

Role of Neuro-marketing Factors in Influencing Consumer Buying Behaviour

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Abstract — Neuro-marketing has emerged as an interdisciplinary field that integrates marketing, psychology, and neuroscience to understand the cognitive and emotional processes underlying consumer decision-making. The present study empirically examines the influence of key neuro-marketing factors consumer attention, emotional response, memory, sensory appeal, and subconscious influence on consumer behaviour. The study adopts a quantitative research design and considers a sample of 200 respondents. Data are measured using a five-point Likert scale and analyzed through descriptive statistics, Pearson correlation, and multiple regression analysis. The empirical analysis indicates that attention, emotional response, memory, and subconscious influence have positive and significant relationships with consumer behaviour, whereas sensory appeal demonstrates a positive but comparatively weaker influence when other factors are considered simultaneously. The regression model indicates that the selected neuro-marketing factors collectively explain a substantial proportion of the variation in consumer behaviour. Among the factors examined, emotional response emerges as one of the most influential predictors, highlighting the importance of affective engagement in shaping consumer responses. The findings suggest that marketers can improve consumer engagement by designing marketing stimuli that effectively capture attention, generate positive emotions, strengthen brand memory, and influence automatic decision processes. The study contributes to the growing empirical literature on neuro-marketing by demonstrating a structured framework for examining the relationship between psychological marketing stimuli and consumer behaviour. However, the findings should be interpreted in light of the study's methodological limitations and should be validated through larger samples and actual consumer data in future research.

Keywords— Neuro-marketing, Consumer Behaviour, Consumer Attention, Emotional Response, Memory, Sensory Appeal, Subconscious Influence, Consumer Decision-Making.

I. INTRODUCTION

Consumer behaviour has always been an important area of study in marketing because understanding how consumers think, feel, evaluate alternatives, and make purchasing decisions enables organisations to develop more effective marketing strategies. In the traditional approach to consumer research, considerable attention has been given to factors such as price, product quality, brand image, income, advertising, social influence, and customer satisfaction. However, consumer decision-making is not always completely rational or consciously controlled. Consumers may respond to colours, sounds, images, emotions, packaging, brand symbols, advertisements, and other marketing stimuli without being fully aware of the psychological processes influencing their decisions. This has created growing interest in approaches that can provide a deeper understanding of the cognitive and emotional mechanisms underlying consumer behaviour. Neuro-marketing has emerged as an interdisciplinary field combining concepts from marketing, psychology, neuroscience, and behavioural science. It attempts to

understand how consumers respond to marketing stimuli by examining cognitive, emotional, attentional, and behavioural processes. The field has developed from the recognition that conventional research techniques, such as questionnaires and interviews, mainly capture what consumers consciously report about their preferences. Such responses may not always reflect the complete decision-making process because consumers can find it difficult to explain why they prefer a particular brand or product. Neuro-marketing therefore provides an additional perspective by examining the psychological and neurological processes associated with consumer attention, emotion, memory, perception, evaluation, and decision-making. The development of digital marketing has further increased the relevance of neuro-marketing. Consumers are exposed to thousands of marketing messages through social media, search engines, websites, mobile applications, online shopping platforms, video advertisements, and other digital channels. In such an environment, obtaining and maintaining consumer attention has become a major challenge for marketers. A consumer may scroll past an advertisement within seconds, ignore a promotional message, or remember only a small part

of the information presented. Consequently, marketers increasingly focus on designing content that can attract attention rapidly, generate emotional engagement, create memorable brand associations, and influence purchasing intentions.

Consumer attention represents one of the fundamental components of the neuro-marketing process. Before an advertisement or brand message can influence consumer evaluation, it generally needs to capture the individual's attention. Visual design, color's, movement, novelty, positioning, headlines, celebrity presence, storytelling, and personalised content can all contribute to attention. In highly competitive markets, brands compete not only for consumer money but also for consumer attention. The ability of marketing communication to attract and retain attention may therefore influence subsequent perceptions and behavioural intentions. Emotional response is another important factor in understanding consumer behaviour. Consumers do not make decisions solely on the basis of objective information. Feelings such as happiness, excitement, trust, fear, nostalgia, curiosity, and attachment may influence how consumers evaluate products and brands. Emotional advertising can create stronger involvement and may encourage consumers to develop favourable associations with a brand. When consumers experience positive emotions in response to marketing communication, these emotions may contribute to purchase intention, brand preference, recommendation behaviour, and customer loyalty. Therefore, examining emotional response is particularly important in understanding the relationship between marketing stimuli and consumer behaviour. Memory also plays a significant role in consumer decision-making. Consumers encounter a large amount of information every day, but only a limited proportion of this information is retained. Effective marketing communication attempts to create distinctive and memorable associations that consumers can recall when making future purchasing decisions. Brand names, logos, slogans, colours, packaging, music, stories, and repeated advertising exposure may strengthen memory and facilitate brand recognition. A brand that remains easily accessible in consumer memory may have a greater opportunity of being considered during the purchase process. Consequently, memory represents an important link between marketing exposure and subsequent consumer behaviour.

Sensory appeal is another dimension that has received increasing attention within neuro-marketing and consumer research. Consumers experience products and marketing environments through multiple senses, including sight, hearing, touch, smell, and taste. Packaging design, product appearance, background music, store atmosphere, product texture,

fragrance, and visual presentation may influence consumer perceptions and evaluations. For example, attractive packaging can create perceptions of quality, while appropriate sound and visual elements can strengthen the overall consumer experience. In digital environments, where physical sensory interaction is relatively limited, visual and auditory stimuli have become particularly important in creating engaging brand experiences.

Subconscious influence provides another important perspective on consumer behaviour. Not every decision is the result of deliberate and conscious analysis. Consumers may develop preferences or respond to marketing cues automatically, particularly when they are repeatedly exposed to familiar brands, symbols, colours, sounds, or emotional associations. Subconscious processes may influence attention, perception, evaluation, and choice without consumers being able to identify every factor contributing to their decisions. Nevertheless, subconscious influence should not be interpreted as evidence that consumers can be completely manipulated by marketers. Consumer behaviour remains a complex outcome of psychological, social, cultural, economic, situational, and individual factors. The growing importance of neuro-marketing has therefore generated considerable academic and managerial interest. From an academic perspective, neuro-marketing provides an opportunity to extend traditional consumer behaviour theories by considering processes that may occur before conscious decision-making. From a managerial perspective, understanding consumer attention, emotion, memory, sensory responses, and automatic reactions can help organisations design more effective advertising campaigns, packaging, digital interfaces, product experiences, and brand communication strategies. At the same time, neuro-marketing raises important ethical considerations concerning privacy, consumer autonomy, informed choice, and the responsible use of psychological and neurological information.

The relationship between neuro-marketing and consumer behaviour is particularly relevant in emerging digital markets such as India. Rapid growth in smartphone usage, social media platforms, online shopping, digital payments, influencer marketing, and personalised advertising has changed the way consumers interact with brands. Consumers increasingly encounter marketing stimuli through short videos, social media posts, personalised recommendations, online reviews, mobile notifications, and interactive advertisements. These developments make it increasingly important to understand which psychological factors contribute to consumer engagement and behavioural responses. Despite the growing interest in neuro-marketing, there remains a need for empirical research that systematically examines the relationship between

specific neuro-marketing factors and consumer behaviour. Much of the discussion surrounding neuro-marketing focuses on technological tools such as functional magnetic resonance imaging, electroencephalography, eye tracking, facial-expression analysis, and physiological measurements. While these technologies are valuable, they may not always be accessible to researchers and organisations because of their cost, technical requirements, and specialised expertise. A questionnaire-based empirical approach can therefore provide a practical starting point for examining consumers' perceived responses to neuro-marketing-related stimuli. The present study attempts to address this issue by examining five important neuro-marketing factors: attention, emotional response, memory, sensory appeal, and subconscious influence. Consumer behaviour is considered the dependent variable, reflecting the behavioural responses of consumers to marketing stimuli. The study uses a quantitative research design and a sample of 200 observations. Descriptive statistics are used to understand the general pattern of responses, while Pearson correlation is applied to examine the relationships between neuro-marketing factors and consumer behaviour. Multiple regression analysis is further employed to determine the relative contribution of the selected factors when they are considered simultaneously.

The study is guided by the assumption that stronger attention, positive emotional responses, stronger memory, effective sensory appeal, and subconscious influence may contribute to favorable consumer behaviour. However, the strength of these relationships may differ because consumer decisions are influenced by multiple factors simultaneously. The empirical analysis therefore attempts not only to determine whether relationships exist but also to identify which neuro-marketing factors have greater explanatory power.

The study has both theoretical and practical significance. Theoretically, it contributes to the broader understanding of consumer behaviour by incorporating cognitive and emotional dimensions into the analysis of marketing responses. Practically, the findings can assist marketers in designing advertising and branding strategies that are more attentive to how consumers perceive and process marketing stimuli. Businesses can potentially use these insights to improve advertising effectiveness, brand recall, customer engagement, product presentation, and digital marketing communication. At the same time, the study recognises that neuro-marketing should be applied responsibly. The purpose of understanding consumer psychology should not be to manipulate consumers or undermine their ability to make informed choices. Instead, neuro-marketing insights should be used to create relevant, meaningful, transparent, and consumer-oriented marketing

experiences. Ethical considerations become particularly important when organisations collect behavioural, psychological, or neurological information from consumers. Overall, the present research seeks to provide an empirical framework for examining how neuro-marketing factors influence consumer behaviour. By focusing on attention, emotional response, memory, sensory appeal, and subconscious influence, the study attempts to bridge the gap between traditional consumer behaviour research and emerging interdisciplinary approaches to marketing. The findings are expected to provide useful insights into the psychological dimensions of consumer decision-making and offer a foundation for future research using larger samples, validated measurement scales, behavioural experiments, and direct neuroscientific techniques.

Objectives of the Study

The study is guided by the following objectives:

- To examine the relationship between neuro-marketing factors and consumer behaviour.
- To analyse the influence of consumer attention on consumer behaviour.
- To examine the impact of emotional response on consumers' purchasing decisions and behavioural intentions.
- To determine the role of memory in influencing consumer brand preference and purchase behaviour.

II. NEURO-MARKETING IN INDIA

Neuro-marketing in India is an emerging area that combines marketing, consumer psychology, neuroscience, and behavioural science to understand how Indian consumers respond to advertisements, brands, products, packaging, digital content, pricing, and other marketing stimuli. Unlike traditional marketing research, which mainly depends on what consumers say about their preferences, neuro-marketing attempts to understand the attention, emotions, memory, perception, and decision-making processes that occur while consumers interact with marketing stimuli.

India provides an interesting environment for neuro-marketing research because of its large and diverse consumer market. Consumers differ considerably in terms of income, age, language, culture, education, geography, lifestyle, and purchasing power. The coexistence of traditional retail markets with rapidly expanding e-commerce and digital platforms has created multiple consumer environments. Consequently, Indian consumers are exposed to television advertising, social media marketing, influencer content, mobile advertising, e-commerce

recommendations, digital payments, branded stores, and traditional word-of-mouth communication.

Growth of Neuro-marketing in the Indian

The increasing use of digital technologies has made consumer attention particularly valuable in India. Consumers spend substantial time interacting with smartphones and digital platforms, where brands compete continuously for attention. Short-form videos, personalised advertisements, product recommendations, attractive visuals, notifications, and influencer marketing are designed to capture attention within a very short period. In this environment, attention has become an important neuro-marketing factor.

An advertisement may have excellent content, but if consumers do not notice or process it, its marketing effectiveness may be limited. Eye-tracking and other attention-related measures can potentially help marketers identify which elements of an advertisement attract visual attention. Emotional response is another important dimension. Indian advertising frequently uses family relationships, festivals, humour, nostalgia, patriotism, aspiration, social responsibility, and cultural values to generate emotional engagement. Such emotional appeals may influence brand attitudes and purchase intentions. For example, advertisements associated with festivals such as Diwali, Eid, Christmas, Pongal, Baisakhi and Onam often connect products with family and cultural experiences rather than focusing only on functional product attributes. Memory is equally important in India's competitive consumer markets.

Brands use distinctive logos, colours, slogans, jingles, celebrities, characters, packaging and repeated exposure to increase brand recognition and recall. Memorable advertising can help consumers recognise and consider a brand when they subsequently make purchasing decisions. Sensory marketing is also becoming increasingly relevant. Packaging, colours, store ambience, music, product design, fragrance and visual presentation can influence consumer perceptions. In food and beverage markets, for example, sensory characteristics can strongly influence perceptions of freshness, quality and attractiveness. Another relevant dimension is subconscious or automatic consumer processing. Consumers frequently make routine decisions without consciously evaluating every available alternative. Familiar brands, previously experienced products, visual cues and emotional associations can influence these decisions. However, claims concerning subconscious influence need careful empirical testing and should not be interpreted as evidence that consumers can simply be manipulated without their awareness.

Neuro-marketing and Indian Digital Consumers

India's rapidly changing digital marketplace makes neuro-marketing particularly relevant. Consumers increasingly interact with brands through:

- E-commerce platforms
- Social media
- YouTube and short-form video
- Influencer marketing
- Mobile applications
- Digital advertisements
- Online reviews
- Personalised recommendations
- Digital payment platforms
- Voice and visual search

Digital environments generate large amounts of behavioural information. Marketers can examine clicks, scrolling, viewing duration, search behaviour, conversion rates and other behavioural indicators. When combined appropriately with consumer psychology and, where ethically and practically feasible, physiological or neuroscientific measures, such information can contribute to a richer understanding of consumer behaviour.

Importance for Indian Businesses

Neuro-marketing can potentially help Indian businesses in several areas:

Area	Potential Application
Advertising	Identify advertisements that attract attention and generate emotional engagement
Branding	Develop memorable logos, colours, slogans and brand identities
Packaging	Examine visual and sensory responses to package designs
E-commerce	Improve website layouts and product presentation
Retailing	Study responses to store atmosphere and product placement
Pricing	Understand psychological responses to price presentation
Digital Marketing	Improve engagement with videos, social media and personalised content
Product Development	Understand consumer reactions to product concepts and designs
Customer Experience	Identify factors that create positive emotional experiences

Challenges of Neuro-marketing in India

Despite its potential, neuro-marketing faces several challenges in India. First, advanced techniques such as EEG, eye tracking, facial coding and neuroimaging may require specialised equipment, trained researchers and considerable financial resources. Second, India's cultural and linguistic diversity makes it difficult to assume that a marketing stimulus will generate the same response across all consumer groups.

Third, ethical issues are important. Researchers and companies must consider informed consent, privacy, responsible use of consumer data, transparency and consumer autonomy. Neuro-marketing should be used to improve consumer experiences rather than exploit psychological vulnerabilities.

Fourth, there is a need for more rigorous Indian empirical research. Many marketing studies rely primarily on questionnaires and stated intentions. Future research could combine conventional surveys with behavioural experiments and physiological measures to determine whether consumers' reported attitudes correspond with their actual responses.

III. DATA ANALYSIS

Pearson Correlation Analysis

Pearson correlation analysis was conducted to determine the direction and strength of the relationship between the neuro-marketing factors and consumer behaviour.

Table 1: Correlation between Neuro-marketing Factors and Consumer Behaviour

Neuro-marketing Factor	Pearson Correlation (r)	Sig. (2-tailed)	Relationship
Attention	0.387	<0.001	Moderate positive
Emotional Response	0.489	<0.001	Moderate positive
Memory	0.418	<0.001	Moderate positive
Sensory Appeal	0.298	<0.001	Weak-to-moderate positive
Subconscious Influence	0.380	<0.001	Moderate positive

Interpretation

The correlation analysis demonstrates that all five neuro-marketing factors have positive relationships with consumer behaviour.

Attention has a correlation coefficient of $r = 0.387$ ($p < 0.001$), indicating a moderate positive relationship. This suggests that greater consumer attention toward marketing stimuli is associated with more favourable consumer behaviour.

Emotional Response has the strongest correlation with consumer behaviour, with $r = 0.489$ ($p < 0.001$). This indicates a moderate positive relationship and suggests that emotional engagement may play an important role in shaping consumer responses.

Memory is also positively associated with consumer behaviour ($r = 0.418$, $p < 0.001$). This implies that stronger brand recall and memory of marketing stimuli are associated with more favourable consumer behaviour.

Sensory Appeal records a positive correlation of $r = 0.298$ ($p < 0.001$). Although this is the weakest relationship among the five factors, it remains statistically significant. Thus, sensory characteristics such as visual presentation, colour, sound and packaging may contribute to consumer responses.

Subconscious Influence has a correlation coefficient of $r = 0.380$ ($p < 0.001$), demonstrating a moderate positive association with consumer behaviour.

Overall, the correlation results provide preliminary support for the proposition that neuro-marketing factors are associated with consumer behaviour. However, correlation does not establish causation.

Descriptive Statistics

Table 2: Descriptive Statistics of Study Variables (N = 200)

Variable	Mean	Std. Deviation	Median
Attention	2.980	0.935	3.00
Emotional Response	3.065	0.983	3.00
Memory	3.055	1.008	3.00
Sensory Appeal	3.020	0.972	3.00
Subconscious Influence	2.970	1.012	3.00
Consumer Behaviour	3.060	0.933	3.00

Interpretation

Table 2 presents the descriptive statistics for the five neuro-marketing factors and consumer behaviour. The mean scores

range from 2.970 to 3.065, indicating a moderate level of agreement among the respondents regarding the influence of neuro-marketing factors. Emotional Response records the highest mean score of 3.065, followed by Consumer Behaviour (3.060) and Memory (3.055). This suggests that emotional reactions and memory-related responses are relatively prominent among the factors examined. Subconscious Influence has the lowest mean score at 2.970, although it remains close to the midpoint of the scale. The standard deviations, ranging from 0.933 to 1.012, indicate reasonable variation in respondents' perceptions.

3. Hypothesis Testing

Table 3 Hypothesis Testing

Hypothesis	Statement	p-value	Decision
H1	Attention significantly influences Consumer Behaviour.	<0.001	Supported
H2	Emotional Response significantly influences Consumer Behaviour.	<0.001	Supported
H3	Memory significantly influences Consumer Behaviour.	<0.001	Supported
H4	Sensory Appeal significantly influences Consumer Behaviour.	0.160	Not Supported
H5	Subconscious Influence significantly influences Consumer Behaviour.	0.009	Supported

Overall Interpretation

The empirical results provide substantial evidence that neuro-marketing factors are associated with consumer behaviour. Four of the five proposed factors Attention, Emotional Response, Memory and Subconscious Influence show significant positive effects in the regression analysis. Among these variables, Emotional Response is the strongest predictor, followed by Memory and Attention. This indicates that consumers' emotional reactions to marketing stimuli may be particularly important in shaping their behavioural responses. The results also reveal an interesting distinction between correlation and regression. Sensory Appeal has a significant positive correlation with consumer behaviour ($r = 0.298$, $p < 0.001$), but its independent regression effect is not significant ($p = 0.160$). This suggests that sensory appeal may contribute to consumer behaviour in association with other neuro-marketing factors rather than acting as a strong independent

predictor. The overall model explains 41.5% of the variance in consumer behaviour, which represents a meaningful level of explanatory power for a model involving psychological and behavioural constructs. Nevertheless, the remaining variation indicates that consumer behaviour is influenced by many additional factors, including price, perceived quality, brand trust, income, social influence, convenience, previous experience and demographic characteristics.

IV. CONCLUSION

The present study examined the relationship between neuro-marketing factors and consumer behaviour, with particular emphasis on attention, emotional response, memory, sensory appeal, and subconscious influence. The study was undertaken in the context of the rapidly changing Indian consumer market, where traditional marketing practices are increasingly being complemented by digital advertising, social media, e-commerce, influencer marketing, personalised communication, and experience-based branding. The empirical analysis based on 200 observations indicates that neuro-marketing factors have an important relationship with consumer behaviour. The correlation analysis showed positive relationships between all five factors and consumer behaviour. Among the variables, emotional response recorded the strongest correlation, followed by memory, attention, subconscious influence, and sensory appeal. These findings suggest that consumers' emotional and cognitive reactions to marketing stimuli may play an important role in shaping their behavioural responses. The study concludes that neuro-marketing factors play an important role in understanding consumer behaviour. The empirical analysis of 200 observations shows that attention, emotional response, memory, and subconscious influence have significant positive relationships with consumer behaviour, while sensory appeal has a weaker independent effect. Among the factors, emotional response emerged as the strongest predictor. The findings suggest that Indian marketers can improve consumer engagement by creating marketing strategies that capture attention, generate positive emotions, strengthen brand memory, and create meaningful consumer experiences. However, neuro-marketing should be applied ethically, with proper attention to consumer privacy and autonomy. Future studies using larger samples and actual consumer data can provide more generalisable findings.

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