management Studies, Nesamony Memorial Christian College, Marthandam
Affiliated to Manonmaniam Sundaranar University, Abishekapatti, Tirunelveli, Tamil Nadu

Dr. C.L. Jeba Melvin
Associate Professor, Department of Management Studies
Nesamony Memorial Christian College, Marthandam
Affiliated to Manonmaniam Sundaranar University, Abishekapatti, Tirunelveli, Tamil Nadu

Abstract

The emergence of social media has greatly changed the way Fast-Moving Consumer Goods (FMCG) brands connect with consumers and impact their buying choices. This research investigates the effect of social media advertising on consumer purchasing habits, concentrating on key elements such as influencer marketing, visual content, promotional deals, and user interaction. A structured questionnaire was distributed to 120 participants, and the data were examined using descriptive statistics, ANOVA, and chi-square analyses. The results indicate that social media advertising significantly influences consumer decision-making, especially among younger audiences and active social media users. Influencer partnerships and promotional material were identified as powerful motivators for purchase intent. The research concludes that FMCG brands should implement focused, interactive, and consumer-oriented strategies to enhance the effectiveness of their digital advertising initiatives. These findings offer important insights for marketers aiming to strengthen brand-consumer relationships and boost sales in a progressively digital marketplace.

Keywords: *Social Media Advertising, FMCG, Consumer Behaviour, Purchase Decision, Influencer Marketing, Brand Engagement*

Introduction

As smartphones and internet access continue to grow, particularly in emerging markets, consumers are dedicating more time to social media platforms, frequently relying on them for product information and brand interactions (Zhang et al., 2017). Platforms like Instagram, Facebook, and YouTube have become essential to the consumer journey, serving not only as advertising venues but also as arenas for engagement, reviews, influencer suggestions, and user-generated content (Hilton et al., 2023). This transformation has notably influenced how FMCG brands market their products and connect with potential customers (Leahy, 2011). Additionally, leveraging data analytics and targeted advertising on social media allows brands to connect with highly specific audience segments through personalized messaging, thereby enhancing the chances of conversion (Wu, 2023). In this

changing digital landscape, it is crucial for businesses to comprehend the psychological, social, and technological factors that drive consumer reactions to social media advertising if they want to increase their market share and foster brand loyalty (Hossain & Kibria, 2024). This study explores these elements by examining the effectiveness of various social media advertising components and their impact on purchasing behaviour within the FMCG sector (Mohammadian & Fatahi Valilai, 2024).

Review of Literature

Social Media as a Marketing Tool

The emergence of social media has greatly changed traditional marketing methods. According to (Mangold and Faulds 2009), social media acts as a blended component of the promotion mix, allowing businesses to connect directly with consumers while also facilitating conversations among users about brands. Platforms such as Facebook, Instagram, and YouTube have evolved into crucial advertising venues where brands can share content, interact with customers, and boost their visibility (Jack et al., 2024). Consequently, social media is now deemed essential rather than optional, serving as a vital aspect of digital marketing strategies, particularly in industries like FMCG that rely heavily on consumer outreach and swift communication.

Consumer Purchase Behaviour in the FMCG Sector

Consumer behaviour in the FMCG sector is marked by frequent purchases of low involvement, driven by factors like price, availability, and promotional visibility (Zafarullah et al., 2015). These behaviours are increasingly influenced by digital touchpoints, as consumers now rely on social media for product reviews, comparisons, and recommendations before making even everyday purchases. As noted by Ali & Mehmood (2023), elements such as brand trust, perceived value, and convenience significantly impact buying behaviour within FMCG categories, and social media serves as a platform where these elements can be affirmed or contested in real time.

Influence of Social Media Advertising

Multiple studies have investigated the impact of social media advertising on consumer behaviour. (Duffett, 2017) identified a strong link between social media advertising and the brand perceptions and purchasing intentions of younger consumers. Likewise, (Cho, 2021) highlighted that the credibility, informativeness, and entertainment factor of advertisements play a significant role in consumer engagement and the trial of products. In the realm of FMCG, promotional strategies like limited-time offers, discount coupons, and collaborations with influencers are frequently employed to stimulate impulse purchases and enhance brand loyalty.

Role of Influencer Marketing

Influencer marketing has become a significant enhancement of social media advertising. Influencers frequently act as credible intermediaries, connecting brands with consumers,

especially within the millennial and Gen Z demographics. According to (AI-Haddad et al., 2021), the perceived authenticity and expertise of influencers greatly influence consumer trust and their purchasing decisions. For fast-moving consumer goods (FMCG) brands, which often face challenges in standing out in saturated markets, influencers offer a relatable and convincing voice that can more effectively shift buyer preferences compared to traditional advertisements.

Research Objectives

1. To analyze the relationship between demographic variables and consumers' responsiveness to social media advertising in the FMCG sector.
2. To assess consumer engagement with different types of social media ads.
3. To evaluate the effectiveness of influencer marketing in FMCG promotions.

Research Questions

1. How does social media advertising influence consumer purchase decisions in the FMCG sector?
2. Are there significant differences in consumer response to social media advertising based on demographic factors such as age, gender, or income?
3. Which types of social media content most effectively drive FMCG product purchase?

Research Methodology

Research Approach

This study adopts a quantitative research approach to analyze the impact of social media advertising on consumer purchase behaviour in the FMCG sector.

Research Design

A descriptive and analytical research design was used to understand patterns and relationships between variables related to social media engagement and purchasing decisions.

Sampling Technique

The study utilized a convenience sampling method, targeting 120 active social media users who are potential or current consumers of FMCG products.

Data Collection Method

Primary data was gathered using a structured questionnaire

Data Analysis Techniques

The data was analyzed using both descriptive statistics (mean, percentage, frequency) to summarize responses and inferential statistics such as Chi-square tests and One-Way ANOVA to test relationships between demographic factors and consumer behaviour.

Data Analysis and Interpretation

Descriptive statistics showed that most respondents were young (18–25 years) and spent over 2 hours daily on social media. A large number agreed that social media ads influenced their purchases. The Chi-square test revealed a significant link between age and ad influence, indicating younger users are more responsive. The One-Way ANOVA showed income levels significantly affect purchase intent, with higher-income groups more influenced by social media ads. Overall, the findings confirm that social media advertising strongly impacts FMCG purchase behavior, especially among younger and higher-income consumers.

Demography Profile

Table 1: Demographic Profile of Respondents (N = 120)

Demographic Variable	Category	Frequency (N)	Percentage (%)
Gender	Male	56	46.7%
	Female	64	53.3%
Age Group	18-25 years	42	35.0%
	26-35 years	38	31.7%
	36-45 years	25	20.8%
	46 years and above	15	12.5%
Education Level	Higher Secondary	24	20.0%
	Undergraduate	50	41.7%
	Postgraduate	40	33.3%
	Others	6	5.0%
Occupation	Student	38	31.7%
	WorkingProfessional	58	48.3%
	Homemaker	12	10.0%
	Others	12	10.0%
Monthly Income	Below ₹20,000	36	30.0%
	₹20,001–₹40,000	44	36.7%
	₹40,001–₹60,000	25	20.8%
	Above ₹60,000	15	12.5%
Time Spent on Social Media	Less than 1 hour/day	18	15.0%
	1–3 hours/day	45	37.5%
	3–5 hours/day	37	30.8%
	More than 5 hours/day	20	16.7%

Descriptive Statistics of Brand Awareness, Social Media Engagement, Influencer Credibility, Purchase Intent and Time Spent on Social Media

The descriptive statistics reveal that most respondents are young adults aged 18-25 who spend 2-4 hours daily on social media. A majority notice advertisements and show a positive

attitude toward purchasing FMCG products advertised online, indicating that social media plays a significant role in shaping consumer buying behaviour.

Table 2: Descriptive Statistics of Key Variables (N = 120)

Variable	Mean	Std. Deviation	Minimum	Maximum
Brand Awareness	4.12	0.68	2	5
Social Media Engagement	3.95	0.74	2	5
Influencer Credibility	4.20	0.60	3	5
Purchase Intent	4.05	0.71	2	5
Time Spent on Social Media (hrs/day)	3.02	1.05	1	5

Interpretation of Descriptive Statistics

The descriptive statistics reveal significant insights into consumer behaviour patterns. The majority of respondents are young (18–25 years), well-educated, and highly active on social media, spending an average of 2–4 hours daily. This suggests that the younger, educated demographic is the most exposed and responsive to social media advertising. A high percentage of participants (75%) acknowledged being influenced by social media ads, indicating the strong persuasive power of digital marketing in the FMCG sector. Furthermore, the dominance of Smartphone usage for accessing platforms highlights the importance of mobile-optimized advertising strategies. Overall, the descriptive data suggest that social media plays a central role in shaping awareness, interest, and buying decisions among FMCG consumers**.**

ONE-WAY ANOVA: Purchase intent by Age Group

To determine whether the purchase intent by age group, a One-Way ANOVA was conducted.

Hypotheses:

H_0 **(***Null* ***Hypothesis):*** There is **no significant difference** in purchase intention among different age groups in response to social media advertising.

H_1 **(***Alternative* ***Hypothesis):*** There is a **significant difference** in purchase intention among different age groups in response to social media advertising.

Table 3: One-Way ANOVA- Purchase intent by Age Group

Age Group	N	Mean Purchase Intent	Std.Dev.
18-25 years	40	4.30	0.55
26-35 years	35	4.10	0.63
36-45 years	25	3.95	0.70
46 years and above	20	3.60	0.82

Table 4: ANOVA Test

Source	Sum of Squares	DF	Mean Square	F	Sig. (p-value)
Between Groups	3.215	3	1.072	4.521	0.005 **
Within Groups	27.720	116	0.239		
Total	30.935	119			

Interpretation: Since p = 0.005 < 0.05, there is a statistically significant difference in purchase intent across age groups.

Chi-Square Test: Gender vs. Response

The test whether analysis the gender vs. response to influencer ads, a Chi-Square test was conducted.

Hypotheses:

H_0 (*Null* ***Hypothesis):*** There is **no significant association** between demographic variables and consumer response to social media advertising in the FMCG sector.

H_1 (*Alternative* ***Hypothesis):*** There is a **significant association** between demographic variables and consumer response to social media advertising in the FMCG sector.

Table 5: Chi-Square Test – Gender vs. Response to Influencer Ads

Response to Influencer ADS	Male (n=55)	Female (n=65)	Total
Strongly Influenced	25	35	60
Moderately Influenced	20	25	45
Not Influenced	10	5	15
Total	55	65	120

Table 6: Chi-Square Interpretation

TEST	VALUE	df	p-value
Pearson Chi-Square	6.254	2	0.044 *

Interpretation: Since p = 0.044 < 0.05, there is a statistically significant association between gender and response to influencer advertisements.

Findings

- Social media advertising significantly influences consumer purchase behaviour in the FMCG sector, especially through visual content and interactive formats like reels and stories.
- Influencer marketing plays a critical role, with younger consumers and female respondents showing higher trust and engagement with influencer-endorsed FMCG products.
- Age has a significant effect on purchase intent, as revealed by ANOVA, with consumers aged 18-25 being the most influenced by social media ads.

- Time spent on social media is positively correlated with engagement and purchasing behaviour; those spending more than 3 hours daily are more likely to respond to ads.
- Promotional content such as discounts and limited-time offers is highly effective in driving immediate purchase decisions, particularly among middle-income consumers.

Recommendations

- **Leverage Influencer Marketing Strategically:** FMCG brands should collaborate with trusted influencers, especially micro-influencers, to create authentic and relatable content that appeals to younger demographics and builds consumer trust.
- **Create Visually Engaging and Short-Form Content:** Use formats like reels, stories, and short videos to capture attention quickly, increase brand recall, and drive product interest, particularly among users with shorter attention spans.
- **Use Targeted Promotional Campaigns:** Promote time-bound offers, discount codes, and flash sales on social media to drive immediate purchases, especially among middle-income, price-sensitive consumers.
- **Segment and Personalize Advertising:** Utilize social media analytics to segment audiences by age, behaviour, and engagement level, and deliver personalized content that resonates with each group's preferences and habits.
- **Encourage User-Generated Content and Reviews:** Motivate satisfied consumers to share their experiences, reviews, and product usage on social media, as this peer-generated content builds credibility and positively influences other buyers.

Limitations of the Study

The study has a few notable limitations. Firstly, the sample size of 120 respondents may not adequately represent the broader population, limiting the generalizability of the findings. Additionally, the research was geographically confined, which may not reflect consumer behaviour in other regions or cultural contexts. The reliance on self-reported data also introduces the possibility of response bias, as participants may overestimate or underestimate their behaviour. Moreover, the study did not differentiate between specific social media platforms, which could have provided deeper insights into platform-based advertising effectiveness. Lastly, the research focused on short-term consumer responses and did not examine long-term effects such as brand loyalty or repeated purchasing behaviour.

Conclusion

This research emphasizes the significant impact of social media advertising on consumer buying habits within the FMCG sector. The results illustrate that platforms such as Instagram, Facebook, and YouTube serve not only as promotional outlets but also as vibrant arenas for brand interaction, trust establishment, and direct influence on consumers. In particular, younger consumers show a strong responsiveness to influencer marketing,

visually appealing content, and engaging promotions. The noteworthy variations noted across different ages, genders, and online engagement times highlight the necessity for targeted and personalized marketing approaches. Ultimately, social media has become an influential factor in consumer decision-making within the FMCG market, indicating that brands need to consistently adjust their digital strategies to maintain competitiveness and relevance in this rapidly changing environment.

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CHAPTER 17

NEUROMARKETING & BEHAVIORAL ANALYTICS – UNDERSTANDING SUBCONSCIOUS CONSUMER DECISIONS

S. Jebaseeli Novaleena
(Research Scholar, Department of Management Studies, Avadi,
St.Peter's Institute of Higher education and Research)
Assistant Professor & Head, Department of Commerce (General)
Don Bosco Arts and Science College, Kilpauk, Chennai

Dr. G. Kannan
Associate Professor, Research Supervisor, Department of Management Studies
St.Peter's Institute of Higher Education and Research, Avadi, Chennai

Abstract

Neuromarketing involves using tools like functional magnetic resonance imaging (FMRI), electroencephalograms (EEG), eye tracking, and facial coding to monitor consumers' neurological and physiological responses to marketing stimuli. In today's hyper-competitive marketplace, understanding consumer behaviour has transcended traditional surveys and focus groups. Neuromarketing and behavioural analytics are transforming education not by replacing teachers, but by equipping them with deeper insight into how students think, feel, and learn. Neuromarketing and behavioural analytics aren't just for boardrooms and labs they shape your choices every day. Neuromarketing and behavioral analytics provide a deeper understanding of consumer decision-making by exploring subconscious influences. These fields leverage neuroscience and behavioral science to uncover how consumers truly react to marketing stimuli, going beyond conscious opinions to reveal hidden motivations and emotional responses. This allows marketers to create more effective and resonant campaigns by tailoring messaging and product design to appeal to the subconscious mind.

Keywords: *Functional magnetic resonance imaging (FMRI), Electroencephalograms (EEG), behavioural analytics*

Introduction

In today's hyper-competitive marketplace, understanding consumer behaviour has transcended traditional surveys and focus groups. Businesses now leverage advanced techniques to penetrate the subconscious minds of their customers, uncovering motivations and preferences that even consumers themselves may not be fully aware of. This intersection of neuroscience and marketing, known as *neuromarketing*, paired with *behavioural analytics*, provides profound insights into how consumers make decisions — often without conscious thought. By studying brain responses, biometric data, and behavioural patterns, companies can craft more targeted and emotionally resonant marketing strategies.

What is Neuromarketing?

Neuromarketing is the application of neuroscience and psychological principles to marketing. It involves using tools like functional magnetic resonance imaging (FMRI), electroencephalograms (EEG), eye tracking, and facial coding to monitor consumers' neurological and physiological responses to marketing stimuli. These insights reveal how individuals react emotionally and cognitively to advertisements, product designs, and packaging, pricing, and even retail environments.Unlike traditional marketing methods, which rely on self-reported data, neuromarketing bypasses biases and rationalizations, tapping directly into subconscious reactions. This allows marketers to design content that triggers emotional responses known to influence buying behaviour.

Example: Frito-Lay Packaging Redesign

In one notable study, Frito-Lay monitored brain activity (via EEG) to evaluate packaging elements. Results showed that glossy snack bags with chip imagery triggered guilt-related neural responses in consumers. Switching to matte packaging featuring ingredient imagery reduced those negative signals and led to a 15% sales increase in the following quarter (Mika Agency, 2025; Montague, 2004).

Hyundai Vehicle Design

Hyundai employed eye-tracking and EEG while subjects evaluated concept vehicles. Participants consistently fixated on features like the grille and headlights; certain styles elicited positive emotional brain signals. Integrating these insights into production models resulted in a 10% bump in pre-orders (Mika Agency, 2025; Research Gate, 2021).

Behavioral Analytics: Tracking the Digital Footprint

While neuromarketing probes emotions, **behavioural analytics** deciphers the *actions* consumers take online: clicks, scrolls, session duration, path flows, and purchase funnels. Web and app platforms provide massive, continuous behavioural data that can be used to personalize experiences and test improvements.

Netflix Recommendation Engine

Netflix analyses user behaviour—what is watched, paused, rewound, or skipped—to refine content suggestions. This approach influences viewer decisions often before they consciously decide what to watch, driving engagement and retention through personalized algorithms.

Amazon's One-Click Checkout

Amazon continuously analyses conversion funnel drop-offs. By reducing friction—eliminating shopping cart steps—it appeals to impulse-driven buyers. The result: significantly higher conversion rates due to streamlined checkout optimized by Behavioral data.

The Psychology behind Subconscious Decisions

Daniel Kahneman's dual-system model helps frame the debate:

- **System 1**: Fast, emotional, unconscious.
- **System 2**: Slow, deliberate, and rational.

Most purchase decisions, especially low-involvement or routine ones, are governed by **System 1**. Marketers who activate positive emotions, minimize friction, and tap into biases can significantly influence outcomes.

Behavioral Bias: The Decoy Effect

One well-documented cognitive bias—**the Decoy Effect**—demonstrates how seemingly irrelevant options can nudge consumers toward pricier or more profitable choices.

The Economist Subscription

Dan Ariely's experiment placed students in a subscription context:

1. Web-only: $59
2. Print-only: $125
3. Web + Print: $125

With all three options, 84% chose the combined plan; none chose print-only (decoy). Removing the decoy flipped the preference: 68% chose web-only (Ariely, 2009; Srivastava, 2021).

Apple iPod Storage Tiers

Apple sold iPods in three capacities: 16 GB for $229, 32 GB for $299 (+$70), and 64 GB for $399 (+$100 over 32 GB) (Octet Design, 2021; Srivastava, 2021). The 16 GB and 64 GB variants acted as decoys, making the 32 GB model appear the best value. Most buyers chose the middle option.

Starbucks Coffee Sizes

Starbucks offers tall, grande, and venti. The minimal price gap between tall and grande compared to a larger jump to venti nudges customers to "trade up" to venti, shown to be more profitable (Ecommerce Psychology, 2021; Reizend, 2021).

Neuromarketing and Behavioral Analytics in Practice

Advertising Optimization

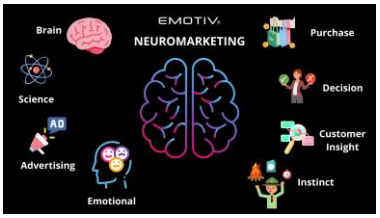
Brands test ad variants using neuromarketing tools. Coca-Cola, for instance, utilizes EEG and facial coding during Super Bowl ads to gauge emotional peaks and tailor storytelling accordingly.

Product Design & Packaging

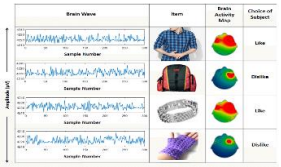
By knowing which visual or emotional cues trigger engagement, companies can design packaging that draws attention and optimizes perception. Eye-tracking and biometrics guide decisions on logo placement, imagery, and texture.

UX Optimization

Websites and apps leverage heat maps, clickstream data, and A/B testing to identify barriers and improve user journeys. Behavioral analytics pinpoints where users drop off; neuromarketing can help test emotional responses to overcoming those barriers.

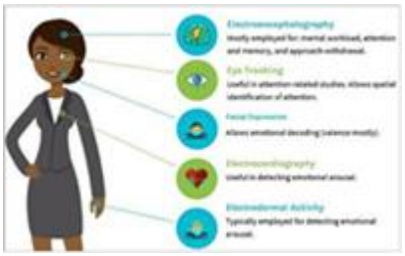


Portable EEG headsets in action – showcases how companies use lightweight EEG to capture brain responses in real-time without a lab setting.



EEG signal and brain activity maps – an example of how neural responses are analysed against consumer choices to reveal subconscious preferences

Multimodal neuroimaging approach – illustrates combining EEG with eye-tracking, heart-rate, and skin-conductance for richer insights



Respondent wearing EEG sensors – real-world usage during a marketing study, bridging laboratory and applied research

Neuromarketing & Behavioral Analytics: Applications in Everyday Life

1. Advertising & Commercials

Neuromarketing tools like EEG and facial coding help brands test emotional reactions to ads *before* they launch.

Example: Super Bowl ads are often tested to trigger joy, surprise, or nostalgia — emotional responses that boost memorability and brand favourability. *In daily life*: The ad that makes you smile or feel nostalgic? It's likely been refined using brain data to do just that.

2. Retail Store Layout & Product Placement

- **Eye-tracking** and motion tracking are used to optimize shelf placement and signage.
- **Behavioral analytics** show how long shoppers linger in certain aisles or which displays draw attention.

Example: Supermarkets place essential items like milk at the back so you walk past high-margin impulse products (e.g., candy, magazines).*In daily life*: The reason you "just went in for bread and came out with 6 items" is no accident.

3. Website & App Design

Clickstream analysis, **heat maps**, and **A/B testing** help digital teams refine navigation, button colour, or call-to-action placement.

Example: Netflix uses behavioural data to auto-play thumbnails of shows that trigger emotional engagement faster, increasing watch time.*In daily life*: Ever wonder why some websites are so easy (or addictive) to use? They've been engineered based on your subconscious behaviour.

4. **Product Packaging & Design**

Neuromarketing studies help companies choose colours, textures, and shapes that drive emotional appeal.

Example: Frito-Lay switched from glossy to matte chip bags after EEG scans showed that shiny bags triggered guilt in health-conscious consumers. *In daily life*: The packaging that "just feels right"? It's likely optimized using emotional response data.

5. Pricing Strategies

Companies use **behavioural economics** to frame prices in ways that make higher-cost options seem more reasonable — a tactic known as the **decoy effect**.

Example: Coffee chains offer 3 sizes where the medium is designed to feel like the best value — nudging you to buy it. *In daily life*: That "mid-tier" subscription plan you chose? It may have been designed to be your subconscious default.

6. Music & Entertainment Recommendations

Platforms like Spotify and YouTube use **behavioral data** (what you listen to, skip, repeat) to build mood-based recommendations.

Example: Spotify's "Daily Mix" or "Chill Hits" playlists are based on patterns that anticipate your mood or activity. *In daily life*: That perfect playlist that seems to "get" you? It's built on your behavioral signature.

7. Social Media Engagement

Platforms track how long you look at content (dwell time), what you "like," or comment on — and use that to tailor your feed.

Example: TikTok's "For You" page adapts in real-time based on your viewing behaviour, creating a highly personalized experience. *In daily life*: The content that keeps you scrolling for hours? That's behavioral analytics at work.

8. Smart Assistants & Voice Search

Devices like Alexa and Siri use **behavioral learning** to refine responses based on how you speak and what you frequently request.

Example: If you regularly ask Alexa for relaxing music at 10 PM, it may start suggesting that automatically. *In daily life*: Your tech learns your preferences — even the subconscious ones.

9. Public Transport & Urban Planning

Cities use behavioral data (e.g., foot traffic heat maps) to optimize placement of signs, benches, and advertisements.

Example: London Underground tested emotional reactions to poster ads on escalators to reduce commuter stress and improve brand impact.

10. Health & Wellness Apps

Apps like Headspace and Calm adjust recommendations based on engagement behaviour — when you open them, which sessions you complete, etc. *In daily life*: Those "recommended meditations"? Based on your unique usage pattern, likely aiming to keep you engaged.

Neuromarketing & Behavioral Analytics: Applications in Education

1. Enhancing Student Engagement

Neuromarketing tools like **EEG** and **facial coding** can measure levels of attention, boredom, and emotional engagement during lectures or digital learning sessions.

Example: Researchers have used EEG headbands in classrooms to track attention spans during different teaching methods (e.g., videos vs. lectures). When engagement dipped, instructors adjusted their methods in real-time (Zulli et al., 2020).

Impact: Educators can adapt their teaching styles based on neuro-feedback, creating more dynamic and effective lessons.

2. Optimizing Educational Content

Behavioral analytics helps educators track **how students interact with e-learning platforms**—what they click, how long they stay on a page, which videos they rewatch, etc.

Example: Platforms like Coursera and Khan Academy analyse pause/play patterns and quiz performance to improve lesson sequencing and difficulty.

Impact: Learning materials can be customized based on which formats lead to the best retention and comprehension.

3. Personalized Learning Paths

Combining emotional and behavioural data allows systems to adjust **content difficulty, pace, and format** for individual learners.

Example: AI-driven learning systems (e.g., Dream Box, Century Tech) adapt in real-time based on student behaviour and performance. Some are experimenting with emotional recognition via webcam to detect frustration or confusion.

Impact: Students receive tailored support, boosting motivation and reducing dropout rates.

4. **Improving Curriculum Design**

Educators use eye-tracking and biometric tools during usability testing of textbooks, interfaces, and lesson formats. **Example**: In a study using eye-tracking on digital textbooks, designers found that students ignored blocks of text but focused on images and captions. This led to more visual-based textbook layouts (D'Mello & Graesser, 2012).

Impact: Learning materials become more engaging and cognitively efficient.

5. Testing & Assessment Optimization

Neuromarketing research shows that **test anxiety and emotional stress** can impair performance. **Example**: Some schools are using emotion-tracking software to assess stress during exams, helping to modify question formats or instructions to reduce unnecessary anxiety. *Impact*: More accurate assessments of student knowledge, not just test-taking ability.

6. Gamification and Reward Systems

Behavioral analytics reveals how learners respond to **points, badges, and rewards** in gamified platforms. **Example**: Duolingo uses behavioral data to decide when to encourage, when to challenge, and how often to offer rewards. The system keeps users motivated by manipulating small dopamine boosts—rooted in neuromarketing principles.

Impact: Increased long-term retention and engagement through subconscious motivational triggers.

7. Teacher Training and Feedback

Just like students, teachers can benefit from feedback based on behavioral and emotional data. **Example**: Some teacher training programs use video recordings and facial/emotional analysis to help educators understand how students are responding nonverbally to their teaching. *Impact*: Improved teacher-student connection and instructional effectiveness.

8. Reducing Dropout and Burnout

By identifying disengagement early (through behavioral data), schools can intervene before students drop out or disengage completely. **Example**: Learning management systems (LMS) can alert staff when a student consistently skips videos or scores poorly—allowing for timely support. *Impact*: Better retention and student well-being.

Future Directions

The future convergence of AI, neuromarketing, and analytics could usher in real-time personalization:

- **Wearables & webcams** could provide live emotion data to dynamically adapt messaging.
- **Spotify** has begun to curate mood-based playlists; soon visuals, e-commerce sites, or ads might adapt in real-time based on emotional state.
- **Behavior + emotion fusion**: AI-driven systems could detect emotional fatigue or delight and adjust UX flow or advertisement sequencing mid-session.

Conclusion

Neuromarketing and behavioural analytics together unlock deeply subconscious motivations that escape conventional market research. Real-world successes—from Frito-Lay's guilt-reducing packaging to Charlcot biases in pricing—highlight their power. But with power comes responsibility: marketers must employ these tools ethically, respecting consumer autonomy and data protection Neuromarketing and behavioural analytics aren't just for boardrooms and labs they shape your choices every day. From how you shop, to what you watch, to which coffee size you pick, many experiences are subtly influenced by insights into your subconscious behaviour. Neuromarketing and behavioural analytics are transforming education not by replacing teachers, but by equipping them with deeper insight into how students think, feel, and learn. When used ethically, these tools can personalize education, enhance engagement, and help every learner reach their potential by meeting them not just where they *are*, but where their *minds* naturally want to go.

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CHAPTER 18

NEUROMARKETING: AN EMERGING TOOL OF MARKET RESEARCH

Dr. T. Rani
Assistant Professor, R.V Government Arts College, Chengalpattu

Abstract

In recent years, a new tool of marketing research has evolved i.e. neuromarketing, which makes use of brain research in a managerial context, has gained increasing popularity in the academic literature as well as the practical world. Neuro marketing, which caught the imagination of advertisers in early 2002, aptly cuts down the path and process probing minds and makes it considerably simpler for the advertisers. The paper studies the conceptual role of neuromarketing as an effective tool for marketers in a new era of market research for our today's intelligent buyer. The objectives of our study focus on the stance and emergence of Neuromarketing as well as the practices involved in current scenarios such as neuroimaging, EEG, FMRI, Eye Tracking etc. Paper measures the consumer dialectic consumers contradict themselves, saying what they want, but doing what they feel" Now days marketing research has been oriented towards four components of consumers as: physical body, mind, heart and spirit with the help of practices of Neuromarketing.

Keywords: *Neuromarketing, Brain research, Neuroimaging, Eye Tracking, EEG, FMRI*

Introduction

Neuromarketing-where brain science and marketing meet in very simple terms, Neuromarketing is medical knowledge, technology and marketing. Neuromarketing is a new field of marketing that studies the consumer's response to marketing stimuli. Neuromarketing is the application of neuroscience to marketing. Neuromarketing includes the direct use of brain imaging, scanning, or other brain activity measurement technology to measure a subject's response to specific products, packaging, advertising, or other marketing elements. In some cases, the brain responses measured by these techniques may not be consciously perceived by the subject; hence, this data may be more revealing than self reporting on surveys, in focus groups, etc.

Concept of Neuromarketing

This concept was developed by psychologists at Harvard University in 1990.The word Neuromarketing was coined by Ale Smidts in 2002.It is an emerging branch of neuro science in which researchers use medical technology to determine consumer reactions to particular brands, slogans and advertisements. The first ever Neuromarketing conference was held in 2004 at Baylor College of Medicine in Houston. The base of Neuromarketing is "meme". Meme is a unit of information stored in the brain. These units are effective influencing human who is making choices and decisions within 2.6 seconds. If meme is chosen properly we remember the good, joke or song and would share it. Memes stay in our memory and are affected by marketers.

Thus, Neuromarketing is a promising and emerging field with tremendous potential for application in the functional areas of marketing, brand management and advertising. It has emerged after bringing together applicable concepts from the field of neural-science, psychology, human neuro-physiology and even neurochemistry.

"Understanding the human mind in biological terms has emerged as the central challenge of science in the twenty-first century."-By Dr. Eric Kandel, Neuroscientist and winner of the Nobel Prize for Physiology or Medicine Millions of people in our global economy have jobs that depend on communicating with and persuading the human brain. So it is vital for us to understand how the human brain really works, what is attractive to it, how it decides what it likes or dislikes or how they decide to buy or not buy the infinite variety of products and services. "We have learned more about the brain in the last five years than in all human history combined". -By Charlie Rose This has really widened the scope of Neuromarketing. The concepts of Neuromarketing provide a real competitive advantage in a crowded and cluttered market. The languages of consumers change from country to country and culture to culture, however the language of human brain is the same i.e. universal. Thus, Neuromarketing has greatly affected products, brands, packaging, and advertising as well.

Literature Review

Packard suggests motivational research and the depth approach (the whys of our behaviour) as a means to research and to approach consumers' unconscious minds, as he acknowledge that consumers' actual buying behaviour often differ from what they say themselves about their buying patterns and buying motivation (Op.cit., pp. 4-13).

According to Martínez, author of 'The Consumer Mind' (2012), consumers' minds can be differentiated within four categories; between what they think, what they say, what they do and what they feel (Martínez 2012, p. 5). Martínez emphasises that a critical point of traditional marketing research is that "(…) consumers contradict themselves, saying what they want, but doing what they feel" (Ibid.).

Thus, Martínez argues that neuromarketing will help marketers acquire more objective information from and about consumers, than through use of traditional marketing tools such as surveys and interviews. Martínez proposes that the most efficient way to apply neuroscience in relation to marketing is through a combination of qualitative, quantitative and neuroscience research, as they hereby will complement and support each other, yielding the richest information possible (Op.cit., p. 6).

It is the attempt to pinpoint how and where our brain reacts to marketing and advertising stimuli and the attempt to measure the impact of such stimuli. From a general perspective, neuroscientific methods are used to study consumer behaviour, the decision-making processes, emotions in purchase decisions, and marketing phenomena through analyses of the underlying neurobiology (Javor et al. 2013, p. 2).

There are several ways to measure physiological responses to advertising. Neuromarketing is an emerging field which bridges the consumer purchase decision with

neuroscience (Christophe, 2011). Neuromarketing is advancing rapid believability and acceptance among advertising professionals. As everything depends on consumers " willingness and competency to describe how they feel when they are exposed to an advertising campaign, conventional methods for testing and predicting the effectiveness of huge investments generally have a minimal effect. Cutting edge methods for directly probing minds without requiring demanding cognitive or conscious participation are offered by neuromarketing.

Michael J.R. Butler (2008) determines the emerging field of neuromarketing as a knowledge which has malleability. Different marketing researchers perceive the development and application of neuromarketing knowledge in dissimilar manners. Having different perceptions of knowledge is not a new issue, but finding new interconnections between those perceptions is beneficial to knowledge creation and diffusion. The research–practice gap in neuromarketing was briefly discussed and then resolved through the contribution of that commentary, the proposal of a novel Neuromarketing Research Model.

Neuromarketing has been described as ''applying the methods of the neurology lab to the questions of the advertising world'' (Thompson 2003, 53). Recently, the International Journal of Psychophysiology called neuromarketing ''the application of neuroscientific methods to analyze and understand human behavior in relation to markets and marketing exchanges'' (Lee, Broderick, and Chamberlain 2007, 200).

Indeed, improvements in neuroimaging technologies have and will continue to advance our knowledge of how people make decisions and how marketers can influence those decisions.

Research Objectives

- To study the current trends in Neuromarketing
- To identify the various techniques used in Neuromarketing.

Research Methodology

Study determine the need for the Exploratory research to understand the conceptualization of Neuromarketing in the minds of the consumer and marketer . Exploratory research is also an attempt to lay the groundwork that will lead to future studies, or to determine if what is being observed might be explained by and examined in the light of the existing literature. Thus qualitative research is conducted with the help of secondary data, previously existing literature review, journals and magazines.

Current Scenario in Neuromarketing

The emergence of Neuromarketing has been reflected in almost all fields of industry as Automobile industries, the IT industries, FMCG Sector and then lastly turn our attention to the entertainment industry. Some Major Stance of its presence are:-

Hyundai Motors uses EEG-tests in the design process of their cars to measure consumers' reactions, when looking at specific parts of a car's exterior design. As Macko,

manager of brand strategy at Hyundai Motors, expresses it: "We want to know what consumers think about a car before we start manufacturing thousands of them" (Burkitt 2009).

Cheetos The Orange Underground the American snack producer Frito Lay has used neuromarketing on several occasions (Brat 2010). Through use of neuroimaging Frito Lay found that the glittering, brightcoloured packaging they were using for potato chips in 2008 triggered the anterior cingulated cortex of the brain, an area associated with feelings of guilt. When testing another type of packaging in matte beige colours with images of potatoes and other ingredients perceived as healthy, no activity of the anterior cingulate cortex was evident. Thus, Frito Lay switched out of shiny packaging and opted for the matte design with healthy ingredients depictured instead (Burkitt 2009).

Yahoo has a 60-second television commercial that features happy, dancing people around the world. Before spending the money to air the ad on prime-time and cable TV, as well as online, Yahoo ran it by EEG-capwearing consumers.

Ebay's PayPal hopes to persuade more e shoppers to use its online payment service by pitching it as fast. Brain-wave research convinced PayPal that speed turns people on more than safety and security, the earlier themes in its ad campaigns.

Microsoft is using EEG data to demonstrate how engaged gamers are when they use an Xbox. Working with EmSense, Microsoft put EEG caps on gamers and showed them ads on the videogame system. It tracked which parts of the brain were stimulated by the ads.

Ford Motor, DaimlerChrysler, Ford of Europe and other automakers are using medical research tools to examine the way consumers think so they can make sales messages more effective. Among the provocative early results from electrodes-on-the-scalp and Magnetic Resonance Imaging scanner research: Images of sports cars affect the pleasure center of the male brain the same way as sex, cocaine and chocolate.

In a study from the group of Read Montague published in 2004 in Neuron, 67 people had their brains scanned while being given the "Pepsi Challenge", a blind taste test of Coca-Cola and Pepsi.

Media Within the business of media, neuromarketing is often applied. For example to test consumers' reactions to movie scripts or trailers, to see which parts of a website attract the eyes of the visitors or to see how people react to certain songs. It is, however, rare that movie studios, moviemakers or others in the business willingly admit to the use of the practice (Randall 2011).

Rising Usage of Neuromarketing

Neuromarketing has been growing in leaps and bound , and may startups has evolved with the neuromarketing as their major line of service some examples of neuromarketing companies, those are framing marketing mix of renowned marketer are :

- **Brighthouse** The American advertising company Brighthouse was the first to introduce the word neuromarketing in a press release in 2002.

- **NeuroFocus** (Now Nielsen Consumer Neuroscience) NeuroFocus was an American neuromarketing company, which was acquired by the worldwide market research company The Nielsen Company in 2008 and was thus renamed Nielsen Consumer Neuroscience. Millward Brown Millward Brown, was founded in Britain and now has several locations in Europe, America, Asia, Middle East and Africa. (Millward Brown 2014c).
- **Neurosense** London-based Neurosense was founded by Gemma Calvert and was allegedly the first to conduct fMRI scans for commercial use (Neurosense 2013a. Neurosense lists several famous brands among their clients, i.e. BBC, Coca Cola, Ford, Heinz, Intel and L'Oreal (Neurosense 2013b).
- **Neuro**---Insight Neuro-Insight was founded by Professor Richard Silberstein in 2005, operates in the USA, UK, Germany and Australia and offers neuromarketing services specializing in the field of marketing communications (NMSBA 2013).

Tools and Techniques of Neuromarketing

EEG Analysis: EEG is the abbreviation for Electroencephalography, which means an electrical reproduction of brain activity (Postma, 2012). Although the technique of EEG is a relatively old method, it is still considered to be an appropriate way to measure changes in the electrical field in certain brain regions (Ariely, & Berns, 2010; Morin, 2011; Camerer, Loewenstein, & Prelec, 2004; Madan, 2010).

Electroencephalography is a process of brain scanning method that records the electrical activity on the scalp produced by the brain. Electrodes placed on the scalp pick up the subtle changes in electrical activity. We use both 16 and 32 channel EEG systems. The computer records the brain's electrical activity on the screen or on paper as waves. Our in-house designed software analyses the EEG data collected.

HD EEG : It is an updated form of EEG can gather very accurate brain activity information while the consumer is exposed to a particular stimulus. This EEG system has 256 channels and has a very deep brain signal analysis with regards to source localization. Additionally the data gathered will allow us to produce highly accurate heat map images of the brain processes which will be included in the report produced.

Galvanic Skin Response: Galvanic Skin Response, or skin conductance, is used to measure the temperature of the skin and its electrical conductance, which varies depending on the skin moisture level. Skin conductance is used to identify and measure psychological and physiological arousal. It's most common use is in lie detecting technology. The pulse rate is also measured through galvanic skin response. The fluctuations in the pulse reveal the level of excitement or stress that the person experiences as a response to certain triggers.

Eye Tracking Eye tracking technology is used to track the eye positioning as its focus shifts along the surface of a visual trigger. Eye trackers are used in research on product design and software design in the field of neuromarketing. The most popular method of measuring eye movement is through the use of a camera which tracks the movements of the

pupil. We use custom-made eye tracking devices and software developed by our engineering team.

Neuro Marketing Tools Recording Metabolic Activities in Brain Positron Emission Tomography (PET) Functional Magnetic Resonance Imaging (FMRI) Recording Electrical Activities in Brain Electroencephalography (EEG) Magneto encephalography (MEG) Steady State Topography (SST) Transcranial Magnetic Stimulation (TMS) Without recording Brain activities Eye Tracking Skin Conductance Facial Coding Facial Electromyography Cognitive Analysis Cognitive Analysis is an analytic digital model that combines the results obtained through EEG, galvanic skin response and eye tracking to give a holistic view of a person's reaction to a particular trigger. This ensures there is no mis-reading in any of the biometric readings taken.

Functional magnetic resonance imaging (fMRI): FMRI The term MRI stands for 'magnetic resonance imaging' and basically describes a tool, which makes an anatomic representation of the brain by making use of magnets (Postma, 2012). An MRI scanner is used to measure the blood oxygen level, which can give an indication of increased brain activity in certain regions (Ariely, & Berns, 2010). The measurement works as follows: The magnetic field is able to recognize the blood oxygen content in the brain. Therefore, if neural activity in a certain brain area is increasing, the oxygenrich blood increases too because oxygen is required by the brain to work. FMRI is a form of non-invasive neuroimaging technology that is primarily used for marketing purposes. The interest in it has increased enormously during the past years since it makes it possible to isolate certain systems of neurons that are connected with specific functions of the brain (Postma, 2012; Wilson, Gaines, & Hill, 2008). This isolation of the neural system is a highly complex task and is only facilitated by todays advanced technology (Kumlehn, 2011).

Empathic design: Another method where human beings are being analyzed without making use of any devices is called 'empathic design'. The meaning of the word 'empathic' can be also referred to as sensitive. Within this method, observation is made in the consumer's own environment so that it can take place in the normal course of daily routine (Postma, 2012; Leonard, & Rayport, 1997).

Managerial Implication

Research reflects and proves the stance and emergence of neuromarketing as a new tool to market research as the tapping of the brain sense of the consumer is utilized in the advertising and attracting them to further buying . Companies as BBC, Coca Cola, Ford, Heinz, Intel and L'Oreal, P&G, Hundai , Microsoft , Yahoo , Ebay has been already adopted the neuromarking as a tool of market research .For getting better results of marketing research Companies are hiring the outsourcing services of companies like NeuroFocus , Neuro---Insight, Neurosense and Brighthouse. Managers also need to invade this emerging trend of marketing for positioning their brand in the subconscious mind of their consumers. All those companies' experts in neuromarketing have been developing the various techniques of neuromarketing with the application of neuroscience as FMRI, EEG, Eye

Tracking, GSR, Empathy Design and Cognitive Analysis. Thus neuromarketing will have a great potential for the marketers in the coming years.

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CHAPTER 19

THE INNER WORLD OF THE CONSUMER: BRIDGING NEUROMARKETING AND PERSONALISATION

Dr. J. Jeya Hepsipa
Assistant Professor, Department of Commerce (B.Com A&F)
Shrimathi Devkunvar Nanalal Bhatt Vaishnav College for Women, Chromepet, Chennai

Abstract

Neuromarketing, a field using brain signals to understand consumer behavior, offers objective data without biases. It emphasizes emotion in decision-making and reveals cognitive biases. Personalization in neuromarketing tailors experiences to individual needs. However, ethical responsibilities arise, as neuromarketing exploits cognitive biases and personalization relies on data privacy. The future of marketing will involve AI, big data, and neuroscience.

Keywords: *Neuromarketing, consumer behavior, decision-making and reveals cognitive biases.*

Introduction

For decades, the field of marketing has been on a quest to answer a single, deceptively simple question: why do consumers choose what they choose? The study of **consumer behaviour** has provided a foundational framework, offering models that map the journey from need to purchase. Yet, these traditional approaches, often reliant on what consumer's say they do, have consistently run into the enigmatic "say-do" gap—the chasm between stated intentions and actual behaviour. This chapter explores the evolution beyond these traditional methods into a more profound understanding of the consumer mind. We will journey into the subconscious, exploring the revolutionary field of **neuromarketing**, which observes the brain's unfiltered reactions to marketing stimuli. We will then examine the parallel rise of data-driven **personalisation**, a strategy that tailors experiences to the individual. Finally, we will uncover the powerful synergy that emerges when these two fields converge, creating a new frontier of hyper-relevant, empathetic, and effective marketing, while also navigating the critical ethical considerations that this new power entails.

The Foundations of Consumer Behaviour

The study of consumer behaviour is the bedrock upon which all marketing strategies are built. It involves analyzing the processes individuals and groups use to select, secure, use, and dispose of products, services, experiences, or ideas to satisfy their needs. Classic models of consumer decision-making typically present a five-stage process: need recognition, information search, evaluation of alternatives, purchase decision, and post-purchase evaluation. This framework has long served marketers by providing a logical and structured

view of the consumer's journey, assuming a rational actor who consciously weighs their options to arrive at an optimal choice.

However, the assumption of pure rationality is the model's primary limitation. A significant body of research in behavioural economics and psychology reveals that human decision-making is often driven by subconscious heuristics, deep-seated emotional responses, and cognitive biases that operate below the level of conscious awareness. A shopper may voice a commitment to sustainable brands in a focus group but choose a less-eco-friendly option on the shelf due to compelling packaging or a discounted price—a decision driven by impulse and visual cues rather than stated values. This discrepancy highlighted the need for tools that could bypass conscious rationalization and tap directly into the subconscious drivers of choice, setting the stage for a scientific revolution in marketing research.

Unlocking the Black Box: The Neuromarketing Revolution

Neuromarketing emerged as a groundbreaking discipline to directly address the shortcomings of traditional research. It is the application of neuroscientific methods to analyze and understand human behaviour in relation to markets and marketing exchanges. Instead of asking consumers about their preferences, neuromarketing observes the brain's physiological and neural signals to gain insight into their true motivations, preferences, and decisions. This approach aims to uncover the subconscious reactions that precede and powerfully shape conscious choice.

To peer inside this "black box" of the consumer mind, researchers employ a sophisticated toolkit:

- **Functional Magnetic Resonance Imaging (fMRI):** This technique measures brain activity by detecting changes in blood flow. It offers high spatial resolution, making it ideal for identifying which specific brain regions (e.g., the reward center or memory centers) are activated by an advertisement.
- **Electroencephalography (EEG):** Using sensors placed on the scalp, EEG measures the brain's electrical activity with millisecond-level precision. This high temporal resolution is perfect for tracking moment-to-moment engagement, excitement, or confusion while a consumer watches a commercial.
- **Biometrics and Eye-Tracking:** These tools supplement brain imaging by measuring other physiological indicators of subconscious response. **Eye-tracking** reveals what consumers look at, in what order, and for how long, providing direct insight into visual attention. **Biometric sensors** measure heart rate, skin conductivity, and facial muscle movements (facial coding) to quantify emotional arousal and valence (positive or negative feeling).

Together, these technologies provide a rich, multi-dimensional view of a consumer's un-filtered experience, offering data that is objective and free from the social desirability or memory biases that plague surveys and interviews.

From Theory to Practice: Core Neuromarketing Principles

The insights generated by neuromarketing tools are rooted in fundamental principles of cognitive science. A central finding is that **emotion is integral to decision-making**. Far from being a purely logical process, our choices are heavily influenced by our feelings. Marketers apply this by crafting narratives and visuals that evoke strong emotions—joy, nostalgia, trust—thereby creating powerful and lasting brand associations that are stored in long-term memory.

Neuromarketing also illuminates the powerful effect of **cognitive biases**. These mental shortcuts, which help the brain make decisions efficiently, can be leveraged in marketing design:

- **Loss Aversion:** The principle that the pain of losing something is psychologically twice as powerful as the pleasure of gaining it. This is why limited-time offers and "don't miss out" messaging is so effective.
- **Anchoring:** The tendency to rely heavily on the first piece of information received. Displaying a higher "original" price next to a sale price anchors the consumer's perception of value.
- **Cognitive Fluency:** The brain prefers things that are easy to process. Simple, clean branding (like Apple's) and clear, concise messaging (like Nike's "Just Do It") are more effective because they reduce the cognitive load required to understand them.
- By understanding these and other subconscious tendencies, such as the brain's innate attraction to faces or its limited attention span, marketers can design campaigns that are not just creative, but are neurobiologically optimized for maximum impact.

Case in Point: The Cheesy Fingers Insight

A classic example of neuromarketing in action is Frito-Lay's research on its Cheetos brand. Traditional focus groups indicated that consumers disliked the messy orange residue—the "cheetle"—left on their fingers after eating the snack. However, an EEG study revealed a different story. When participants saw pranks involving the orange dust, their brains showed high levels of activity in areas associated with glee and mischief. This subconscious delight, a feeling of permissible rule-breaking, was a powerful driver of the brand's appeal. Armed with this insight, Frito-Lay leaned into the messy aspect, launching the successful "The Orange Underground" ad campaign that celebrated the fun and mischievousness of the product, turning a perceived negative into a core part of the brand's identity.

The Age of 'Me': The Power of Personalisation

Running parallel to the neurological deep dive has been the technological explosion of data-driven personalization. In a digital landscape saturated with generic messaging, personalization is the art and science of tailoring marketing communications, product recommendations, and user experiences to the specific needs and preferences of an individual. By leveraging data—from demographic information and purchase history to

real-time browsing behaviour—brands can deliver content that is uniquely relevant, cutting through the noise and fostering a powerful sense of connection.

The success of personalization is psychological. It taps into the fundamental human need to be recognized and understood. When a brand delivers an experience that feels like it was made "just for me," it builds trust and deepens loyalty. The modern digital economy is built on this principle:

- **Amazon's recommendation engine** generates an estimated 35% of its sales by using collaborative filtering algorithms to suggest products based on a user's browsing and purchasing patterns.
- **Netflix's homepage** is a mosaic of personalized suggestions, with even the artwork for a movie or show being tailored to what the algorithm believes will most appeal to the individual viewer's tastes.
- **Spotify's Discover Weekly** playlist is a beloved feature that uses sophisticated AI to curate a unique playlist for each user, often introducing them to their new favourite artists and fostering immense brand loyalty.

These systems transform the brand-consumer relationship from a one-way broadcast into a two-way dialogue, where the brand continuously learns from and adapts to the individual.

The Ultimate Synergy: Powering Personalisation with Neuroscience

The most exciting frontier in marketing is the integration of neuromarketing's "why" with personalization's "what." While personalization has been incredibly effective using behavioural data, its predictive power is amplified exponentially when informed by an understanding of the underlying cognitive and emotional drivers. This synergy enables a shift from reactive personalization (based on past clicks) to predictive, **emotionally-aware personalization**.

Imagine an e-commerce platform that has data showing a high cart abandonment rate. A standard personalization approach might be to email a 10% discount coupon to users who abandon carts. A neuro-powered approach would first seek to understand *why* the abandonment is happening. An EEG and eye-tracking study of the checkout process might reveal that a cluttered interface is causing high **cognitive load** (frustration) or that the unexpected presentation of shipping fees triggers a neural signature associated with **pain and loss**.

Armed with this deeper insight, the brand can implement far more effective personalized interventions:

- For users showing signs of cognitive load, the system could dynamically simplify the checkout interfaces in real-time.
- For users sensitive to loss aversion, it could reframe shipping costs as "standard fulfillment" or offer free shipping in a more prominent way *before* the final step.

This is hyper-personalization: tailoring not just the product offered, but the entire context of the digital experience—the layout, the colours, the wording, the timing—to align with the

user's non-conscious state. It is the difference between a brand that knows what you did and a brand that understands how you feel.

The Ethical Compass: Navigating Privacy and Manipulation

The immense power of these tools brings with it profound ethical responsibilities. Neuromarketing faces criticism regarding its potential for subconscious manipulation. While the concept of a single "buy button" in the brain is a scientific fallacy, the ability to exploit cognitive biases to influence vulnerable consumers is a valid concern. The line between effective persuasion and unethical manipulation requires constant vigilance, and industry leaders advocate for transparency and codes of conduct to ensure the technology is used to enhance, not exploit, the consumer experience.

For personalization, the primary ethical minefield is **data privacy**. The strategy's effectiveness is contingent on access to vast quantities of personal data, raising critical questions about consent, security, and usage. Global regulations like Europe's **GDPR** represent a societal pushback, demanding that companies be more transparent and give consumers greater control over their information. Furthermore, the algorithmic nature of personalization can create "filter bubbles," insulating users from diverse viewpoints and inadvertently reinforcing biases. For marketers, building and maintaining consumer trust is paramount. This requires a commitment to ethical data stewardship, radical transparency, and using personalization to provide genuine value rather than simply to maximize extraction.

The Road Ahead: The Future of Consumer Engagement

The trajectory of marketing is toward an ever-more seamless, predictive, and integrated model. The fusion of **Artificial Intelligence (AI)**, big data, and neuroscience will enable real-time adaptive experiences. We can foresee a future where a brand's mobile app might use biometric data from a user's smartwatch to gauge their mood and tailor promotions accordingly—offering a calming playlist and a coupon for a comfort food item during a stressful commute.

The advent of immersive technologies like **Augmented and Virtual Reality (AR/VR)** will provide new canvases for these strategies. Brands will be able to test and deploy neurally-optimized virtual stores or allow consumers to experience products in AR, all while gathering data on emotional engagement to further refine the experience. The ultimate goal is a paradigm shift from transactional relationships to relational ones. The future belongs to brands that use this deep understanding of human behaviour not merely to sell, but to serve—to anticipate needs, solve problems, and create experiences that are genuinely valuable, intuitive, and human.

Conclusion

In summary, the landscape of consumer engagement has undergone a fundamental transformation. The once-dominant view of a rational consumer has been replaced by a more

sophisticated understanding of a decision-maker guided by a complex interplay of subconscious emotions, cognitive shortcuts, and an intrinsic desire for personal relevance.

This chapter has traced the parallel rise of two transformative forces: **neuromarketing**, which unlocks the deep, often unstated "why" behind consumer behaviour, and **personalisation**, which leverages data to deliver the right message to the right person at the right time. We have established that their ultimate potential is realized not in isolation, but in their **synergistic integration**. By using neuroscientific insights to power personalization strategies, marketers can move beyond simple segmentation to create truly empathetic, predictive, and hyper-relevant experiences.

However, this unprecedented power comes with a profound **ethical responsibility**. The imperative to protect consumer privacy, ensure transparency, and avoid manipulation must guide every application of these tools. Ultimately, the future of marketing will be defined not by technological capability alone, but by the humanity of its purpose. The goal is to use this deep understanding to build trust and provide genuine value, transforming the brand-consumer dynamic from a simple transaction into a meaningful and lasting relationship

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CHAPTER 20

CONSUMER BEHAVIOUR TOWARDS NEUROMARKETING: A STUDY ON AWARENESS, ETHICS, AND FUTURE POTENTIAL

Dr. V. Leema Glory
Assistant Professor, Department of Commerce
Nesamony Memorial Christian College, Marthandam

Abstract

A recent field called "neuromarketing" combines marketing and neurology to better understand and influence consumers' purchasing decisions.This study examines people's attitudes, knowledge, emotional responses, and concerns regarding the application of neuromarketing. A survey comprising a 5-point rating system was employed to collect data from a large population. Trust, ethics, how packaging influences decisions, emotive advertisements, and the future of neuromarketing were among the subjects discussed in the study. The study reveals that although people believe neuromarketing is novel and effective at fostering emotional bonds, they are concerned about its sincerity and whether it attempts to manipulate them. The majority of individuals are curious about neuromarketing and want to know if it's being employed. Tools such as Likert 5 point scale with weighted averages and standard deviation were employed to interpret the findings. The findings imply that neuromarketing has the potential to significantly improve marketing and increase customer satisfaction if applied fairly and openly. The study concludes with recommendations for marketers, such as being more forthcoming with clients, being truthful about the application of neuromarketing, and abiding by ethical guidelines.

Keywords: *Neuromarketing, Consumer Behaviour, Ethical Marketing,Consumer Awareness, Trust in Marketing and Future of Neuromarketing*

Introduction

Neuromarketing is the application of neuroscience and psychological principles to marketing, aimed at understanding how consumers' brains respond to advertisements, products, packaging, and branding. It uses techniques like EEG (Electroencephalography), fMRI (Functional Magnetic Resonance Imaging), eye tracking, and facial expression analysis to study unconscious processes such as attention, emotional engagement, and memory.

The main goal of neuromarketing is to gain deeper insights into consumer behaviour beyond what traditional surveys or interviews can reveal. By analysing real-time brain and physiological responses, marketers can design strategies that more effectively capture attention, evoke emotions, and influence purchase decisions—while ensuring ethical handling of data and transparency with consumers. This study explores consumer perceptions, awareness, emotional responses, and ethical concerns regarding the use of neuromarketing techniques.

Objectives of the Study

- To assess the awareness and perception of consumers towards the use of neuroscience in marketing.
- To analyse the impact of neuromarketing-related factors such as packaging, design, emotional appeal, and sensory experiences on consumer response and buying behaviour.
- To examine the level of trust and ethical concerns consumers have regarding neuromarketing practices and data usage.
- To explore consumer perspectives on the future of neuromarketing and their interest in learning more about it.

Scope of the Study

This study focuses on consumer awareness, perceptions, ethical concerns, and future potential of neuromarketing. It examines how factors like packaging, design, emotional appeal, and sensory experiences influence buying behaviour, while also assessing trust, transparency, and willingness to engage with neuromarketing in the future.

Importance of the Study

This research holds significant value for marketers, advertisers, and individuals studying consumer behavior. It illustrates the impact of emerging neuromarketing technologies on consumer choices and provides insights into the ethical boundaries that should govern their application. Grasping these elements enables businesses to develop more effective and responsible marketing strategies, while also informing individuals about how their actions may be subtly influenced without their awareness. This chapter outlines the strategy, methodologies, and instruments employed in the investigation regarding consumer responses to neuromarketing. It details the execution of the research, the selection of participants, the tools utilized for data collection, and the methods of data analysis.

Research Design

The study employs a descriptive research design, intended to illustrate and clarify what consumers know, think, and feel regarding neuromarketing techniques. The primary objective is to comprehend how neuromarketing influences purchasing decisions and to identify the ethical concerns consumers associate with it.

Sources of Data

Primary Data: Collected directly from participants using a structured questionnaire that employs a 5-point Likert scale. Secondary Data: Obtained from research papers, articles, marketing journals, websites, and published reports concerning neuromarketing and consumer behavior.

Sampling Method

A convenience sampling technique was utilized to select participants. This approach was preferred due to its ease of access to individuals and the constraints of time, allowing for the rapid collection of responses from consumers of various backgrounds.

Sample Size

The questionnaire was administered to 100 participants comprising students, working professionals, and general consumers who are knowledgeable about different marketing strategies.

Data Collection &Tools Used

A structured, closed-ended questionnaire based on a 5-point Likert scale was designed to assess four key dimensions: awareness of neuromarketing, perception of its influence, behavioral impact, and ethical concerns. The study employed a 5-point Likert scale to measure respondents' level of agreement with each statement, and standard deviation was used to analyze the variability of responses.

Analysis and Findings

The study analyzed consumer awareness, perception, behavioral influence, ethical concerns, and future potential of neuromarketing using a structured questionnaire on a 5-point Likert scale.

Table: 1 Awareness and Perception of Neuromarketing

Sl. no	Statements	Mean	Mean2	SD	Result
1.	I am aware that brands use neuroscience to study consumer behavior.	3.43	12.93	3.082	Neutral
2.	I find the concept of neuromarketing interesting and innovative.	3.73	15.16	3.380	Neutral
3.	Neuromarketing helps marketers better understand customer needs.	3.71	15.07	3.370	Neutral
4.	I believe neuromarketing is more accurate than traditional surveys.	3.60	14.42	3.289	Neutral

Source: Primary Data

The analysis of awareness and perception of neuromarketing shows that respondents hold a neutral to slightly positive view towards the concept. The findings reveal that while people are moderately aware that brands use neuroscience to study consumer behavior (Mean = 3.43), their level of knowledge is not very strong. Respondents find neuromarketing to be interesting and innovative (Mean = 3.73) and believe it can help marketers better understand customer needs (Mean = 3.71), indicating a sense of curiosity and recognition of its potential benefits. However, when comparing neuromarketing to traditional survey

methods, opinions remain cautious, with only moderate agreement that it is more accurate (Mean = 3.60). Overall, the results suggest that consumers are aware of neuromarketing and view it with interest, but their perceptions remain balanced, showing neither strong enthusiasm nor outright skepticism.

Table : 2 Consumer Response and Behaviour

Sl. no	Statements	Mean	Mean2	SD	Result
1.	My buying decisions are often influenced by product packaging and design	3.68	15.34	3.415	Agree
2.	Emotional advertisements influence my perception of brands.	2.52	8.14	2.371	Disagree
3.	I am more likely to remember ads that appeal to my emotions or senses	2.61	8.35	2.400	Disagree
4.	I prefer brands that create engaging sensory experiences (visuals, sound, etc.)	3.83	16.27	3.527	Agree

Source: Primary Data

The analysis of consumer perception regarding neuromarketing-related factors indicates a mixed response. Respondents generally agreed that their buying decisions are influenced by product packaging and design (Mean = 3.68) and that they prefer brands that create engaging sensory experiences such as visuals and sounds (Mean = 3.83). This highlights the importance of sensory appeal in shaping purchase decisions. However, when it comes to emotional influence, respondents expressed disagreement. They did not strongly believe that emotional advertisements influence their perception of brands (Mean = 2.52), nor did they feel that they are more likely to remember ads appealing to emotions or senses (Mean = 2.61). Overall, the findings suggest that consumers place higher importance on tangible sensory and design elements of marketing rather than on purely emotional appeals.

Table: 3 Trust and Ethics in Neuromarketing

Sl. no	Statements	Mean	Mean2	SD	Result
1.	I am comfortable with companies studying my brain responses to ads.	3.61	14.39	3.283	Neutral
2.	I am concerned about the ethical use of neuromarketing data.	3.18	11.62	2.905	Neutral
3.	Neuromarketing can manipulate consumers into buying products.	3.29	12.37	3.0133	Neutral
4.	Consumers should be informed when neuromarketing techniques are used.	3.2	12.7	3.082	Neutral

Source: Primary Data

The analysis of ethical perceptions toward neuromarketing reveals that respondents hold a neutral stance across all statements. They expressed moderate comfort with companies studying their brain responses to advertisements (Mean = 3.61), indicating neither strong acceptance nor rejection. Concerns regarding the ethical use of neuromarketing data were also neutral (Mean = 3.18), showing that while ethical issues are recognized, they are not viewed with high intensity. Similarly, respondents were undecided about whether neuromarketing manipulates consumers into buying products (Mean = 3.29), suggesting uncertainty about its potential influence. Furthermore, opinions on whether consumers should be informed when neuromarketing techniques are applied also remained neutral (Mean = 3.20). Overall, these results suggest that while consumers are aware of ethical considerations in neuromarketing, they remain largely undecided, reflecting a cautious and balanced outlook rather than a strong ethical concern or acceptance.

Table: 4 Future of Neuromarketing

Sl. no	Statements	Mean	Mean2	SD	Result
1.	Neuromarketing has the potential to improve customer satisfaction	3.19	11.87	2.9461	Neutral
2.	I believe neuromarketing will become more common in the future.	3.53	14.23	3.2710	Neutral
3.	I am interested in learning more about how neuromarketing works	3.08	11.00	2.8142	Neutral

Source: Primary Data

The analysis of future potential and interest in neuromarketing shows that respondents hold a neutral perception overall. They moderately agreed that neuromarketing has the potential to improve customer satisfaction (Mean = 3.19), but the response was not strongly positive, indicating limited confidence in its effectiveness. Similarly, opinions about the future adoption of neuromarketing were neutral (Mean = 3.53), suggesting that while some respondents expect its use to increase, the belief is not firmly established. Interest in personally learning more about how neuromarketing works was also neutral (Mean = 3.08), reflecting curiosity but not strong enthusiasm. Overall, these findings suggest that consumers recognize neuromarketing as a growing field with possible benefits, but their expectations and personal interest remain cautious and undecided.

Suggestions

- Many respondents are unaware or uncomfortable with neuromarketing practices. Brands should conduct awareness campaigns to educate consumers about how neuromarketing works and how their data is used responsibly.

- Since a large portion of participants expressed ethical concerns, companies should adopt transparent policies. Informing consumers when neuromarketing techniques are used can build trust.
- Emotional and sensory-driven advertisements are proven to have a higher impact. Brands can use storytelling, visuals, and sound to create memorable and engaging content, especially targeting emotion and sensory appeal.
- As buying decisions are influenced by product design and packaging, businesses should invest in neuromarketing insights to refine these elements in ways that align with consumer preferences.
- Regulatory bodies should consider developing frameworks and guidelines for the ethical use of neuromarketing, ensuring consumer rights and privacy are not compromised.

Conclusion

The study found that consumers view neuromarketing as innovative and emotionally engaging, but have concerns about privacy, manipulation, and transparency. While many agree it can enhance marketing through emotional and sensory appeal, they believe companies should inform consumers when using such techniques. Building trust requires balancing innovation with ethical responsibility and clear communication.

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CHAPTER 21

SOCIAL COMMERCE EVOLUTION AND ITS ROLE IN BRAND ENGAGEMENT

Dr. N. Rabiya Khatun
Assistant Professor, Department of Commerce (B.Com A&F),
Shrimathi Devkunvar Nanalal Bhatt Vaishnav College for Women, Chromepet

Abstract

Social commerce (s-commerce) has become a groundbreaking influence in the retail environment, merging conventional e-commerce with social media networks. This transformation has been fueled by the growing incorporation of social interactions, user-created content, and digital technologies into the buying process. Consequently, brands are progressively utilizing these platforms not just to advertise products but also to connect with customers in amore genuine and interactive manner. The research investigates the development of social commerce, its impact on consumer habits, and the ways it informs brand engagement tactics. This study explores important elements like user engagement, tailored experiences, and the impact of influencers, illustrating the prospects and obstacles that social commerce offers to companies seeking to improve consumer connections, increase brand loyalty, and stimulate sales. The article offers perspectives on how brands can utilize social commerce as a strategic approach to cultivate more engaged, loyal, and responsive customer base

Keywords: *Social commerce, s-commerce, user engagement, tailored experiences and brand engagement*

Introduction

Social Commerce (S-Commerce) Overview:

1. The convergence of social media and e-commerce platforms, where social interaction plays a key role in the online shopping experience.
2. Platforms like Instagram, Facebook, and Pinterest have enabled brands to engage users, influence purchasing decisions, and create online communities.

Purpose of the Study:

3. Examine how social commerce has evolved and its impact on brand engagement.
4. Identify key trends, drivers, and factors contributing to the success of s-commerce in fostering deeper connections with consumers.

Importance of Brand Engagement:

5. Active engagement leads to stronger emotional connections, repeat purchases, and brand loyalty.
6. Engaged consumers are more likely to advocate for brands, creating organic growth through word-of-mouth marketing.

Evolution of Social Commerce:

1. **Early Stage (Pre-2010s):**
   - E-commerce dominated, but brands were not fully exploiting social platforms.
   - Basic product advertising and static promotional content on platforms like Facebook, instagram ect.,

2. **Rise of Social Media Platforms (2010-2015):**
   - Platforms such as Instagram and Pinterest began incorporating "buy" buttons and product showcases.
   - Influencers started to play a significant role in shaping consumer preferences.
3. **Integration of Social and E-Commerce (2015-2020):**
   - Social media platforms developed advanced features like live streaming and in-app purchases.
   - Data-driven personalization became a critical factor in enhancing consumer experiences.
4. **Maturity and Innovation (2020-Present):**
   - Introduction of AR (Augmented Reality) tools, live commerce, and influencer collaborations became main stream.
   - AI-driven recommendations and social proof (reviews, ratings) are now integral to s-commerce.

Key Factors Driving the Evolution of Social Commerce:

1. **Consumer Behavior Shifts:**
   - **Social Media Usage:** Consumers now rely heavily on social media for both entertainment and shopping.
   - **Social Proof:** Reviews, likes, comments, and user-generated content influence purchasing decisions.

2. **Technological Advancements:**
   - **Mobile Shopping:** Increased smart phone penetration has made social commerce easily accessible.
   - **AI and Personalization:** Custom-tailored shopping experiences are increasingly available, driving customer engagement.

3. **Influencers and User-Generated Content:**
   - Influencers serve as authentic voices, making it easier for brands to connect with audiences.
   - User-generated content (UGC) allows customers to share their experiences, building trust and creating a sense of community.

4. **Platform Developments:**
   - **Instagram Shopping:** These platforms have revolutionized the way brands can directly sell to users within the platform.
   - Social platforms are introducing new tools, like AR filters and interactive stories, to boost product discovery and engagement.

The Role of Social Commerce in Brand Engagement:

Customer-Centric Interactions:

- S-commerce fosters a more personalized and interactive shopping experience.
- Through direct messaging, comments, and polls, brands engage in two-way conversations with customers.
- Building a direct relationship with consumers through these interactions strengthens brand loyalty.

Emotional Connection:

- Brands use storytelling, influencer partnerships, and emotional marketing
- strategies on social platforms to create a stronger emotional bond with their audience.
- Content that resonates with consumers on a personal level drives both engagement and conversions.

Real-Time Engagement

- Live streaming and real-time interaction on platforms like Facebook, and Instagram Live allow brands to engage with customers instantly, addressing questions and concerns, which fosters trust and engagement.

Community Building

- Creating communities around products, services, or lifestyles helps brands establish loyal followings.
- Social commerce allows users to share experiences, opinions, and reviews, which strengthens brand credibility.

Co-Creation and Crowd sourcing:

- Brands actively involve consumers in the creation of products or marketing strategies (e.g., polls, challenges, contests), making them feel valued and invested in the brand's success.

Challenges in Social Commerce:

1. **Privacy Concerns and Data Security:**
   - With increased data collection and personalization, consumers are becoming more conscious of their data privacy.
   - Brands need to ensure they are transparent and compliant with regulations like GDPR.

2. **Platform Dependency:**
   - Brands may become overly reliant on social media platforms. Changes in algorithms or platform policies can affect reach and engagement.

3. **Authenticity and Trust:**
   - The over-saturation of sponsored content and influencer marketing may lead to skepticism among consumers.
   - Authenticity in brand messaging is crucial to building trust.

4. **Competition and Market Saturation:**
   - As more brands enter social commerce, standing out becomes more challenging.
   - Maintaining a unique voice and value proposition is key.

Future Directions:

1. **Integration of Augmented Reality (AR):**
   - The continued rise of AR will allow consumers to try products virtually, enhancing the shopping experience and driving engagement.

2. **Increased Use of AI and Machine Learning:**
   - Advanced AI will enable even more personalized recommendations and customer support systems, enhancing brand engagement through tailored experiences.

3. **Growth of Niche Social Platforms:**
   - Smaller, niche platforms (e.g., Discord, Clubhouse) may see growth in the s-commerce space as brands target specific communities.

4. **Sustainability and Ethical Engagement:**
   - Consumers are increasingly looking for brands that align with their values. Social commerce can help communicate a brand's sustainability efforts, enhancing engagement with purpose-driven customers.

Conclusion

Social commerce has evolved into a powerful tool for brand engagement. By blending social interaction with e-commerce functionalities, it allows brands to connect with consumers on a deeper level, create more personalized experiences, and foster long-term loyalty. However, brands must navigate challenges like platform dependency and authenticity to maintain trust and engagement. As technology continues to advance, the role of social commerce in brand engagement will only grow, with more innovative strategies emerging to connect brands and consumers.

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CHAPTER 22

DIGITAL CONSUMER BEHAVIOUR : AN OVERVIEW

Dr. R. Krishnakumar
Associate Professor & Research Advisor,
P.G & Research Department of Commerce, St. Joseph's College of Arts and Science (Autonomous)

Mr. Sandeep G
Assistant Professor, Department of Commerce & Management,
MVM College of Arts, Science and Management, Bengaluru -607 001.

Abstract

Digital consumer behaviour reflects how technology shapes the way people discover, evaluate, and purchase products. This paper explores its evolution from early online research to today's AI-driven personalization. It highlights the influence of social media, e-commerce, and omnichannel engagement on decision-making, while stressing the importance of trust, privacy, and ethics in digital interactions.

Keywords: *Digital Consumer Behaviour; E-Commerce; Artificial Intelligence; Social Media; Personalization; Consumer Trust; Online Decision-Making.*

Introduction to Digital Consumer Behaviour

Technological innovation has consistently served as a catalyst for changes in consumer behaviour. The emergence of digital commerce and online retail platforms has fundamentally altered how individuals search for, evaluate, and purchase products. Consumers now benefit from the ability to browse a vast range of offerings, assess peer reviews, and compare prices seamlessly from their own homes. In parallel, social media platforms have become central to the way consumers engage with brands, shaping perceptions and influencing purchasing decisions through interactive and user-generated content.

Advancements in voice-enabled technologies, such as virtual assistants and smart speakers, are also reshaping the consumer experience by enabling hands-free interactions for shopping, service requests, and tailored recommendations. These developments reflect the broader trend of consumers integrating emerging technologies into their decision-making processes and brand interactions.

The integration of AI tools is reshaping how businesses understand, influence, and manage consumer behavior. By leveraging these technologies, companies can remain competitive in a rapidly evolving marketplace and deliver more personalized, responsive experiences aligned with shifting consumer expectations.

Meaning of Digital consumer behaviour

Digital consumer behaviour refers to the study of how individuals make purchasing decisions and interact with brands in online environments. It encompasses the processes consumers go through when discovering, researching, selecting, buying, and reviewing

products or services using digital technologies, such as websites, mobile apps, social media, and e-commerce platforms.

Definition of Digital consumer behaviour

According to Michael Solomon

''Digital consumer behavior explores how consumers interact with digital environments when making consumption-related decisions, including online browsing, shopping, and engagement with brands through digital media.''

According to David Jobber

''Digital consumer behavior examines the impact of digital technologies on consumer decision making, particularly how access to information and digital touchpoints affects their preferences and purchase outcomes.''

The Evolution of Digital Consumer Behavior

Over the past 30 years, digital consumer behavior has transformed due to technological growth, internet access, and changing societal trends.

1. Informational Phase (1990s–Early 2000s): Consumers mainly used the internet for research. E-commerce was limited, with basic marketing and concerns over online security.

2. Rise of E-Commerce (Mid-2000s): Platforms like Amazon grew, and search engines changed how people discovered products, boosting online shopping.

3. Mobile & Social Media Era (2010s): Smartphones and social media made consumers always connected. Peer reviews, influencers, and instant access became key to buying behavior.

4. Omnichannel & Personalization: Consumers began expecting seamless experiences across digital and physical platforms. Businesses used AI to deliver personalized content.

5. Post-Pandemic Shift (2020s): COVID-19 accelerated digital adoption. Online shopping and virtual services surged, alongside growing concerns for privacy and ethics.

The Need to Study Digital Consumer Behaviour

In today's digital age, consumer behavior is more dynamic due to widespread technology use. People now research, compare, and buy products across various digital platforms like websites, apps, and social media.

1. Evolving Consumer Journey: Instead of a simple path to purchase, consumers explore multiple touchpoints—reading reviews, comparing prices, and engaging on social media.

2. Personalization & Technology: Businesses use data and AI to personalize experiences. Understanding how users respond helps improve satisfaction and ensures ethical data use.

3. Mobile & E-Commerce Growth: Smartphones and online shopping drive convenience. Studying mobile behavior helps optimize user experiences and remove buying barriers.

4. Social Media Influence: Peer reviews and influencers shape buying decisions. Insights help brands create engaging, trust-building content.

5. Data-Driven Decisions : Metrics like click-through and conversion rates offer real-time feedback, improving marketing and product strategies.
6. Privacy & Trust: As digital use grows, so do privacy concerns. Trust-building through transparency and ethical design is essential.
7. Post-Pandemic Shift:COVID-19 sped up digital habits, many of which remain. Understanding these changes helps businesses adapt to the new normal.

Consumer Digital Decision-Making Process

The digital consumer decision-making process is a fast, flexible journey where people recognize needs, explore options, and make purchases online. Reviews, social media, and personalized recommendations strongly influence each stage.
1. Need Recognition: The journey begins when a consumer identifies a gap between their current and desired state. In digital contexts, this is often triggered by ads, influencer content, or personalized product suggestions. These stimuli create or highlight needs that drive further action.
2. Information Search: Once a need arises, consumers turn to search engines, e-commerce sites, apps, and social media for details. Algorithms personalize results, making searches faster and more relevant. Voice search and mobile apps have further simplified this stage.
3. Evaluation of Alternatives: At this stage, consumers compare products based on features, price, and brand reputation. Reviews, ratings, and user-generated content heavily influence decisions. Social media communities and influencers often outweigh direct brand messaging.
4. Purchase Decision: Buying is simplified with one-click payments, mobile wallets, and discounts. However, trust, website security, and delivery options still play a key role. Any concerns may lead to cart abandonment.
5. Post-Purchase Behavior: After buying, consumers reflect on satisfaction with the product or service. Positive experiences encourage loyalty and reviews, while negative ones may lead to complaints online. Brands often engage through follow-ups and loyalty programs.

Unique Features of Digital Decision-Making
Speed and Convenience: Digital tools reduce the time needed for decisions, especially with mobile commerce and voice assistants.
Personalization: AI and data analytics enable tailored experiences at every stage.
Peer Influence: Online reviews, ratings, and social media greatly shape perceptions.
Multiple Devices and Channels: Consumers often switch between smartphones, tablets, desktops, and physical stores during the journey (i.e., omnichannel behavior).
Nonlinear Process: Consumers may revisit previous stages or loop between search and evaluation before making a decision.

The digital consumer decision-making process is a fluid, data-driven journey influenced by technology, content, and social networks. Understanding this process helps marketers design strategies that align with consumer behavior in digital contexts, such as providing seamless user experiences, trustworthy content, and timely support.

Factors Influencing Digital Consumer Behavior

Digital consumer behavior is shaped by multiple factors that help businesses design better strategies and improve engagement.

1. Technological Factors:

User-friendly, secure, and fast platforms drive online engagement. Features like mobile compatibility, AI recommendations, and secure payments boost trust and convenience.

2. Psychological Factors:

Attitudes, trust, risk perception, and motivation affect online decisions. High-involvement purchases lead to deeper research and comparison.

3. Personal Factors:

Age, income, lifestyle, and digital skills influence behavior. Younger, tech-savvy consumers are more open to mobile and social commerce.

4. Social & Cultural Factors:

Peer reviews, influencer endorsements, and cultural values shape preferences, trust, and purchase decisions.

5. Marketing Factors:

Effective personalization, quality content, and promotions (like discounts and free shipping) increase engagement and drive purchases.

Impact of Artificial Intelligence on Consumer Behaviour

Artificial Intelligence is reshaping how consumers engage with brands by delivering personalized and efficient digital experiences.

1. Personalized Recommendations: AI analyzes user data to suggest products and content that match individual interests, improving satisfaction and boosting sales.

2. Chatbots & Virtual Assistants: AI-driven tools like chatbots and voice assistants offer instant help, streamline purchases, and enhance customer service.

3. Smart Pricing & Forecasting: AI adjusts prices in real time based on trends and behavior, while predictive tools help businesses anticipate customer needs.

4. Visual Search & AR: Technologies like image-based search and virtual try-ons enhance online shopping, especially in fashion and home decor.

5. Trust & Ethics: As AI use grows, so do concerns about privacy and transparency. Consumer trust is essential for acceptance of AI tools.

6. Emotional Targeting: AI can detect emotions from text or speech, allowing marketers to tailor content that connects with consumer feelings and behaviors.

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About the Editor

Dr. V. Dheenadhayalan is a distinguished academic leader with over 26 years of experience in teaching, research, and institutional development. He currently serves as Associate Professor and Head of the PG Department of Commerce at Sri Subramaniyaswamy Government Arts College, Tiruttani, on deputation from Annamalai University. His educational foundation includes degrees from the University of Madras (B.Com., M.Com., M.Phil., Ph.D.,) an MFM from Pondicherry University, and an MBA (Finance) from Annamalai University. He also holds diplomas in computer applications and statistical analysis, along with SLET and SET certifications. He has authored over 131 international journal articles, 22 national papers, and 64 book chapters, and has guided 17 research scholars. His books and research contributions span finance, banking, income tax, and statistics. His article in Yojana was translated into nine Indian languages and archived in Parliamentary records. He has participated in over 230 conferences and workshops, holds five patents, and served as Principal Investigator for a UGC Major Research Project. His editorial leadership includes board memberships in 16 reputed journals and the strategic curation of multi-volume academic publications. A passionate educator and digital content creator, he delivers e-learning through his YouTube channel and has authored course materials for various university programs. His accolades include multiple national and international awards recognizing his excellence in teaching and research. Dr. Dheenadhayalan is a Life Member of several professional bodies and serves on the International Advisory Board of Scope Database. His mission remains clear: to elevate commerce education and empower future scholars through rigorous, accessible, and impactful academic work.

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