

NEUROMARKETING AND CONSUMER BEHAVIOUR: ETHICAL IMPLICATIONS AND FUTURE PROSPECTS IN EDO STATE

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ABSTRACT

This study examined the effects of neuromarketing techniques on consumer behaviour, focusing on emotional engagement and brand recall as key variables. Conducted in Edo State, Nigeria, this research targeted active consumers within the retail and e-commerce sectors, specifically adults aged 18-50. A quantitative research design was adopted, using a sample size of 60 participants selected via stratified random sampling to ensure a representative cross-section of age groups and purchasing patterns. Data were collected through structured questionnaires containing Likert-scale items designed to capture consumers' emotional responses to neuromarketing stimuli and their ability to recall specific brands. The analysis employed descriptive statistics, correlation, and multiple regression techniques to evaluate the relationship between neuromarketing variables and consumer purchasing behaviour. Findings indicated that both emotional engagement and brand recall significantly influence consumer purchasing behaviour, underscoring the efficacy of neuromarketing techniques. This study recommended prioritizing emotional engagement in marketing strategies and maintain brand familiarity through consistent branding efforts. These insights contribute to the empirical understanding of neuromarketing, serving as a foundation for future research and the development of ethical marketing practices.

Keywords: Neuromarketing, Emotional Engagement, Brand Recall Consumer Behaviour, Ethical Implications

INTRODUCTION

Utilising developments in neuroscience to get a deeper understanding of customer behaviour, neuromarketing has become a ground-breaking instrument in the marketing industry in recent years. Marketers may learn more about customers' subconscious reactions by using techniques like electroencephalography (EEG) and functional magnetic resonance imaging (fMRI), which were previously hard to capture using conventional approaches (Murphy et al., 2019). The idea behind neuromarketing is that a large portion of human decision-making is impacted by unconscious processes, and that marketers may create more successful campaigns and tactics by examining how the brain reacts to different stimuli (Fugate, 2021; Huettel & Yoon, 2018). Although this novel strategy has intriguing

opportunities to improve marketing effectiveness, it also brings up serious ethical issues with regard to customer manipulation, privacy, and the prudent use of such potent technology.

Understanding how marketing stimuli, such ads, packaging, and product placements, impact brain activity and shape customer choices is the main goal of neuromarketing, a branch of consumer neuroscience. Examining emotional and cognitive reactions to marketing initiatives has become more common thanks to methods like fMRI, which tracks blood flow to identify active brain areas, and EEG, which analyses electrical activity in the brain (Harris et al, 2020). By using this technique, marketers may access deeper, subconscious emotions that influence customer behaviour in addition to self-reported data, which can be incorrect (Plassmann et al., 2018). Although the discipline of neuromarketing is still developing, its uses are expanding in sectors where success depends on knowing customer preferences, such as retail and entertainment.

The use of neuromarketing has generated ethical problems despite its increasing popularity, especially in relation to privacy and manipulation concerns. Issues concerning the fairness of employing neuroscience to sway consumer decisions are raised by certain detractors who claim that neuromarketing allows companies to take advantage of individuals' unconscious weaknesses (Stanton et al., 2021). Furthermore, gathering brain data presents serious privacy problems as it may be abused by businesses or other parties to influence customer decisions without their will (Larrivee, 2020). Furthermore, the application of neuromarketing on vulnerable groups, including children and those with cognitive disabilities, who can be especially prone to unconscious persuasion, raises concerns (Ariely & Berns, 2020). These ethical challenges necessitate a deeper examination of the role neuromarketing plays in consumer behaviour and the future regulatory frameworks that may be required.

This study's primary objective is to assess the effects of neuromarketing techniques—specifically emotional engagement and brand recall—on consumer behaviour. Finally, the study will provide recommendations for establishing a responsible regulatory framework to guide ethical and effective use of neuromarketing in marketing strategies. Therefore the research questions are:

- i. How does emotional engagement influence consumer behaviour?
- ii. To what extent does brand recall affect consumer behaviour?

The broad objective of the study is to investigate the effect of Neuromarketing on Consumer Behaviour: Ethical Implications and Future Prospects in Edo State. The specific objectives are:

- i. To assess the effect of emotional engagement (as a neuromarketing technique) on consumer behaviour.
- ii. To evaluate the impact of brand recall (as a neuromarketing technique) on consumer behaviour

The following hypothesis were formulated:

- i. **H₀**: There is no significant relationship between emotional engagement and consumer behaviour.
- ii. **H₀**: There is no significant relationship between brand recall and consumer behaviour.

REVIEW OF RELATED LITERATURE

Concept of Neuromarketing

Neuromarketing is an emerging interdisciplinary field that integrates marketing and neuroscience to understand how consumers' brains respond to various marketing stimuli, such as advertisements, packaging, product placements, and pricing strategies (Mansor, 2020; Plassmann et al., 2018). The application of neuroscientific methods to marketing with the aim of comprehending customer preferences and behaviours at a neurological level is known as neuromarketing (Larrivee, 2020; Stanton et al., 2021). Traditional market research methods, like surveys and focus groups, often fail to capture subconscious responses that can be crucial to understanding consumer behaviour. Neuromarketing seeks to fill this gap by studying brain activity, uncovering hidden emotions and responses that might not be consciously recognized or verbally expressed (Murphy et al., 2019; Harris et al., 2020; De Mooij & Hofstede, 2011; Yoon et al., 2018).

The core principle of neuromarketing is that a significant portion of consumer decision-making is driven by subconscious influences. By using neuroimaging technologies, such as functional Magnetic Resonance Imaging (fMRI) and Electroencephalography (EEG), marketers can observe how consumers react on a neural level to various stimuli. This allows for the creation of more effective marketing campaigns, product designs, and messaging that resonate deeply with consumer preferences and emotions (Fugate, 2021; Kahneman, 2015). However, as neuromarketing grows in application, it brings both excitement for its potential to enhance consumer experience and ethical concerns over the possibility of manipulating consumer choices through the subconscious.

Consumer Behaviour

Consumer behaviour refers to the study of how individuals, groups, and organizations select, purchase, use, and dispose of goods, services, ideas, or experiences to satisfy their needs and desires. The concept encompasses psychological, social, and economic factors that influence consumers' decision-making processes. In recent years, consumer behaviour has become increasingly complex due to the rise of digital platforms, social media, and global connectivity, which have given consumers access to vast amounts of information and a wider variety of purchasing options (Hoyer et al., 2020). The advent of artificial intelligence and big data analytics has further transformed the way businesses understand and predict consumer behaviour, allowing for highly personalized marketing strategies and improved customer engagement (Dholakia, 2017).

The psychological dimensions of consumer behaviour, such as motivation, perception, attitudes, and emotions, are central to understanding how consumers make purchasing decisions. Contemporary studies emphasize the role of emotions in consumer decision-making, as emotional responses are often more influential than rational evaluations in driving purchasing behaviour (Bagozzi et al., 2016). Additionally, consumer behaviour is shaped by social influences such as cultural norms, peer pressure, and family dynamics. These social factors are particularly relevant in global markets where cultural diversity impacts consumer preferences and buying habits (Solomon et al., 2021). As such, marketers need to adopt culturally intelligent approaches to resonate with diverse consumer groups effectively.

Neuromarketing and Consumer Behaviour

Neuromarketing is an emerging field that combines neuroscience with marketing strategies to better understand consumer behaviour. It leverages techniques such as functional magnetic resonance imaging (fMRI) and electroencephalography (EEG) to analyze brain activity in response to marketing stimuli, offering deeper insights into consumers' subconscious decision-making processes (Ariely & Berns, 2016). By understanding how consumers react neurologically to specific advertisements, brands, and products, marketers can tailor their strategies to tap into consumers' emotional and cognitive responses. Recent studies show that neuromarketing provides a more accurate prediction of consumer preferences compared to traditional methods like surveys and focus groups, which rely on self-reported data and are often subject to biases (Venkatraman et al., 2015).

The relationship between neuromarketing and consumer behaviour is grounded in the premise that consumers are not always aware of the factors driving their decisions. For instance, emotional responses, which are often subconscious, play a critical role in shaping consumer preferences and behaviours (Plassmann et al., 2018). Neuromarketing reveals how emotional triggers—such as colors, sounds, and even product placement—can significantly influence consumers' purchasing decisions. Through brain scans and other tools, neuromarketing studies have demonstrated that consumers often make decisions emotionally first, and rationalize them later. This insight allows businesses to create more emotionally engaging marketing campaigns that resonate on a subconscious level, thus driving consumer engagement and brand loyalty (Hubert & Kenning, 2020).

The integration of neuromarketing into consumer behaviour research has implications for how brands approach customer experiences and advertising. Neuromarketing can identify which specific elements of a campaign—such as imagery, slogans, or music—activate positive brain responses, leading to more effective marketing strategies (Karmarkar & Plassmann, 2019). Additionally, it can help brands optimize product design and pricing by focusing on consumer perceptions shaped by their neurological responses to value and risk. While neuromarketing offers exciting potential, it also raises ethical concerns about manipulation, as companies could exploit consumers' subconscious reactions to influence their purchasing behaviour without their explicit awareness (Hensel et al., 2020). Therefore, while neuromarketing deepens our understanding of consumer behaviour, it is essential to balance its use with ethical considerations.

Theoretical Framework

Cognitive Dissonance Theory and Neuromarketing

According to Festinger's (1957) cognitive dissonance theory is widely used in consumer behaviour research to explain why people feel uncomfortable when their beliefs or attitudes conflict with their actions (Festinger, 1957). In the context of neuromarketing, this theory is relevant to understanding how marketers use brain data to detect moments of dissonance and intervene through targeted strategies to reduce consumer discomfort (Venkatraman et al., 2019). Neuromarketing techniques such as EEG can identify consumers' emotional responses to advertising messages that contradict their preexisting attitudes. By comprehending these neural responses, marketers can develop campaigns that alleviate cognitive dissonance and encourage consumers to align their actions with marketed goods or services (Plassmann et al., 2018). This integration of cognitive dissonance theory into neuromarketing demonstrates how the field leverages psychology to enhance the effectiveness of marketing strategies.

Behavioural Economics and Neuromarketing

Another important theoretical framework in neuromarketing is behavioural economics, which combines ideas from economics and psychology. It asserts that customers are impacted by social circumstances, emotions, and cognitive biases and do not always make logical decisions (Kahneman, 2015). By offering neuroscientific proof of certain biases, including loss aversion or anchoring effects, neuromarketing enhances behavioural economics. Functional MRI (fMRI) scans, for instance, have demonstrated that when consumers assess risks or rewards, particular brain regions light up, offering real-time insights into decision-making processes (Plassmann et al., 2018). In order to help marketers create more persuasive campaigns that take use of these cognitive biases, neuromarketing uses behavioural economics frameworks to forecast how customers will react to certain pricing schemes, special offers, or product attributes (Stanton et al., 2021).

Empirical Review

Neuromarketing

In a study titled *Neural Responses to Emotional Advertising Stimuli and Consumer Behaviour*, Lee et al. (2021) used an experimental methodology involving fMRI scans to measure participants' emotional responses to various advertising stimuli. The study involved 150 participants aged 20 to 45, segmented into three groups based on exposure to emotional, rational, or neutral advertisements. Findings revealed that advertisements with strong emotional content activated the amygdala significantly more than rational ads, linking emotional engagement with purchase intent. The researchers recommended that marketers incorporate emotional elements in advertisements to enhance consumer connection, which could lead to increased sales.

In assessing brand recall through neuromarketing techniques, Chang and Park (2022) examined how visual elements in advertisements affect brand recall using EEG technology on a sample of 200

participants. The study revealed that strong visual stimuli, such as vibrant colors and distinct logos, led to higher brand recall rates among participants compared to those exposed to minimalistic designs. Chang and Park suggested that brands should emphasize distinctive visual elements in their marketing strategies to improve recall and recognition, especially in competitive markets where brand identity plays a pivotal role in consumer loyalty.

Ahmed and Zhao (2023) investigated Neuro-Persuasive Packaging and Consumer Choice, how product packaging impacts consumer behaviour. By employing eye-tracking technology and fMRI. The study used a sample of 120 participants. The study showed that visually appealing packaging increased brain activity in areas associated with pleasure and reward. The study concluded that brands that invest in visually stimulating packaging are likely to gain a competitive advantage. Ahmed and Zhao recommended that marketers design packaging to appeal to consumers' senses as a cost-effective strategy to influence purchase decisions.

A recent study by Patel and Waring (2024), *Neuromarketing and Consumer Autonomy: An Ethical Analysis*, explored the potential ethical concerns associated with neuromarketing practices. Through a qualitative approach that included interviews with 50 neuromarketing professionals and ethicists, the study highlighted the risk of consumer manipulation when subconscious responses are leveraged. Findings emphasized that neuromarketing practices can influence purchasing behaviours without consumer awareness, raising ethical questions. Patel and Waring recommended the establishment of ethical guidelines for neuromarketing applications, suggesting transparent communication with consumers about data usage.

Consumer Behaviour

González and Ruiz (2021) examined how subtle cues affect consumer choices. Using a mixed-methods approach with a sample of 300 online shoppers, the researchers found that implicit signals, such as color schemes and word associations, significantly impacted product preference and trust in the brand. This study recommends that marketers pay closer attention to implicit factors that influence decisions at a subconscious level, as these factors can greatly enhance consumer engagement and brand loyalty.

According to Huang et al. (2023) in their paper *Social Influence and Consumer Behaviour in Digital Markets*, social proof, such as product reviews and endorsements, heavily impacts purchasing decisions. The study used a sample of 500 participants exposed to various online product listings with differing levels of social proof. Results showed a positive correlation between higher ratings and increased likelihood of purchase. Huang et al. recommended that businesses prominently display positive consumer feedback and endorsements to attract new customers, particularly in e-commerce where consumers rely on peer input.

Research by Fischer and Kline (2022), titled *Cognitive Dissonance and Consumer Satisfaction Post-Purchase*, focused on the role of cognitive dissonance in consumer behaviour. The study involved a

survey of 250 recent purchasers of electronic products and found that consumers experiencing dissonance post-purchase often returned items or avoided future purchases from the same brand. Fischer and Kline recommended strategies to mitigate cognitive dissonance, such as offering post-purchase support and reassurance, to enhance consumer satisfaction and loyalty.

Singh and Ali (2023) explored how price perception affects consumer behaviour. The study used a survey of 400 participants across different income brackets and showed that perceived value, not just price, played a significant role in purchasing decisions. Findings suggested that consumers are more likely to purchase products if they perceive the pricing to be fair and the value to be substantial. Singh and Ali recommended that marketers focus on communicating the value of their products alongside pricing to enhance consumer trust and drive sales.

Neuromarketing Techniques and Consumer Purchase Intention

Thompson and Li (2022) combined EEG and survey methods to explore how neuromarketing techniques, such as emotional engagement and brand recall, impact consumer purchasing intentions. The study involved 250 participants and found that high emotional engagement and strong brand recall led to a 30% increase in purchase intention. The researchers highlighted that a combination of neuromarketing insights and traditional consumer behaviour analysis offers a comprehensive understanding of purchasing behaviour. Thompson and Li recommended that businesses integrate neuromarketing techniques with traditional consumer research to develop effective marketing strategies that align with consumer preferences and ethical considerations.

Gaps in Literature

There are still certain gaps in the literature, especially when it comes to discussing the ethical ramifications of neuromarketing's influence on consumer behaviour, despite a wealth of study on the subject. The majority of the current research concentrates on the methods and technology developments utilised in neuromarketing, including eye tracking, fMRI, and EEG (Harris et al., 2020). Few studies, nonetheless, fully examine how these tools might violate customer privacy or influence choices without the users' knowledge. Although some scholars draw attention to the moral dilemmas raised by consumer vulnerability, especially for young people and those suffering from cognitive impairments (Plassmann et al., 2018), there is a dearth of empirical study on the legal frameworks required to resolve these issues. Additionally, there is a paucity of data on how consumers perceive neuromarketing's influence on their purchasing decisions and how this awareness may shape their behaviour and trust in brands.

Furthermore, there is a dearth of research on the application of neuromarketing in emerging economies, with the majority of the literature concentrating on the Western setting. There is still much to learn about the cultural ramifications of neuromarketing in many locales, particularly with regard to ethical limits. There is also a dearth of research on how various legislative frameworks in non-Western markets may influence the uptake and moral principles of neuromarketing (Stanton et al., 2021). This necessitates

cross-cultural research that explores the moral dilemmas and upcoming laws needed for the worldwide use of neuromarketing. Future studies could fill these gaps by creating thorough ethical standards and investigating how neuromarketing is changing in various consumer markets.

METHODOLOGY

This study employed a quantitative research design to investigate the effects of neuromarketing techniques on consumer behaviour, with a focus on emotional engagement and brand recall as explanatory variables. The population for this study included active consumers within the retail and e-commerce sectors in Edo State, specifically adults aged 18-50. A sample size of 60 participants were selected using a stratified random sampling technique to ensure representation across age groups and purchasing patterns. Data was collected through a structured questionnaire featuring Likert-scale items designed to measure consumers' reactions to neuromarketing stimuli, focusing on their emotional engagement and brand recall. The 60 questionnaires distributed received a 100% rate of return (all questionnaires were retrieved). The data analysis involve descriptive statistics, correlation, and multiple regression analysis to assess the relationship between neuromarketing variables and consumer purchasing behaviour. The model specification is as follows: $Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \epsilon$, where Y represents consumer purchasing behaviour, X_1 denotes emotional engagement, X_2 represents brand recall, β_0 is the intercept, β_1 and β_2 are the coefficients for the independent variables, and ϵ is the error term. This model tested the influence of emotional engagement and brand recall on consumer behaviour, offering insights into the effectiveness of neuromarketing techniques.

DATA ANALYSIS AND DISCUSSION OF FINDINGS

Research Question 1: How does emotional engagement influence consumer purchasing behaviour?

Table 1: Mean and Standard Deviation Response Scores on Emotional Engagement Influence On Consumer Purchasing Behaviour(N=60)

S/N	STATEMENTS	SA	A	D	SD	X	SD	Remark
1.	Emotional connection to a brand strongly influences my decision to purchase its products.	48	9	2	1	3.73	0.60	Agree
2.	I am more likely to purchase a product if its advertisement evokes a strong emotional response.	45	10	3	2	3.63	0.73	Agree
3.	Advertisements that appeal to my emotions feel more trustworthy and reliable.	37	17	4	2	3.48	0.76	Agree
4.	I tend to purchase products that align with my emotions rather than my practical needs.	42	11	5	2	3.55	0.78	Agree

	Grand Mean/SD					3.59	0.71	Agree
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Field Study, 2024

The table displays respondents' mean and standard deviation scores on how emotional engagement influences consumer purchasing behaviour. With a sample size of 60, all four statements received high agreement levels. The statement "Emotional connection to a brand strongly influences my decision to purchase its products" scored the highest mean ($X = 3.73$, $SD = 0.60$), suggesting that brand emotional connection significantly impacts purchase decisions. Similarly, "I am more likely to purchase a product if its advertisement evokes a strong emotional response" follows closely with a mean score of 3.63 ($SD = 0.73$). The third and fourth statements—"Advertisements that appeal to my emotions feel more trustworthy and reliable" ($X = 3.48$, $SD = 0.76$) and "I tend to purchase products that align with my emotions rather than my practical needs" ($X = 3.55$, $SD = 0.78$)—also indicate agreement. These results imply that emotional engagement through brand connection, emotionally charged advertisements, and emotional trustworthiness in ads strongly influences consumers' purchasing behaviour.

Research Question 2: To what extent does brand recall affect consumer decision-making behaviour?

Table 2: Mean and Standard Deviation Response Scores on Extent Brand Recall Affect Consumer Decision-Making Behaviour (N=60)

S/N	STATEMENTS	SA	A	D	SD	X	SD	Remark
5.	I am more likely to purchase from brands that are easily recognizable to me.	21	29	5	5	3.10	0.87	Agree
6.	Recalling a brand name makes me more inclined to buy its products over unfamiliar brands	34	22	3	1	3.48	0.67	Agree
7.	Strong brand recall helps me trust a product's quality.	24	21	10	5	3.07	0.95	Agree
8.	The mentorship and guidance provided by instructors have a strong influence on my pedagogical growth.	45	10	3	2	3.63	0.73	Agree
	Grand Mean/SD					3.32	0.80	Agree

Field Study, (2024)

The table provides an analysis of how brand recall influences consumer decision-making, based on mean and standard deviation scores. With a sample size of 60, responses show a general agreement that brand recall positively impacts purchasing decisions. The highest agreement is with the statement "Recalling a brand name makes me more inclined to buy its products over unfamiliar brands," which has

a mean score of 3.48 (SD = 0.67), suggesting brand familiarity strongly influences purchase choices. Additionally, "I am more likely to purchase from brands that are easily recognizable to me" (X = 3.10, SD = 0.87) and "Strong brand recall helps me trust a product's quality" (X = 3.07, SD = 0.95) indicate that brand recognition and recall contribute to consumer trust and inclination to buy. The overall grand mean of 3.32 (SD = 0.80) reflects consistent agreement that brand recall plays a significant role in consumer decision-making.

Hypotheses

H₁: Emotional engagement has a significant positive effect on consumer purchasing behaviour.

H₂: Brand recall significantly influences consumer decision-making behaviour.

Table 3: Pearson Correlation Coefficients

		Consumer Behaviour	Emotional Engagement	Brand Recall
Consumer Behaviour	Pearson Correlation Sig. (2-tailed) N	1 60		
Emotional Engagement	Pearson Correlation Sig. (2-tailed) N	0.802** 0.000 60	1 60	
Brand Recall	Pearson Correlation Sig. (2-tailed) N	0.903** 0.002 60	0.041 0.811 60	1 60

Source: Researcher's fieldwork, 2024

The Pearson correlation table reveals strong relationships between consumer behaviour, emotional engagement, and brand recall. There is a significant positive correlation between emotional engagement and consumer behaviour ($r = 0.802$, $p < 0.001$), indicating that increased emotional engagement is associated with higher consumer purchasing behaviour. Additionally, brand recall also shows a strong positive correlation with consumer behaviour ($r = 0.903$, $p = 0.002$), suggesting that brand recall significantly influences consumer decision-making. However, the relationship between emotional engagement and brand recall is weak and not statistically significant ($r = 0.041$, $p = 0.811$), indicating these factors operate somewhat independently in their influence on consumer behaviour.

Regression Analysis

Regression analysis was performed to show the relationship between Neuromarketing and Consumer behaviour. The results are shown in Table 5.

Table 4: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	0.851	0.638	0.487	0.632	2.0114

a. Predictors: (Constant), Emotional Engagement, Brand Recall

b. Dependent Variable: Consumer Behaviour

Source: Researcher’s fieldwork, 2024 (SPSS20)

The model summary shows a strong correlation ($R = 0.851$) between the predictors and consumer behaviour, indicating that the independent variables explain a significant portion of the variance. Specifically, the R Square value of 0.638 reveals that 63.8% of the variation in consumer behaviour is accounted for by the predictors in the model. The Adjusted R Square (0.487) suggests that when adjusted for the number of predictors, approximately 48.7% of the variance is explained, reflecting a reliable model fit. The Durbin-Watson statistic (2.0114) is close to 2, indicating no significant autocorrelation in the residuals, further supporting the model’s reliability.

Table 5: ANOVA

Model	Sum of Squares	Df	Mean Square	F	Sig.
Regression	18.687	2	9.344	31.57	0.000 ^b
Residual	16.868	57	0.296		
Total	34.555	59			

a. Dependent Variable: Consumer Behaviour

b. Predictors: (Constant), Emotional Engagement, Brand Recall

Source: Researcher’s fieldwork, 2024 (SPSS20)

The ANOVA table shows that the regression model significantly predicts the dependent variable, as indicated by an F-statistic of 31.57 and a p-value (Sig.) of 0.000, which is well below the 0.05 threshold. This suggests that the independent variables (predictors) collectively explain a significant portion of the variance in the dependent variable. With a Mean Square for Regression (MSR) of 9.344 compared to a much lower Mean Square for Residual (MSE) of 0.296, the model demonstrates a strong fit, where the predictors meaningfully account for changes in the outcome variable.

Table 6: Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	-0.611	0.312		0.712	0.041
Emotional Engagement	0.913	0.218	0.821	4.012	0.000
Brand Recall	0.772	0.301	0.654	2.672	0.011

Source: Researcher’s fieldwork, 2024 (SPSS20)

a. Dependent Variable: Consumer behaviour

The table 7 shows that both Emotional Engagement ($B = 0.913$, $p < 0.001$) and Brand Recall ($B = 0.772$, $p = 0.011$) are significant positive predictors of Consumer Behaviour, with Emotional Engagement having a stronger influence (Beta = 0.821) than Brand Recall (Beta = 0.654). The constant term is also statistically significant ($p = 0.041$), indicating a baseline effect on Consumer Behaviour when the predictors are zero.

Test of hypotheses

1. H_0 : There is no significant relationship between emotional engagement and consumer behaviour.

The table shows that Emotional Engagement significantly predicts Consumer Behaviour ($B = 0.913$, $p < 0.001$), with a strong positive effect (Beta = 0.821), while the constant term is also significant ($p = 0.041$), indicating a meaningful baseline level of Consumer Behaviour when Emotional Engagement is zero. Grounded on the outcome, we reject the null hypothesis and conclude that there is a significant relationship between emotional engagement and consumer behaviour.

2. H_0 : There is no significant relationship between brand recall and consumer behaviour.

The table shows that Brand Recall significantly predicts Consumer Behaviour ($B = 0.772$, $p < 0.011$), with a strong positive effect (Beta = 0.654), while the constant term is also significant ($p = 0.041$), indicating a meaningful baseline level of consumer behaviour when brand recall is zero. Grounded on the outcome, we reject the null hypothesis and conclude that there is a significant relationship between brand recall and consumer behaviour.

Discussions of Findings

The findings demonstrate a significant positive influence of Emotional Engagement on Consumer Behaviour, as shown by a high standardized coefficient (Beta = 0.821) and a significant p-value (< 0.001). This result aligns with recent studies, such as Lee & Kim (2021), which emphasized the impact of emotional appeal on consumer loyalty and purchasing decisions. Similarly, Gomez et al. (2022) found that emotionally engaging advertisements increase trust and intention to buy, supporting the notion that emotions play a critical role in shaping consumer responses. These results reinforce the understanding that consumers respond favorably when their emotions are tapped into, suggesting that companies might benefit from incorporating emotional resonance in their branding strategies.

Brand Recall also significantly affects Consumer Behaviour ($p = 0.011$), though with a slightly lower standardized coefficient (Beta = 0.654), indicating that while emotional engagement has a more substantial impact, brand familiarity remains crucial. Studies by Johnson & Wang (2023) corroborate this finding, revealing that familiar brand names elicit a higher level of trust and perceived quality, thus influencing purchasing behaviour. However, some recent studies, like Chan & Patel (2023), argue that in highly competitive markets, emotional engagement may outweigh brand recall. This variation suggests

that while brand recall is important, it is the emotional connection that often drives repeated purchases, particularly in sectors where consumers have abundant alternatives.

The implications of these findings underscore the importance for marketers to invest in emotionally engaging campaigns while building strong brand recognition to foster consumer loyalty. The statistically significant constant term suggests an inherent baseline of consumer behaviour, supporting the findings of recent neuromarketing studies that consumer predispositions may shape initial responses to brands (Smith & Lee, 2020). Together, these results imply that while emotional engagement and brand recall significantly predict consumer behaviour, understanding the baseline tendencies and pre-existing brand perceptions could enhance campaign effectiveness, allowing brands to strategize more effectively in an increasingly consumer-centric marketplace.

CONCLUSION AND RECOMMENDATIONS

Neuromarketing represents a cutting-edge intersection of neuroscience and marketing, offering deeper insights into consumer behaviour by examining brain responses to various stimuli. This innovative approach has the potential to revolutionize marketing strategies by allowing brands to tap into subconscious preferences and emotional triggers, resulting in more effective campaigns. However, as neuromarketing becomes increasingly sophisticated, ethical concerns surrounding privacy, manipulation, and the vulnerability of certain populations demand serious consideration. The future of neuromarketing will likely be shaped by technological advancements in AI and machine learning, as well as the regulatory frameworks that evolve to address the ethical complexities of this field. As the line between persuasion and manipulation blurs, the need for ethical responsibility in neuromarketing practices becomes paramount.

To ensure the responsible use of neuromarketing, several recommendations were made:

i.) **Prioritize Emotional Engagement in Marketing Strategies:** Given the strong influence of emotional engagement on consumer behaviour, companies should develop marketing campaigns that evoke emotional responses, such as storytelling, relatable scenarios, or values-based messaging. This approach can deepen consumer loyalty and encourage purchasing decisions, especially in competitive markets where emotional resonance can differentiate brands.

ii.) **Maintain Brand Familiarity through Consistent Branding Efforts:** While emotional engagement is critical, brand recall remains a key factor in influencing consumer behaviour. Businesses should ensure consistent branding across channels to reinforce brand recognition and trust. Regular exposure to familiar brand elements (like logos, slogans, and color schemes) can help retain consumer attention and positively influence purchasing decisions.

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