
Neuromarketing Readiness in Malaysia: Where are we now?

Azrin Ali¹, Lennora Putit^{1,2}, Azlin Shafinaz Mohamad Arshad¹,
Yasmin Kamall Khan¹, Heny Hendryati³

¹*Department of Entrepreneurship and Marketing Studies, Faculty of Business Management,
University Institute Technology MARA, Puncak Alam, Selangor, MALAYSIA*

²*BIZ-Health Research Interest Group, Universiti Teknologi MARA, Shah Alam,
Selangor, MALAYSIA*

³*Universitas Pendidikan Indonesia, Bandung, Jawa Barat, INDONESIA*

Corresponding author: azrinali@uitm.edu.my

Abstract - In the race to forecast consumer behaviours and purchase patterns, a culmination of new ideas, theories, and research is brought forth and used. One such contemporary study on consumer behaviour is the subject of neuromarketing. An underlying theme among several key concepts in defining neuromarketing is the ability to measure consumers' brain activities; it aims to understand the reasoning and reactions toward specific offerings. Although the field of study has garnered worldwide interest, the subject of neuromarketing is only starting to gain traction in Malaysia, with only a few existing literatures observed. This study plans to assess the readiness of companies in Malaysia to implement neuromarketing as part of their overall strategic marketing plan, as well as the comfort level of companies in deploying neuromarketing to increase the effectiveness of the companies' performance. By applying mixed-method research, several small to medium-sized enterprises (SMEs) would be selected to explore and subsequently examine their comprehension, readiness, and implementation of neuromarketing.

Keywords - Construction, Contribution, Subcontractors, Main contractors, Project Success

ARTICLE INFO

Received 3 Mac 2024

Received in revised form 4 May 2024

Accepted 16 June 2024

Published 29 June 2024

DOI: <https://doi.org/10.24191//jibe.v9i1.902>

I. Introduction

Innovative marketing technologies are increasingly essential components of boosting a product's efficiency, competitiveness, and marketability. The current global market status is continually changing since it is still in the marketing and innovation stages, thus elucidating the reason why an innovative activity is so crucial (Alsharif et al., 2024; Chiapello, 2020; Jukić, 2020; Kumar, 2018; Paper et al., 2015). The most pertinent areas within the subject of contemporary marketing innovations encompass sensory marketing, cognitive marketing, event marketing, relationship marketing, Internet marketing, and buzz marketing, among others. One of the most popular

and dynamic types of innovative marketing is neuromarketing (Chiapello, 2020). Neuromarketing is a new research method based on the nervous system and the application of neuroscience in the field of marketing, which was pioneered by Professor Ale Smidts (Stefko et al., 2020). The initial study spurred the emergence of recent studies extensively exploring the topic of neuromarketing (Ahmed et al., 2022; Alsharif et al., 2024; Alsharif et al., 2023; Casado-Aranda et al., 2023; Fauzi & Widyarini, 2023; Herrando et al., 2023; Hurley, 2015; Kumar, 2018; Mileti et al., 2016; Pozharliev, 2017; Romanenko, 2020; Samsuri et al., 2016; Shaari et al., 2019).

Essentially, neuromarketing aims to identify consumer decision-making processes and which region of the brain is activated. Furthermore, neuromarketing examines which emotions are significantly influential to people during the decision-making process, and uses these findings to improve marketing efficacy through the utilisation of medical technologies such as magnetic resonance imaging (fMRI) and electroencephalography (EEG), among others (Shaari et al., 2019). The inferences derived from these studies could be applied to promotional mix, product design, improving promotion and advertising, pricing, store design, and enhancing the consumer experience as a whole (Alsharif et al., 2023; Ling et al., 2021). Marketers are drawn to neuroscience primarily because consumers are unable to perfectly articulate their preferences and because unconscious factors play a substantial role in influencing shopping behaviour (Wilson et al., 2008).

According to Buxbaum (2016), the complete process consists of three elements: an incoming stimulus, an emotional component, and a rational consideration. Due to advancements in research technology, the precise identification of active brain regions is now possible through inventions such as the polygraph (lie detector). The foundation of the polygraph lies in the assumption that a conscious lie will cause a stressful situation, which will be reflected in a measurable change in the observed data (Clark, 2020). When people use distinct brain systems to make different kinds of decisions, numerous choices are made automatically, consciously or otherwise. Moreover, consumer decisions are also significantly influenced by situational factors, such as the way the product is presented in the store or what other products are placed next to it (Jukić, 2020). Understanding the impact of neuromarketing on businesses, companies in Malaysia ought to be exposed to and keen to adopt this method to further increase marketing efficiency and productivity. However, less than ideal numbers of research could be found in this area.

Nowadays, small and medium enterprises (SMEs) are recognized for their agility, resilience, and survival capabilities whilst weathering uncertain times worldwide (Hussin, Putit, & Subramaniam, 2023). They play a crucial role in the economic growth of any country or region (Putit & Sahudin, 2023; Rana et al, 2019). Additionally, studies have found that technology could enhance SMEs' sustainability when utilized strategically (Prof & Hellström, 2024). Kamaruddin (2022) suggests that post covid-19, innovative approach in technology by SME could bring successes when incorporated in the companies. Furthermore, Malaysia's SMEs are found to lack the maturity to enhance technology to stay competitive. These situation is unacceptable given that the government's ongoing efforts to ensure SMEs stay up to date is substantial (Joseph et al, 2013). As stated above, neuromarketing is a valid tool for businesses to use for better prediction of consumer behaviour which could help SMEs to be relevant and competitive. Hence, this research proposes to gauge the level of readiness among Malaysian organizations for neuromarketing implementation.

II. The Current Research

Neuromarketing refers to the merging of two academic disciplines of neuroscience and marketing (Ahmed et al., 2022; Fauzi & Widyarini, 2023; Kumar, 2018). This study seeks to predict the effectiveness of advertising campaigns by measuring the response using brain imaging without resorting to consumer statements (Ahmed et al., 2022). Most neuromarketing research in Malaysia focuses on review papers, with a small percentage of empirical studies on the attention of consumers towards advertisements (Alsharif et al., 2023) and the measurements of consumers' attention levels (Mansor & Isa, 2022; Mohd Isa & Mansor, 2020). Additionally, a prior study on consumers' memory retention on green versus non-green products was also conducted (Shaari et al., 2019). There are studies throughout the region that have investigated neuromarketing applications, particularly in the areas of electroencephalography (EEG), functional magnetic resonance imaging (fMRI), eye-tracking (ET), electromyography (EMG), and galvanic skin response (GSR); these studies span multidisciplinary fields which produce comprehensive insights into neuromarketing and marketing mix discoveries (Alsharif et al., 2023). A chart of neuromarketing techniques as displayed in the figure 1, exhibits the various neuromarketing techniques available for application to better understand consumer behaviours (Gill & Singh, 2022).

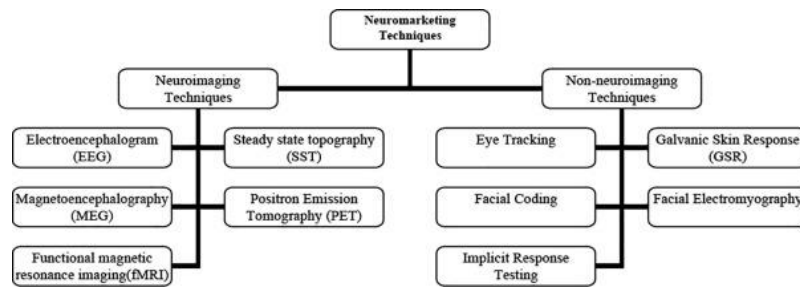


Figure 1 - Neuromarketing Techniques

***Note:** Techniques above involve using devices and observations tests. From *A study of neuromarketing techniques for proposing cost effective information driven framework for decision making*. *Materials Today: Proceedings*, 49, 2969–2981. <https://doi.org/10.1016/J.MATPR.2020.08.730> by Gill, R., & Singh, J., 2022.

Furthermore, in the branding arena, neuromarketing is able to identify consumers' unconscious and emotional reactions towards marketing messages (Jukić, 2020). Past research in Belarus strongly suggests that neuromarketing could vet nonperforming advertisements and problematic goods besides identifying subconscious desires (Merangin et al., 2018). A majority of neuromarketing experimentations and discoveries have revolved around comprehending the consumers' perspectives and prospective purchasers' thought processes. Due to the abundance of possibilities neuromarketing yields, relevant studies are continuously conducted, and subtopics have expanded exponentially. However, regardless of how neuromarketing has piqued the interest of scholars and academics, the complexity of the subject has resulted in limited studies conducted here in Malaysia within the past decade.

A stimulus-organism-response (SOR) theory developed by Mehrabian and Russell in 1974 could be a useful framework to explore factors associated with the readiness of neuromarketing in this study. It has been widely used in many disciplines of research to examine the links amongst inputs (stimulus), processes (organism), and outputs (response) respectively. It explains that stimulation, along with human reaction and action, is caused by an organism component (Buxbaum, 2016). This theory further states that individuals commonly react to environments in one of two distinctive methods; firstly, via approach behaviours that include all positive actions, such as the desire to explore, stay, affiliate, or work, and secondly, via averting behaviours which incorporate the opposite, such as the desire not to positively act (Mehrabian and Russell 1974). In other words, it heightens the emotion-eliciting or emotional qualities of surroundings that are regarded as aesthetic incitements (Wohlwill 1976). Past research which implemented the SOR model and conducted a neurophysiological experiment combined with a survey-based study confirmed that interactive marketing affects the purchase intention of consumers in the virtual world (Herrando et al., 2023). The adoption posits that neuromarketing plays a stimulus component role, neuromarketing comprehension as the organism component, and readiness level to adopt neuromarketing as the response component within the SOR model equation.

In Malaysia, studies about neuromarketing by small and medium enterprises are highly lacking. Baskaran et al. (2021) had attempted to clarify the link of neuromarketing and entrepreneurial opportunities and proposed that neuromarketing as a mediator variable which will help predict entrepreneurship. That conceptual paper claimed, no other previous studies have empirically tested the propositions in Malaysia and other places. As a complementary attempt, this conceptual paper proposes to test neuromarketing using a robust SOR model to envisage entrepreneurial adoption intention in neuromarketing Malaysia's landscape.

The significance of neuromarketing has been proven to aid businesses in enhancing their understanding of consumers and subsequently increase the effectiveness of businesses' efforts in future marketing exercises. Nevertheless, in Malaysia, there is a dearth of information indicating businesses' preparedness to adopt and embed neuromarketing as a tool to help better fathom consumers and enhance profits in the long run. Thus, this conceptual paper is designed to investigate the comprehension and the degree of readiness among businesses here to engage with neuromarketing in scientific ways. The objectives of this study are as follows:

RO1. To explore the businesses' understanding of neuromarketing as a valuable tool to measure consumer behaviours in Malaysia.

RO2. To evaluate the implementation of neuromarketing by businesses in Malaysia.

RO3. To determine the readiness toward integrating neuromarketing into marketing strategies among businesses in Malaysia.

From the research objectives, the following propositions are derived:

P1. Businesses in Malaysia understand that neuromarketing is a valuable tool to measure consumer behaviours.

P2. Neuromarketing is currently being implemented by businesses in Malaysia.

P3. Businesses in Malaysia are ready to integrate neuromarketing into their marketing strategies.

The following research questions are based on the propositions observed:

RQ1. Do businesses in Malaysia understand that neuromarketing is a valuable tool to measure consumer behaviour?

RQ2. To what extent is neuromarketing currently being implemented by businesses in Malaysia? RQ3. Are companies in Malaysia ready to integrate neuromarketing into their marketing strategies?

From the above research objectives and propositions, the following conceptual framework is drawn by adapting the SOR model as illustrated in Figure 2. The stimulus components are emotional engagement, memory retention, and novelty level of the businessperson (Gambhir, S., & Sharma, 2019). Stimulus component of the framework addresses the organism component, which is the awareness level of a businessperson. It is the existing condition of the businessperson, that will either react to the stimulus from the first component of the framework. As the outcome, prediction on the adoption of neuromarketing could be gauge as the response component.

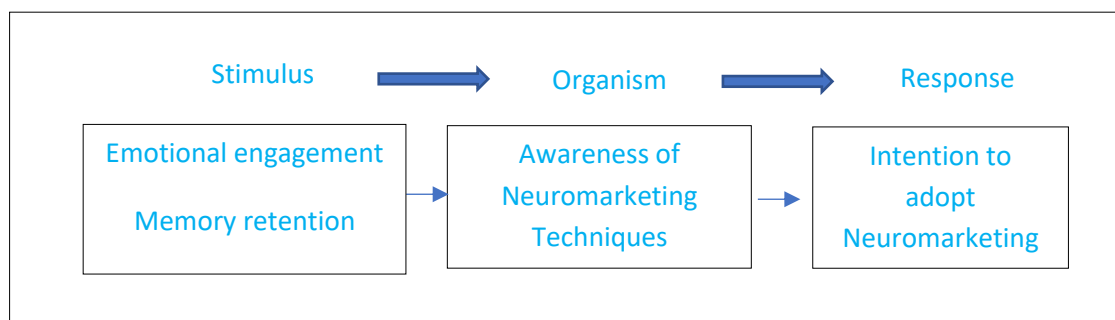


Figure 2: Proposed Conceptual Framework

Previous studies have proven potential neuromarketing benefits to businesses, such as Daimler-Chrysler company in evaluating car models preferred (Casado-Aranda et al., 2023); Campbell's Soup, Gerber, and Frito-Lays packaging designs acceptance (Gambhir, S., & Sharma, 2019); and ESPN, the worldwide American TV channel leader in sports branding and logo (Gurgu, E., Gurgu, I. A., & Tonis, 2020). It is without doubt, neuromarketing's efficacy is substantial, as presented by these giant companies. However, to discover neuromarketing and small and medium enterprises synergy, this study aims to measure the potential adoption possibilities.

III. Research Methodology

For this study, a mixed method research approach would be used to capture both qualitative and quantitative data collected. The first stage is to carry out an initial qualitative research design via focus group discussions (FDGs) with an approximate of 15 participants identified for that purpose. This initial exploratory research is undertaken to identify potentially new insights regarding the understanding of neuromarketing. The second stage of data collection is a quantitative phase of research design via the use of non-probability sampling technique as the population is not known, and each case in the entire population does not have an equal chance to be selected (Bryman & Bell, 2011). Additionally, the convenience of non-probability sampling in terms of effort, cost, and time is suitable for this research and its limitations. The exact population size of businesses in Malaysia in 2022 is not known. As it is impossible to acquire the sampling frame, the random sampling error cannot be estimated (Daniel, 2012). Specifically, this study will implement a questionnaire-based survey utilising a seven-point Likert

scale. All the measures will be adapted from various research. This instrument is selected as the interviewees' responses may enable a quantitative assessment of the effects on respondents and facilitate an evaluative comparison, which is difficult to gauge using only words and language.

The distribution of this survey and its subsequent data collection would be conducted via telephone and face-to-face interview methods, making it accessible to a wide range of participants. Furthermore, the questionnaire is back translated into two languages to accommodate both English and Bahasa Malaysia readers. The average time allotted to complete the questionnaire is forty-five minutes, which will be informed to respondents prior to the interview session. This data collection will take place entirely in Malaysia within the span of two months. The target sample size for this study is established to be around 200 participants, and the unit of analysis comprises individuals from the marketing division or top management with a marketing background. To enhance the survey questionnaire, a pilot test will be conducted prior to the actual survey distribution, with a target of 30 cases. The data collected will be tested for both reliability, face and content validity.

IV. Discussion

This conceptual paper serves as a starting point to set the stage for the potential future of neuromarketing in Malaysia as a pertinent tool for any business to ensure marketing efforts are maximised through a deep understanding of consumers. Although studies on neuromarketing have been shared in the academic circle (Alsharif et al., 2024a; Alsharif et al., 2023b; Alsharif et al., 2023; Alsharif et al., 2023c; Mansor & Isa, 2022; Mohd Isa & Mansor, 2020; Samsuri et al., 2016; Shaari et al., 2019), the uptake of neuromarketing as a tool for businesses is not high. Several reasons from the academic and industries in Malaysia are cited such as (i) lack of technology and facilities; (ii) lack of neuromarketing experts; (iii) lack of awareness and knowledge in both academia and industrial society, for example, they are not aware of the neuromarketing position or relevant contemporary topic; (iv) lack of investment in the neuromarketing field from both academia and industrial environments; (v) data interpretation is quite hard and complicated; and (vi) experiments consume a significant amount of time (Alsharif et al., 2023).

V. Conclusion

Future usage success of neuromarketing is exponential with the advancement of technology and speed of knowledge dissemination. However, if Malaysian businesses neglect this chance to ride on the bandwagon, it could be a costly missed opportunity because countries actively adopting this knowledge are reaping fruitful successes by leaps and bounds (Chiapello, 2020). Understanding the subconscious decisions of consumers is priceless, as each marketing, designing, development, strategizing, and various efforts are tailored to deep comprehension of the intended market.

Acknowledgements

Funding for the project was received from Office of the Deputy Vice-Chancellor (Research & Innovation) Universiti Teknologi MARA Shah Alam, Selangor, Malaysia, bearing grant number: RMC/RD/85/027/2022.

Conflict of Interest Statement

There is no conflict of interest between the authors and co-author.

Author's Contribution

Azrin Ali, Lennora Putit, Azlin Shafinaz Mohamad Arshad, Yasmin Kamall Khan, Heny Hendryati devised the project, the main conceptual ideas and proof outline and wrote the manuscript.

References

- Ahmed, R. R., Streimikiene, D., Channar, Z. A., Soomro, H. A., Streimikis, J., & Kyriakopoulos, G. L. (2022). The Neuromarketing Concept in Artificial Neural Networks: A Case of Forecasting and Simulation from the Advertising Industry. *Sustainability (Switzerland)*, 14(14). <https://doi.org/10.3390/su14148546>

- Al Fauzi, A., & Widyarini, L. A. (2023). Neuromarketing: The Physiological Tools for Understanding Consumer Behaviour. *Malaysian Journal of Social Sciences and Humanities (MJSSH)*, 8(1), e002081-e002081.
- Alsharif, A. H., Salleh, N. Z. M., Abdullah, M., Khraiwish, A., & Ashaari, A. (2023). Neuromarketing Tools Used in the Marketing Mix: A Systematic Literature and Future Research Agenda. *SAGE Open*, 13(1), 1–23. <https://doi.org/10.1177/21582440231156563>
- Alsharif, A. H., Salleh, N. Z. M., Alrawad, M., & Lutfi, A. (2024). Exploring global trends and future directions in advertising research: A focus on consumer behavior. *Current Psychology*, 43(7), 6193–6216. <https://doi.org/10.1007/s12144-023-04812-w>
- Alsharif, A. H., Salleh, N. Z. M., Hashem E, A. R., Khraiwish, A., Putit, L., & Arif, L. S. M. (2023). Exploring Factors Influencing Neuromarketing Implementation in Malaysian Universities: Barriers and Enablers. *Sustainability (Switzerland)*, 15(5), 1–27. <https://doi.org/10.3390/su15054603>
- Alsharif, A. H., Salleh, N. Z. M., & Pilelienė, L. (2023). A Comprehensive Bibliometric Analysis of fNIRS and fMRI Technology in Neuromarketing. *Scientific Annals of Economics and Business*, 70(3), 459–472. <https://doi.org/10.47743/saeb-2023-0031>
- Buxbaum, O. (2016). The S-O-R-Model. In *Key Insights into Basic Mechanisms of Mental Activity* (pp. 7–9). https://doi.org/10.1007/978-3-319-29467-4_2
- Casado-Aranda, L. A., Sánchez-Fernández, J., Bigne, E., & Smidts, A. (2023). The application of neuromarketing tools in communication research: A comprehensive review of trends. *Psychology and Marketing*, 40(9), 1737–1756. <https://doi.org/10.1002/mar.21832>
- Chiapello, E. (2020). *Effective Technologies for Innovative Marketing Implementation Preecha Pongpeng*. 174–181.
- Clark, K. R. (2020). Chapter Two - A field with a view: Ethical considerations for the fields of consumer neuroscience and neuromarketing. In I. Bárd & E. Hildt (Eds.), *Ethical Dimensions of Commercial and DIY Neurotechnologies* (Vol. 3, pp. 23–61). Academic Press. <https://doi.org/https://doi.org/10.1016/bs.dnb.2020.03.002>
- Gambhir, S., & Sharma, R. (2019). Neuromarketing as a tool of customer engagement for encouraging on-line impulsive buying. *Indianjournals.Com*.
- Gill, R., & Singh, J. (2022). A study of neuromarketing techniques for proposing cost effective information driven framework for decision making. *Materials Today: Proceedings*, 49, 2969–2981. <https://doi.org/10.1016/J.MATPR.2020.08.730>
- Gurgu, E., Gurgu, I. A., & Tonis, R. B. M. (2020). Neuromarketing for a better understanding of consumer needs and emotions. *Independent Journal of Management & Production*, 11(1), 208-235.
- Herrando, C., Jiménez-Martínez, J., Martín-De Hoyos, M. J., Asakawa, K., & Yana, K. (2023). Emotional responses in online social interactions: the mediating role of flow. *Asia Pacific Journal Of Marketing And Logistics*, 35(7), 1599–1617. <https://doi.org/10.1108/APJML-02-2022-0091>
- Hurley, D. (2015). Neuromarketing – Fundamentals and insights for advantageous advertising in a luxury watch context. *Master of Science in Marketing, December*, 347. <https://esource.dbs.ie/handle/10788/2356>
- Hussin, R. M., Putit, L., & Subramaniam, G. (2023). Social media as an open innovation: deciphering its relationship with firm performance, compatibility, and security concern. In *Open Innovation in Small Business: Creating Values for Sustainability* (pp. 87-98). Singapore: Springer Nature Singapore.
- Joseph, N. P. S., Mahmood, A. K., Choo, P. Y., Wong, S. W., Phan, K. Y., & Lim, E. H. (2013). Battles in volatile information and communication technology landscape: the Malaysia small and medium enterprise case. *International Journal of Business Information Systems*, 13(2), 217–234.
- Jukić, D. (2020). *Opening Pandora'S Box: Neuromarketing and Brand Image. January 2019*, 512–524. <https://doi.org/10.7441/dokbat.2019.049>
- Kamaruddin, N. A. (2022). Factors Influencing the ICT Innovation Process in Small-Medium Enterprises: A Conceptual Framework. *Journal of International Business, Economics and Entrepreneurship*, 7(2), 75. <https://doi.org/10.24191/jibe.v7i2.20710>
- Kumar, H. (2018). *Neuromarketing: a New Agenda for Marketing Researches With Neuromarketing: a New Agenda for Marketing Researches With Particular Reference To Eye. May 2016*.
- Ling, G. M., Ang, E., Chin, H., Huat, T. S., & Poh, T. T. (2021). The Influence of Promotional Mix on Female Consumers' Buying Behaviour. *Journal of International Business, Economics and Entrepreneurship*, 6(2), 36–45. <https://doi.org/10.24191/jibe.v6i2.16653>
- Prof, S., & Hellström, T. (2024). *Driving Social Sustainability and Resilience of SMEs Amidst Turbulence : The Role of Information Technology and Dynamic Capabilities. May*, 1–114.
- Mansor, A. A., & Isa, S. M. (2022). Areas of Interest (AOI) on marketing mix elements of green and non-green products in customer decision making. *Neuroscience Research Notes*, 5(3). <https://doi.org/10.31117/neuroscirn.v5i3.174>

- Mileti, A., Guido, G., & Prete, M. I. (2016). Nanomarketing: A New Frontier for Neuromarketing. *Psychology and Marketing*, 33(8), 664–674. <https://doi.org/10.1002/mar.20907>
- Mehrabian, A., and J. A. Russell. 1974. *An Approach to Environmental Psychology*. Cambridge, MA: MIT Press
- Mohd Isa, S., & Mansor, A. A. (2020). Rejuvenating the Marketing Mix Through Neuromarketing To Cultivate the Green Consumer. *International Journal of Industrial Management*, 5(December), 66–75. <https://doi.org/10.15282/ijim.5.0.2020.5623>
- Pozharliev, R. I. (2017). *Social Neuromarketing: The Role of Social Context in Measuring Advertising Effectiveness*. <https://repub.eur.nl/pub/95528/EPS2017402MKT.pdf>
- Putit, L., & Sahudin, Z. (2023). Towards adopting innovative quick response (QR)-enabled contactless transaction payment: the Malaysian MSMES' entrepreneurial perspective in COVID-19 setting. In *Open Innovation in Small Business: Creating Values for Sustainability* (pp. 57-70). Singapore: Springer Nature Singapore.
- Romanenko, Y. (2020). *The Correlation of Neurophysiologic and Social Mechanisms of The Subconscious*. August 2018.
- Samsuri, N., Reza, F., Begum, T., Yusoff, N., Idris, B., Omar, H., & Isa, S. M. (2016). Electrophysiological quantification of underlying mechanism of decision making from auto dealer advertisement - A neuromarketing research. *AIP Conference Proceedings*, 1782(October). <https://doi.org/10.1063/1.4966084>
- Shaari, N. A. S., Syafiq, M. M. J., Amin, M. K. M., & Mikami, O. (2019). Electroencephalography (EEG) application in neuromarketing-exploring the subconscious mind. *Journal of Advanced Manufacturing Technology*, 13 (Special Issue 2), 81–92.
- Wilson, R. M., Gaines, J., & Hill, R. P. (2008). Neuromarketing and consumer free will. *Journal of Consumer Affairs*, 42(3), 389–410. <https://doi.org/10.1111/j.1745-6606.2008.00114.x>
- Wohlwill, J. F. (1976). "Environmental Aesthetics: The Environment as a Source of Affect." *Human Behavior and Environment* 1: 37–86.