

An An sso uro r tn , t o so s n t Futur

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CI ED

follow through with our purchases and Likewise, we can find

201,). Each of these is a method to investigate a consumer's brain, literally. Neuroscientists look at which parts of the brain are most active when watching a television ad, for example. This method is called fMRI (Mirsha, Shukla 2020). Each of these methods allows for immediate feedback from consumers which in turn, assists a company in the process of building a stronger brand.

Certain ethical boundaries may be crossed in the process of utilizing neuroscience to uncover more about consumer behavior. When using fMRI, there can be an unknown biased reaction to marketing signals (Clark, 2020) An example from a study conducted by Harvard University shows how the brain can be deceived into thinking there might be a reward when presented with something it is familiar with. The study plays a comedic cartoon's introductory theme song for a group of fans, familiar viewers, and people who have never seen the show before. The results showed that those who were fans of the show had activity in the part of their brain that thinks there is to be a reward (The Neurological Effects of South Park, 201). This is just one part of the puzzle when it comes to combating the ethical issues aligned with the neuromarketing processes.

Traditional means of marketing are becoming outdated as society becomes both overly stimulated and desensitized. Using neuroscience methods to interpret the emotional and physical response to an ad can be enlightening for a brand. The smallest details in an ad or product can grant a company the upper hand. Its goal is to discover those subconscious behaviors that humans consistently lean into (Iloka, Onyeke, 2020). Consumers are faced with daily decisions even when they are not aware. It's incredibly progressive for companies to utilize neurological methods in their research of consumer behavior. The territory is heavily undiscovered, yet this

only promotes its usage. Its evolution can significantly assist the growth of companies and how they produce.

Consumer behavior can be substantially expansive. Some elements are being undiscovered by modern marketers and neuroscientists. While there are problems attached to these new and interesting tactics, they allow producers to develop stronger methods of advertising. These studies that are being published about consumers are also very beneficial to the average consumer of any service, platform, or product. The tracking of a consumer's brain empowers the consumer to be educated on their behavior and be mindful of the schemes presented by the monetary world.

B roun n

The reactions consumers subconsciously have to the world around them are critical. Not only to those who produce what they react to but also to the consumers themselves. It enhances our knowledge of something as complex as the human brain. The core question of *why* can be heavy and bewildering. This is something that has driven nearly every scientific study, every curious brain, and anyone who wants to know *how*. Understanding the significance behind the reactions that we can't always see is transformative for the corporate world.

There's a lot that we can take away from a consumer, besides assisting in a marketing campaign for a company. Learning more about the psychological patterns that help us decide why we pull the trigger on a purchase, can help us learn more about human behavior in general. The truth is that there is not always much rationale behind buying behaviors. Loyalty can change and the markets are becoming increasingly competitive. Any event that occurs within the consumer experience is affected and can be disrupted or trigger the buyer.

Consumers make rapid decisions when they are shopping in a market. Studies show that a buyer's response to buy or not to buy is triggered first by an emotional reaction (Ramsoy, 201). Tracking the emotional responses consumers have to products is key and can show patterns in the average consumer. We, as humans, can be very predictable and appreciate this in our media. A study conducted in 2014 showed a sample group in such a way that the study concluded that society has a movie sequence that can be heavily predictable based on pop culture trends and general media (ibid.). The deeper that we investigate phenomena such as this, the more we can gather from human and consumer behavior.

Purpos o t u

The purpose of this study is to determine the importance of the implementation of neuroscience in the business world. Its goal is to provide an understanding of the processes involved and the significance of their development and evolution. How these might be used in a standard marketing plan and what place it has in the future of marketing and consumer behavior. The study will collect information from resources that demonstrate an understanding of neuromarketing to synthesize a conclusion. The results of the study will be used to inform both small businesses and corporations, specifically marketing teams.

R s r u st ons

Questions that will be answered within the study are as follows

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- a a y n d n n o a n oc
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- a a and a d fo co an a c oo o od

n o a n a n a b n b n o d

n n o t F

Consumers are being faced with more choices than ever in the markets. There is constant variety and expansion from producers as subcategories continue to pop up with demand. Gaining an understanding of ways to promote a product better and make it stand out is a battle amongst companies but can be achieved. With the emergence of new methods, companies can utilize psychology to promote products and services at a personalized level.

D n t ons

Definitions that are important to the basis of the study are described below

Neuromarketing, the application of neuroscience in terms of consumer behavior

Consumer Behavior, the study of why or why not consumers might purchase items or services. It relates to how their overall attitude might influence a purchase.

fMRI, (functional magnetic resonance imaging) is a process that shows activity in the brain using changes in blood flow, oxygen, etc.

EEG, (electroencephalography) uses electrodes attached to the scalp to track neuron activity within the brain. It does not pinpoint the exact location of the activity in the brain.

Eye-Tracking, used to track where eye movements travel to, and which portion of pictures or videos evoke the most reactions. Also tracks the dilation of the eyes in response to a stimulus to determine emotional arousal.

Facial Coding, technology that is attached to the face to track facial movements when intaking products, ads, images, etc.

GSR (galvanic skin response) this method measures the electric conductance of the skin which includes measuring moisture levels from sweat.

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The limitations of this study will be that the subject is relatively new. As it is still expanding and being explored, it is constantly changing. To avoid outdated information, research will be conducted within the last five years.

C h a p t e r t r u c k e R e v

Intro u t o n

Neuromarketing is an enhanced method of analyzing how producers can perfect marketing plans for consumers (Mishra & Shukla, 2020). Studying consumer behavior is a key factor in determining the most effective ways to market to a target market. Therefore, it's important to take a look at the research that focuses on a growing interest in and applications of neuromarketing. Many of these studies delve into methods such as eye tracking, facial coding, and FMRI (put in parentheses what this acronym stands for) that are used to break down the ways we can specifically pinpoint how to target consumers more effectively.

The literature review addresses three areas related to neuromarketing and consumer

Neuromarketing is used in such a way that marketers can pinpoint how advertisements are delivered to the public. Using tools such as eye tracking, EEG, and fMRI (brain tracking), we can deduct what is needed or what was achieved (Alsharif et al., 2021). The primary neuromarketing tools are used to record metabolic and electric brain activity as well as non-brain activity. Each tool has a very specific purpose and one of the most useful tools involves studying the brain's response to the media put in front of the human as well as how our physical body responds externally. EEG (electroencephalography) is a tool that can measure the responses of neurons in the brain directly (Alsharif et al., 2021). Additionally, eye tracking is a tool that is used across many psychological fields such as behavioral psychology and cognitive psychology (Alsharif et al., 2021). It assists producers in accounting for the way that a consumer might react to something like packaging, the colors chosen for the product, and where the product is placed on the shelf or in the store (Alsharif et al., 2021). Components such as eye tracking can provide important insights to marketers looking for feedback on their ads but can also assist brands in their marketing and product packaging.

This literature review describes in detail the elements involved in neuromarketing and how they work. The research provides in-depth information about each tool and how it can be applied by neuromarketing and how they are classified. The limitation of this study is the absence of providing the strengths and weaknesses specifically for each tool.

A study about point-of-purchase marketing analyzed the way eye tracking is used in stores and how it plays a role in a consumer's shopping experience. This research cites findings from an earlier study conducted in 1998 and discusses the way consumers go through three stages when making purchasing decisions (Chandon et al., 2000). The three stages are orientation, evaluation, and verification. Each of these stages can be applied throughout the

consumer purchasing process. These researchers conducted a study that tracked the way that consumers made purchasing decisions for orange juice and laundry detergent. The consumers were all women aged twenty-four to sixty-five years old and they did the shopping for the household. The results showed how visuals played a large role in the purchasing process

details such as heart regulation in response to a product or ad and whether that type of tool would benefit a producer in each category such as social media or brand strategy.

uro r t n App t ons n t Futur

Marketing is one of the key factors for any business. To succeed, you need your product or service to have exposure in a community for the target market. Neuromarketing can be used within many platforms. While there is a fine line or debate on whether neuromarketing is deemed a scientific study or a business application, it is very much clear that neuromarketing is of great assistance to the business world (Devaru et al., 2017). One of the most useful ways a business can hone neuromarketing techniques is within its advertisements. The way that consumers react to advertisements with their faces can be tracked with facial coding and eye tracking (Devaru et al., 2017). Commercials are a keyway to evoking emotion and creating an attachment to the brand. One study conducted an experiment in which, a test group was presented with samples of Coke and Pepsi and asked to differentiate the two. The participants were not able to separate the two sodas, but the scientists found that the group had increased blood flow as the group was triggered by the word ,Coke, . Simply knowing that they were being served Coke gave them a rush and the participants associated the beverage with something good or pleasant (Devaru et al., 2017).

This literature review gives us an overview of the strengths of neuromarketing and how it has been applied by businesses in the past. It also draws conclusions supporting the statement that neuromarketing is an effective marketing tool that should continue to be used in the business world. The review claims that “neuromarketing empowers marketers, psychologists, and economists,” (Devaru et al., 2018). It also suggests that the neuromarketing world will grow due to the competitive nature of the business world and the pursuit of the consumer.

The business world is ever-changing and has become incredibly enhanced and technological. Therefore, there's a need to keep up with the times and for businesses to explore in more depth the subconscious of consumers to discover why and how they behave as well as the way we discuss consumption. While neuromarketing tools may not be accessible to every company, it's critical that the business thoroughly understands its average consumer. Whether this is on a neural level or not, there is an urgency surrounding the competition in the business world. From a more general standpoint, the tools used in neuromarketing can assist companies with their marketing mix (Alvino, L. 2019). A marketing mix is composed of the "Four P's" or price, promotion, place, and product. Neurology can assist a business in analyzing its marketing mix by gauging a consumer's reaction to the P's. Using any of the methods that track a consumer's brain patterns, a business can monitor whether a consumer reacts positively or negatively to a price or the placement of the product on the shelf or the colors integrated into the product's packaging, etc. Another suggested application of neuromarketing mentioned in the study is to improve the understanding of the dynamics within a company. One such example is to assess trust within a team or a business deal (Alvino, L. 201).

This literature review provides concrete suggestions as to how we might use neuromarketing in new ways in the future. While the technology is currently used for consumer behavior purposes, it can also be used in other areas within the company and between companies.

➔H stor o uro r t n

Neuromarketing has made a huge breakthrough within the last ten years. The phenomena have taken the neurological, psychological, and consumer behavior world by storm. It's an

opportunity to combine the three and create a window into the mind of the average consumer. Neuromarketing is a study that takes traditional neuro strategies and applies them to studying consumer behavior (Iloka et al., 2020). Neuromarketing as a term was first coined in 2002 by Professor Ale Smidts and not long afterward came an influx of services that would harness this technology in the consultation industry. Neuromarketing has since taken off, developing a large

C h a p t e r 1

Intro d u c t i o n

Consumer behavior is what drives new and innovative methods of marketing and branding. The study of how consumers operate can be a mystery, but the idea that buyers are completely conscious while shopping has been ruptured. Decision-making is an important process to consider in the business world and can put a lot of pressure on producers. Within the last decade, there have been breakthroughs with modern technology and fields of study specific to the way the brain works in a retail setting. Neuromarketing has combined neuroscience with the values of the business world to put reason to why consumers purchase and behave the way they do. This relatively new method of studying consumer behavior is still being explored and has a wide scope of potential. Because of this, the following questions were addressed when performing research on the information and studies available.

What are the key elements used in the neuromarketing process?

How does neuromarketing differ from traditional marketing?

Is neuromarketing sustainable in the business world?

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To analyze any data recorded, surveys from research studies were gathered as the technology used is not something that can be obtained or replicated without expertise and funding. There are also in-depth reviews of the role neurology plays in consumer behavior based on the same journals studied. Both tools are dated within the last five years to the present year. The cutoff for research regarding the subject was 201 . Additionally, the majority of the findings are not based on neurological findings as the main focus is how the phenomena can benefit the business world and consumer behavior. Much of the content has been published within the last

conclusions must be gauged critically. If one article claims that the ideas behind ne

C h p t r s u t s

Intro u t on

conducting clinical and experimental studies, the EEG also has provided its fair share of contributions to the research world. It has gained in popularity partly because it is less expensive to use. The EEG uses futuristic-looking electrodes that are placed along the scalp of the subject to track the reactions of neurons in the brain (Ahmed et al., 2021). These neural responses occur in the cortex which will light up depending on the way the stimulus interacts with the subject. If the consumer finds pleasure in the advertisement or the product, researchers can expect the neurons to light up or become more active in response to the stimuli. The EEG provides a quick turnaround rate so that information can be interpreted within minutes (Devaru, 2017). This method is particularly beneficial for researchers looking to gauge the response to a stimulus such as a commercial. While the consumer is viewing the commercial, the researchers can establish which clips elicit the most neural responses (Devaru, 2017).

Non-brain activities can also provide, researchers with a lot of information which then can be used to determine the best methods of acti3d(of a) .0((i) .004, (n.a) . 4 (rc) .00 , €2Ho, 1

emotional arousal and sweat glands within sensitive areas like the hands and the feet (Ahmed et al., 2021). This study analyzed the extent of the emotion from each subject derived from the GIFs (Rua-Hidalgo et al., 2021). The goal of the study was to understand how images are used in social media to illicit emotion and convey a specific message to the viewer. The researchers concluded that the methods used (ET, GSR, and facial coding) are notable and effective methods to analyze emotional responses to media (Rua-Hidalgo et al., 2021).

H stor o uro r t n

The use of neuromarketing has stemmed from the need to understand the consumer's mind throughout the purchasing process and experience. Furthermore, it is a means to predict how consumers might react to the stimuli within a retail setting (online and otherwise), through marketing and packaging, and the interactions in general. Consumers are constantly making subconscious decisions as they proceed through the purchasing process/experience, filtering the options presented to them. The mystery of why consumers behave the way they do has been an

activity. The participants in the study were given Coke and Pepsi and were asked to taste them both. Two test groups were involved, one would drink anonymously and the other would know the brand before drinking the beverage (McClure et al., 2004). During, the sipping of the anonymous drinks, the participants would experience sudden flashes of a Coke or Pepsi can. Throughout the experiment, the researchers used fMRI to gauge neural activity. The findings showed that brain activity spiked when the participants in were presented with Coke rather than the Pepsi beverage (McClure et al., 2004). Not only did this indicate cultural preferences (Coke is a well-known and preferred brand), but it demonstrated the power neurological studies can have within the business world (McClure et al., 2004). The results of the study specifically stated that there was brain activity even when the flashing image of the can of Coke was presented to the participants. The use of the fMRI provided McClure and his team the ability to pinpoint the exact location of the sources of the greatest neural activity, and they concluded that it was most active in the dorsolateral prefrontal cortex (McClure et al., 2004). This part of the brain is responsible for memory (E. Sturm et al., 201). Because of this connection, we can determine

markets and gauging their responses to the company's products and content, but it can specifically assist start-up companies in identifying and understanding their target market. A start-up is a company that is in the first stages of operation, they are the 'newborn' of the business world. The majority of the problems that start-ups face are related to financing, and unfortunately often led to the start-up's demise (Giriskan, 2020). A vital element to the success of a start-up is the ability to understand its target market. To do this, extensive research needs to be collected to ensure the success of their product and ultimately the company. Neuroscience research and techniques come into play as they have the power to motivate the investigation of target markets when proposing a new product, service, or marketing campaign (Giriskan, 2020). While neuromarketing research cannot replace the traditional methods of market research (surveys, focus groups, consumer observations, and general consumer interviews), it can supplement or aid in the process of uncovering the wants and needs of the market (Giriskan, 2020). The benefits of using neuromarketing tools such as eye-tracking, EEG, or facial coding for entrepreneurs and start-up companies are not to be ignored. Investing money into the technology needed to perform these methods would provide a return for their investment leading to the long-term success of the product and the company. The start-up would have the opportunity to expand and deepen its understanding of its consumers, i.e. its target market. Thus, the company could utilize more strategic and effective methods of marketing. Start-ups are popping up constantly and the marketplace can become heavily saturated with products that offer similar benefits or solve the same problem. The use of neuromarketing enables start-ups and other businesses to understand the conscious and sub-conscious needs of their consumers (Giriskan, 2020). The intersection of neuroscience and marketing deepens the understanding of

A study was analyzed to determine how neurosciences can assist start-up companies. The study evaluated the shopping experience of online buyers using EEG (Giriskan, 2020). The goal was to understand what parts of the experience caused shoppers discomfort or caused negative emotions. The study noted that when shoppers could not locate the necessary buttons to add items to their cart or sort the products on the webpage, they experienced distress or negative emotions. The use of EEG enabled researchers to determine n consumers have negative feelings or emotions during the shopping experience. The U.S. Department of Commerce reported that E-commerce produced 21 billion dollars in the third quarter of the 2022 retail season (Statista, 2022). E-commerce (electric commerce) refers to services or products that are sold online (Fuscaldo, 2022). Sales for online stores rose by 4% in 2020 due to the COVID-19 pandemic (Brewster, 2022). Society has been shifting to become dependent on technology and web-based delivery for shopping experiences and marketing campaigns. The use of EEG, ET,

C h a p t e r D i s c u s s i o n

Introduction

This thesis investigates the work surrounding neuromarketing and the studies that support its expansion through the business world. Neuromarketing is a relatively new phenomenon, only gaining traction within the past decade. The goal of the technology is to understand the consumer's mind and track their neural patterns while they make purchasing decisions. Researchers can do this through electroencephalography (EEG), facial coding, eye tracking (ET), functional magnetic resonance imaging (fMRI), galvanic skin response (GSR), etc. Each method can deliver different results, but the most used methods have been EEG and fMRI. The studies generally focus on the popular use of tracking brain activity through EEG and fMRI which have proved to be the most beneficial in terms of pinpointing where neural activity is coming from in the brain and what exactly it's responding to.

The design of the thesis was to investigate research and journals on the methods of neuroscience and analyze the way it can be implicated in the modern business world. Research on the subject focuses on the methods used in neuromarketing and the processes needed to perform the tasks. Some studies focus on putting the methods into action, such as the McClure study. However, much of the data collected is based upon in-depth research rather than true studies evaluating the effects of EEG, fMRI, GVS, ET, and facial coding. The research done reviews ways to improve the methods or how they can be used for future research.

The design of the research conducted for the thesis was broken down to cover three bases, the technology used in neuromarketing, the future of neuromarketing, and the history of neuromarketing. The focus was on understanding the nuances of neuromarketing and the long-

subconscious to the consumer. This is important because businesses can harness these positive responses and replicate them through marketing plans, packaging, and overall brand image.

When producers take control of these technologies and invest in them, they can see benefits when tracking what works and what doesn't. Advertisements that have success are generally eye-catching and bring out emotions from the viewer. They can create a bond with their consumers. For example, brands that air commercials that have a high retention rate during the Super Bowl event are discussed long after their airing. They have this power because they fabricate an emotional bond with their consumer and general viewers.

History of Neuro Marketing

Because the idea of neuromarketing is relatively new, there is not a plethora of detailed data providing its usage. The methods neuroscience has subscribed to are not widely used across all companies. Little data is showing that the methods are as commonly used as they perhaps should be. The term neuromarketing was first developed in the early 2000s and has since received nearly twenty years of development and traction. It's important to understand the beginning of neuromarketing because of how it came from a place of need. Like many new inventions or methods of working, the goal is to solve a problem. In the consumer behavior realm, this will be a constant problem. Consumers react unpredictably at times, and this can hurt the market. Companies that are just entering the market are instrumental to economic growth and offer variety in a highly saturated market. However, they often fail due to the lack of concentrated and extensive research on their target market, product need, and pricing. When

tools, the feedback is more distilled. There are limitations to classic methods of marketing research that can hinder a company's general growth. When researchers for a company explore the mind of a consumer, subconscious thoughts and reactions are revealed.

➤ **Futur o uro r t n**

The future of neuromarketing lies in the hands of companies that choose to invest in its power and benefits. The technology can be used to understand the preferences of consumers and adapt the ability to predict their needs and wants. As stated previously, the benefits of this for a company and business research are huge. When we investigate the wants and needs of consumers, there is a deeper comprehension of what will produce more traffic and pull from the pockets of consumers. The neuromarketing techniques like EEG, ET, fMRI, and facial coding, can be used to analyze the responses to advertisements, product packaging, product usage, and customer service responses, and gauge the likelihood of purchase or engagement for a service or product. Neuromarketing has a long investigative future ahead of it but can transform the way producers deliver their media and products. It allows producers to have an internal edge on consumers that is scientifically proven and can easily be replicated because of its evidence against the consumer.

t t ons

benefits and neurological background knowledge is absent. This might have added an edge to the thesis in terms of conceptualizing the neuromarketing process.

R o n t o n s

In the future, it is recommended that researchers integrate studies into their study and apply this to previous knowledge. Any future study performed might also find interest in researching the responses from a variety of social groups. This might include social class or sexual preference (LGBTQ+). Focusing on these specific groups might harvest information concerning what marketing methods appeal to certain groups of people. Furthermore, during a month like Pride Month, researchers would be able to understand what those who identify as a part of the LGBTQ+ would respond to through ads or merchandising. If the research was centered on subcultures, the results might yield information that is much more specific and can benefit companies further in drawing profits from minority groups.

Con us ons

Three major conclusions can be made from this study. The first conclusion is that technology such as electroencephalography and functional magnetic resonance imaging is a highly specific method of tracking the way that the brain reacts and interprets the information that it is fed and a constructive method of evaluating the emotional responses of consumers. The second conclusion is that there is a great advantage to tying neurosciences and consumer behavior to marketing tactics. The third conclusion is that the research provided regarding neuromarketing is well-suited to make conclusions on the general benefits and predict its future accomplishments, but it does not supply enough data to allow companies to invest.

The evaluation of emotional responses to stimuli produced by businesses is important to assess because it provides scientific reasoning as to why consumers make their purchasing

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