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The Role of Eye Tracking in Neuro Marketing: Insights Into Consumer Attention and Behaviour

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Abstract
In an increasingly competitive and dynamic business environment, traditional marketing methods often fall short of capturing the subconscious drivers of consumer behaviour. Neuromarketing, an interdisciplinary field combining neuroscience with marketing, offers a more profound understanding of consumer responses. Among its tools, eye-tracking has emerged as a critical technique for providing objective insights into visual attention, a key component of the consumer decision-making process. This study explores the role and application of eye-tracking within neuromarketing to understand and enhance consumer brand engagement in the Indian context. A descriptive research design was employed, with primary data collected from 200 respondents using purposive sampling. The analysis, conducted through descriptive statistics, ANOVA, and Structural Equation Modeling (SEM), reveals a complex interplay of factors. The SEM results indicate that consumer decision-making processes are a powerful predictor of neuromarketing insights derived from eye-tracking (path coefficient = .78). Furthermore, the application of these insights shows a positive, albeit moderate, influence on consumer preference and brand engagement (path coefficient = .20), while also significantly highlighting the operational and methodological challenges inherent in its use (path coefficient = .37). The findings underscore the potential of eye-tracking to create more effective, data-driven marketing strategies but also emphasize the necessity of addressing practical challenges and ethical considerations, such as data privacy, to build consumer trust. This research contributes to the limited body of region-specific literature, providing a foundational understanding for marketers aiming to tailor visual strategies to the unique Indian market.
Keywords: Neuromarketing, Eye-Tracking, Consumer Behaviour, Visual Attention

INTRODUCTION

Marketing today is a critical business function that works in an environment that is frequently changing. Marketing managers today must concern themselves with concepts such as branding, integrated marketing communications, marketing mix, and control systems for their sales forces. Marketers can strategize marketing messages that provide more value and market the products in ways that the consumers are aware of. It is difficult to gather a consumer's subconscious information using traditional research methods [1]. The drawback of this traditional marketing method is that it fails to focus on the consumer's subconscious minds and it leads to poor prediction of consumer behaviour [2]. For that reason, Lowenstein argued that it is imperative to know what is inside the consumer's mind so that marketers can shape, modify, and communicate the messages to the wider consumer base more successfully.

In order to close the gap, researchers have shown an interest in applying neuroscience technology in marketing researches. New neuroscience technologies have enabled companies to connect with their consumers, respond more quickly and effectively to consumer needs, and become more solutions oriented. Therefore, the combination between neuroscience and marketing exist the term neuro marketing. Neuro marketing helps to understand the consumers' behaviour better than traditional market research [3].

Neuro marketing techniques have been popular over the years to conduct marketing studies, and have been used as effective tools in exploring consumer buying decisions, combining consumer psychology with behavioural science [4]. Eye tracking (ET) is a technique that can assess what people see and is commonly used in NM because it provides useful indicators of interest, attention, and attraction. The ET technique offers data on internal brain activity. ET discloses customer behaviour by offering more precise information regarding behavioural data to be analysed. The Neuro marketing (NM) and ET paradigms may be expanded to investigate the influence of various signals or stimuli on strategic monitoring inside a visual perspective memory task linked to cognitive systems [5].

Consumers' decision-making behaviour have adopted the eye-tracking approach to quantify consumers' visual attention, from various perspectives including determining how specific visual features of the shopping website influenced their attitudes and reflected their cognitive processes [6]. With the introduction of neuroscience into marketing, it has become possible to understand whether consumers

are affected by the "what" and "where" of their preferred products through their visual attention (Lee, Broderick, and Chamberlain 2007; McClure et al. 2004; Morin 2011) [7, 8, 9]. That is, consumers' psychological information, such as preferences and interests, can be expressed unconsciously and investigated through eye tracking.

Consumer purchasing decision after reading online comments is a psychological process combining vision and information processing. As evident from the literature, much of the research has focused on the outcome and impact of online reviews affecting purchasing decisions but has shed less light on the underlying processes that influence customer perception [9]. While some studies have attempted to investigate the underlying processes, including how people are influenced by information around the product/service using online reviews, there is limited research on the psychological process and information processing involved in purchasing decisions. The eye-tracking method has become popular in exploring and interpreting consumer decisions making behaviour and cognitive processing [10].

This research highlights the critical role of eye-tracking technology in shaping consumer attention, engagement, and decision-making in India. By leveraging eye-tracking insights, businesses can design more impactful marketing campaigns, improve brand positioning, and strengthen their connection with consumers in an increasingly competitive marketplace.

STATEMENT OF THE PROBLEM

In the competitive business environment, understanding consumer behaviour has become increasingly complex due to rapidly changing preferences, digital influences, and heightened market competition. Traditional marketing research methods often fail to accurately capture the subconscious factors driving consumer decisions, especially in a diverse and culturally rich market like India. Neuro marketing, which integrates neuroscience with marketing strategies, offers a scientific approach to studying consumer responses beyond self-reported data. Among its tools, eye tracking plays a crucial role in revealing how visual attention influences purchasing behaviours by identifying which elements of advertisements, packaging, or online interfaces attract or disengage consumers.

However, in the Indian context, there is limited empirical research exploring how eye-tracking insights can be applied to decode consumer attention and decision-making patterns effectively. This gap creates challenges for marketers who aim to optimize visual marketing strategies and design persuasive stimuli tailored to Indian consumers. With the rapid growth of digital marketing, e-commerce, and social media platforms, understanding consumer eye movement patterns has become critical to improving website layouts, advertisements, and product placements for better engagement and conversions. Therefore, it is essential to investigate the role of eye tracking in neuro marketing to better understand consumer attention, preferences, and behavioural responses, ultimately enabling brands to create more impactful marketing campaigns, enhance customer engagement, and achieve sustainable business growth.

OBJECTIVES OF THE STUDY

- ❖ To explore the application of eye-tracking techniques in neuro marketing.
- ❖ To evaluate the impact of eye-tracking technology in predicting consumer preferences and improving brand engagement.
- ❖ To assess the influence of eye-tracking techniques on consumer decision-making and purchasing behaviour.
- ❖ To identify the challenges in using eye-tracking in neuro marketing campaigns.

LITERATURE REVIEW

The Application of Eye-Tracking Techniques in Neuro marketing

Eye-tracking techniques have become crucial in neuro marketing by providing valuable insights into consumers' unconscious preferences and decision-making processes. [11]. These techniques measure gaze behaviour and visual attention, allowing researchers to identify which elements of advertisements or product packaging capture and hold consumer interest [12]. By analysing eye movements such as fixations and saccades, marketers can better understand how consumers interact with marketing stimuli on a subconscious level, improving the effectiveness of campaigns. Eye-tracking helps uncover emotional and cognitive responses linked to visual stimuli, enabling more precise targeting and optimization of marketing strategies and integration of eye-tracking with other neuroscientific measures enriches insights, making campaigns more effective and reducing marketing costs through targeted strategies [13]. Therefore, the following hypothesis is proposed:

H1: Eye-tracking techniques enhance neuro marketing effectiveness by identifying visual attention and subconscious preferences.

Impact of Eye-Tracking Technology in predicting Consumer Preferences

The integration of eye-tracking technology into neuro marketing strategies has significantly advanced marketers' capabilities in predicting consumer preferences and enhancing brand engagement. Empirical research has demonstrated that eye-tracking provides rich insights into consumers' visual attention, enabling marketers to understand which visual elements draw focus and influence decision-making.

Ogonowski and Piwowarski affirm that eye-tracking facilitates deeper comprehension of how packaging designs impact purchasing choices, particularly by highlighting focal points of consumer attention, which can then be optimized for strategic marketing [14]. Several studies suggest that brand advertisement effectiveness is notably improved when eye-tracking data is utilized. Chatterjee and Srivastava showed how automobile brands could use eye-tracking to optimize the layout and messaging of print advertisements, resulting in heightened recall and consumer engagement [15].

In digital commerce, personalization is a major beneficiary of eye-tracking applications. Kalansooriya et al. reviewed how neuro marketing tools including eye-tracking, when combined with UX design, contribute to more intuitive and consumer-centric e-commerce interfaces [16]. Moreover, Riswanto et al. emphasize that visual engagement data derived from eye-tracking helps refine product placements and advertisement interfaces, leading to increased user satisfaction and trust [17]. Accordingly, the study puts forward the following hypothesis:

H2: Eye-tracking technology enhances consumer preference prediction by analysing visual attention patterns and optimizing marketing strategies.

The Influence of Eye-Tracking Techniques on Consumer Decision-Making and Purchasing Behaviour

Eye-tracking techniques have a profound influence on consumer decision-making and purchasing behaviour by revealing unconscious consumer visual attention and cognitive processing in real time. This technology tracks where consumers look, how long they fixate, and their gaze patterns, enabling marketers to understand which product attributes, advertisements, or packaging grab attention and affect purchase decisions. [18]. Consumer decision-making on retail websites is not always conscious, and eye-tracking provides real-time, unobtrusive data on gaze patterns that go beyond self-report surveys, uncovering both what consumers look at and how long they engage with various elements during the natural course of online shopping [19].

Expanding eye-tracking research from laboratory settings to real-world retail settings increases the ecological validity of findings, allowing marketers to decode consumer decisions in the complex context of physical stores and better understand the interplay between visual attention and purchasing actions Triangulating eye-tracking data with other behavioural measures in field research can provide a more comprehensive understanding of the factors influencing consumer decision-making, supporting actionable strategies for retail and marketing innovation [20]. Based on the above discussion, the following hypothesis is formulated:

H3: Eye-tracking techniques significantly influence consumer decision-making and purchasing behaviour by identifying visual attention patterns.

Challenges in Using Eye-Tracking in Neuro marketing Campaigns

The use of eye-tracking in neuro marketing has grown rapidly in recent years, yet its practical application is often hindered by several critical challenges. One of the most widely cited issues is the high cost of eye-tracking hardware and software, which remains a significant barrier, especially for small-to-medium enterprise.

According to Miladinović, the technological infrastructure required for real-time, high-resolution eye-tracking can be prohibitively expensive, making it less accessible for marketing departments operating under tight budgets [21]. This is reinforced by findings from Ng, who highlights that budget constraints are a key deterrent to adopting neuro marketing tools in digitally evolving markets like Finland [22].

Another prominent challenge is the shortage of expertise in interpreting eye-tracking data. Although the technology itself is increasingly user-friendly, understanding gaze patterns, heat maps, and attention metrics in a way that drives marketing insights requires specialized knowledge [23]. The technical complexity of converting raw eye movement data into actionable strategy often leads to misinterpretation or underutilization of the technology. This gap in analytical skillsets necessitates either hiring specialized personnel or investing in training both of which loop back into the issue of cost [24]. Drawing from the literature review, the following hypothesis is proposed:

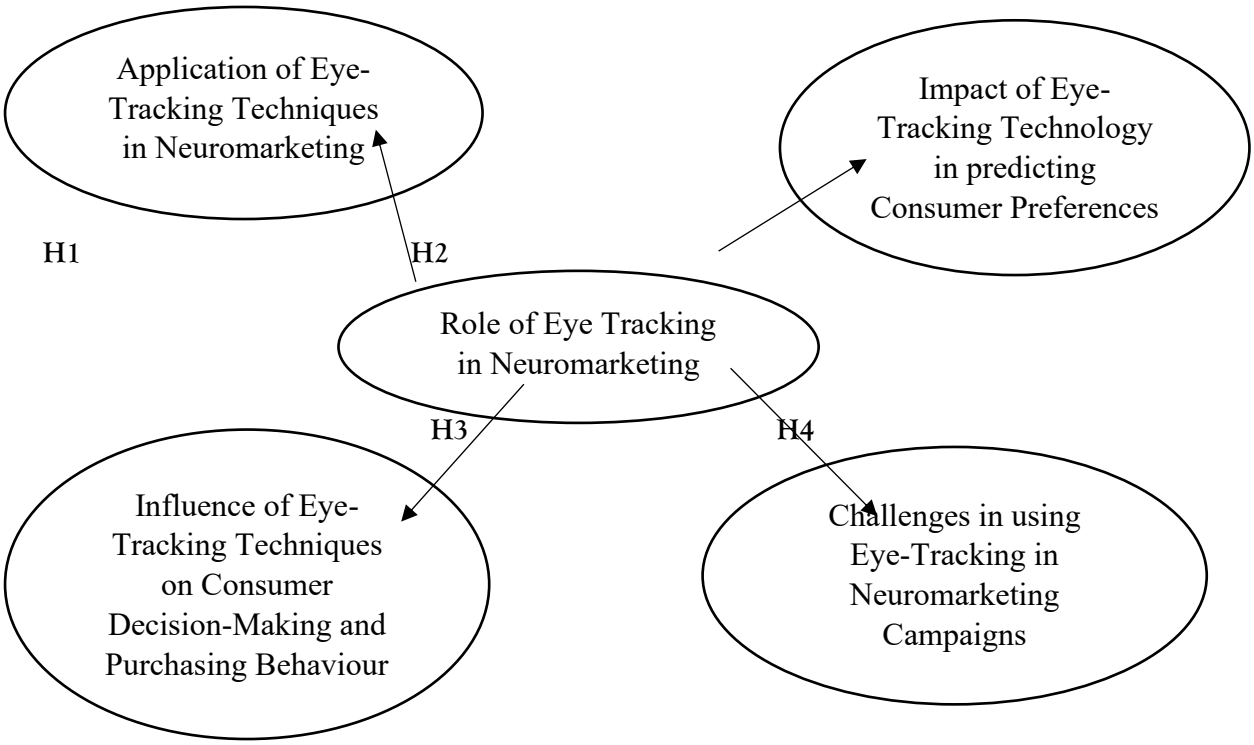
H4: Challenges in eye-tracking, including costs, technical limits, and data interpretation, significantly impact the accuracy and effectiveness of consumer insights.

RESEARCH GAP

Despite the growing global interest in neuro marketing, research focusing on eye tracking as a tool to analyse consumer attention and behaviour remains relatively underexplored in the Indian context. Most existing studies on neuro marketing have been conducted in Western markets, where consumer preferences, cultural influences, and purchasing patterns differ significantly from those in India. While international research demonstrates how eye tracking can reveal subconscious attention cues, visual engagement, and decision-making triggers, there is limited empirical evidence on how Indian consumers respond to various marketing stimuli such as advertisements, packaging designs, product placements, and digital interfaces. Additionally, the diversity of the Indian market, characterized by multiple languages, cultural variations, and socio-economic segments, presents unique consumer behaviour patterns that cannot be generalized from global findings. This lack of region-specific studies creates a significant gap in understanding how eye-tracking insights can be effectively applied to optimize marketing strategies and influence purchase decisions in India. Addressing this gap is crucial for developing data-driven, consumer-centric marketing approaches tailored to the Indian audience.

CONCEPTUAL FRAMEWORK

Application of Eye-Tracking in Neuro marketing to Enhance Consumer Brand Engagement



RESEARCH METHODOLOGY

Type of research: Descriptive research.

Data Collection

Primary data: Primary data were collected through eye-tracking experiments conducted on selected participants while exposing them to various marketing stimuli, such as advertisements, product packaging, and digital interfaces.

Secondary data: Secondary data were obtained from published research papers, industry reports, academic journals, and online databases related to neuro marketing, consumer behaviour, and eye-tracking studies.

Sampling design: Purposive Sampling

Sampling universe: The sampling universe consisted of Indian consumers who were potential buyers of products across various categories.

Sample size: 200 respondents

Reliability of the Study

Sno	Dimensions	Number of items	Cronbrach Alpha value
1	The Application of Eye-Tracking Techniques in Neuro marketing	6	0.842
2	Impact of Eye-Tracking Technology in predicting Consumer Preferences and improving Brand Engagement	6	0.815
3	The Influence of Eye-Tracking Techniques on Consumer Decision-Making and Purchasing Behaviour	4	0.860
4	Challenges in Using Eye-Tracking in Neuro marketing Campaigns	4	0.835

The Cronbach's Alpha values for all four dimensions range from 0.815 to 0.860, which falls within the acceptable range of 0.7 to 0.9. This indicates that the scales used to measure various aspects of eye-tracking techniques in neuro marketing are reliable and demonstrate good internal consistency.

Tools used for the study: Percentage analysis, Descriptive statistics, one-way ANOVA and SEM analysis.

ANALYSIS AND INTERPRETATION

Demographic Information of the Respondents

Demographic Information	Particulars	Frequency	Percent
Age	18–25 years	39	19.5
	26–35 years	46	23.0
	36–45 years	51	25.5
	46–55 years	43	21.5
	Above 56 years	21	10.5
Gender	Male	116	58.0
	Female	84	42.0
Education Level	High School or Below	26	13.0
	UG	56	28.0
	PG	64	32.0
	Doctorate or Higher	54	27.0
Occupation	Student	34	17.0
	Professional	54	27.0
	Self-employed	44	22.0
	Homemaker	43	21.5
	Other	25	12.5
Income Group	Below Rs.20,000	26	13.0
	Rs.20,000 - Rs.30,000	77	38.5
	Rs.30,000 - Rs.40,000	31	15.5
	Rs.40,000 - Rs.60,000	42	21.0
	Above Rs.60,000	24	12.0
Familiar with the concept of eye-tracking in advertising and marketing	Yes	117	58.5
	No	83	41.5
Thinking eye-tracking technology helping businesses understanding preferences better	Yes	46	23.0
	No	67	33.5
	Maybe	60	30.0
	Not sure	27	13.5
	Total	200	100.0

The age distribution of respondents showed that 25.5% were between 36–45 years, 23% in the 26–35 years, 21.5% in the 46–55 years, 19.5% in the 18–25 years and 10.5% were above 56 years. Regarding

gender distribution, 58% were male and 42% were female. The distribution of educational qualifications among respondents showed that 32% had completed their postgraduate studies, 28% had obtained an undergraduate degree, 27% held doctorates or higher qualifications and 13% had completed high school education or below. The occupational profile showed that 27% were professionals, 22% were self-employed, 21.5% were homemakers, 17% were students and 12.5% were engaged in other occupations. In terms of income, 38.5%, earned between Rs.20,000 and Rs.30,000, 21% earning Rs.40,000 to Rs.60,000, 15.5% earning Rs.30,000 to Rs.40,000, 13% earning below Rs.20,000, and 12% earning above Rs.60,000. Regarding familiarity with the concept of eye-tracking in advertising and marketing, 58.5% were aware of the concept and 41.5% were not familiar. Regarding eye-tracking technology could help businesses understand consumer preferences, 23% believed it could, 33.5% did not, 30% were uncertain, and 13.5% were not sure about its potential.

Descriptive Statistics for the Application of Eye-Tracking Techniques in Neuro marketing

Particulars	N	Mean	SD
I am familiar with eye-tracking technology and its use in advertising and marketing.	200	2.77	1.401
Eye-tracking can help improve the design of advertisements by highlighting the most engaging elements.	200	2.97	1.314
Eye-tracking technology can be used to optimize product placements in both online and offline environments.	200	2.92	1.273
Eye-tracking could be a tool for brands to enhance the relevance of advertisements to my personal interests.	200	2.86	1.192
I think that eye-tracking data can help companies better target their advertisements to specific consumer groups.	200	2.88	1.328
I would prefer if eye-tracking studies were conducted in a way that ensured my privacy and data protection.	200	3.00	1.341
Valid N (list wise)	200		

The above table indicates that the consumers disagree with being familiar with eye-tracking technology and its use in advertising and marketing (2.77), eye-tracking improving the design of advertisements by highlighting the most engaging elements (2.97), eye-tracking technology optimizing product placements in both online and offline environments (2.92), eye-tracking enhancing the relevance of brand advertisements to their personal interests (2.86), and eye-tracking data helping companies to better target advertisements to specific consumer groups (2.88). The consumers were neutral about preferring eye-tracking studies to be conducted in a way to ensure their privacy and data protection (3.00).

Descriptive Statistics for Impact of Eye-Tracking Technology in predicting Consumer Preferences and improving Brand Engagement

Particulars	N	Mean	SD
Eye-tracking technology helps marketers better understand consumer visual attention patterns.	200	2.85	1.302
Eye-tracking insights help improve brand advertisement effectiveness.	200	3.30	1.341
Eye-tracking data makes online shopping experiences more personalized.	200	2.94	1.296
Brands that use eye-tracking technology have higher consumer engagement.	200	3.02	1.282
Eye-tracking helps identify which parts of a product packaging attract the most attention.	200	2.95	1.342
The use of eye-tracking technology enhances the development of new product designs.	200	2.90	1.274
Valid N (list wise)	200		

The table indicates that the consumers disagree with eye-tracking technology helping marketers better understand visual attention patterns (2.85), eye-tracking data making online shopping experiences more personalized (2.94), eye-tracking helps in identifying which parts of a product's packaging attract the most attention (2.95), and eye-tracking technology enhancing the development of new product designs (2.90). The consumers agree with the eye-tracking insights helps to improve brand advertisement effectiveness (3.30) and brands that use eye-tracking technology having higher consumer engagement (3.02).

Descriptive Statistics for the Influence of Eye-Tracking Techniques on Consumer Decision-Making and Purchasing Behaviour

Particulars	N	Mean	SD
The visual placement of product information in advertisements significantly impact consumer decision-making.	200	2.89	1.324
Advertisements that are designed based on eye-tracking insights result in higher recall and a stronger emotional connection with consumers.	200	2.91	1.277
Eye-tracking can predict consumer preferences by showing which visual elements lead to deeper product consideration and purchase intent.	200	3.02	1.240
Marketers can use eye-tracking data to adjust product positioning in advertisements.	200	2.79	1.283
Valid N (list wise)	200		

The table indicates that the consumers disagree with the visual placement of product information in advertisements impact their decision-making (2.89), advertisements designed based on eye-tracking results in higher recall and a stronger emotional connection (2.91), and marketers using eye-tracking data to adjust product positioning in advertisements (2.79). The consumers agree with eye-tracking can predict their preferences by showing which visual elements lead to deeper product consideration and purchase intent (3.02).

Descriptive Statistics for Challenges in Using Eye-Tracking in Neuro marketing Campaigns

Particulars	N	Mean	SD
The high cost of eye-tracking technology is a significant barrier to implement in neuro marketing campaigns.	200	3.02	1.305
There are limited resources and expertise for effectively analysing and interpreting eye-tracking data for marketing purposes.	200	3.01	1.295
The lack of consumer awareness and acceptance of eye-tracking as a marketing tool hinders its adoption.	200	2.86	1.306
There are privacy concerns associated with using eye-tracking technology, which can negatively affect consumer trust in brands.	200	3.10	1.297
Valid N (list wise)	200		

The table indicates that the consumers agree with the high cost of eye-tracking technology (3.02), limited resources and expertise for effectively analysing and interpreting eye-tracking data for marketing purposes (3.01) and privacy concerns associated with using eye-tracking technology are significant barrier to its implementation in neuro marketing campaigns (3.10). The consumers disagree with the lack of consumer awareness and acceptance of eye-tracking as a marketing tool (2.86).

Comparison between the Demographic Variables (Age) of the Respondents and Various Dimensions

Ho1: There is a substantial link between the demographic variables (age) of the respondents and various dimensions.

Dimensions	Age	N	Mean	SD	F	Sig.
The Application of Eye-Tracking Techniques in Neuro marketing	18–25 years	39	2.86	0.600	1.202	0.311
	26–35 years	46	2.95	0.482		
	36–45 years	51	2.86	0.621		
	46–55 years	43	2.83	0.604		
	Above 56 years	21	3.12	0.342		
	Total	200	2.90	0.561		
Impact of Eye-Tracking Technology in predicting Consumer Preferences and improving Brand Engagement	18–25 years	39	3.12	0.549	2.292	0.061
	26–35 years	46	3.11	0.616		
	36–45 years	51	2.80	0.652		
	46–55 years	43	3.03	0.562		
	Above 56 years	21	2.91	0.537		
	Total	200	2.99	0.602		
The Influence of Eye-Tracking Techniques on Consumer Decision-Making and Purchasing Behaviour	18–25 years	39	2.99	0.599	0.403	0.806
	26–35 years	46	2.86	0.797		
	36–45 years	51	2.84	0.770		
	46–55 years	43	2.88	0.689		
	Above 56 years	21	3.01	0.457		

	Total	200	2.90	0.697		
Challenges in Using Eye-Tracking in Neuro marketing Campaigns	18–25 years	39	3.12	0.604	0.624	0.646
	26–35 years	46	2.95	0.767		
	36–45 years	51	2.91	0.735		
	46–55 years	43	3.03	0.706		
	Above 56 years	21	3.05	0.626		
	Total	200	3.00	0.699		

There is a substantial link between the application of eye-tracking techniques in neuro marketing (0.311), impact of eye-tracking technology in predicting consumer preferences and improving brand engagement (0.061), the influence of eye-tracking techniques on consumer decision-making and purchasing behaviour (0.806), challenges in using eye-tracking in neuro marketing campaigns (0.646) and the age of the respondents.

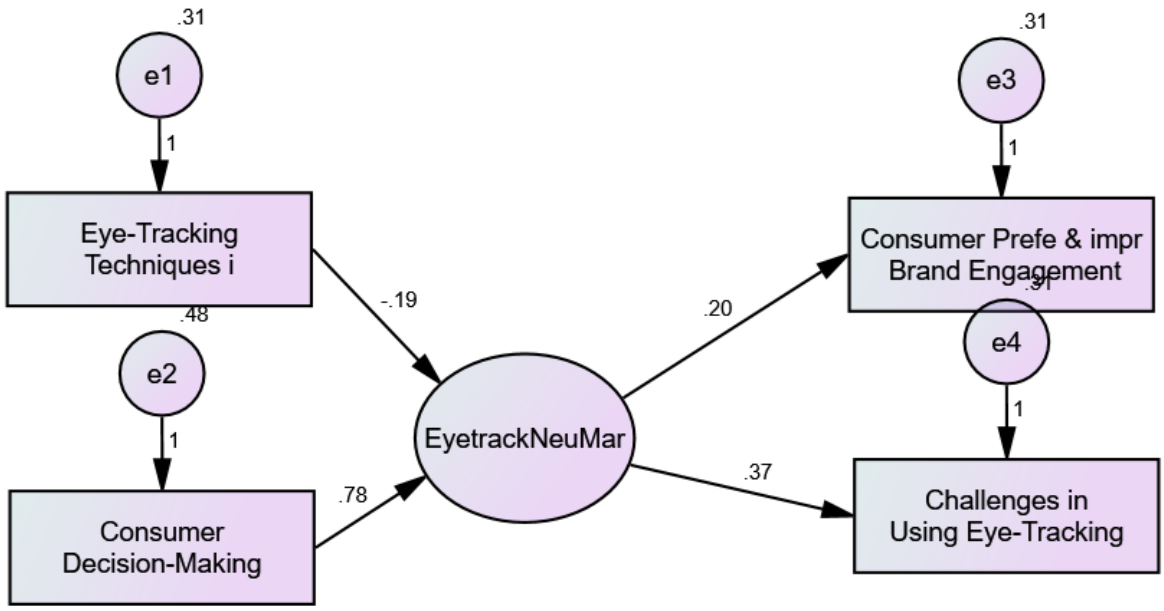
Comparison between the Demographic Variables (Income Group) of the Respondents and Various Dimensions

Ho2: There is a substantial link between the demographic variables (income group) of the respondents and various dimensions.

Dimensions	Age	N	Mean	SD	F	Sig.
The Application of Eye-Tracking Techniques in Neuro marketing	Below ₹20,000	26	2.96	0.526	1.201	0.312
	₹20,000 – ₹30,000	77	2.90	0.545		
	₹30,000 – ₹40,000	31	2.88	0.566		
	₹40,000 – ₹60,000	42	2.77	0.566		
	Above ₹60,000	24	3.08	0.620		
	Total	200	2.90	0.561		
Impact of Eye-Tracking Technology in predicting Consumer Preferences and improving Brand Engagement	Below ₹20,000	26	3.12	0.583	1.448	0.220
	₹20,000 – ₹30,000	77	2.92	0.608		
	₹30,000 – ₹40,000	31	3.12	0.718		
	₹40,000 – ₹60,000	42	2.89	0.571		
	Above ₹60,000	24	3.11	0.444		
	Total	200	2.99	0.602		
The Influence of Eye-Tracking Techniques on Consumer Decision-Making and Purchasing Behaviour	Below ₹20,000	26	2.88	0.530	0.534	0.711
	₹20,000 – ₹30,000	77	2.87	0.661		
	₹30,000 – ₹40,000	31	2.81	0.697		
	₹40,000 – ₹60,000	42	2.99	0.800		
	Above ₹60,000	24	3.02	0.797		
	Total	200	2.90	0.697		
Challenges in Using Eye-Tracking in Neuro marketing Campaigns	Below ₹20,000	26	3.19	0.772	1.533	0.194
	₹20,000 – ₹30,000	77	3.02	0.719		
	₹30,000 – ₹40,000	31	2.75	0.622		
	₹40,000 – ₹60,000	42	3.02	0.676		
	Above ₹60,000	24	3.03	0.652		
	Total	200	3.00	0.699		

There is a substantial link between the application of eye-tracking techniques in neuro marketing (0.312), impact of eye-tracking technology in predicting consumer preferences and improving brand engagement (0.220), the influence of eye-tracking techniques on consumer decision-making and purchasing behaviour (0.711), challenges in using eye-tracking in neuro marketing campaigns (0.194) and the monthly income of the respondents.

Application of Eye-Tracking in Neuro marketing to Enhance Consumer Brand Engagement



A primary finding is the exceptionally strong, positive relationship between Consumer Decision-Making and EyetrackNeuMar," indicated by a standardized path coefficient of .78. This suggests that the cognitive and behavioural processes underlying consumer decision-making are a principal driver and a powerful predictor of the insights and applications derived from eye-tracking in a neuro marketing context. Essentially, the effectiveness and relevance of eye-tracking applications are heavily dependent on their ability to tap into the core mechanisms of how consumers make choices. Conversely, a weak negative relationship (coefficient = -.19) is observed between"Eye-Tracking Techniques and EyetrackNeuMar. This intriguing finding may imply that a greater focus on the technical intricacies or a proliferation of complex techniques could slightly detract from the core neuro marketing objectives, or perhaps that simpler, more direct techniques yield more impactful results in this context.

The model further elucidates the outcomes of applying eye-tracking in neuro marketing. There is a positive, albeit moderate, path from "EyetrackNeuMar" to "Consumer Prefe & impr Brand Engagement," with a coefficient of .20. This indicates that while eye-tracking-based neuro marketing efforts do contribute positively to enhancing consumer preference and brand engagement, the effect size is modest. This suggests that other variables not included in this model may also play a significant role in driving brand engagement. More pronounced is the relationship between EyetrackNeuMar and Challenges in Using Eye-Tracking, evidenced by a stronger positive path coefficient of .37. This significant finding underscores that as the application of eye-tracking in neuro marketing intensifies, so too do the perceived or actual challenges associated with its implementation. This could encompass methodological, ethical, or interpretive difficulties that become more apparent with deeper engagement in the practice.

FINDINGS

Demographic Information of the Respondents

Most of the respondents have an age group within 36–45 years. Most of the respondents are male. Most of the respondents completed PG. Most of the respondents of the respondents were working professionals. Most of the respondents earning a monthly income Rs.20,000 - Rs.30,000. Most of the respondents were familiar with the concept of eye-tracking in advertising and marketing. Most of the respondents did not think that eye-tracking technology can help businesses understand their preferences better.

The Application of Eye-Tracking Techniques in Neuro marketing

The findings indicated that most respondents had a moderate level of familiarity with eye-tracking technology and its applications in advertising and marketing. They generally agreed that eye-tracking helped improve advertisement designs, optimized product placements, and assisted brands in enhancing the relevance of advertisements to personal interests. Additionally, respondents emphasized the importance of conducting eye-tracking studies with strong privacy and data protection measures.

Impact of Eye-Tracking Technology in predicting Consumer Preferences and improving Brand Engagement

The findings indicated that eye-tracking technology helped marketers better understand consumer visual attention patterns and improve the effectiveness of brand advertisements. It also showed that eye-tracking data personalized online shopping experiences and enhanced consumer engagement with brands using this technology. Furthermore, respondents agreed that eye-tracking assisted in identifying the most attention-grabbing elements of product packaging and supported the development of innovative product designs.

The Influence of Eye-Tracking Techniques on Consumer Decision-Making and Purchasing Behaviour

The findings indicated that the visual placement of product information in advertisements significantly impacted consumer decision-making. Advertisements designed using eye-tracking insights resulted in higher recall and created a stronger emotional connection with consumers. Additionally, the study revealed that eye-tracking effectively predicted consumer preferences and helped marketers adjust product positioning in advertisements to influence purchase intent.

Challenges in Using Eye-Tracking in Neuro marketing Campaigns

The findings from the study indicated that the high cost of eye-tracking technology posed a significant barrier to its implementation in neuro marketing campaigns. It was also found that limited resources and a lack of expertise in analysing and interpreting eye-tracking data affected its effective utilization. Additionally, the study revealed that low consumer awareness, acceptance issues, and privacy concerns hindered the widespread adoption of eye-tracking technology, potentially impacting consumer trust in brands.

SEM analysis

The model posits that while eye-tracking in neuro marketing is strongly informed by the fundamentals of consumer decision-making and can yield positive results for brand engagement, its application is a double-edged sword. The process itself inherently brings to light significant operational and methodological challenges. The results advocate for a strategic approach that grounds eye-tracking applications firmly in consumer psychology while remaining cognizant of, and prepared for, the practical hurdles that will likely arise.

CONCLUSION

The study highlights the growing importance of eye-tracking technologies in understanding how consumers perceive, process, and respond to marketing stimuli. Eye-tracking provides accurate insights into consumers' visual attention, decision-making patterns, and emotional engagement with advertisements, packaging, and branding. By analysing gaze patterns and fixation durations, businesses can identify which elements capture attention and which are ignored, helping marketers design more effective campaigns that resonate with consumer preferences.

Furthermore, the findings demonstrate that eye-tracking plays a crucial role in predicting consumer purchase intent and brand engagement. The technology bridges the gap between traditional marketing research and real-time consumer responses by offering objective, non-intrusive data about subconscious decision-making processes. This empowers marketers to create content and product designs that better align with consumer expectations, ultimately improving customer satisfaction and loyalty. The integration of eye-tracking into neuro marketing presents significant opportunities for data-driven strategies in an increasingly competitive marketplace. It enables businesses to personalize marketing approaches, optimize ad placements, and enhance user experience across digital and physical platforms. However, the study also suggests the need for ethical considerations regarding consumer privacy and data usage. As technology evolves, eye-tracking will continue to reshape marketing practices by providing deeper insights into how attention drives behaviour, helping brands stay relevant and consumer-focused.

FUTURE RECOMMENDATIONS

Future research on should focus on integrating eye-tracking technology with other advanced tools such as facial emotion recognition, EEG, and AI-driven analytics to gain a deeper understanding of consumers' subconscious responses. Expanding studies across diverse demographics, cultures, and product categories will provide more generalized insights into consumer behaviour. Additionally, researchers should explore real-time eye-tracking applications in digital marketing, e-commerce, and virtual reality environments to evaluate consumer engagement more accurately. Ethical considerations, such as data privacy and informed consent, must also be prioritized to ensure responsible usage of consumer data. By combining

technological advancements with consumer-centric strategies, eye-tracking can further enhance personalized marketing, improve brand positioning, and optimize decision-making in future neuro marketing practices.

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