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A Comparative Study of Neuromarketing Influence on Customer Decision-Making in Retail Spaces

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Abstract

In today's highly competitive retail environment, understanding customer decision-making has become increasingly complex, as traditional marketing methods often fail to capture subconscious consumer responses. Neuromarketing, which applies principles of neuroscience to marketing, provides deeper insights into how sensory stimuli, product placement, promotional strategies, and digital cues influence consumer behavior. This final year project examines the influence of neuromarketing practices on customer decision-making, satisfaction, and trust within retail spaces.

The study adopts a qualitative research approach using a structured questionnaire based on a 7-point Likert scale. Data was collected from customers of large retail stores in Pakistan, including Metro Cash & Carry, Punjab Cash & Carry, and Carrefour. The independent variables of the study include sensory and store environment, product placement and promotions, and technology and digital cues, while the dependent variables are customer decision-making and customer satisfaction and trust.

The findings indicate that sensory and store environmental elements such as lighting, layout, music, and visual design significantly influence customer engagement and purchasing behavior. Product placement and promotional strategies were found to encourage impulse buying and enhance product visibility. Additionally, technology-driven cues, including digital displays and loyalty-based promotions, positively affect customer decision-making, although transparency in data usage is essential for building customer trust.

The study concludes that Pakistani retail stores can significantly improve customer experience and retail performance by adopting neuromarketing-based strategies. The results offer practical insights for retailers to enhance store design, promotional effectiveness, and technology integration while maintaining customer trust.

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Contents

CHAPTER 1 - INTRODUCTION

1.1 Background of Study

The modern business world of retailing involves a high level of competition which has made customer decision making a key ingredient to success in marketing. Conventional research techniques like surveys and focus groups assume much on conscious, self-reported responses and most of the time do not consider the subconscious emotions and psychological factors that drive real purchase behavior. Due to the increasingly complex customer behavior, marketers are looking more scientifically to understand it better.

Neuromarketing fills this requirement by combining neuroscience with marketing research to examine how the brains of the customer react to marketing stimuli, such as adverts, product packaging, store layout, and even the senses. EEG (Electroencephalography), fMRI (functional Magnetic Resonance Imaging), eye-tracking and biometric analysis are methods that allow the researcher to explore the involvement of attention, emotion and memory in influence on the purchase decision, which proves to be more reliable than traditional methods.

Neuromarketing can be used in retail settings especially since they involve a combination of several senses at the same time. Lighting, color schemes, music, scent, and store layout are some of the elements that play a significant role in the perception, involvement, and impulse buying of the customers. With knowledge of these triggers of sensations, retailers are able to create a shopping environment that leads to better shopping experience and affects buying behavior.

Walmart, Amazon Go, Carrefour, and Tesco are all international retailers that have been able to use the findings of neuromarketing to maximize their in-store design and customer interaction. Conversely, most Pakistani retailers are still in their infancy in the use of neuroscience-based marketing efforts, although the local retailing industry is being modernized at a high rate.

The objective of the research will be to investigate the role of neuromarketing in influencing customer choice in Pakistani retail environment by investigating how visual, auditory, olfactory, and tactile stimulation affect customer behavior. It also contrasts local standards with international standards to pinpoint areas of gaps, success and ethical implications, which provides viable information that allows Pakistani retailers to achieve better customer experience, sales and creating a long-term brand loyalty.

1.2 Problem Statement

In the current super competitive retail industry, retailers are under mounting pressure to find ways purchase decisions. The use of traditional customer research tools like surveys, interviews, and analysis of sales data to a large extent relies on the conscious responses that are self-reported. Nonetheless, much of the customer decision making process is subconscious and emotional, and these techniques are usually incapable of capturing this correctly. This restraint balances out the capability of retailers to comprehend and mold the behavior of customers in the retail environment. Neuromarketing provides the answer as it uses neuroscience-advanced methods of studying subconscious customer reactions to attention, emotion, and memory. Although the world-known retailers like Walmart, Carrefour, and Amazon Go have effectively applied the neuromarketing knowledge to maximize store format and customer experience, the application of these practices in Pakistan is still underdeveloped. Neuromarketing has proven to be more of intuition and experience on the part of the managers as opposed to scientifically proven methods, especially in relation to local retailers.

The main reasons behind this poor adoption are the ignorance, technological infrastructure and empirical studies on neuromarketing among the retail sector in Pakistan. As a result, retailers are in a dilemma of whether the neuromarketing strategies are effective, whether sensory stimuli can alter customer choices and whether the techniques can be implemented ethically. Moreover, the awareness of the customers and their views on neuromarketing activity are not studied to its full extent, which raises ethical and trust-related issues.

Further, comparative studies of the differences between Pakistani and international retail neuromarketing activities on sensory influence, technological advancement, and effects on customer decision making have not been conducted. This lack of benchmarking restricts the capacity of the local retailers to tell them what is lacking and implement the best practices in the industry. Therefore, the core problem addressed in this study is the insufficient understanding and application of neuromarketing in Pakistan's retail sector, highlighting the need for evidence-based, ethical, and context-specific insights to enhance customer engagement and purchasing outcomes.

1.3 Rationale of the Study

This study can be explained by the fact that there is an increasing demand to learn more about customer behavior outside the conventional marketing strategies. Purchasing decisions are no longer conscious in modern retail settings, with customers experiencing various sensory and emotional stimuli that affect their buying behavior. Traditional research procedures can be unable to record such concealed effects and thus sophisticated methodologies like neuromarketing are necessary to comprehend the decision-making in retail stores.

One of the reasons supporting this study is the fact that neuromarketing is a phenomenon that has little recognition and use in the retail industry of Pakistan. Though the neuroscience-based marketing has been successfully adopted by the international retailers to help them improve the store design, customer experience, and sales performance, Pakistani retailers are at the initial level of adoption. The unavailability of localized empirical studies limits the knowledge of the effectiveness, problems, and ethical concerns of neuromarketing in the local environment. This paper resolves this gap by comparing local and global retail practices.

Another justification of the study is the growing competitiveness of the retail industry in which customer experience has emerged as a source of differentiation that is critical. Retailers will need to cease using price-based solutions and start building senses-filled and emotional environments. This study will shed some light on the way that neuromarketing can increase customer engagement and satisfaction by analyzing the impact that visual, auditory, and olfactory stimuli have on purchase behavior.

The study examines customer awareness and perceptions towards the practice of neuromarketing particularly the essence of ethical and transparent marketing as seen through the eyes of the customer. Knowledge of the concerns of customer s about subconscious influence is vital in ensuring that trust is maintained and autonomy of customer s is safeguarded. This study adds to the debate on the ethical front by emphasizing the aspect of balance in persuasive and responsible marketing. Academically, the study adds to the limited body of neuromarketing research within developing markets by offering empirical and comparative insights. By linking theory with real-world retail practices, the findings are expected to support future research and academic inquiry. Finally, the study offers practical value by providing actionable and ethical recommendations for Pakistani retailers, supporting strategic decision-making and innovation within the retail sector.

1.4 Research Gap

Despite the growing global interest in neuromarketing, significant research gaps remain, particularly within developing retail markets such as Pakistan. Most neuromarketing studies are conducted in developed economies where advanced technology, data availability, and digital infrastructure are readily accessible. Consequently, these findings may not be fully applicable to markets with different cultural, economic, and consumer behavior dynamics.

One of the greatest gaps is the absence of an empirical study to analyze neuromarketing behavior in the Pakistan retail industry. Although the use of neuroscience-based methods of eye-tracking, EEG, and biometric analysis has been well-documented in international literature, the application of the concept of neuromarketing in Pakistani retailers, whether formal or informal, is not well-researched. The local research mainly focuses on the conventional marketing variables with little focus on subconscious and sensory aspects of customer decision-making.

The other area of acute shortage is lack of comparative studies between local retailers and the international retail giants like Walmart, Amazon and Carrefour. The absence of systematic comparison hinders benchmarking of the Pakistani retail practices to the international standards and finding flexible neuromarketing approaches in the context of local resource segment.

Moreover, the research on the effect of sensorial stimuli, visual, auditory, and olfactory, on the physical retail setting in Pakistan is not extensive and localized. Though international research proves the impact of sensory perception on customer buying, cultures and shopping are quite different and the investigation has to be localized.

Neuromarketing and customer awareness and perception of the product are also under-researched. The literature on the subject is mainly on organizational acceptance and technological improvement with minimal consideration to the perceptions of subconscious influence and ethics among the customers. The gap is especially applicable in Pakistan, where the knowledge of neuromarketing remains rather low.

Also, little is known about the ethical concerns of neuromarketing in emerging markets. Much of the current literature incorporates ethical issues in highly regulated settings and provides little information on aspects of transparency, manipulation and customer autonomy in not so tightly regulated retail settings.

Lastly, there is a paucity of studies that translate the neuromarketing theory into practical and actionable advice to the local retailers. Most of the research are either theoretical or technology-

oriented, thus having little value to the retailers that lack availability of resources (financial and infrastructural). This paper fills these gaps by providing localized and comparative and customer-oriented insights which can bridge the gap between theory and practice in Pakistani retail sector.

1.5 Purpose of the Study

The main object of this research will be to investigate the impact of neuromarketing policies on the choices of customers in retailing scenarios, and especially how the subconscious sensory and emotional stimuli will influence the buying behavior. With the high competition in the retail industry, knowing the psychological and the neurological motivation behind customer choices is critical to the creation of effective and customer-focused marketing strategies.

The research will examine the use of neuromarketing concepts in retail outlets in Pakistan and how the concepts compare with those used by the retail giants in the world. It is a comparative methodology on sensory design and technological integration at the level of customer engagement, as well as focus on gaps between local and international neuromarketing practices.

The other study aims to determine the effectiveness of the neuromarketing techniques in increasing customer engagement, satisfaction, and purchase intentions. The study determines the sensory stimuli that are most applicable and influential in the local setting by analyzing the impact of visual, auditory, olfactory, and emotional stimuli in a store.

The research also seeks to understand the customer knowledge and attitude towards neuromarketing activities, especially regarding subconscious persuasion and the issue of ethics. Customer attitude is crucial in understanding the ethical acceptability and sustainability of the neuromarketing strategies.

The study will also aim at identifying major challenges and opportunities of application of neuromarketing within the retailing industry in Pakistan such as technological, financial and regulatory factors. Finally, the research will offer viable and ethical recommendations that can support local retailers to appropriately apply neuromarketing knowledge, better customer experience, and customer decision-making within retail spaces.

1.6 Research Objectives

The research objectives will help identify the specific goals of this study and guide the process of researching the effect of neuromarketing on customer decision making in the retail setting. According to the research problem and the aim of the research, the following objectives are formulated:

- To examine how neuromarketing stimuli, such as visual, auditory, olfactory and tactile marketing stimuli, play a role in affecting the purchase behavior of customers in shopping areas.
- To draw parallels between the neuromarketing methods embraced by the Pakistani retailers and those used by the retail giant's world-over to compare, emphasizing the variations in the use of technology, its strategic implementation, and its effectiveness.
- To evaluate customer awareness and perception concerning neuromarketing techniques and how they influence the shopping behavior and brand evaluation.
- To determine the most relevant challenges and opportunities linked to the implementation of the neuromarketing idea in the Pakistani retail industry, regarding the economic, technological, and ethical aspects.
- To formulate viable and ethical suggestions on how to incorporate neuromarketing wisdom in retail marketing practices to improve customer interest, satisfaction, and purchase decision experiences.

1.7 Research Questions

According to the objectives of this research, the sample research questions are as follows, aimed at investigating the impact of neuromarketing on customer decision-making in retail settings:

1. What is the effect of neuromarketing stimuli (visual, auditory, olfactory, and touch) on customer buying behavior in retail outlets?
2. Which current neuromarketing behaviors are being practiced by Pakistani retail outlets, and what are their differences with those employed by retail giants all over the world?
3. How do both sensory and affective stimuli in retail settings influence customer interaction, satisfaction, and purchase?

4. What is the degree of customer awareness and perception towards the application of neuromarketing techniques in the retail environment?
5. Which difficulties and constraints are Pakistani retailers likely to encounter in embracing advanced neuromarketing strategies?
6. What are the ways of introducing neuromarketing strategies as an activity in the Pakistani retail sector and in an ethical manner that can improve customer decision-making processes and the performance of retail outlets?

1.8 Scope of the Study

The present research paper discusses how neuromarketing practices can affect the decision-making of customers in the physical retail setting, particularly concerning the subconscious sensory and emotional stimuli. The study is based geographically in Pakistani retail spaces (supermarkets, hypermarkets, and shopping malls) but draws comparative examples of international retailers (Walmart, Carrefour, and Amazon Go) to act as benchmarks.

The research dwells upon such important neuromarketing stimuli as visual (store layout, lighting, and colors), auditory (music and sound), olfactory (scent), and emotional stimuli that impacts the perception and buying decisions of customer s. Both tactile and digital aspects are taken only when they pertain to customer experience.

The research envisages retail customers and applicable retail professionals to study customer perceptions and management outlook. It is comparative and analytical in the sense of qualitative insight, observation and secondary data analysis, without applying any clinical neuroscientific instrumentation (EEG or biometric testing).

It is restricted to retail industry, and its analysis is based on quick results of customer decision making instead of long-term neurological impacts. This narrow scope limits the analysis to a specific and realistic analysis in line with the study aims.

1.9 Significance of Study

The research is relevant to the field of academics, retail practitioners, policymakers and future researchers because it focuses on a relatively new yet under-investigated field of marketing in the context of the Pakistani retail industry.

The research is also beneficial in academic terms, as it is an addition to the poorly represented literature on neuromarketing in emerging markets, because it focuses on how subconscious sensory stimuli influences customer decision-making and compares the local practices with international retail leaders. It also builds on the past theories of customer behavior by integrating the marketing knowledge into a local environment.

To retail practitioners, the research provides viable and economic data on how to apply the principles of neuromarketing to physical retailing. The results assist the retailers to improve customer engagement, satisfaction, and purchase intentions without using costly neuroscientific instruments; thus, the results were especially applicable in the context of resource-bound markets. The research will also be helpful to the local retailers as it will allow them to benchmark the international practices in neuromarketing and identify the areas of strategic improvement and competitive advantage. Customer -wise, it increases the awareness of unconscious effects on the retail space and adds to the debate on ethical marketing, transparency, and autonomy of customer. The study is also beneficial to policymakers as it brings to the fore aspects of ethics with regards to neuromarketing in the emerging market. Lastly, it presents a research base in future studies as it has outlined gaps and promoted future empirical and comparative studies in the field of neuromarketing in the Pakistani retail industry.

CHAPTER 2 – LITERATURE REVIEW

2.1 Concept of Neuromarketing

Neuromarketing is grounded in the understanding that a significant portion of consumer decision-making occurs at a subconscious level. Dooley (2012) highlights that nearly 95% of mental activity, including emotional reactions, preferences, and judgments, takes place outside conscious awareness. This means that although consumers may express rational justifications for their choices, their actual decisions are often influenced by automatic, instinctive, and emotional processes that they cannot fully articulate.

While traditional marketing methods rely heavily on self-reported data, surveys, and rational persuasion, these approaches fail to capture the deeper, non-conscious factors that drive consumer behavior. Neuromarketing bridges this gap by applying tools and principles from neuroscience, such as eye-tracking, EEG, fMRI, facial coding, and biometric sensors, to measure how the brain and body react to marketing stimuli in real time. These stimuli may include visual design, colors, store layout, music, scent, brand messaging, pricing strategies, and product packaging.

The term “neuromarketing” is widely attributed to Ale Smidt’s, a professor at the Rotterdam School of Management, who introduced it to describe the emerging field that examines how marketing information influences sensory-motor, cognitive, and affective (emotional) processes in the brain. As the name suggests, it merges “neuro”, representing neuroscience and cognitive science, with “marketing,” defined by the American Marketing Association (AMA) as the set of processes involved in creating, communicating, and delivering value to consumers and society.

Neuromarketing operates on the principle that consumer behavior is not solely analytical but is shaped by complex neural mechanisms involving reward pathways, attention systems, emotional regulation, and memory formation. By understanding these biological responses, marketers can design strategies that align more closely with how the human brain naturally processes information. This results in more effective marketing efforts that engage both the rational mind and the emotional core of the consumer.

In essence, neuromarketing extends traditional marketing into a scientifically informed approach, helping organizations predict consumer behavior more accurately, optimize customer experience, and design retail environments that positively influence purchase decisions.

2.2 History and significance of Neuromarketing

Neuromarketing is a change of paradigm in the traditional marketing research that utilizes the conscious self-report to the scientific investigation of the cognitive and emotional process of subconscious factors that determine customer behavior. Although the term neuromarketing was coined by Professor Ale Smidt's in 2002, the conceptual basis of neuromarketing dates back to the 1990s when psychologists and neuroscientists started to use such tools as fMRI and EEG to learn the way the brain reacts when responding to products, advertisements and branding. Preliminary studies showed that subconscious emotions have a significant impact on the decision-making process and this contradicts the belief of a customer being a purely rational decision maker.

The Pepsi Paradox (2004) was a landmark study, which proved that brand labels were capable of stimulating emotional memory centers within the brain which superseded real taste preferences. This and other research studies confirmed neuromarketing as an addition to the traditional research by demonstrating that subconscious responses could be different in comparison to conscious ones. Towards the mid-2000s, commercial organizations have started to incorporate EEG, fMRI, eye-tracking, and galvanic skin response into product testing, advertising analysis, and the field of practice has begun to be moved out of the academic realm.

With technological progress in the 2010s, such as portable EEG monitors, mobile eye-tracking, facial coding, biometric wearables, and AI-powered predictive models, real-time research became possible both in retail and digital settings. Such tools enabled marketers to determine attention, emotion, memory, and likelihood of purchase more precisely, which surveys and focus groups could not, due to the high potential of bias or imprecise self-reporting. Neuromarketing has become a strategic tool for improving marketing efficiency. Brands and retailers use its insights to optimize store layouts, sensory design (lighting, music, scent), product placement, packaging, and advertising, focusing on why consumers react rather than just what they say. However, the field also raises ethical concerns regarding privacy, manipulation, and transparency, emphasizing the need for responsible practices and neuroethical guidelines.

Overall, the evolution of neuromarketing, from early brain-imaging studies to AI-driven predictive systems, underscores its importance in modern marketing. By uncovering subconscious drivers of consumer behavior, it provides scientifically grounded insights that enhance customer experience, reduce marketing uncertainty, and shape the future of personalized retail and advertising strategies.

2.3 Customer Decision Making Models

There have been traditional methods of studying customer decisions that involve structured models that enable individuals to identify their needs, weigh options and purchase products. According to Schiffman and Wisen lit (12th Edition), the process includes three steps: input, process and output, which implies the collective effect of the psychological, sociocultural and environmental factors on customer behavior.

2.3.1 Input Stage

The input stage consists of any external stimuli that influences the initial exposure of the customers to the marketing information:

- **Segmentation & Targeting:** Differentiation of products, charges, location and advertising towards a certain group of customer s.
- **Communications that are Controlled by Marketers:** Advertising, social media and promotional communications that result in awareness and perception.
- **Sociocultural Influences:** Family, peers, social class, culture, and gender roles that determine preferences and attitudes.
- **Interpersonal Communications:** Word of Mouth, online reviews, and influencer recommendations that support or dispute customer perceptions.

Neuromarketing underlines that most of such input's colors, packaging, layout, and branding are processed unconsciously, and have an influence on attention and emotional response even before conscious judgement comes about.

2.3.2 Process Stage

Process stage is the internal part of psychology that interprets and evaluates the marketing stimuli. Key factors include:

- **Motivation:** Internal motivation that is recognized in the choice of products.
- **Personality Traits:** Predictable traits that influence preferences and reactions.
- **Perception**: The meaning of sensory information.
- **Learning:** Creation of brand associations and habits, experience.
- **Attitudes:** Things that have been learned through exposure and experience.

Neuromarketing devices such as EEG, fMRI, and eye-tracking show the mechanism of these psychological processes happening unconsciously, which stimuli will attract attention, trigger an emotion, create a long-lasting memory, and in many cases, before customers can describe their reactions.

2.3.3 Output Stage

The output phase incorporates buying behavior and after sales analysis:

Purchase Behavior: Decisions are made based on a rational evaluation as well as an unconscious.

Post-Purchase Analysis: Post consumption satisfaction or dissatisfaction, which influences loyalty, repeat purchase and word-of-mouth.

The results can be forecasted through neuromarketing where emotional involvement, cognitive load and memory encoding are assessed during evaluation and thus give more insights as compared to the conventional self-reported measures.

The connection between the Model and Neuromarketing

Combining neuromarketing and the conventional decision-making models enhances the knowledge of customer behavior:

Input Stage: The stage involves recognizing sensory inputs such as the colors, smell, sounds, and the layout of the store that attract attention and arouse feelings.

Process Stage: Uncovers unconscious judgment and neural processing which affects preferences and decisions.

Output Stage: It forecasts more accurately both the likelihood of purchase and customer satisfaction through underlying cognitive and emotional reactions.

Integrating the classical models and the insights of neuromarketing, researchers and practitioners can obtain a scientifically based vision of the customer perception, evaluation, and responses toward the marketing stimuli in the real-world retail settings.

2.3.4 Marketing and Neuroscience and Behavioral Economics

The integration of neuroscience and behavioral economics has significantly transformed modern marketing by revealing how consumers make predominantly subconscious decisions. As noted in A.K. Pradeep's *The Buying Brain*, nearly 95% of buying decisions occur automatically, guided by the brain's reward systems rather than deliberate reasoning. Emotional drivers such as reward, novelty, trust, comfort, fear, and anticipation influence neural responses to brands, products, and

store environments. Sensory stimuli, including visual design, music, scent, color, and tactile elements, activate specific neural pathways, enhancing attention, emotional engagement, and memory encoding. These mechanisms explain why certain store atmospheres, packaging designs, or advertising elements appeal to consumers even when they cannot consciously articulate the reason.

Behavioral economics complements these insights by explaining predictable deviations from rational decision-making. Concepts such as cognitive ease, framing, loss aversion, and choice architecture illustrate how marketing stimuli shape consumer choices by leveraging inherent psychological patterns:

- **Cognitive Ease:** Simple, familiar, and easily processed stimuli generate emotional comfort and attract attention.
- **Framing Effect:** Positive or negative presentation of information influences neural interpretation and subsequent decisions.
- **Loss Aversion:** The brain is more sensitive to perceived losses than gains, a principle often applied in pricing and promotions.
- **Choice Architecture:** Retail layouts, product placement, and sensory design guide consumers' decisions subconsciously.

In retail, these principles translate into practical applications. Store layouts can reduce decision fatigue, ambient lighting can improve perceived product quality, and music or scent can create positive emotional associations that increase purchase likelihood. Such environmental cues act as subconscious nudges, shaping behavior without requiring deliberate thought.

Neuromarketing tools, including EEG, fMRI, eye-tracking, facial coding, and biometrics, allow marketers to validate these behavioral insights by measuring real-time emotional engagement, attention shifts, and memory encoding. Unlike surveys, which are prone to recall errors and social desirability bias, these techniques provide objective evidence of how consumers react to stimuli, enabling optimization of store design, packaging, advertising, and promotions.

Together, neuroscience and behavioral economics offer a robust framework for understanding consumer behavior. While behavioral economics explains why consumers often deviate from rationality, neuroscience reveals how these deviations occur at the neural level. The interplay of subconscious processes, emotional triggers, and environmental cues highlights the importance of these fields in modern neuromarketing and strategic retail decision-making.

2.4 Neuromarketing Methods and technologies

2.4.1 Eye Tracking

Eye tracking is one of the most popular neuromarketing methods of visual attention, information processing, and customer interaction. Self-reports tend to be unreliable because people do not know the movements of their eyes. Eye-tracking offers an objective method of capturing fixations (when eyes freeze) and saccades (movements between fixations) to show the subconscious patterns of attention, which affect perception, judgment, and decision-making (Ramsoy, Introduction to Neuromarketing & Customer Neuroscience). This technology enables the customers to act in a natural manner and record visual behavior in real-time.

Eye-tracking studies have a long history, with the first studies made in 1879 by Louis Emile Javal who noted that reading involved rapid eye movements (Javal, 1879). The early mechanical devices like those by Edmund Huey were intrusive but showed that eye movements are indications of cognitive activities and the allocation of attention. The present-day eye-tracking technologies are very precise, non-obtrusive, and can be easily adapted to different types of research, including:

- **Remote eye-trackers:** Infrared cameras capture stares without wearable equipment.
- **Head mounted trackers:** allow natural movement of real-world retail studies.
- **Mobile eye-tracking glasses:** Immersive technology to conduct research in-store on product visibility, shelf interaction, and navigation.

Eye-tracking has been utilized in the context of neuromarketing to test the efficacy of the visual stimuli in various contexts:

- **Product Packaging:** It is the one that determines what will be looked at and how long the customers will look into the main information.
- **Advertising:** Measures attention to logos, emotional cues, and call-to-action elements.
- **Store Layouts & Merchandising:** Tracks on how customer s explore aisles, promotional displays, and signage.
- **Digital Interfaces:** Optimizes website, app, and online shopping layouts using heatmaps and gaze plots.

Eye-tracking information assists marketers to know areas of attention bottlenecks, neglected factors and areas of visual confusion. It can be used along with other neuromarketing tools, including EEG or biometrics, to gain a full insight into the relationship between visual attention

and emotional involvement, encoding of information, and decision-making. All in all, eye-tracking fills the gap between visible behavior and what goes on in the brain, which is why it is a necessary step towards creating easier-to-use, more interesting and more physiologically productive retailing.

2.4.2 EEG (Electroencephalogram)

Electroencephalography (EEG) is a neurophysiological technique that measures the brain's electrical activity through electrodes placed on the scalp. First named by Hans Berger, with early work by Richard Caton and Vladimir Pravdich-Neminsky, EEG is widely used to examine real-time neural functioning. It captures electrical oscillations, typically ranging from a few to about 75 μV, primarily originating from synchronized activity of pyramidal neurons in cortical layers 3 to 5. High synchrony produces rhythmic high-amplitude patterns, while desynchronization, associated with active cognitive processing, results in lower amplitude and more complex waveforms.

Clinically, EEG is used to diagnose epilepsy, sleep disorders, and brain injuries, and in some cases, to assess brain death. Its high temporal resolution also makes it indispensable in cognitive neuroscience, as it can track neural activity on a millisecond scale.

In neuromarketing, EEG is a powerful tool for measuring consumers' subconscious responses to stimuli such as advertisements, product packaging, retail environments, and digital interfaces. It captures rapid fluctuations in attention, emotional engagement, cognitive workload, and approach–avoidance tendencies, providing insights beyond self-reported measures. Combined with eye-tracking or biometrics, EEG helps marketers understand the neural processes underlying consumer behavior, making it a cornerstone of evidence-based marketing strategy.

2.4.3 fMRI (Functional Magnetic Resonance Imaging)

The FMRI or the Functional Magnetic Resonance Imaging is a modern neuroimaging methodology that can be used to measure brain activity based on the changes in blood oxygen level. FMRI is an important instrument in the field of cognitive neuroscience and neuromarketing because it enables the visualization of brain functions as opposed to structural MRI, which demonstrates the brain structure, and thus, gives high spatial resolution.

fMRI uses two principles; active parts of the brain will get more blood flow, and this flow will bring oxygen-rich hemoglobin that will change the local magnetic field. This variation is recorded as the BOLD signal (Blood Oxygen Level Dependent), this enables the scanner to map the active regions of the brain when performing certain tasks or when they are exposed to marketing stimuli. The images are converted into three-dimensional slices, and the data are analyzed through voxel, and this offers the localization of the neural activity in a precise way.

FMRI is applied in customer behavior, attention, and emotional involvement research in neuromarketing. It recognizes the brain areas that are acting on the adverts, product packaging, price messages and display in stores specifically those regions connected to the reward, decision making, memory, and emotion. This assists marketers to know what stimuli attracts positive reactions, influence preferences as well as the purchase intentions.

FMRI has great spatial resolution, however, it has several shortcomings: it is very expensive, the subjects must still lie in a small machine, and its temporal resolution is lower than that of EEG. Even so, it has offered an unmatched understanding of neural processes underlying customer choice and supplements behavior, eye-tracking and EEG. All in all, fMRI enables marketers to step forward of self-reports and observe real time brain reactions to marketing stimuli, which determine better advertisements, retail design, and product strategies.

2.4.4 Biometrics and Facial Expression Analysis

Biometric measurements and facial expression analysis are critical neuromarketing instruments that measure delicate emotional reactions, which are often subliminal, and not measurable using self-report methods. These methods assist the researcher to track the response of customers to marketing stimuli, including advertisements, product packages and retail setting, through the analysis of involuntary physiological expressions and expressive reactions.

Electromyography (EMG)

Facial EMG is used to record electric activity in particular muscles of the face with the help of small surface electrodes, which detect a micro expression that may be hard to see naked (Cacioppo, Tassinary and Fridlund, 1990). It is a non-self-reported, covert indication of pleasure, discomfort, surprise, or attention that provides quantitative and real-time information that supplements observational data and self-reporting. EMG is also applicable in assessing the feelings evoked by adverts, product attributes and the shopping experience.

Facial Action Coding System (FACS)

FACS was developed by Ekman and Friesen (1978) and describes 44 different facial action units (AUs) which reflect individual movements on the face and rates them using a standardized scale. This objective code system can enable the researcher to quantify the visible responses and scales emotional reactions to marketing stimuli, which supplements EMG because it measures observable and conscious responses.

Validation of Judgment Studies

Judgment studies are done to achieve the accuracy of EMG or FACS data in which analysis of facial expression is done by trained observers under control conditions (Rosenthal, 1982, 1987). These experiments confirm that physiological or coded facial reactions are associated with emotional or cognitive states that can be used in relation to the customer behavior, which provides statistical rigor and methodological reliability to the neuromarketing analysis.

Retail Environment Ambient Cues

The expression of the face, as well as the reaction of the biometrics, is affected by both direct and environmental stimuli:

- **Background Music:** Influences arousal, emotional value, dwell time and shopping behavior. The speed of shopping, exploration, and brand associations can be affected by tempo, genre, and volume.
- **Scents:** Smells create instant emotional reactions, cause approach or avoidance behavior as well as supplement brand experience. Positive smells, including flower scents or wood scents, can extend the duration of in-store time and likelihood of purchasing, whereas demographic variables may influence scent sensitivity, i.e., gender.

Combining the analysis of facial expression with the ambient sensory data, the neuromarketing studies can measure the extent to which minor environmental factors affect attention, emotion and decision-making.

Retail and Marketing Implications

Facial expression analysis and biometrics can provide practical ideas about customer responses which were unconscious. These tools provide a holistic insight into the influence of sensory stimuli on the perception, emotional involvement, and purchase decision-making in combination with EEG, fMRI, and eye-tracking. This combination enables marketers and retailers to create emotionally attractive advertisements, maximize store environments and generate multisensory

experiences that spur client fulfillment and brand commitment. Finally, the techniques link observable behavior and the processes within the brain and the emotional system and are essential in contemporary customer research and retail strategy.

2.5 Retail Environment and Customer Experience

Retail space is an extremely important condition that influences customer experience and decision-making. In addition to product offerings, price and promotions, there exist unspoken environmental and psychological messages, frequently processed on the unconscious level, that drive perception, preference and purchasing behaviour.

2.5.1 Imprinting and First Impression

Imprinting is the concept initially noticed by Konrad Lorenz in goslings, which demonstrates that the early exposure to stimuli results in the different development of behavioral patterns. In the context of retail, emotional anchors, created by the store design, lighting, music, smell, and product display, generate customer satisfaction, trust, and preference of the brand. The favorable first-hand experience may contribute to the deepening of emotions and development of the further attitude to the brand and the store atmosphere.

2.5.2 Arbitrary Coherence and Anchoring

Anchoring is a cognitive bias in which original information, which is usually the original price or product exposure, also greatly influences the later judgments. According to the principle of arbitrary coherence, by randomly displaying numbers, people can establish durably high reference-points that determine willingness to pay as well as their implied value. Strategic pricing, promotional cues, and product placement can help retailers to establish positive anchors and, hence, to affect immediate purchase decision-making and customer expectations in the long-term.

2.5.3 Long-term Effect of First Decisions

Future buying decisions are influenced by earlier buying or experience due to their functions as behavioral anchors. The first impressions, like customized service, product sampling, immersive product displays, etc. can stimulate the repeat purchase and strengthen loyalty. On the other hand,

bad first impressions may prevent interaction, which is why it is crucial to maximize the first experiences in retail areas.

2.5.4 Herding and Self-Herding

Herding happens when the behavior of customers is influenced by the visible actions and appeal of others based on the social indicators (crowd size, popularity, or review) and the customers seek to use social proof to justify their decisions. Self-herding is the repetition of decisions by the customers themselves based on their previous choices which serves to strengthen the habits and loyalty. These phenomena combined highlight the value of designing experiences that will bring both first-time and repeat consumption, be it through product consistency, loyalty programs, brand familiarity.

2.5.5 Sensory and Environmental Cues

Minor features of perception that work on attention, mood, and emotional reaction are lighting, color scheme, music, fragrance, and spatial plan. Warmer lighting, sweet scents, and background music may enhance comfort, dwell time, and interest and the strategically located products or visual messages can control attention and stimulate impulse buying. With the combination of these factors and behavior understanding, retailers could develop conditions that would have a positive impact on customer purchasing behavior on a subconscious level.

2.5.6 Retail Design and Neuromarketing Implications

These can be followed by the retailers through:

- Creating meaningful first impressions in terms of aesthetics, light, smell, and sound.
- Setting products and prices in such a way that positive anchors are created and that perceived value is strengthened.
- Use of social cues, reviews and displays to promote herding.
- Developing unforgettable moments that will strengthen self-herding and revisiting.

These strategies can be empirically validated with the tools of neuromarketing that include eye-tracking, EEG, facial expression analysis, and biometrics. They are used to gauge customer attention and emotional interaction and subconscious responses that allow retailers to tune the store design, sensory experiences, and promotional strategies to their best advantage. The insights into

these behaviors and senses help the retailers to provide better customer experience, stimulate purchase behaviour and create a long-lasting loyalty.

2.6 Sensory Marketing Role in Retail

2.6.1 The role of Sensory Marketing in Retail

Sensory marketing is a strategic marketing approach that applies visual, auditory, olfactory, tactile, and ambient elements to create positive experience in the retail environment and shape customer perception, emotion and purchase behavior. The sensory stimuli are effective activators of attention, memory and preference formation since several customer decisions are made unconsciously. The integration of two or more senses at once allows retailers to build immersive, memorable experiences that promote brand loyalty and become the direct cause of purchase.

2.6.2 Visual and Color Psychology

Vision is the dominant human sense processing, where attention, emotional response and decision are directed. Store layout, lighting, signage, packaging, and color schemes are some of the ways through which retailers manipulate customer perception of products and the entire brand. The most important is color psychology, warm color (red, orange) provokes excitement and urgency, and cool color (blue, green) provides calmness, trust, and spaciousness. Simplicity in the visuals enhances the ability to memorize, and customers are more likely to remember the products or brand message. The use of contrasting colors to emphasize the items on high margins, effective use of lighting to draw attention, as well as visual path through the layout, are some of the techniques that will create the perceived value and influence the decision-making process. Good visual design can not only appeal to the audience but also creates brand impressions that build a repeat behavior.

2.6.3 Auditory Effects (Sound and music)

Sound changes mood, arousal, and decision-making without one paying attention to it. Background music influences their shopping rate, time of staying and their perceived waiting time. Increasing the tempo of music increases more and may stimulate faster buying speeds, whereas slower tempos may induce window shopping and interacting. The genre and the volume of music strengthen brand identity; luxury stores tend to play classical or ambient music, whereas youth targeted stores tend

to play pop or electronic music. Audio branding positively (products interact audibly, clicks, rustling clothes etc.) helps to strengthen emotional contact and enhance multisensory consistency. Retailers can also use auditory information to subconsciously control behavior, build atmosphere and support brand personality.

2.6.4 Olfactory Influence (Scent)

The olfactory system is directly connected to emotion and memory and affects behavior subconsciously. Positive smells prolong the time in the browsing process, increase the engagement, and raise the chances of purchase. Fragrance may create certain associations, such as leather or sandalwood as a symbol of luxury, citrus as a symbol of freshness, and should be consistent with brand identity to be effective. Gendered distinctions are also a factor where women tend to be more receptive to osmic indicators particularly in the apparel, cosmetic, and lifestyle product category. A retailer can make use of scent marketing by diffusing company smells, choosing category-associated smells, and making experiential areas aromatic. Well created olfactory environments boost brand memory, mood and perceived quality.

2.6.5 Tactile and Ambient Factors

Haptic perception or touch enables the customer to evaluate the quality, authenticity, and appropriateness of products. Smooth textures are more comfortable and warmer, whereas smooth or hard surfaces are more sophisticated and reliable. The perceived risk is minimized when customers are given the opportunity to touch products, and this creates emotional attachment. Environmental conditions such as temperature, level of air pollution, density of crowds, and light and spatial comfort influence mood and behaviour, and usually unconsciously. This is done by retailers to maximize tactile and ambient cues, which include providing comfortable thermal conditions, comfortable ergonomic product location, navigable areas and interactive display. All these elements combine with visual, auditory and olfactory stimuli to create a complex multisensory experience, which increases engagement, satisfaction and purchasing intent.

2.6.6 Retail Strategy Implications

Retailers can affect conscious and subconscious decision-making by incorporating visual, auditory, olfactory, tactile, and ambient effects to produce the highly emotional and immersive

environments. Attention, emotions, and memory are stimulated by using sensory cues leading to increased customer satisfaction, customer loyalty, and sales.

Eye-tracking, EEG, facial expression analysis and biometrics are the neuromarketing analysis tools that can confirm these strategies by showing how customers interpret and respond to sensory input. A well-crafted multisensory shopping experience does not only appeal to the customers, but also ensures a return engagement, brand value, and competitive advantage over the long-term basis.

2.7 Marketing to the Neurons (Global Retail Giants Walmart, Amazon Go, Target, Tesco)

Neuromarketing has emerged as an important strategic instrument that major retailers around the world have used to know and manipulate customer behaviors subconsciously. Combining behavioral science, bio metric data, and leading-edge analytics, Amazon Go, Walmart, Target and Tesco, among others keep on improving the store environment to increase focus, decrease the decision fatigue and overall shopping experience.

Amazon Go is one of the most creative applications of neuromarketing-based retail design. Just Walk Out technology is the technology of the company that is based on computer vision, pattern recognition based on AI, and sensor fusion that will help to get rid of the checkout lines completely. The store eliminates waiting or processing purchases, thereby lowering the cognitive load and friction, lengthening the dwell time and improving the perceived convenience and trust. These are the factors that make a direct penetrate into the neurological triggers which enhance customer satisfaction and interaction without any effort.

Walmart has been widely using behavioral insights in both physical and online retail. Spatial analytics, controlled experiments and real-time shopper monitoring are used to inform the store layout, product adjacency, aisle flow, and design of signages. Indicatively, Walmart observes customer visual shelf scan patterns, identification spots and sensory attributes that enhance movement. Such insights are consistent with the principle of neuromarketing, which focuses on the attention pattern that is subconscious, the impact of environment, and efficiency of decision making. These data driven insights influence strategic positioning of the high conversion categories, lighting and the in-store signage.

Target and Tesco have less publicly recorded case studies, but are proactive in their application of behavioral analytics, A/B testing and biometric application, including eye-tracking, heat-mapping and shopper flow analysis. Target focuses on the emotional appeal, especially in the beauty, fashion, and home decor areas where the visual design, color schemes, background sound, and the way products are displayed have a strong influence on the affective reactions. Tesco uses behavioral knowledge in the planning of their programmes in store layout, shelf assortment, and promotion, minimizing the information overload of choice and subtle encouragement of focus to priority SKUs.

In these world leaders, the strategies of neuromarketing usually combine several methods:

- **Multimodal measuring:** Eye-tracking, face expression, EEG, and physiological responses will demonstrate unconscious involvement and emotional response.
- **Sensory optimization:** Lighting, scent, music, and feel make the store experience better and affect decision-making.
- **Behavioral segmentation:** The knowledge of responding and types of shoppers enables customizing experiences, offers, and location of products.

The advantages of such practices are a lower cognitive load, increased interaction with the brand, directed navigation, improved product placement, and improved conversions. Through creating an environment that fits the subconscious customer behavior, the retailers establish an intuitive, engaging, and emotionally appealing experience which enhances loyalty and satisfaction.

To recap it all, neuromarketing has ceased to be a narrow research instrument but a fundamental component of the retail strategy. Knowing not only what customers do, but why they act in some manners on a neural and emotional level, these global giants create the shopping experience, which is flawless, pleasant, and knowledgeable and establish a standard in the contemporary retailing innovations.

2.8 Neuromarketing Practice in Pakistani Retail Industry (Metro, Imtiaz, Carrefour Pakistan)

The retail industry in Pakistan has also seen a massive change in the last ten years that has seen the changes of the traditional kiryana shops to the organized model that includes Metro Cash and Carry, Imtiaz Super Market and Carrefour. Even though more sophisticated technologies of

neuromarketing such as the EEG, fMRI, or eye tracking have yet to be utilized or reported in the local application, retailers are increasingly adopting the ideas of neuromarketing by designing with senses in mind, optimizing the flow of shoppers, and using behavioral stimuli to shape customer choice.

The visual presentation of merchandise, ambient design and developed shelf layouts are now part of the retail strategy. Use of colors in packaging, lighting, signage and aisle layout, direct customer attention, lessen the cognitive load, and provoke impulse purchases. As the example of Carrefour Pakistan, the company employs the use of bright promotional displays, end-cap layouts and eye-catching aisle layouts to boost product visibility and to explore the product using the cues of attention-grabbing aligning with the principles of neuromarketing.

The Imtiaz Super Market focuses on customer comfortability and easy navigation by having broad aisles, distinct category space, and visually appealing display of products including bakery and fresh produce sections which increase the time of browsing, decision exhaustion, and buying intentions. Likewise, Metro Cash and Carry is interested in logical store circulation, huge display islands and professional buyer and household customer differentiation. The strategies enhance the efficiency of navigation and provide a chance to make impulse purchases and cross-category interaction, which are principles of behavioral and neuromarketing studies.

Although there are limited studies in formal neuroscience-based research in Pakistan, retailers are becoming more adopters of sensory marketing ability, such as ambient music to control mood, scented bakery to provoke emotional response, color-coded navigation signs, and animated display screens. These tactics show that there is increased awareness of the impact that subconscious sensorial indicators and environmental conditions have on customer perception, attention and satisfaction.

To conclude, neuromarketing in Pakistan is at its initial stages of development but major retailers like Metro, Imtiaz and Carrefour have successfully incorporated the principles of the marketing concept. Their emphasis on visual appeal, store mood, sensory stimulation and layouts which are behaviorally informed show some emerging conformity to the global practices of neuromarketing. With the growth of research, technologies, and managerial knowledge, the use of formal neuromarketing tools, like eye-tracking, biometric feedback, and real-time behavioral monitoring, will likely grow, which will further improve customer engagement and purchasing behavior in the local retail environment.

2.9 Neuromarketing Ethical Issues and Concerns

With the spread of neuromarketing worldwide, neuroscientific applications in commercial decision-making cause major ethical, legal, and social issues. These are due to the sensitivity of neural data, possible control of customer behavior, and safety of autonomy and informed consent. Although neuromarketing is an effective tool in understanding the ways people make subconscious decisions, emotions, and attention, the current practice must be supported by a powerful moral compass to avoid abuse and ensure societal trust.

One of the major issues to consider is the misunderstanding or misapprehension of neuroscientific discoveries. Marketers can also be untrained to adequately interpret neural signals and therefore make exaggerated claims or misuse them. There is also the issue of privacy that is likely to be breached by neuroimaging or biometric devices which can disclose the subconscious preferences, and this leaves the question of subtle manipulation of customer preferences.

These concerns are included in neuro ethics that focus on the moral, legal, and social consequences of the commercial use of neuroscience. The main ethical principles are:

- Secrecy of research participants,
- Protecting vulnerable groups against exploitative marketing, and
- Securing transparency in terms of research goals, methods, risks, and benefits.

Another important issue is data security. Neural, biometric, and behavioral data sets are very sensitive and should be secured against hacking, unauthorized use or abuse. Strict confidentiality measures and communication regarding the way data will be kept, used and whoever will have access to it are essential ethical practice.

Customer indeterminacy is also core. Neuromarketing ought to be more experiential and relevant, yet it must not exploit emotional vulnerabilities and disregard deliberate choice. Individual rights should be strictly observed by privacy, confidentiality and informed consent.

To conclude, the practice of neuromarketing is providing a potent means of learning customer behavior; however, the responsibility of using the tool should be conducted under the standards of participant protection, data security, transparency, and autonomy respect. It is necessary to set up a set of strong ethical standards to uphold trust and to make sure that neuroscience is used in a manner that will be beneficial to both customers and businesses.

CHAPTER 3 – RESEARCH METHODOLOGY

3.1 Research Design

The research design gives the broad outline in which the researcher intends to systematically collect and analyze data in order to answer the research objectives. In case of the current research study, which is entitled to the *A Comparative Study of Neuromarketing Influence on Customer Decision-Making in Retail Spaces,* the comparative and exploratory research design has been chosen. The design will be designed in order to examine and compare the neuro marketing tools and techniques applied in the international retail stores and Pakistani retail stores, and to examine how the tools affect customer decision-making.

The approach was qualitative research design since it aims to comprehend practices, strategies and perceptions as opposed to quantifying relationships. Neuromarketing is a developing area especially in the Pakistani retail market, and thus needs an analytic and deep interpretative methodology in order to elicit the application of the neuromarketing concepts in the real world as practiced by retailers. The design gives the researcher a chance to observe retail settings in the natural setting and also to experience the explicit and implicit marketing approaches.

This design is appropriate because it allows the investigation of both dissimilarities and similarities between the neuromarketing adoption of the international and local retail markets, as well as giving it the flexibility to explore new themes that may arise during the data collection.

3.1.1 Comparative and Exploratory Design

Comparative and exploratory design is utilized to examine information that is qualitative in nature. The researcher uses comparative research design in order to comprehensively examine discrepancies between international and Pakistani retail stores regarding the application of neuromarketing tools and techniques. The comparison dwells on the usage of such aspects as visual merchandising, layout of stores, sensory marketing, emotional cues, and customer engagement strategies by the retailers as a way of influencing the purchase decision. The research will seek to establish the gaps, best practices and areas of improvement in the Pakistani retail sector by comparing these practices to two retail settings.

Besides this, an exploratory research design is also adopted since there is little empirical research on the application of neuromarketing in Pakistan. Exploratory research will enable the researcher to explore a field that has not been researched well, come up with initial information, and reveal trends that are yet to be exhaustively reported in the literature. Because the practice of neuromarketing customarily differs across markets and industry, the exploratory approach will offer the requisite openness to study how the retailers understand and apply the concept of neuromarketing in different ways.

By combining comparative and exploratory designs, the research would not only be able to compare current practices in neuromarketing but also explore the emerging patterns with a complete picture of the role of neuromarketing in customer decision-making in various retail settings.

3.2 Research Method: Qualitative Method

The present study adopts a qualitative research approach to gain a deeper understanding of neuromarketing practices in retail spaces. Qualitative research is particularly suitable for this study because it focuses on meanings, experiences, and interpretations rather than numerical measurement. The objective is to explore *how* and *why* neuromarketing tools are used by retailers and *how* these tools influence customer decision-making from a behavioral and perceptual perspective.

Qualitative methods that will be utilized in collecting data to use in the study include:

- Retail manager interviews or professional marketing interviews.
- Store layout, visual merchandising, and sensory observation analysis.
- It included document and content analysis of retail marketing resources, websites and promotional campaigns.

The qualitative research method enables the researcher to obtain rich and descriptive information, which concerns subconscious influence, emotional involvement, and experience in the shopping that is the focus of neuromarketing. It also assists in identifying the themes and patterns that describe the differences in the adoption of neuromarketing in international and Pakistani stores involved in retailing.

The qualitative research approach used in the study gives contextualized information that builds up theory and practical knowledge and thus especially the emerging markets where neuromarketing research is still developing are useful.

3.3 Research Environment: Retail Shopping Environments

This research was based on the organized retail shopping experience in Islamabad, Pakistan, and aims to investigate the extent to which the customer decision-making is affected by the elements of neuromarketing. The research was carried out in three stores: Metro Cash & Carry, Punjab Cash & Carry (E-11), and Carrefour (D-12), which were selected based on the sample that will reflect various operational models, brand positioning and differences in the extent to which the stores have implemented neuromarketing.

Metro Cash & Carry is more of a wholesale (B2B) company with retail customer s. Its store atmosphere is based on mass buying, cost-effectiveness, and big-scale design, with high-ceiling, tall shelves, wide aisles, and well-identified product areas. Neuromarketing drivers are on visual proliferation, strategic pricing messages, checkout urges, and senses in fresh food zones. Cafe Metro and resting facilities also help business orientated shoppers to be comfortable and to spend time.

Punjab Cash & Carry (E-11) is a contemporary, customer -focused retail format that has organized layout, visual perception and vocation with the customers. Big aisles, intuitive navigation and structured product categories lower the cognitive load. Visual merchandising, lighting, entrance smells, and eye-level strategic positioning are attentive and make people buy. Emotional reassurance and confidence in decisions is provided through staff interaction and some organized presentations and is more experience oriented.

Carrefour (D-12, Islamabad) is a branch of a global brand that is located in a limited local environment. Weak navigation, limited space, and congested aisles have an impact on movement and comfort. There is little or little to no sensory stimulation, visual merchandising, digital presence and interaction between staff, showing how local conditions of operation can make neuromarketing less effective even in a global brand.

These three retail environments can offer a rich comparative environment to analyze neuromarketing influence. The differences in sensory involvement, layout performance, service

interface, and pricing plans enable the study to obtain realistic data on the influence of the retail design and psychological stimuli on customer perceptions, feelings, and buying behaviors in Pakistan.

3.4 Population and Sampling

The population for this study consists of retail customers shopping within organized retail environments in Islamabad, Pakistan. Given the qualitative and exploratory nature of the research, the study does not aim for statistical generalization but instead seeks to gain in-depth understanding of customer perceptions, experiences, and decision-making processes influenced by neuromarketing practices in retail spaces.

A non-probability sampling approach was adopted, allowing the researcher to purposefully select participants who had direct exposure to the retail environments under study. This approach is appropriate for qualitative research, where the objective is to capture rich, contextual insights rather than numerical representation.

The study focuses exclusively on customers of Metro Cash & Carry, Punjab Cash & Carry (E-11), and Carrefour (D-12, Islamabad). These retail environments provided access to a diverse customer base, enabling the exploration of variations in consumer behavior across different retail formats and operational models.

3.4.1 The target population is the retail customers

The target population of this study includes adult retail customers who actively shop at Metro Cash & Carry, Punjab Cash & Carry (E-11), and Carrefour (D-12, Islamabad). These customers were selected because of their direct interaction with the store environments, layouts, sensory cues, pricing strategies, and service elements relevant to neuromarketing analysis.

The target group is a blend of different customer profiles, which includes:

- Shoppers in individual households.
- Customers who are business oriented and buy in bulk.
- Price-sensitive customers
- Experience-oriented customers

The participants were also contacted on their shopping visits or immediately after shopping to ensure that their answers were based on their recent and authentic shopping experiences. This enabled the research to obtain the real-time perception of store atmosphere, visual merchandising, sensory elements, and the process of making purchase decisions.

The study has contextual relevance and congruence between the information as it relates to interviews and the findings of the observation by targeting customers in these three retail environments. The given focus enhances the validity of the study and contributes to the comparative perception of the impact of the neuromarketing activity on the decision-making of customers in various organized retailing settings in Pakistan.

3.4.2 Sampling Technique (Purposive Sampling)

This research used purposive sampling, which is a non-probability methodology commonly employed in qualitative studies, to identify participants who can be of most interest to the particular aims of the study. The participants were selected purposely using their active shopping experience in Metro Cash & Carry, Punjab Cash and Carry (E-11) and Carrefour (D-12, Islamabad). This was to make sure that the responses gathered were up-to-date and genuine accounts of the existing store layout, sensory stimuli, pricing policies and customer service.

The sample was diverse as it contained a variety of customer profiles, such as individual household customers, bulk purchasers, and business-oriented customers. This diversity was necessary to have various viewpoints on the role of the elements of neuromarketing in influencing decision-making in various retail formats and shopping motives.

In this study, purposive sampling was the right sampling method since it does not rely on statistical generalization but on the depth of understanding. The study could afford to produce detailed information on customer perceptions, emotional reactions, and behavioral patterns due to the presence of information rich participants due to firsthand exposure to the practices of neuromarketing.

In general, the purposive sampling enhanced the qualitative rigor of the research, as it ensured that the choice of the participants was in tandem with the research aims as well as the various operational situations within the sampled retail settings.

3.4.3 Data Saturation and Sample Size.

This qualitative research had a sample size of 50 retail customers of Metro Cash and Carry, Punjab Cash and Carry (E-11) and Carrefour (D-12, Islamabad). It was more concerned with depth and rich data as opposed to numerical representation.

The data were gathered by means of semi-structured interviews to enable the respondents to express impressions, feelings and choices regarding store layout, sensory stimuli, pricing, and interactions between the respondents and the staff. As the interviews continued, the same patterns were repeated, meaning that the answers were consistent.

The level of data saturation was achieved as the further interviews did not provide new themes and insights of the participants regarding the store layout, the stimuli triggers, and sensory engagement became repetitive. This established the fact that the sample was adequate in its ability to cover the research objectives holistically.

Interviews and observational data were combined to maximize triangulation, which makes the findings even more credible and relevant to the context. On the whole, the data saturation and sample size guarantee high validity and substantial information about customer experiences in well-ordered retail settings in Islamabad.

3.5 Data Collection Methods

In the current study, qualitative data collection method was used to investigate the role of the neuromarketing factors in customer decision-making when structured retailer setting is considered. Semi-structured in-depth interviews were taken by use of non-participant observational analysis to collect data. This combination enabled the study to understand customer perceptions and actual environmental factors in time in retail spaces.

The data collection was carried out in natural shopping settings to ensure authenticity and contextual relevance. All data were collected from customers and retail environments associated with Metro Cash & Carry, Punjab Cash & Carry (E-11), and Carrefour (D-12, Islamabad).

3.5.1 Detailed Semi-Structured Interviews with the customers

The main data collection tool was in-depth semi-structured interviews that provided in-depth information on the customer experience, feelings, and mechanisms that they used in making their

decisions in the chosen retail settings. The reason why this method was selected was that it was flexible and hence allowed the connection of individual perceptions but ensured consistency among the participants due to the use of similar interview guide.

The interview guideline contained open-ended questions pertaining to:

- Shopping behavior and frequency.
- Store layout and store navigation.
- Effect of sensory factors like light, music, smelling, and visual presentation.
- Use of pricing mechanisms and promotion indications.
- Impulse buying and positioning of products.
- Belief, emotional reaction and general shopping experience.

The respondents were contacted during or immediately after doing their shopping so that the responses they gave were based on their recent and lived experiences. The interviews were held in a relaxed and natural tone that would help the participants give their opinions without any form of intimidation.

The semi-structured form provided the researcher with the flexibility of investing more into the emerging themes, when necessary, yet provided the assurance that all the important influence of neuromarketing would be addressed comprehensively across the interviews. This method contributed to the enrichment of the data and allowed defining the common trends in question of customer behavior and perception.

On the whole, the in-depth semi-structured interviews were effective in revealing subtle information about the customer s and offered a solid ground on which then the thematic analysis would be conducted within the context of the chosen retail shopping settings.

3.5.2 Non-Participant Observations of Retail Spaces

Besides interviews, this research utilized non-participant observation aimed at studying the applicability of neuromarketing elements and the manner in which the customers engage with those elements on actual retail settings. This approach enabled recording of the conditions and behavior in the store without direct involvement.

On-site observations were performed at Metro Cash and Carry, Punjab Cash and Carry (E-11), and Carrefour (D-12, Islamabad) at their normal operating hours in order to record the natural movement and interaction of the customers.

The focus included:

- Entry and first impressions of the store.
- Aisles, space layout, and usability.
- Display, advertising and offers.
- Placing products and impulse buying areas.
- Sensual components: light, sound, odor.
- Employee communication and service indicators.
- Foot traffic, service duration, and behavioral action.
- Waiting and checking out experience.

Customer engagement, emotional cues, and behavioral patterns were recorded by the researcher without interaction and their authenticity was maintained. The background data used to supplement the interview data is based on observations that give the contextual and behavioral evidence of the effectiveness of neuromarketing.

On the whole, non-participant observation provided the research with useful insights into the actual retail practices, which augmented the depth, credibility, and triangulation of the qualitative findings of the research.

3.6 Research Instruments

In order to meet the aims of this research, several qualitative inquiry tools were utilized to obtain in-depth information on the role played by neuromarketing approaches in determining customer decision making in retail outlets. The fact that structured instruments were used guaranteed reliability, uniformity, and consistency with the research objectives. A semi-structured interview guide and an observational checklist were the main research tools. In this section, attention is paid to interview guides to be employed in the collection of qualitative data.

3.6.1 Interview Guide

To examine the perceptions and experiences of customers as well as the response towards neuromarketing components within the retail space, a semi-structured interview guide was created. The semi-structured format provided flexibility to the respondents to share in their experiences

and at the same time ensured that all the essential neuromarketing dimensions applicable in the study were covered in a consistent manner.

The interview guide was created through the examination of the available literature concerning the research on neuromarketing, sensory marketing, customer behavior, and retail psychology. Questions were designed to include customer response with regard to store layout, visual merchandising, sensory stimuli (music, lighting, smell), staff interaction, emotional engagement, impulse buying behavior, as well as the shopping experience all round.

The sample was given the guide to participants who had shopping experience in Metro cash and carry Pakistan, Punjab cash and carry (e-11), and Carrefour (D-12, Islamabad). The interview process was done in conversational form, to make the respondents respond honestly and in detail, giving the respondents time to think how retail environment affects their purchase decision.

The interview guide was composed of open-ended question**s** that were organized into themes and included:

- Purchase patterns and habits.
- Store layout perception and store navigation.
- Impact of visual presentation and promotion.
- Effect of sensory aspects (lighting, music, smell)
- Staff interaction role and service cues.
- The retail store and trust in it as well as the impact of the emotions.
- Impulse buying behavior
- Retail environment comparison.
- Neuromarketing strategy awareness and perceptions.

The given approach allowed gathering qualitative data with a high level of richness and paying attention to the research goals. Interview guide provided comparability among the respondents and helped in triangulating the results of the observations, which in turn, contributed to the credibility and depth of the study.

3.6.2 Observation Checklist

Qualitative research tool to assess the neuromarketing strategies used in the selected retail environments in a systematic manner to collect real-time cues, non-verbal cues, and environmental cues that affect customer attention, emotions, and buying behavior was an observation checklist.

The checklist was created on the basis of literature on neuromarketing and customer behavior, i.e. sensory marketing, store atmospherics, behavioral indicators. Observations were made at:

- Metro Cash & Carry Pakistan
- Punjab Cash & Carry (E-11)
- Carrefour (D-12, Islamabad)

The checklist discussed several dimensions:

- Store layout and spatial: store entrance attractiveness, aisle size, foot traffic, location of products.
- Signage and visual merchandise: legibility, advertising, branding.
- Sensory cues:
- Auditory (music, volume, brand alignment) stimuli.
- Smell (presence, consistency, pleasantness)
- Lighting and visual atmosphere (brightness, focus and color temperature)
- Technological and digital touchpoints: promotion screens, QR codes.
- Employee attitude and interaction: welcoming, helpfulness, types of communication.
- Emotional and behavioral customer measures: comfort, interaction, dwell time, impulse purchase.

The item was coded (No/Yes) with short descriptive remarks and a rating scale (1-5) assessing the store layout and merchandising, sensorial environment, engagement and brand experience.

The checklist was structured, which made it objective and comparable as well as triangulated methodologically to complement the data collected through interviews to enhance the validity and reliability of the study.

This thematic analysis is based on a qualitative, exploration, and comparative observation of the three stores to find repeat of neuromarketing and the effect it has on the customer decision-making level.

3.7 Data Analysis Technique

3.7.1 Thematic Analysis

Thematic analysis was used in the analysis of the qualitative data collected by means of semi-structured interviews and on-site observations. The thematic analysis has been chosen as a most

suitable method as it can be used to identify, organize and interpret common patterns and themes in qualitative data in a systematic way. This method is especially appropriate to investigate perceptions, experiences, and behavioral reactions concerning neuromarketing strategies in retail settings.

The analysis was done in a multi-step and organized process to achieve rigor and transparency:

- **Data Familiarization**

All transcripts and notes of the interviews and observations were thoroughly read several times in order to obtain a proper conception of the data. This step assisted the researcher in getting acquainted with customer experiences and monitored neuromarketing activities in Metro Cash & Carry Pakistan, Punjab Cash & Carry (E-11) and Carrefour (D-12, Islamabad).

- **Initial Coding**

Relevant coded data were entered into meaningful groups of data. Recurring concepts were given codes which comprised store layout, visual merchandising, sensory stimulation, staff interaction, emotional comfort, trust and impulse buying behavior. The interview responses and the observations were coded to make sure that there is consistency among the data sources.

- **Theme Development**

There were codes related to each other and were combined to create more general themes that represented major aspects of neuromarketing influence. Such emergent themes as sensory engagements, mental dexterities and orientation, emotional assurance and reassurance, price perception and motivation to purchase were examples.

- **Theme Review and Refinement**

The themes identified were examined to make sure that they portrayed the data in the most accurate way and supported the objectives of the study. The themes overlapping were combined and less significant patterns were narrowed or eliminated in order to keep the analysis clear.

- **Interpretation and Integration**

The ultimate themes were interpreted with respect to the neuromarketing and customer behavior literature. Interview results were validated using observational data to enhance credibility and present a comprehensive picture of the role that retail settings play in customer decision-making.

Thematic analysis allowed the researcher to go beyond superficial descriptions and to reveal more about the mechanism of action of the various aspects of neuromarketing in the various types of retail formats. This approach helped to conduct a comparative analysis of the three stores chosen

and to have a sound basis to discuss the impact of the neuromarketing strategies on customer behavior.

3.8 Study Trustworthiness of the Study

Trustworthiness in qualitative research is used to guarantee that findings are credible, reliable and applicable. This paper is conducted in line with four criteria of credibility, transferability, dependability and confirmability as described by Lincoln and Guba (1985).

3.8.1 Credibility

Credibility is an assurance of the accuracy of the results. Strategies used include:

- Long-term work: The data will be gathered in various stores (Metro Cash and Carry I-11, Punjab Cash and Carry E-11, Carrefour D-12) in different customer groups (students, professionals, families, business owners).
- Triangulation: This is a note-taking technique that uses observational data along with the in-depth interview to ascertain behavior, sensory perceptions, and decision-making.
- Peer review**:** Data and initial thematic analysis were reviewed by academic peers in order to decrease bias.

3.8.2 Transferability

Transferability evaluates applicability to other contexts:

- Store layouts, sensory aspects, and demographics of customers are described in detail.
- Selective sampling of the various groups of customer enables the reader to evaluate the applicability to the similar retail settings.

3.8.3 Dependability

Dependability brings stability and consistency of the research process:

- All the stores had systematic data collection rules.
- Field notes, audio recordings, and transcripts were arranged in order to be verified.
- Transparency was recorded by recording the changes and thoughts in the data collection process.

3.8.4 Confirmability

Confirmability provides that what is found is related to the experiences of participants:

- A journal-reflective record was made of assumptions and interpretations of the researcher.
- The subjective influence was reduced through data triangulation.
- Raw data, transcripts and coding schemes were stored to be ensured to be checked independently.

3.9 Ethical Considerations

Qualitative research requires ethical considerations to ensure the participants are not hurt in terms of their rights, dignity, and privacy. Ethical issues were observed in this research during the data collection and data processing.

3.9.1 Informed Consent

The objectives of the study, the nature of the data being collected, and use of the collected information were all explained to all participants. Involvement was fully voluntary and the respondents were free to pull out any time with no negative repercussions.

3.9.2 Confidentiality and Anonymity

No personal identifiers of the participants were taken. The data were stored safely, and the anonymity of all the responses was maintained in the analysis and reporting to avoid intrusion of privacy of participants.

3.9.3 non-maleficence

The research prevented the physical, psychological, and social harm of subjects involved in interviews or observations. It did not touch on sensitive issues, and the participants were approached with a sense of respect.

3.9.4 Transparency

Participants were well informed about the purpose of the research, the methodology used and the use of the findings. Participation was preceded by any question or concerns.

CHAPTER 4 – DATA ANALYSIS AND FINDINGS

4.1 Demographic Profile of Respondents

The survey involved a wide scope of respondents to get a wide approach to the shopping experiences and neuromarketing perceptions in Pakistani shopping outlets. The data gathered was by use of semi structured interviews, the participants shopping habits and their preference of the stores as well as the general demographic traits. The focus of the analysis is on patterns and trends and not on numerical statistics.

4.1.1 Age Distribution

The respondents consisted of young adults (18-25 years) and middle-aged shoppers (45-55 years) with most of them aged between 25-40 years. Digital engagement features were preferred by the younger respondents, and the older ones concentrated on the in-store comfort and staff support.

Age Group	Observed Trends
18–25	Interested in promotions, digital interactions, and experiential zones
26–40	Balance between product quality, layout efficiency, and sensory experience
41–55	Emphasis on staff guidance, trust, and smooth checkout experience

4.1.2 Gender Representation

Both male and female shoppers were taken as a sample, and the differences in the shopping behavior could be identified. The female participants have also placed a lot of focus on store structure, displays, and employee interactions. Male participants were also preoccupied with product positioning, quantity purchasing and time saving.

Gender	Observed Patterns
Female	High attention to displays, signage clarity, and personalized assistance
Male	Preference for wide aisles, visibility of products, and promotional deals

4.1.3 Shopping Frequency

The respondents differed in the frequency of shopping, with some going to the stores weekly and others shopping occasionally once a month. Regular shoppers shared their observations on loyalty, checkout, and sensory marketing effects over the long run, but infrequent shoppers paid attention to the impression, and accessibility of the store in general.

Shopping Frequency	**Shopping Frequency**
Weekly	Familiarity with store layout, focus on efficiency, and impulse buying tendencies
Bi-weekly	Awareness of promotions and sensory stimuli, moderate engagement with staff
Monthly / Occasional	Emphasis on overall experience, store environment, and digital engagement

4.1.4 Preferred Stores

The preferences of the participants showed the perceived variations in the neuromarketing implementation across the three stores observed. Metro Cash & Carry was preferred because of spacious marts and variety of products. Punjab Cash & Carry was praised on account of cleanliness, staff support and orderliness. Carrefour D-12 was observed to be more convenient in terms of location but got a low score in terms of in-store comfort and sensory experience.

Preferred Store	**Observed Patterns**
Metro Cash & Carry	Appeals to B2B and bulk shoppers; valued for spacious layout
Punjab Cash & Carry	High appreciation for staff guidance, visual merchandising, and lighting
Carrefour D-12	Convenience-based preference; lower engagement with sensory and digital cues

On the whole, the sample is a good sample of a balanced age, gender, and frequency of shopping. The qualitative trends have shown that the priorities of the shoppers vary depending on

demographic variables, which have their implications on the perception and experiences of neuromarketing strategies among various formats of retail outlets.

4.2 Thematic Analysis Table

4.2.1 Research Design Context

The thematic analysis relies on the qualitative, exploratory and comparative longitudinal observations of three retail stores in Pakistan, the Metro Cash & Carry, the Punjab Cash and Carry (E-11) and the Carrefour (D-12, Islamabad). The analysis will help to determine the common trends associated with the neuromarketing aspects and how they affect the decision-making behavior of customers.

Theme 1: Store Layout & Navigation (Cognitive Ease)

Codes	**Sub-Themes**	**Evidence from Observations**	**Comparative Insight**
Spacious aisles	Ease of movement	Wide aisles at Metro and Punjab Cash & Carry	Metro & Punjab reduce cognitive stress; Carrefour increases stress
Congested layout	Cognitive overload	Narrow aisles at Carrefour D-12	Carrefour negatively affects browsing comfort
Clear category separation	Efficient navigation	8/10 clarity at Metro; 9/10 at Punjab	Punjab performs best in navigation clarity
Poor spatial flow	Confusion	No intuitive layout at Carrefour	Weak neuromarketing execution

Theme 2: Visual Merchandising & Signage

Codes	Sub-Themes	Evidence from Observations	Comparative Insight
Promotional banners	Attention capture	Entrance campaigns at Metro & Punjab	Strong at Metro & Punjab
Clean displays	Perceived quality	Organized shelves at Punjab	Punjab strongest in cleanliness
Digital screens	Visual stimulation	Present at Metro & Punjab	Absent at Carrefour
Lack of signage	Reduced brand recall	No clear signage at Carrefour	Carrefour weakest

Theme 3: Strategic Product Placement & Impulse Buying

Codes	Sub-Themes	Evidence from Observations	Comparative Insight
Eye-level placement	Visibility bias	Punjab scored 10/10	Punjab strongest
Bulk-buy sections	Value perception	Metro Pro Price sections	Appeals to B2B customers
Checkout displays	Impulse triggers	Chocolates, drinks at Metro & Punjab	Absent at Carrefour

Theme 4: Sensory Marketing (Music, Lighting, Scent)

Codes	Sub-Themes	Evidence from Observations	Comparative Insight
Background music	Emotional regulation	Calm music & Azaan at Metro	Unique cultural alignment
No music	Neutral/dull mood	Punjab & Carrefour	Missed emotional engagement

Lighting quality	Freshness perception	Excellent lighting at Punjab	Punjab leads
Scent presence	Brand identity	Mild Metro; entrance scent at Punjab	Underutilized overall
No scent	Low sensory recall	Carrefour	Weak sensory branding

Theme 5: Staff Interaction & Human-Centered Neuromarketing

Codes	**Sub-Themes**	**Evidence from Observations**	**Comparative Insight**
Greeting customers	Emotional reassurance	Observed at Metro & Punjab	Builds trust
Product guidance	Decision facilitation /Dull mood	Strong at Punjab	Punjab strongest
Limited staff	Reduced engagement	Carrefour	Negative emotional impact

Theme 6: Checkout Experience & Waiting Time

Codes	**Sub-Themes**	**Evidence from Observations**	**Comparative Insight**
Impulse products	Last-minute buying	Metro & Punjab checkout counters	Positive sales impact
Long queues	Frustration	Peak hours at Metro	Area for improvement
Poor checkout optimization	Missed opportunity	Carrefour	Weak impulse stimulation

Theme 7: Experiential Zones & Customer Comfort

Codes	Sub-Themes	Evidence from Observations	Comparative Insight
Café / seating	Extended dwell time	Café Metro scored 9/10	Unique advantage
No rest areas	Shopping fatigue	Punjab & Carrefour	Limits exploration

Theme 8: Checkout Experience & Waiting Time

Codes	Sub-Themes	Evidence from Observations	Comparative Insight
Digital screens	Promotional reinforcement	Metro & Punjab	Supports engagement
QR codes	Information access	Observed at Punjab	Moderate tech usage
No digital tools	Low interactivity	Carrefour	Major gap

The thematic analysis shows that cognitive ease, sensory stimulation, human interaction, and strategic visual communication are the main requirements of neuromarketing within Pakistani retail stores. The neuromarketing execution of Metro and Punjab Cash and Carry is more pronounced over that of Carrefour D-12 where local operations pressure erodes global brand standards.

Such thematic analysis supports the comparative and exploratory essence of the given research in showing how the differences in the implementation of neuromarketing in various retail formats largely determine the decision-making process of customers.

4.3 Comparative Analysis

4.3.1 Neuromarketing Practices in Pakistani Retailers

Retailers in Pakistan are also shifting to practices related to neuromarketing, but such practices are mostly tacit, intuitive, and experience-based and not technologically enhanced. In comparison to the global giants that apply EEG, eye-tracking, facial coding, and biometric sensors in order to quantify the subconscious customer reaction, most Pakistani retailers hire the environment design,

sensory stimuli, and observational feedback. Nevertheless, these strategies have a successful effect on the perceptions, emotions, and purchase decision of customers on the subconscious level.

Store layout and visual merchandising is one of the core practices. The retailers like Metro Cash and Carry, Carrefour and Imtiaz Super Market make wide aisles, product zones well defined and organized shelving to minimize mental load and optimize navigation. High-demand and impulse products are perfectly located at front doors, checkout spots, and aisles ends so that they become more visible and evoke impulse buying. These habits are in line with neuromarketing principles of cognitive fluency, whereby the decreasing mental effort produces positive emotional reactions and increases purchase probability.

The use of visual cues and psychology of color is wide. The color scheme of promotional areas consists of warm colors such as red, yellow, orange, whereas the color scheme of grocery and pharmaceutical and household areas consists of cooler colors such as blue, green, and white, evoking the sense of cleanliness, trust, and calmness. Bright, contrasting signage messages like sale, limited offer, or buy one get one free stimulates FOMO leading to a decision to be made faster and a higher purchase rate. The design of packaging and product displays also ensures that one will attract attention and focus the shopper to his gaze.

The strategies used in lighting are important in the perception and mood. Light in fresh food and bakery display areas is bright and white, with a focus on hygiene and quality of products, whereas in apparel, electronics, and lifestyle stores, the lighting is more relaxed and warmer, which stimulates the desire to explore and spend more time in the store.

Aural and olfactory senses are also used to a smaller degree but are effective. Background music that is soft and culturally familiar to the customer can be de-stressing, enhance the comfort of shopping and even prolong the browsing time. In the same vein, natural aromas, such as fresh baked bread, coffee, or spices, create emotional memory and appetite and promptly influence buying behaviors in a subtle manner.

It has digital aspects of neuromarketing (particularly in urban and multinational retail chains). Electronic screens, price change displays, self-checkout desks, and advertisement content are used to draw attention and influence buying choices. Nevertheless, they are mostly fixed and are not advanced personalized as in world-famous stores and do not provide real-time tracking or biometric feedback.

Pakistani retail is dominated by price-oriented approaches to emotional engagement. Bundles, value packages, discounts, as well as loyalty programs are attractive to customers with low-cost as they are evaluated rationally, but with emotional appeal. Its focus on perceived value is based on local socio-economic conditions, in which financial gain mainly takes precedence over experiences of high quality.

In general, neuromarketing as practiced in the Pakistani retail is economical, experiential and observational**.** Store design, visual and color clues, lighting, ambient sound, smell and price indicators are important to retailers, instead of using the formal neuroscience. Although these strategies can be effective in influencing subconscious decision-making, lack of more sophisticated neuro-measurement and data analytics in the absence of advanced neuro-measurement and data analytics places limitations on precision, personalization, and scalability. Relative to the global equivalents, Pakistani retailers show a theoretical but dynamic implementation of neuromarketing concepts, thus, it can be concluded that there is a high potential of growth as technology usage, research experience and customer analytics get better.

4.3.2 Neuromarketing in International Retail Powerhouses

Retail giants in the world like Walmart, Amazon (including Amazon Go), Tesco, and Carrefour (international operations) use very developed and organized neuromarketing practices as opposed to developing-market retailers. These corporations combine neuroscience, behavioral analytics, AI, and big data to achieve profound understanding of customer decision-making, beyond implicit sensory technologies, to quantify subconscious reactions and maximize store design, product placement, and pricing and digital experiences.

The use of eye-tracking technology is extensive to learn the way customers scan shelves, signs, and advertisements. These studies are used by Walmart and Tesco to adjust the optimum shelf height, visibility, and positioning of high-margin products on the natural lines of sight of customer s. Retailers can expose the product and affect buying choices without the need to make effort by reaching the unconscious level of attention.

Tools of facial coding and emotion recognition gauge emotional responses to advertisements, displays and in-store experiences. The Micro-expression analysis determines happiness, surprise, confusion or frustration, which allows retailers to optimize marketing stimuli by their neurological reaction instead of self-reported feedback. As an example, Walmart uses such insights to adjust

promotional materials and in-store atmosphere to improve the attraction and minimize negative experience.

Amazon Go is the example of high-level neuromarketing integration. Just Walk Out system is sensor fusion-based, computer vision-based, and AI-oriented behavioral tracking designed to remove checkout lines, decrease cognitive friction, and provide a positive and seamless shopping experience. This is in line with the principles of cognitive ease, which bring about more satisfaction and returns.

Behavioral experimentation aids in optimizing the layout of stores. Walmart A/B tests the aisle width, product placement, signage, and end-cap use, frequently based on biometric and movement tracking data to influence subconscious shopping decision-making.

Global retailers are focused on structured sensory marketing. The use of dynamic lighting helps to emphasize products and achieve mood - warm colors in bakery/ fresh food sections should evoke a sense of comfort, and cool colors in electronics should give an impression of precision. Guided scents form brand-specific emotional resonances, which extend dwell time and trigger impulse buying, which is frequently confirmed by neural feedback.

Digital neuromarketing uses AI to make a personalized recommendation, using browsing history, purchase behavior, eye tracking, and emotional response. Machine learning models are continuously optimized to offer personalized product placement, pricing, and promotions that are increasingly more relevant, emotionally appealing, and efficient to make decisions.

Neuroimaging and biometric testing of emotions and storytelling allow the development of campaigns that stimulate the reward centers, promote the formation of memory, and enhance long-term loyalty to the brand.

International retailers have also been under strict ethical and regulatory standards to ensure privacy in customer awareness, transparency, responsible usage of data, and balancing efficacy and trust in the community.

To conclude, neuromarketing in retail is a scientifically proven, data-driven, and technology-intensive discipline on the global level. Relative to Pakistani retailers, these businesses are more precise, scaleable, personalized, including neuroscience and digital innovation to impact decisions, improvements on experiences, and the development of long-term customer loyalty.

4.4 Sensory influences on Customer Decisions

4.4.1 Visual Impact and Store layout Impact

Some of the strongest sensory variables that determine customer behavior in retail outlets include visual stimulus and store layout. Neuromarketing wise, visual cues are processed at a fast rate and may be used to attract attention, emotion and purchase behavior unconsciously. The layouts of stores, visual merchandising and space layout of the store are strategically arranged by retailers to guide the flow of customers, minimize mental work and maximize exposure to products.

The structure of store layout is very important. Arranged shelves that have distinct aisles, segmentation by category, and logical placement of products relieve mental stress and enhance efficiency of shopping. Poor layouts that are cluttered or confusing will be more frustrating and less dwell time will occur. Such retailers as Metro Cash & Carry and Carrefour use grid-based layouts which make customers navigate but at the same time see a variety of merchandise.

Shelf placement and product placement enhance visuality. It improves the focus on high-margin and impulse products, which are the eye-level placement, end-of-aisle displays, and checkout counter positioning. Subconscious judgment and choice is affected by visual salience and reachability.

Merchandising, visual techniques, such as signage, displays and packaging are the other elements that influence decisions. There is excitement and urgency produced by bold fonts, contrast colors and clear promotional messages, and perceived quality and trust by aesthetically appealing displays.

Perception is also affected by lighting. High lighting enhances the visibility and gives the impression of cleanliness and lighter shades in lifestyle or clothing stores provide a sense of rest that would entice people to window shop. Lighting differences are used to distinguish areas and to a certain extent direct movement of customers.

Emotion and perception are influenced by psychology of colors. Cool colors (blue, green) and warm colors (red, yellow, orange) make me feel calm and trusting and excited and urgent, respectively, which advocates impulse buying.

The cross-category purchases and exploration are affected by store flow and spatial design. The aisles and open spaces are wider which makes it comfortable, and the strategic routes are used that help to expose customers to major products prior to accessing desired items.

To conclude, attention, emotion, and cognition are influenced subconsciously through visual messages, layout design, merchandising, lighting, and color. The optimized store environments are effective neuromarketing instruments, which improve engagement, satisfaction and purchase behavior.

4.4.2 Auditory and Olfactory Effects

Auditory and olfactory experiences play an important role in influencing customer perceptions, feelings and choices at retail outlets. These cues mediate changed behavior unconsciously and are processed in parts of the brain associated with emotion and memory, by which the mood and engagement are always guided without needing specific attention.

Background music has a great influence on the behavior of the customers. The choice of music, in terms of tempo, volume, and cultural suitability, may make customers more relaxed, allowing them to browse longer, or speed up the purchasing process during rush hours. In most cases, slow and soft music encourages the length of stay and purchase in a store and fast-paced music can regulate flow. Appropriate music causes an improvement in mood, product quality, and satisfaction, whereas loud or inappropriate music can lead to lower attention and early exit.

The contribution of the limbic system to emotion and memory is important in the behavioral effects of olfactory too. Good smells make dwelling time longer, moods elevated and brand perceptions better. Natural perfumes such as bread, coffee, or spices are frequently used in supermarkets, bakeries, cafes, and fresh food areas to arouse appetite and buying on the spur of the moment. Even ambient smells in the emerging markets can make soft impacts on the sub-conscience buying choices even with the limited formal scent-diffusion system.

The fusion of sound and smell produces a multi sensual mood, which enhances emotional warmth and interaction. Cues increase emotional reactions and customer loyalty when they are consistent with brand identity. However, mismatched or excessive stimulus can lead to sensory fatigue. All in all, sound and scent serve as good neuromarketing tools that can influence mood, attention, and buying behavior in retail outlets.

4.4.3 Emotional Triggers and Brand Memory

The key idea in neuromarketing is emotional triggers because customers tend to make decisions based on emotional instead of rational analysis. Emotions are considered to be at an earlier stage

than conscious processing and therefore, positive emotional involvement is essential in the decision of purchase and the ability to remember the brand in the long run.

Major triggers include familiarity and comfort. Store atmospheres that are structured in a way that is friendly and culturally compatible generate emotional security that leads to increased duration of visits and increased engagement with the products. Cognitive ease is achieved through consistent design, familiar branding and predictable layouts, which results in positive emotional feelings and greater brand association.

Urgency and fear of missing out (FOMO) messages like limited time offer or only today are promoted by promotional cues and scarcity messages, which leads to a faster decision-making process and more impulse purchases. According to neuromarketing studies, these cues stimulate the centers of rewards in the brain, which strengthens the action at present.

Emotional engagement is also enhanced by brand storytelling and by experience. Themes that focus on trust, family, or innovation build significant relationships that enhance the encoding of memories making brands more memorable to purchase again. Brand recall is also promoted by sensory consistency in visual, audio, and olfactory touchpoints since recurring information created a strong neurological association.

Satisfaction, trust and perceived value are positive post purchase emotions, which lead to brand long-term loyalty. The retailers who offer smooth, emotionally satisfying experiences ensure memory strengthening as customers will remember the brand and be willing to use it again.

In conclusion, comfort, urgency, storytelling, and sensory consistency; emotional triggers directly affect the purchase decision and brand recall, which bridges sensory stimuli and customer behavior in retail environments.

4.5 Customer Awareness and Perception of Neuromarketing

Neuromarketing perception and awareness of the customer determine the effectiveness and ethical acceptability of the marketing approach in the retail environment. Although neuromarketing is becoming utilized in a store strategy, the majority of customers, however, particularly their developing market, are not aware of the term or even its scientific background of brain activity, emotions, and subconscious influence. However, the neuromarketing aspect that can influence

shoppers prominently is the effect of stimuli (e.g., layout, music, light, color, promotion, etc.), since they are usually highly responsive to these factors.

It is more the shopping experience that determines perceptions rather than technical knowledge. Well-designed environment is usually perceived by customers as convenient, engaging and comfortable, and this raises satisfaction and probability of purchase. The consciousness of intentional behavioral control may bring about the issue of manipulation, privacy, and morality, especially with electronic monitoring or targeting. Acceptance is enhanced when the practices are public, safeguard data, and offer obvious advantages whereas the resistance is eminent in case methods are perceived to be intrusive or exploitative.

These tactics focusing on discounts, promotions, and value bundles are viewed as a positive aspect in price-sensitive markets that build trust and emotional satisfaction. Digital customers, especially the younger generation, are much more aware of influence in marketing, but even informed customers are influenced by sensory and emotional value.

Customer trust serves as an intervening variable. Acceptance, loyalty and long-term engagement can be reinforced when retailers integrate coherent branding, ethical communication, and positive experiences.

Recapitulating the points mentioned, despite a lack of scientific awareness of neuromarketing, its effects on perception and behavior are significant. Pleasant experiences, importance and comfort increase receptivity whereas ethical transparency and trust is also essential to sustainable and responsible neuromarketing.

4.6 Major Neuromarketing Disagreements of Local and Global Retail Approaches

When comparing Pakistani retailers with retail giants in the world, significant discrepancies in the process of adoption, implementation, and success of neuromarketing strategies can be noticed. Although both of them seek to dictate on subconscious customer decision-making, global approaches are more technologically sophisticated, data-driven and strategically accurate.

4.6.1 Technological Resources and Integration

Continuous efforts to evaluate attention, emotions, and cognitive involvement in real-time global retailers use advanced technologies, including eye-tracking, facial coding, biometric sensors, EEG testing, and AI-based behavioral analytics. The local retailers depend on sensory information, layout, colors, lighting and sound, without direct neurological measurement and thus, their practices are more intuitive and observational.

4.6.2 Data-Driven Decision-Making

Big data and AI are utilized by global chains to track patterns of movement, dwell time, purchase history, and emotional reactions to optimize them precisely. Local retailers tend to rely on sales information, managerial experience, and customer feedback which does not allow much personalization and does not allow measurability of neuromarketing impact in a scientific way.

4.6.3 Individualization and Customer Experience

Retailers offer extremely personalized experience, with dynamic pricing, customized recommendations and interactions, minimizing decision fatigue through global retailers. The local retailers are interested in general, widespread strategies, effective in general behavior, but not at the level of individuals.

4.6.4 Sensory Strategy Design

Sensory stimuli are utilized by both local and global retailers, yet the global strategies are organized and experimentally validated to have an emotional effect. The sensory cues of local retailers exist but usually are not organized, and are directed by cultural norms, tradition or cost considerations.

4.6.5 Emotional Involvement and Branding

World retailers focus on emotional branding and storytelling and perfect it with neuro-testing to increase brand loyalties. The value as a source of emotional triggers is mostly used by the local retailers and these include promotions and discounts, which will work well when it comes to immediate purchases but not long-term commitment.

4.6.6 Customer Privacy and Ethical awareness

Multinational retailers operate under stringent ethical and regulation guidelines of transparency and customer approval. Local retailers usually have no formal instructions but are increasingly pressured by the development of digitalization and data gathering.

4.6.7 Investment and Strategic Priorities.

Neuromarketing is considered a long-term strategy by which global retailers allocate a lot of money to research, special teams, and lab collaborations. This is the case with local retailers who employ cost-efficient experience-based strategies because of budgetary and infrastructural limits.

4.6.8 Influence on Customer Decision-Making

World practices are more precise, more scalable and more consistent whereas local approaches affect simple sensorial driven behavior. Nevertheless, local strategies are always contextually dependent in that they conform to cultural norms and sensitivity to price.

4.7 Data Validation / Trustworthiness

Ensuring the trustworthiness of qualitative findings is critical to establish the credibility, dependability, and confirmability of this study. To achieve credibility, dependability, and confirmability of the present study, it is important to guarantee reliability of the qualitative findings. The rigor of the research was improved with several strategies:

4.7.1 Credibility

Credibility is the belief in reliability of the findings and their truth. Credibility in this study was achieved by:

- **Triangulation:** Multiple sources of data (such as semi-structured interviews with shoppers, in-store observational checklists and secondary data obtained via retail reports and online materials) were used to collect the data. This achieved cross-validation of insights.
- **Training:** The researchers took long hours to observe the three stores (Metro, Punjab Cash & Carry, and Carrefour) to have a better insight into store dynamics and customer behavior.

- **Peer debriefing:** Supervisors and peers were involved in discussing the observations and thematic interpretations to reduce the subjective bias.

4.7.2 Confirmability

Confirmability also makes sure that the results are based on the perceptions of the participants and not bias of the researcher. Strategies included:

- **Audit trail:** Transparency The notes of observation, interviews and thematic coding were kept as detailed records.
- **Direct evidence linking:** Themes were the direct results of observed behaviors and statements of the participants, and they formed a clear line of raw data to interpretation.
- **Reflexivity:** The researcher was personally contemplative on assumptions and possible sources of bias during data collection and data analysis.

4.7.3 Dependability

Dependability means stability and consistency of results with time. This was addressed by:

Systematic methodology: The research was conducted using the thematic analysis framework of Braun and Clarke (Codes - Sub-themes - Evidence - Comparative Insight), so the study was conducted in a systematic and replicable way.

Standardized observation: All the store observations were conducted using a standardized checklist to minimize location differences.

Cross-checking results: The results obtained through observation were compared with the interviews with the participants to find the common patterns among the sources of data.

4.7.4 Overall Trustworthiness

Traditionally, triangulation, systematic documentation, and reflective practices make this study credible, confirmable, and dependable. These directions empower the belief that the documented neuromarketing trends are true-to-life measurements of the experiences and perceptions of the customers in the sampled Pakistani retail outlets.

CHAPTER 5: DISCUSSION

5.1 Interpretation of Key Findings

The research offers insights into how neuromarketing is applied, effective and challenging in the retail business particularly focusing on global practice and application in the Pakistani shop.

5.1.1 Neuromarketing Consciousness and Application.

The Pakistani retailers are not very aware of neuromarketing, especially that of small and medium-sized businesses. Local stores do not use the techniques of neuromarketing, as opposed to international companies (Walmart, Amazon, and Carrefour) that implement them on a systematic basis. Use of tools such as eye-tracking, EEG and sensory marketing is limited therefore limiting the ability of such tools to optimize in-store experiences.

5.1.2 Sensory Marketing and Customer Interaction

The visual merchandising, lighting, smells, sounds, and touch have a great impact on emotions and buying choices. These strategies are used by international brands in order to boost the dwell time, impulse buying and loyalty. In Pakistan, these methods are not well employed on a cost and technological constraint.

5.1.3 Layout and Placing Products in the store

High-demand and complementary products should be laid in strategic positions because they enhance visibility and likelihood of making purchases. Behavioral understanding would be useful in maximizing store layout and product placement by Pakistani retailers, but lack of expertise and research infrastructure complicates the implementation.

5.1.4 Technology Adoption and Customization

Interactions are improved with the use of digital tools and personalization. Sales are promoted with the help of AR on platforms such as Amazon and interactive displays in stores such as Carrefour and IKEA. The low level of technology use in Pakistan inhibits individualized and interactive experience.

5.1.5 Emotional Response and Customer Behavior

Brand perception and feelings have a great influence on purchase decisions. Neuromarketing is applied by international retailers to forecast and control these reactions but is not likely to be used by local stores, which means that the area of customer neuroscience application is a gap.

5.1.6 Challenges and Limitations

- Expensive neuromarketing instruments.
- Untrained staff and skills.
- Medical, moral and privacy issues.
- Cultural differences in direct implementation of international practices.

5.1.7 Retail Strategy Implications

The neuromarketing approach, including the optimization of the product display, sensory appeal, store design, employee training, and incorporation of digital technology to create personalized experiences, allows Pakistani retailers to increase the likelihood of interaction and purchase of the products.

The effects of neuromarketing on customer behavior are tremendous at the global level. As Pakistani retailers are limited by their awareness, technology, and expertise, the solution is the ability to provide shopping experiences and competitive advantage in the local market through strategic, cost-effective measures.

5.2 Comparison with Existing Literature

Conclusions of this research are consistent and complementary to the available writing about the neuromarketing, customer behaviour and retail experience, and illustrate some similarities as well as gaps especially in the Pakistani context.

5.2.1 Correspondence to Global Neuromarketing Research

The subconscious processes, emotional involvement, and sensory cues have been noted to be utilized as a way of influencing decision making all over the world (Dooley, 2012; Pradeep, 2010). The insights are applied systematically by international retailers Walmart, Amazon, and Carrefour in store layouts, product placement, and digital interfaces and can be measured with tools like eye-

tracking, EEG, and fMRI to evaluate the degree of attention and probability of purchase. It is established that multisensory marketing (visual, auditory, olfactory, and tactile) improves dwell time, impulse buying and brand loyalty, which is in line with the world literature (Ramsoy, 2015).

5.2.2 Practices in Pakistani Retail Context

The Pakistani retailers such as Metro, Punjab Cash and Carry and Carrefour Pakistan use neuromarketing principles intuitively in the in-store appearance, layout optimization, visual merchandising, ambient music and scent. However, the use of sophisticated neuroscience technologies (like EEG, fMRI, or biometric monitoring) is hardly common, and it is caused by some technological, financial, and expertise limitations (Iloka and Onyeke, 2020). This shows partial yet encouraging embracing of the art of neuromarketing.

5.2.3 Subconscious Conditioning and Patterns of Behavior

The experiment confirms behavioral theories of under conscious mechanisms, such as imprinting, anchoring, herding, and choice architecture (Lorenz, 1935; Ariely, 2008). The predictability of response by Pakistani customer s in response to product placement, prices, social confirmation, and sensory attributes supports the existence of cognitive ease and framing and attention capture.

5.2.4 Ethical Considerations

Whereas in literature, privacy, transparency, and informed consent are emphasized (Dooley, 2012; Ramsoy, 2015), ethical awareness in Pakistan is not so widespread. Retailers are customer-oriented, with little attention to the data security or formal code of ethics, which is a mismatch with the global standards.

5.2.5 Contribution to Existing Knowledge

This study:

1. Demonstrates the use of neuromarketing in Pakistan with little high-tech equipment.
2. Indicates the disconnect between research and practice because of financial, technology and ethical obstacles.
3. Validates the effects of multisensory surroundings, store formats, as well as visual display on conduct.

4. Recognizes the ethical and technological restrictions as the potential research and intervention avenues in the future.

Overall, the research is consistent with the literature on neuromarketing on the global level, and it focuses on subconscious signals, the use of senses, and understanding of behavior. The Pakistani retail situation is an example of a hybrid situation between the traditional and emerging neuromarketing approaches and has the potential to be structured with approaches being ethical and data oriented as per the international best practices.

5.3 Theoretical Implications

By combining neuroscience, behavioral economics, and sensory marketing, the findings provide a number of theoretical contributions to neuromarketing and customer behavior, especially in the retail setting.

5.3.1 Further Development of Customer Decision-Making Models

Conscious evaluation is the focus of traditional models such as the input-process-output framework (Schiffman and Wisenblit, 2019). This paper supports the fact that a lot of customer behaviour is subconscious (Dooley, 2012; Pradeep, 2010). Findings show that:

- **Input Stage:** Attention is fuelled by subconscious processing of visual, auditory, olfactory and tactile stimuli.
- **Process Stage:** Conscious preferences are affected by emotional arousal, memory and cognitive load.
- **Output Stage:** These subconscious responses form purchase behavior and satisfaction.

Combining neuromarketing and conventional models offers a comprehensive perspective which incorporates the conscious and subconscious modes of influence.

5.3.2 Neuroscience and Behavioral Economics Interaction

The research paper affirms that neuroscience and behavioral economics are a powerful model of customer behavior. Cognitive ease, framing, loss aversion, and choice architecture are supported by observed customer reaction, which is the interactions between reward pathways, emotional control and thinking.

5.3.3 Contribution to Sensory Marketing Theory

The results show the importance of multisensory marketing (vision, sound, smell, touch) to influence behavior and show that the interaction of stimuli of the senses works even without complex neuromarketing technologies, proving the universality of sensory responses (Ramsoy, 2015).

5.3.4 Cross-Cultural Implications

The paper indicates that the principles of neuromarketing can be customized to fit different cultures. Pakistani retailers unintentionally implement such concepts as attention capturing, emotional engagement, and choice architecture, which substantiate the ideas of contextual flexibility in the application of neuromarketing.

5.3.5 Ethical and Neuroethical Issues

The level of ethical awareness in the emerging markets is low. The study highlights the necessity to incorporate neuroethical concepts into customer behavior patterns in the areas of privacy, transparency, and responsible usage as well as sensory and cognitive processes.

5.3.6 Theoretical Development Implications in the Future

The study advances theory by:

- Piecing together conventional decision-making paradigms and neuroscience knowledge bases.
- Vindication of behavioral economics in neuromarketing.
- Coming up with an illustration that sensory and behavioral theories have cross-cultural validity.
- Making ethics the key consideration in theoretical models.

The article gives a subtle insight into the interplay between sensory, cognitive, and emotional in retail, especially in an emerging market, which can form the framework of integrated, culturally sensitive, and ethically based model of neuromarketing in subsequent studies.

5.4 Ethical or Cultural Perceptions

In Pakistan, neuromarketing is new and has been used in outlets such as Metro, Punjab Cash and Carry and Carrefour through sensory marketing, store design and behavioral cue. Although these strategies improve the customer experience and sales, they increase ethical and cultural concerns with regards to the Pakistani context.

5.4.1 Ethical Considerations

Even simple neuromarketing affects customer behavior on the unconscious level, which is why ethics is a pivotal issue in Pakistan:

- **Transparency and Informed Consent:** Retailers are not supposed to exploit those with vulnerabilities.
- **Privacy of data**: The purchase pattern or loyalty information cannot be subject to abuse or misuse.
- **The prevention of Exploitative Practices**: Sensory cues, promotions, or price anchoring must add to the experience as opposed to playing upon feelings or mental weaknesses.

5.4.2 Cultural Considerations

Customer responses are conditioned by culture, social and religious factors:

- **Religious and Ethical Standards:** The marketing should not be in conflict with the Islamic values because it would provoke an unpleasant feeling and negative response.
- **Socioeconomic Diversity:** Diverse strategies need to be based on different income, education, and exposure of modern retail.
- **Gender Considerations:** Men and women have different sensory cues, which should be engaged in a way that is culturally acceptable.
- **Social Influences:** The family-based and group decision making necessitates the utilization of social proof without causing unnecessary pressure.

5.4.3 Balance between Marketing Effectiveness and Ethical Responsibility

Managers ought to incorporate neuromarketing and uphold high ethical standards and cultural sensitivity:

- **Sensory Design:** There is supposed to be an enhancement of experience through music, lighting and scents without manipulation.
- **Inclusive Marketing:** Retail space must be able to cater to a variety of customers.
- **Customer Education:** Trust and respect Can be developed through awareness campaigns in making decisions, whether subconsciously or consciously.

5.5 Local Retail Adaptation Opportunities

Embracing the concept of neuromarketing in Pakistan provides the local retailers with a chance to maximize engagement among the stores, store performance, and differentiation within the competitive market. Global practices may be adjustable to the local cultural, economic and technological settings.

5.5.1 Local Preferences Sensory Marketing

Visual and Color Design: The colors chosen should be culturally appealing to attract attention and create an emotion, i.e. warm colors to festive promotion, green to freshness.

Auditory Cues: Incorporate regional music/rhythms; slow-tempo music in lowly traffic areas, high-tempo music in high-traffic areas.

Scent Marketing: Well-known odors such as spices or flowers are better to use to increase emotional reaction and dwell time.

Optimization of Store Layout and Navigation

- **Strategic Product Placement:** products with high-margin and impulse should be positioned eye-level or in the main-path; logical flow should be staple products.
- **Zoning and Flow:** Subdivide regions to ensure that families, young adults or professional professionals get fewer cognitive loads and navigable guidance.
- **Optimization of promotional displays:** Endcap, feature islands, and appealing layouts utilize the visual attraction and perceived value.

5.5.2 Customer Insights through Technology

- **Data Analytics and Loyalty Programs:** Monitor transaction data and browsing data in order to determine trends and preferences.
- **Digital Signage and Interactive Display:** Use screens to promote products, give demos or to send changing messages.
- **Mobile Integration:** Store navigation, real-time promotions and shopping assistance apps make it easier.

5.5.3 Cultural and Behavioral Customization

- **Community-Centric Marketing:** Utilize social influence by featuring the use of popular products or testimonials.
- **Festival and Regional Adaptation:** Sense and visual adaptation to Ramadan, Eid, or local events.
- **Gender-Sensitive Design**: Accounting gender preferences in sensing experience and store comfort.

5.5.4 Improving Experiential Retail

- **Interactive Zones:** Product trials, tastings or demos are more interactive.
- **Comfort and Convenience**: Seating, signs, climate condition and simple navigation increase dwell time.
- **Cross-Category Experiences**: products should be combined to create an experience of exploration and impulse buying.

5.5.5 Human Resource Adaptation and Training

- **Customer Interaction Training:** Employees are expected to identify cues, offer personalized service, and direct the decisions in a subtle way.
- **Behavioral Nudging:** In-store nudging can be done by the employees, and it only focuses on promotions or product trials without annoying the customer.

CHAPTER 6 – CONCLUSION & RECOMMENDATIONS

6.1 Recommendations for Pakistani Retailers

Following the findings of the study and comparison with the international retail practices, there are some recommendations on strategies that can be used to improve neuromarketing performance in Pakistani retail. These are based on sensory appeal, mental comfort, emotional attachment, and technology-driven revelations.

6.1.1 Enhance Store Design and Lessen Mental Burden

- The retailers need to focus on spatial clarity and intuitive navigation:
- Maximizing shelf height and minimizing visible inventory clutter.
- Keep aisles clear and category zoning logically.
- Naturally, direct customers to high-margin or strategic areas.
- Improved spatial arrangement minimizes cognitive load, maximizes comfort, and dwell time is elevated.

6.1.2 Enhance the integration of Marketing Senses

- Planned stimuli enhance automatic interaction:
- Sound: Music in the background was used to control the speed and mood which was culturally sensitive and in line with the brand identity.
- Scent: Use subtle signature scents through product areas to enhance brand perception.
- Lighting: even lighting to emphasize the main products and provide quality perception.

6.1.3 Improve Visual Merchandising and Signage

- Visual communication is better and more accurate:
- Have similar, uncluttered signage and electronic displays.
- Create the same brand colours, fonts and imagery across the channels.

6.1.4 Use Technology to Harness Behavioral Insights

- Actionable behavioral data can be made available using cost-effective tools:
- Heat maps, customer flow analysis.

- Promotional zone dwell-time tracking.
- QR code-based systems of engagement and feedback.

6.1.5 Maximize Checkout Experience and Impulse Zones

- Checkout areas can enhance last-minute shopping:
- Reduce wait and maximize the number of counters during the hourly peak.
- Locate high-markup, low-involvement products in strategic locations around billing.

6.1.6 Inverse in Personnel Education and Emotional Investment

- Employee communication enhances confidence and pleasure:
- Proactively work and mentor customers.
- Be assertive and at the same time respect autonomy.

6.1.7 Build Experience-based Retail Areas

- Emotional aspects are stimulated and time spent through experience:
- Bakeries, tasting areas or product interactive stations in-store.
- Where possible, comfortable seating or cafe areas.

6.1.8 Local Implementation of Global Brand Standards

- In the case of international retailers, consistency is essential:
- Make global strategies localized.
- Adhere to minimum requirements of lighting, signs, music and personnel.
- Periodically inspect stores to conform to international brand levels.

6.4 Policy and Managerial Recommendations

The research highlights the increasing strategic relevance of neuromarketing to the improvement of customer decision-making, retail efficiency, and competitiveness in the markets. To be effective in Pakistan, the adoption should be coordinated both at policy and managerial level to achieve ethical, sustainable, and impactful adoption.

6.4.1 Process of Ethical Guidelines Development

Neuromarketing practices, especially in the area of behavioral tracking, facial coding, and use of biometric data need to be regulated with ethical considerations being developed by regulatory bodies and industry associations. Policies should ensure:

- Standards of data gathering.
- Customer privacy protection.
- Informed consent where necessary.
- Ethical principles will be clearly defined and promote customer confidence as well as responsible innovation.

6.4.2 Retail Innovation and Digital Transformation Promotion

- Governments and regulators ought to promote the use of technology in retail by:
- Rewarding digital transformation programs.
- Facilitating academic-industrial partnerships.
- Pilot projects in smart retail technologies: encourage them.
- All this will assist local retailers to slowly adapt to the global neuromarketing styles.

6.4.3 Standardization of Quality of Retail Experience

There should be minimum standards in the organized retail environments, particularly international chains, which include:

- uniform lighting and signs.
- Sufficient workforce and quality standards of service.
- Accessibility and safety requirements.
- Unification guarantees homogenous quality, brand loyalty, and enhances customer experience in general.

6.4.4 Capacity Building and Skills Development

Professional training may help to improve the work of a manager, as well as to apply ethically neuromarketing, such as:

- Decision Science and Customer behavior.

- Retail insights and behavioral analytics.
- Proper utilization of neuromarketing instruments.
- Through such programs, retail professionals can be prepared to apply evidence-based strategies at ethical standards.

6.3 Managers Level Recommendations

6.3.1 Implementation of Data-driven Decision-Making

Managers in retail must not rely on intuition to shape store designs and marketing but use behavioral analytics to do so. The simplest applications such as footfall monitoring, dwell-time tracking, and customer feedback could also present useful information on subconscious customer behavior.

6.3.2 Relocation of Neuromarketing Strategies

Neuromarketing needs to be localized into local cultures, social, and religious practices. Emotionally resonant strategies, including culturally sensitive sound environment, respectful service practices and community-based-branding, increase trust, loyalty, and customer connection.

6.3.3 The kind of investment made on Sensory Consistency

Managers must make sure that there are cohesive experiences of touchpoints:

- Standardization of lighting in departments.
- Congruent scent and sound strategies and brand identity.
- Even visual merchandising to avoid hyper excitement.
- The uniform sensory design enhances brand recognition at subconscious level and creates comfort.

6.3.4 Empowering Retailing by Focusing on People

People have a tendency to interact with each other as a source of emotional interaction. Managers should:

- Educate employees of the train on customer psychology and emotional intelligence.
- Promotive, not intrusive service.

- Make employees act and look like the brand.
- Good communication with the staff helps in creating buying confidence and customer satisfaction.

6.3.5 Ongoing Testing and Refinement

The culture of experimentation should be incorporated among retailers:

- Promotions, layout of A/B testing and sensory intervention.
- Tracking customer feedback on changes.
- Refinement on a behavioral basis.
- This will provide flexibility and standard practices across the world.

6.3.6 Strategic Implications

Upon a coordinated execution of policy and managerial suggestions, systematic and ethical adoption of neuromarketing should be practiced. The enabling environment is developed by policymakers and the insights implemented into practical, customer-centric strategies by managers. Combined, all these efforts contribute to better customer experience, efficiency in decision-making and long-term competitiveness, both in the local and international market.

6.4 Limitations of the Present Research

Although this study will give information about the power of neuromarketing on customer decision making in the Pakistani retail, a number of limitations need to be considered to balance the results and inform future studies.

The sample and scope are limited, as described below.

The study has not included very many outlets as it has targeted Metro Cash and Carry, Punjab Cash and Carry and Carrefour (D-12 Islamabad). These are both local and international formats, but the sample does not reflect the full picture of the retail situation in Pakistan which involves smaller chains and traditional markets. Thus, the results cannot be entirely generalized.

6.4.1 Observational Constraints

Primary data were collected using observations and structured checklists that can be subjective. The observations were restricted to the definite time, and behavior of customers or the interactions between staff might differ at various moments. Minor emotional or cognitive effects were determined instead of being quantified with high-tech neuromarketing image of eye-tracking, EEG, or facial coding.

6.4.2 Time and Resource Constraints

The constraint of time and resources allowed by the study restricted the number of stores that were visited, frequency of observation and access to proprietary sales or behavioral information. Not all neuromarketing practices may have been captured, especially the ones that are done during peak seasons or special campaigns.

6.4.3 Technological and Methodological Limitation

In comparison to other large companies in the world like Amazon Go and Walmart, Pakistani retailers do not significantly incorporate the advanced neuromarketing technologies. The research targeted environmental, sensory, and behavioral cues but not the direct neural or emotional measurement which gives indirect information on customer decision-making.

6.4.4 Cultural and Contextual Factors

The cultural, social and economic factors that affect customer responses in Pakistan may be regional. Although the current study is representative of the normative behavior in the city of Islamabad, the research might not yield the same results in other places. Differences in technology, infrastructure and customer expectations may also influence comparisons with international retailers.

6.4.5 Summary of Limitations

Concisely, the study provides exploratory information about neuromarketing practice in Pakistan but can be taken with a lot of caution because of:

- Small sample size and geographical scope.
- Non-biometric observation techniques.

- Resources and time limitations.
- Poor neuromarketing technology.
- Variability in culture and context.

The understanding of these limitations gives the study more credibility, and a basis to do research on a bigger sample size, a longer period of observation, and more technologically advanced instruments in the future.

6.5 Recommendations on Future Research

6.5.1 Extended Retail Sample and Geographic coverage

Further studies need to increase the size and variety of sample retail stores in several cities and provinces that have supermarkets, hypermarkets, smaller chains, and traditional markets. Retail context-dependent customer behaviors and preferences can be identified by comparing the urban and rural retail setting.

6.5.2 Implementation of State-of-the-Art Neuromarketing Tooling

They should also be complemented with biometric and neuroscientific instruments, like eye-tracking, facial coding, EEG, and galvanic skin response, which would offer a direct measure of subconscious customer reactions, which are more accurate indicators of neuromarketing success than observation.

6.5.3 Longitudinal and Temporal Studies

Like longitudinal designs are able to follow changes in customer behavior over time, such as the effects of seasonal campaigns or store redesigns or new neuromarketing interventions. This design can be used to establish causal association, but not mere correlations.

6.5.4 Cross-Cultural and International Comparative studies

The extension of cross-cultural comparisons can be used to assess the way international chains implement strategies to fit the local culture, the effectiveness of interventions in Pakistan compared to other markets, and the role of social, cultural, and economic factors in affecting customer responses.

6.5.5 Online and Multichannel Neuromarketing

Further studies are needed on neuromarketing on digital platforms, such as online shopping interfaces, mobile applications, QR-driven interaction, and AR/VR clusters. This would give a broad insight into contemporary customer decision-making in both the physical and online store.

6.5.6 Behavioral Segmentation and Personalization

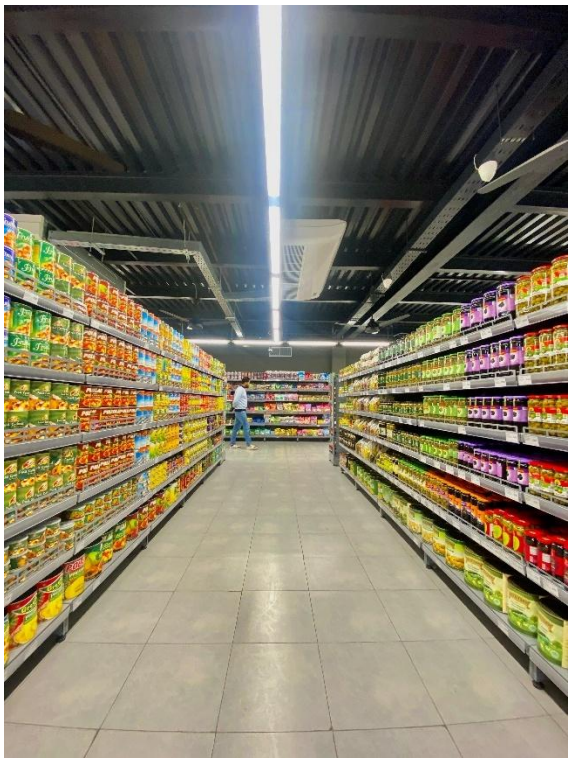
Research has an opportunity to study segment-positioned neuromarketing measures, investigating the impact of demographic factors such as age, gender, income, and education on the formation of subconscious judgments. Behavioral segmentation can be used to make personalized interventions that can boost engagement, satisfaction, and purchase behavior.

The application of these recommendations can:

- Enhance generalizability and scientific rigor of results.
- Measure neurological and emotional reactions directly.
- Discover cross-cultural and omnichannel applications.
- Offer practical insights to maximize customer experience and decision-making.

The instructions will facilitate academic research on neuromarketing in the unfamiliar markets as well as informing the strategy of the local and international retailers in Pakistan.

Heatmapping Of Retail Stores

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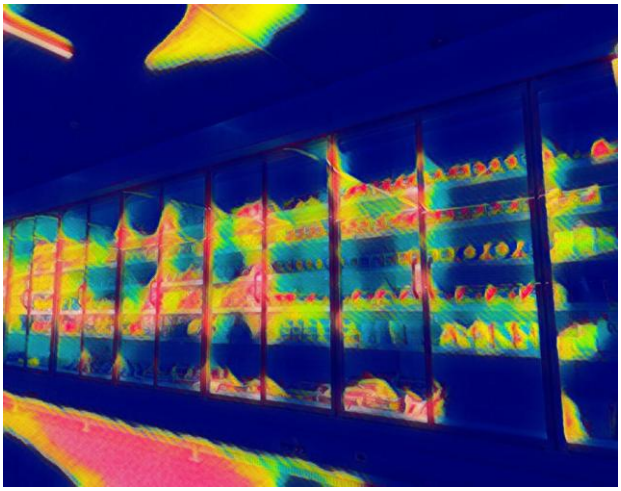

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1st Half Semester Progress Report

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Enrollment No.	(01-111221-158), (01-111221-143), (01-111221-144)
Thesis/Project Title	A Comparative Study of Neuromarketing Influence on Customer Decision-Making in Retail Spaces

Supervisor Student Meeting Record

No.	Date	Place of Meeting	Topic Discussed	Signature of Student
1	7th October'25	Office	Discussion of topics that can be chosen for the project	
2	10th October'25	Office	Finalizing the topic	
3	22nd October'25	Office	Discussing the progression of the project	

Progress Satisfactory ☐ Progress Unsatisfactory ☐

Remarks: Students have done an excellent job of completing the final year project report. They have completed all aspects of rep

Their progress is satisfactory.

Signature of Supervisor: _____ Date: _____

Name: Naimah Khan Note:

Students attach 1st & 2nd half progress report at the end of spiral copy.

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RC-04

2nd Half Semester Progress Report & Thesis Approval Statement

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Enrollment No.	(01-111221-158), (01-111221-143), (01-111221-144)	
Thesis/Project Title	A Comparative Study of Neuromarketing Influence on Customer Decision-Making in Retail Spaces	

Supervisor Student Meeting Record

No.	Date	Place of Meeting	Topic Discussed	Signature of Student
4	14th November'25	Office	Chapter Division discussion	
5	1st December'25	Office	Changes and Improvements	
6	12th December'25	Office	Final touches to the report and changes made	
7	17th December'25	Office	Finalization of report and approval	

APPROVAL FOR EXAMINATION

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