

Neuromarketing: A Tool To Understand Consumer Psychology

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ABSTRACT

Consumer mind is a complex black box and it is difficult to understand what he thinks, says, does and feels (Martínez 2012). Feelings of consumers have gained strategic importance for marketers rather than only focusing on need identification and satisfaction. Neuromarketing has emerged as a strategic tool which tries to map brain activity, consumer sensorimotor and emotional responses of consumers to understand their responses to different marketing activities carried out by organizations (Kumar & Singh, 2015).

The concept of Neuromarketing was introduced in 1990 in Harvard University with a purpose to sell advertising but later in 2002 the concept was named as “Neuromarketing” by Dutch marketing professor Ale Smids. The concept uses medical science technology i.e. fMRI (Functional Magnetic Resonance Imaging) to measure the brain activity by detecting changes associated with blood flow. Market Specialists make the use of fMRI to map the changes in brain activity, to know which part of brain is triggered and to understand what tell consumers to make the decision (Dooley, 2019). Neuromarketing is being considered as one of the tools to gain attention of the consumers in order to understand the impact created on sensory organs of the prospective target audience and generate brand awareness (Kumar & Singh, 2015).

The paper discusses about how marketers are using neuromarketing as a tool to understand the behaviour of their consumers and position themselves as shining stars in the eyes of the consumers. Exploratory research design is employed to conduct the study. A conceptual model is framed to understand the impact of neuromarketing tools on behaviour of consumers leading to final purchase. The research study will be beneficial for marketers, academicians and organizations as it is an emerging field where practitioners apply neuroscience techniques to understand marketing practices and consumer psychology.

Keywords

Neuromarketing, Sensory organs, Branding, Psychology

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Introduction

Consumer Psychology is the unique study of understanding a consumer’s complex mind full of thoughts. The study revolves around consumer’s feelings, emotions, sentiments, and perceptions they form towards any product they are using. This psychology formed in minds of consumers is not raised in just one day but it is a continuous process that consumers attach themselves with the products they are seeing or using in long run. Every-time, whenever the consumer sees a product they are loyal to, their mind starts functioning and they tend to feel for it. These feelings and emotions which consumers have for the product affect the behaviour of consumers in the marketplace (Penz and Hogg, 2011).

Understanding consumer behaviour always seems to be the top priority of marketers as it is very challenging to understand consumer behaviour in a dynamic environment. Consumer behaves differently according to different situations. The behaviour of consumers can be categorized under two factors i.e. first, psychological factors which involve their attitude, preferences, memory, values, emotions, desires, lifestyle, and perception. Second, reference groups, include consumer’s peer groups, family, society, and culture. These factors trigger the consumer’s brain and tell them to behave distinctively. Understanding the changing behaviour of consumers with time, marketers formulate strategies to connect with them. In the last few years, marketers have come up with a new marketing

strategy to understand the science behind consumer behaviour and termed the strategy as neuromarketing.

Neuromarketing is the scientific study of consumer responses to marketing inducement by understanding the consumer sensory-motor and make them utilize their brain ability and connect with the consumer by creating brand loyalty which reflects the emotional response of consumer towards a particular product. This marketing strategy includes brain mapping, scanning, imaging to analyze the consumer sensitive responses to different marketing elements like product, place, price, and promotion (Cherubino et al., 2019)

The concept of neuromarketing in the field of marketing acts as a tool for marketers to understand their audience and offer them what they want or desire. With the use of technology, tools and techniques have emerged in recent years which are helping marketers to fulfill their consumer wishes. Some of the tools and techniques developed to map the signals of the brain are eye-tracking, brain imaging, empathic design, galvanic skin response, and fMRI. fMRI (functional Magnetic Resonance Imaging) is coined as the most reliable technique as it is concerned with the changes happening in the blood flow while measuring the brain activity (Chandwaskar and Pallavi, 2019). The blood flow of the consumer mind increases with the functioning of the brain. This technique helps researchers to understand consumer behavioural changes and find which part of the brain is influencing consumers to make a decision.

In current competitive time, marketers have to be aware of consumer needs & want in order to be ahead of their

competitors. They must know what their consumers think or expect from them. The present study focuses on the newly emerging field of marketing i.e. neuromarketing which tells about consumer psychology and what lets consumers make a purchase decision by use of scientific techniques in the field of marketing. The design used in the study to understand consumer's behaviour by applying the neuro technique is the empathic design where the responses are recorded in the consumer's environment. This design is also known as a sensitive design as it connects with consumer senses and emotions. The study will help the marketers to understand their consumer's dynamic behaviour and strategize accordingly to create brand loyalty in the minds of the consumer.

Methodology

Rationale for the study and Research Questions

Decisions have always been a very important aspect of consumer psychology and are the reactions of the behaviour consumer depicts in different situations. Consumer psychology demonstrates the feelings & emotions consumers have in their mind which can be positive or negative (Williams, 2014). Positive emotions may lead to positive decisions and negative emotions may lead to negative decisions or positive as well, as sometimes marketers deliberately triggers the negative side of consumer emotions to get the positive result. Neuromarketing tools helps in studying psychological behaviour of consumers in varying scenarios. Empathic Design helps in erecting the emotional connect of product with the consumers in order to observe their reaction (Elmansy, 2014). The reactions observed from the testing gives clear understanding about the psychology and behaviour of consumer towards the particular object and data collected from responses helps marketing organizations to know what affects the purchase decision of consumers. The paper aims in exploring the interrelationship between neuromarketing tool (empathic design), behavioural traits of consumers (feelings & emotions) which lead to final purchase decision. The main aim of paper is to understand how neuromarketing tools helps in evaluating consumer behaviour which influence consumers to make final purchase decision. In order to understand this, the research questions are as follows:

1. How does the neuromarketing tool of empathic design help in studying consumer psychology?
2. How does feelings and emotions affect the consumer psychology?
3. How feelings & emotions observed from empathic design influences consumer purchase decision.

The paper begins with the introduction of the theme, the rationale for the study, research questions and the literature for the study that further stimulates the conceptual framework and developing the proposed model for the research.

Neuromarketing & its Implementation

Kumar and Singh (2015) found the elements of consumers-physical body, mind, heart, and spirit have a major impact on understanding consumer neuroscience. The author noticed neuromarketing techniques such as neuroimaging, eye tracking, fMRI, and EEG that are followed by companies to understand their consumers. Roth (2013) ranked fMRI, EEG, and MEG as the most prominent techniques used to understand consumer behaviour and marked the consumer brain as the black box model which tells about the consumer characteristics of the decision making process. Madan and Popli (2016) contributed by stating that human expectations and desires can be divulged by understanding the Human Black Box framework.

Neuromarketing assesses the consumer decision-making technique. The technique will help the companies to understand how the consumers behaviour varies in different situations and which part of the brain triggers the emotions and unconscious minds of the consumer who make a purchase decision (Sebastian, 2014). Constantinescu et al. (2019) noticed that to generate the feeling of consumer loyalty, it becomes important for organizations to understand their consumers and their feelings and emotions. Therefore, companies show themselves as a transparent entity by forming social media campaigns to build consumer trust. Ramya and Ali (2018) observed that consumer behaviour includes consumer's attitude, intention, preferences and these buying characteristics shows the positive or the negative impact on consumer decision making process.

Miljković and Alčaković (2010) observed the buy button in the consumer brain which activates and tracks all the activities that happened in front of the consumer without consumer awareness. Morin (2011) named human brain as the reptilian brain because it tends to decide in the human body from consumer perspective which makes them feel emotional and attached and influence consumer to do impulsive buying. Lindell and Kidd (2013) observed that just with a change of one word from "Right Start" to "Right Brain" consumers mindset got impacted as consumers found the term "Right Brain" training program more interesting, technologically advanced, valuable and effective. Personality traits, Consumer trust, Consumer satisfaction, brand loyalty, risk-taking power can be depicted by brain imaging technology and will help marketers to design their strategies according to consumer interest (Fugate, 2007). Fisher et al. (2013) agreed and said that the advertisers claim that humans have a magic spot in their brain which triggers them to make purchase decision but professionals countered that if it's so easy to manipulate consumer behaviour then in coming future neuromarketing will become the threat for the economy. Brain imaging is the most sophisticated tool to map the actions of consumer brain used by marketers and advertisers but it is not possible to depict all the actions of the brain or the external forces acting on the brain (Garcia and Saad, 2008).

Dragolea and Cotîrlea (2011) observed the human brain model directed by Paul Mc Lean which describes the functions of the brain. The human brain consists of 3 parts i.e. first, the primitive brain (unconscious and denotes reaction of the human), second is the emotional brain (subconscious and feel emotions) and third is the rational

brain (conscious and understanding). Authors have observed that the brain works according to these functions which finally influence or manipulate consumers to make a purchase decision. Murphy et al. (2008) found that there is a thin line gap between perception and conscious awareness. The tools of neuromarketing should be followed in such a manner that it does not exploit the ethics of marketing. Collecting information from consumers unknowingly to manipulate their buying decision is somewhat immoral and in near future can become the ultimatum for the companies, if consumers started getting aware of neuromarketing. The power of usage of neuromarketing is higher than the knowledge of perception (Butler, 2008). Fugate (2008) noticed that consumer satisfaction and brand loyalty can be generated by earning consumer trust. With the help of neuromarketing, service providers understand the desires and want of their consumers which helps the service providers to satisfy their consumers by providing services most effectively and efficiently.

Consumer psychology gives signals to the brain to decide. These signals can be detected by neuromarketing techniques. But the problem arises when it comes to the permission of detecting the signals of the consumer brain without consumer consent. To highlight this issue, five parameters are introduced i.e. first: aware consumer, second: take consent of consumer, third: make consumers participate, fourth: security of consumer data to avoid manipulation and fifth: convey the consequences of using neuromarketing technology to consumers (Wilson et al., 2008). Olteanu (2015) Market researchers use the survey method to collect information from consumers but, if the consumer feels shame or fear in sharing views the information collected will be vague. So, researchers started using neuroimaging tools to map the consumer's brain. The author observed that the utilization of brain scanning techniques without consumer consent is unethical so guidelines were formed which need to be followed by the marketers using neuro tools. Javor et al. (2013) connect neuromarketing with by stating that neurology can contribute to marketing by applying neurotechnology on neuro patients to detect the behavioural reactions to map marketing strategies.

Ulman et al. (2015) observed the changing paradigm from traditional marketing research tools to modern neuromarketing research techniques where it becomes important for marketers to maintain the human values, respect, and integrity of consumers. In light of the moral values, the research is proposed for the well-being and health of the humans on earth and to remind the market researchers to prioritize the rational use of neurotechnology at first and then the cost-effectiveness. EEG technique is used to know the emotional response of the brain. The study focuses on the selection of the right neurotechnology while maintaining the ethical prospectus of the research (Bercea and Cuza, 2012).

Vasiljević et al. (2019) found an infrastructural model based on the postulates of IoT (internet of things) to make the application of neuromarketing technology flexible. Klinčeková (2016) denotes the future of neuromarketing as "iMotions" which will give a clear understanding of the emotional behaviour of consumers on

the marketing communication techniques followed by marketers to grow in the industry. Consumer behaves applying the logical method which tells them to investigate about the product they want to purchase and then make the purchase decision keeping in mind all the rational reasons to buy a particular product (Köylüoğlu et al., 2018).

Chakraborty and Suresh (2018) found the trend, brand quality, comfort and availability and price of the product are the major factors that affect consumer buying behaviour and advertisements act as influential tool which forms a perception about a brand in consumer's mind and make consumers to behave impulsively. Price of the product and the experience consumers have with the quality of product forms the judgement about the product in consumer's mind. This judgement helps the consumers to decide to shop online. Authors have noticed that social media platforms like Facebook advertise the products whenever consumer comes online, which triggers consumer's psychology and affect their buying decision to shop online (Rahman et al., 2018).

Constructs and Hypothesis

After reviewing the literature, the most important variables that affect the study has been proposed in a model. The study also formulates the hypothesis to understand the relationship between the variables.

Variables of the study

Empathic Design

Sah (2019) identified an empathic design method to measure the brain activities of consumers which can be tested in the natural environment. This design of testing helps in observing consumer's reactions instead of asking straight. It is the most feasible, low-cost, low-risk visual technique to map the consumer's behaviour and understand the reasons behind the decisions made by consumers (Ryabchykova, 2017). Ghosh et al. (2016) added by commenting on the empathic design method that helps in examining the consumer interaction with the product by taking the help of psychological constructs. This helps the marketers to understand what consumers thinking about the product or how consumers perceive the product.

Empathic design testing is done without the use of any equipment; it is just like observing the body language, facial codes, gestures of consumers which are linked to their feelings & emotions. With the application of an empathic design model, it becomes easy to understand consumer preferences and consumer reaction towards products or services which helps marketers to fulfill their demands and grow their businesses (Kottier, 2014).

Battarbee et al. (2015) stated that empathic design helps organizations to build an emotional and deeper connection with their consumers by understanding the consumer point of view regarding the product and services offered by the companies. The author observed empathy as a powerful design for understanding and processing the information of consumers as it triggers the feelings & emotions of the consumers. This method helps in mapping the consumer's

brain and observes consumer reaction towards the product or service offered to them and tells the designers what makes consumers feel satisfied. Therefore marketers apply such techniques to understand consumer's feelings & emotions which further help consumers in making a final purchase decision (Hsieh et al. (2013).

Mattelmaki et al. (2013) stated that it is the human-centered approach that makes consumers sense their emotions through bodily activity and talk about their feelings. Sousa and Macêdo (2020) found that colour psychology plays a crucial role in influencing the audience to make a buying decision because when consumer finds something colorful & attractive, they start feeling for the product which triggers their mind and it gives signals to the brain which tells consumers to make a purchase decision and hence empathic design helps by creating a prototype consumer's mind can be observed and reactions can be noted for further experiments.

Morris and Cormican (2012) coined empathic design as the voice of the consumers which helps the companies to understand their consumer feelings and needs and offer consumers according to their need which becomes easy for consumers to make the buying decision. that consumer emotions are the prime reason for the purchase decision. These emotions can vary on the emotional state or mood of the consumer which can be positive or negative and is reflected in the buying decision for the product (Soodan and Pandey, 2016).

H1: There is positive and significant influence of empathic design on the feelings & emotions of consumer.

Experiences

Postma et al. (2012) observed that empathic design intends to build the experiences of the consumers with creative understanding which is the amalgamation of cognition and affection and in result enhances the emotional understanding in consumer's behaviour. This tenderness is conveyed by the translation process which is the challenge for marketers to deliver the message to consumers in rational language so that consumers feel an emotional connection with the product. This design act as a thinking tool that sensitizes the consumer relationality and personality that is reflected in their behaviour which helps marketers and advertisers to observe and understand their consumers even better (Postma et al. ,2012). Penz and Hogg (2011) noticed that consumer is the effigy of mixed emotions, loved, anger, fear, happiness, sadness. These emotions come from consumer experiences which are reflected in their buying behaviour and so the decisions are taken by consumers to make the next purchase. Chitturi (2009) found that consumers carry emotional experiences with the product. These events come from the hedonic and utilitarian design of the product having positive or negative consumption experiences and escort marketers to understand the consumer post-consumption emotions with satisfaction and dissatisfaction level and hence generate consumer loyalty.

Leonard and Rayport (1997) noticed a basic root of empathic design which is observation, which means

observing the consumer response in their environment. This technique involves various steps to understand the consumers' feelings & emotions that are: observation, gathering data, reflection and analysis, brainstorming for solutions, and developing prototypes of possible solutions. After understanding the whole process of empathic design authors concluded that this design can help in contributing to the flow of ideas which will be beneficial for advertisers, marketers, and researchers. Luh et al. (2011) found that consumer behaviour needs to be carefully observed with dynamic market reactions and empathic design helps in observing consumers behaviour as consumers associate themselves with the brand or product being offered to them which means consumers value the brand image of the product. Thomas and McDonagh (2013) found that consumers perceive the products as the part of their personality so to set a good brand image about a product or service in the minds of consumers, marketers strategies to satisfy the needs of consumers by making an emotional connect of product or service with the consumer. Empathic design helps in observing the emotional aspect of consumers and thus acts as a tool to map the consumer buying behaviour.

H2: There is positive and significant influence of consumer experiences on the feelings & emotions of consumer.

Individual Factors

Diehl et al. (2012) found that age and gender are the factors that influence consumer emotional responses as age and gender both reflects the behavior of consumer at market place. The decions taken by consumers based on their feelings or emotions vary due to their age and gender. Keshari and Jain (2016) added by stating that age of the consumer impacts the emotions differently as a person with age group of 20-30 years thinking is completely different from that of a 50 year person. Similary both male and female can have different perspective and can have a different way of expressing emotions (Fisher and Dube, 2005).

Kring and Gordon, 1998 observed that women are more emotionally expressive and men are more reactive. Women express her feelings of love, anger, happiness, and sorrow through her expressions or gestures whereas men have the tendency of reacting more in varying situations.

Suman et al., 2019 observed that the buying behavior of consumer of young age is more powerfull than that of older ager of consumers especially when we talks about online shopping. As aged consumers feels the traditional shopping pattern is the most reliable shopping method whereas young generation thinks differently they feel online shopping as the most convenient method to buy anything which means maybe old age consumers are unaware with the usage of technological tools to shop online. It has been noticed that changes comes in human body with aging. These changes can be of hearing, vision, smell or taste. These changes with age make the consumers feels unlike. So it becomes very

obvious that aging affects the feelings & emotions of consumers distinctively. (Drolet et al., 2018)

H3: There is positive and significant influence of individual factors (age and gender) on the feelings & emotions of consumer.

Feelings & Emotions Influence on Final Purchase Decision

Achar et al. (2016) observed that emotions lodged in marketing appeals influence the consumer decision-making process. Authors have coined emotions as antecedents to the final purchase decision as emotions are the result of the decision making and consumption of the consumers.

Feelings vary on the emotional intelligence level of the consumer and can be positive or negative. Consumers can even possess negative emotions to get a positive response and to map the emotional intelligence of the consumer the emotional signals are noticed which clearly reflects in the behaviour of the consumer and hence it is said that feelings & emotions play a powerful role in making a final purchase decision (Bell, 2011)

Chen et al. (2017) observed that the consumer decision is influenced by two types of appraisals i.e. cognitive appraisal and affective appraisals out of which cognitive appraisals helps in tendering the purchase intention of the consumers. Consumers focus on their preferences and consider emotions as an interactive and heuristic approach where the consumers interact with their preferred brands and make the judgment quickly. Judgments taken while considering emotions as an economic activity are also considered as social or interactive action as these emotions make the consumers feel good which is clearly shown in their action when they make the final purchase decision (Bandelj, 2009). Decisions made are based on the emotional state of the consumers. This emotional state can be manipulated by forming assumptions in consumers mind and making them feel in a way marketers/ advertisers wants them to feel. The author also found that there is a positive and negative impact of emotional state in a consumer's mind. When a consumer feels positive, the risk taken for making a purchase decision comes out to be positive else negative (Chuang, 2007).

Lucey (2005) stated emotions & feelings give rise to the judgment that investors form in their minds which results in the final decision. The author also noticed that decisions can vary on the mood or mental state of the investor which simply means investor decision is based on how the investor feels. The decision becomes the most valuable decision when it comes to the family because in this situation feelings and emotions are connected with the family values. Hence authors have stated that emotions and values influence the purchase decision where the consumers become irrational and take decisions considering their personal feelings (Levy et al., 2008).

H4: There is positive and significant influence of feelings & emotions on the purchase decision of consumer.

Advertising Appeals, Brand Image, Price, Promotional Techniques, Atmosphere

Bagozzi and Moore (1994) found that advertisements trigger the consumer emotions & sentiments. They influence consumers to feel in a way they want and thus the emotional feeling consumers arose in them after watching any advertisement results in empathic responses which include the feelings and emotions of humans through their reaction, expression, or gestures which control consumers to think and make a purchase decision. Majeed et al. (2017) gave ACE approach (i.e. Appeals, Celebrity Endorsement, Emotions) that attracts the women and catches their attention towards the advertisement to influence their buying decision.

Bello (2014) found that emotions can be manipulated with the help of affective priming where the consumer decision depends upon the interaction consumers have with the brand. The author observed another constraint which affects the buying decision of the consumers and that is the price of the product and stated that consumer reacts positively if the price of the product is low and make the positive purchase decision but on contrary if the product price is high or increased the consumer react aggressively and dwindle the product purchase. Store atmosphere amplifies the emotions of the consumers which tends consumers to feel happy and therefore consumer possesses strong emotions towards the store atmosphere which positively impacts the purchase decision of the consumers (Madjid, 2014). Mukhopadhyay and Johar (2007) found that decisions that arise from emotions give rise to the judgments formed in the minds of consumers and as a result used by marketers to influence consumer decision by gaining the attention of consumers with emotional advertising. Marketers not only gain the attention of the audience but also manipulate the consumers with their affective advertising techniques. (Soodan and Pandey, 2016)

H5: There is positive and significant influence of advertising appeals on the relationship of feelings & emotions and the purchase decision of consumer.

H6: There is positive and significant influence of brand image on the relationship of feelings & emotions and the purchase decision of consumer.

H7: There is positive and significant influence of price on the relationship of feelings & emotions and the purchase decision of consumer.

H8: There is positive and significant influence of promotional techniques on the relationship of feelings & emotions and the purchase decision of consumer.

H9: There is positive and significant influence of atmospherics on the relationship of feelings & emotions and the purchase decision of consumer.

The hypothesis evolved in this section has been formulated with the help of conceptual framework in the research model depicted in Figure 1.

The model embraces the prime drivers of the study to understand the impact of neuromarketing tool on consumer decision making. After extensive literature review drivers have been specified keeping in mind the value of consumer's feelings & emotions to their buying decision.

Proposed Model After Application of Neuromarketing Tool:

The below figure represents the proposed model after application of neuromarketing tool i.e. empathic design on consumer feelings & emotions which influence them to make a final purchase decision.

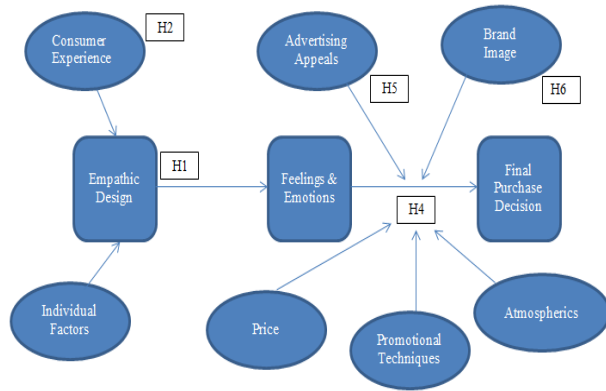


Figure 1. Represents the proposed model after application of neuromarketing tool

Conclusion & Managerial Implications of the study

Neuromarketing is an evolving field of market research and acts as a mechanism to understand the ground root of the decision-making process. The concept of neuromarketing creates a deeper understanding of consumer psychology or consumer behaviour. It describes the way a consumer thinks and consumer behaves to various marketing stimuli. This study tried to understand the impact of neuromarketing tools on consumer behaviour. With the help of an extensive literature review, a conceptual model is framed which tells about the application of neuromarketing tool (empathic design) on consumer behaviour traits (feelings and emotions) which helps consumers in making a final purchase decision. The study highlights the shift from just understanding “consumer wants” with “consumer feelings” which means that consumers make a purchase decision based on their feelings. These feelings and emotions emerge in the minds of consumers come through past experiences or advertising appeals. The study reflects the power of advertising appeals to influence consumer decisions used by organizations to influence consumer's psychology. The research study will be beneficial for marketers, advertisers, academicians, and organizations as it is an emerging concept where practitioners apply neuroscience techniques to understand their consumers better and create deeper connect with them. Neuromarketing can further help in introspecting the behaviour of consumers while making a purchase decision concerning the advertising appeals which emotionally connect consumers and influence or mould consumer's purchase decisions.

References

- [1] Achar, C., So, J., Agrawal, N., & Duhachek, A. (2016). What we feel and why we buy: the influence of emotions on consumer decision-making. *Current Opinion in Psychology*, 10, 166-170.
- [2] Bagozzi, R. P., & Moore, D. J. (1994). Public service advertisements: Emotions and empathy guide prosocial behavior. *Journal of marketing*, 58(1), 56-70.
- [3] Bagozzi, R. P., Belanche, D., Casaló, L. V., & Flavián, C. (2016). The role of anticipated emotions in purchase intentions. *Psychology & Marketing*, 33(8), 629-645.
- [4] Bandelj, N. (2009). Emotions in economic action and interaction. *Theory and Society*, 38(4), 347-366.
- [5] Battarbee, K., Suri, J. F., & Howard, S. G. (2014). Empathy on the edge: scaling and sustaining a human-centered approach in the evolving practice of design. IDEO. http://www.ideo.com/images/uploads/news/pdfs/Empathy_on_the_Edge.pdf.
- [6] Bell, H. (2011). A contemporary framework for emotions in consumer decision-making: Moving beyond traditional models. Bell, HA (2011). A contemporary framework for emotions in consumer decision-making: Moving beyond traditional models. *International Journal of Business and Social Sciences*, 2(17), 12-16.
- [7] Bello, E. (2014). Unravelling the Consumer Brain: The Role of Emotion in Purchase Behavior.
- [8] Bercea, M. D. (2012, August). Anatomy of methodologies for measuring consumer behavior in neuromarketing research. In *Proceedings of the LCBR European Marketing Conference* (pp. 1-14).
- [9] Butler, M. J. (2008). Neuromarketing and the perception of knowledge. *Journal of Consumer Behaviour: An International Research Review*, 7(4-5), 415-419.
- [10] Chakraborty, P., & Suresh, A. S. A Study of Factors of Consumer Buying Behavior

and its Influence on Consumer Perception: Evidence from Value Fashion Retail in The City of Bengaluru.

- [11] Chandwaskar, P. (2019). A Review on: Neuromarketing as an emerging field in consumer research.
- [12] Chen, A., Lu, Y., & Wang, B. (2017). Consumers' purchase decision-making process in social commerce: A social learning perspective. *International Journal of Information Management*, 37(6), 627-638.
- [13] Cherubino, P., Martinez-Levy, A. C., Caratu, M., Cartocci, G., Di Flumeri, G., Modica, E., ... & Trettel, A. (2019). Consumer behaviour through the eyes of neurophysiological measures: State-of-the-art and future trends. *Computational intelligence and neuroscience*.
- [14] Chitturi, R. (2009). Emotions by design: A consumer perspective. *International Journal of Design*, 3(2).
- [15] Chuang, S. C. (2007). The effects of emotions on the purchase of tour commodities. *Journal of Travel & Tourism Marketing*, 22(1), 1-13.
- [16] Constantinescu, M., Orindaru, A., Pachitanu, A., Rosca, L., Caescu, S. C., & Orzan, M. C. (2019). Attitude evaluation on using the neuromarketing approach in social media: matching company's purposes and consumer's benefits for sustainable business growth. *Sustainability*, 11(24), 7094.
- [17] de Sousa, F. N. T., & Macêdo, M. E. C. (2020). Neuromarketing and Psychology of Cors in the process of Making Purchase. *International Journal of Advanced Engineering Research and Science*, 7(5).
- [18] Diehl, S., Mueller, B., & Okazaki, S. (2012). Gender and Age as Factors Influencing Consumer Responses to Soft-sell Ads—A Multi-country Comparison. In *Advances in Advertising Research (Vol. III)* (pp. 291-302). Gabler Verlag, Wiesbaden.
- [19] Dragolea, L., & Cotirlea, D. (2011). Neuromarketing: between influence and manipulation. *Polish Journal of Management Studies*, 3, 78-88.
- [20] Drolet, A., Jiang, L., Pour Mohammad, A., & Davis, C. (2019). The influence of aging on consumer decision-making. *Consumer Psychology Review*, 2(1), 3-16.
- [21] Elmansy, R. (2014). Empathic Design: The Most Difficult Simple Approach to Successful Design.
- [22] Fisher, C. E., Chin, L., & Klitzman, R. (2010). Defining neuromarketing: Practices and professional challenges. *Harvard review of psychiatry*, 18(4), 230-237.
- [23] Fisher, R. J., & Dubé, L. (2005). Gender differences in responses to emotional advertising: A social desirability perspective. *Journal of Consumer Research*, 31(4), 850-858.
- [24] Fugate, D. L. (2007). Neuromarketing: a layman's look at neuroscience and its potential application to marketing practice. *Journal of consumer marketing*.
- [25] Fugate, D. L. (2008). Marketing services more effectively with neuromarketing research: a look into the future. *Journal of Services Marketing*.
- [26] Garcia, J. R., & Saad, G. (2008). Evolutionary neuromarketing: Darwinizing the neuroimaging paradigm for consumer behavior. *Journal of Consumer Behaviour: An International Research Review*, 7(4-5), 397-414.
- [27] Ghosh, D., Olewnik, A., Lewis, K., Kim, J., & Lakshmanan, A. (2017). Cyber-Empathic Design: A data-driven framework for product design. *Journal of Mechanical Design*, 139(9).
- [28] Hsieh, M. H., Luh, D. B., Huang, C. Y., & Ma, C. H. (2013, July). Satisfying Consumers' Needs through Systematic Empathic Design Model. In *International Conference of Design, User Experience, and Usability* (pp. 488-497). Springer, Berlin, Heidelberg.

- [29] Javor, A., Koller, M., Lee, N., Chamberlain, L., & Ransmayr, G. (2013). Neuromarketing and consumer neuroscience: contributions to neurology. *BMC neurology*, 13(1), 13.
- [30] Keshari, P., & Jain, S. (2016). Effect of age and gender on consumer response to advertising appeals. *Paradigm*, 20(1), 69-82.
- [31] Klinčková, S. (2016). Neuromarketing—research and prediction of the future. *International Journal of Management Science and Business Administration*, 2(2), 53-57.
- [32] Kottier, W. G. (2014). The added value of neuromarketing tools in the area of marketing research (Bachelor's thesis, University of Twente).
- [33] Köylüoğlu, A. S., İnan, Ü. S. E., & Acar, Ö. E. (2018). A Research on Consumer Behaviour: Konya Sample. *China-USA Business Review*, 316.
- [34] Kring, A. M., & Gordon, A. H. (1998). Sex differences in emotion: expression, experience, and physiology. *Journal of personality and social psychology*, 74(3), 686.
- [35] Kumar, H., & Singh, P. (2015). Neuromarketing: An Emerging Tool of Market Research. *International Journal of Engineering and Management Research (IJEMR)*, 5(6), 530-535.
- [36] Leonard, D., & Rayport, J. F. (1997). Spark innovation through empathic design. *Harvard business review*, 75, 102-115.
- [37] Levy, D., Murphy, L., & Lee, C. K. (2008). Influences and emotions: exploring family decision-making processes when buying a house. *Housing Studies*, 23(2), 271-289.
- [38] Lindell, A. K., & Kidd, E. (2013). Consumers favor “right brain” training: the dangerous lure of neuromarketing. *Mind, Brain, and Education*, 7(1), 35-39.
- [39] Lucey, B. M., & Dowling, M. (2005). The role of feelings in investor decision-making. *Journal of economic surveys*, 19(2), 211-237.
- [40] Luh, D. B., Ma, C. H., Hsieh, M. H., & Huang, C. Y. (2011). Applying an empathic design model to gain an understanding of consumers' cognitive orientations and develop a product prototype. *Journal of Industrial Engineering and Management (JIEM)*, 5(1), 229-258.
- [41] Madan, M., & Popli, A. (2016). A study on Neuromarketing as emerging innovative market research strategy: An interpretive structural model approach. *IOSR Journal of Business and Management*, 18-30.
- [42] Madjid, R. (2014). The influence store atmosphere towards consumer emotions and purchase decisions. *International Journal of Humanities and Social Science Invention*, 3(10), 11-19.
- [43] Majeed, S., Lu, C., & Usman, M. (2017). Want to make me emotional? The influence of emotional advertisements on women's consumption behavior. *Frontiers of Business Research in China*, 11(1), 16.
- [44] Mattelmäki, T., Vaajakallio, K., & Koskinen, I. (2014). What happened to empathic design?. *Design issues*, 30(1), 67-77.
- [45] Miljkovic, M., & Alcakovic, S. (2010). Neuromarketing: marketing research future?.
- [46] Morin, C. (2011). Neuromarketing: the new science of consumer behavior. *Society*, 48(2), 131-135.
- [47] Morris, S., & Cormican, K. (2012). Towards empathic design in the Irish medical device industry. In *DS 70: Proceedings of DESIGN 2012, the 12th International Design Conference, Dubrovnik, Croatia*.
- [48] Mukhopadhyay, A., & Johar, G. V. (2007). Tempted or not? The effect of recent purchase history on responses to affective advertising. *Journal of Consumer Research*, 33(4), 445-453.

- [49] Murphy, E. R., Illes, J., & Reiner, P. B. (2008). Neuroethics of neuromarketing. *Journal of Consumer Behaviour: An International Research Review*, 7(4-5), 293-302.
- [50] Olteanu, M. D. B. (2015). Neuroethics and responsibility in conducting neuromarketing research. *Neuroethics*, 8(2), 191-202.
- [51] Penz, E., & Hogg, M. K. (2011). The role of mixed emotions in consumer behaviour. *European Journal of Marketing*.
- [52] Postma, C. E., Zwartkruis-Pelgrim, E., Daemen, E., & Du, J. (2012). Challenges of doing empathic design: Experiences from industry. *International journal of design*, 6(1).
- [53] Postma, C., Lauche, K., & Stappers, P. J. (2012). Social theory as a thinking tool for empathic design. *Design issues*, 28(1), 30-49.
- [54] Rahman, M. A., Islam, M. A., Esha, B. H., Sultana, N., & Chakravorty, S. (2018). Consumer buying behavior towards online shopping: An empirical study on Dhaka city, Bangladesh. *Cogent Business & Management*, 5(1), 1514940.
- [55] Ramya, N., & Ali, S. M. (2018). A study on consumer buying behaviour towards Amul products with special reference to Coimbatore city. *IJAR*, 4(7), 353-357.
- [56] Roth, V. A. (2014). The potential of neuromarketing as a marketing tool (Bachelor's thesis, University of Twente).
- [57] Sah, V. Influence of Neuromarketing on Marketing Inputs.
- [58] Sebastian, V. (2014). Neuromarketing and evaluation of cognitive and emotional responses of consumers to marketing stimuli. *Procedia-Social and Behavioral Sciences*, 127, 753-757.
- [59] Soodan, V., & Pandey, A. C. (2016). Influence of emotions on consumer buying behavior. *Journal of Entrepreneurship, Business and Economics*, 4(2), 163-181.
- [60] Suman, S. K., Pallavi Srivastava, & Shaili Vadera. (2019, July). Age and Gender Influences on Consumer Behavior Towards Online Discounts.
- [61] Thomas, J., & McDonagh, D. (2013). Empathic design: Research strategies. *The Australasian medical journal*, 6(1), 1.
- [62] Ulman, Y. I., Cakar, T., & Yildiz, G. (2015). Ethical issues in neuromarketing: "I consume, therefore I am!". *Science and engineering ethics*, 21(5), 1271-1284.
- [63] Vasiljević, T., Bogdanović, Z., Rodić, B., Naumović, T., & Labus, A. (2019, April). Designing IoT infrastructure for neuromarketing research. In *World Conference on Information Systems and Technologies* (pp. 928-935). Springer, Cham.
- [64] Williams, P. (2014). Emotions and consumer behavior. *Journal of Consumer Research*, 40(5), viii-xi.
- [65] Wilson, R. M., Gaines, J., & Hill, R. P. (2008). Neuromarketing and consumer free will. *Journal of consumer affairs*, 42(3), 389-410.
- [66] Рябчикова, К. М. (2017). EMPATHIC DESIGN AS A NEW PARADIGM IN FASHION METHODOLOGY.