Presenting an Online Impulsive Buying Decision Model with a Neuromarketing Approach

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Abstract

The purpose of this study is to design an online impulsive buying decision model with a neuromarketing approach. The present research is applied in nature; qualitative in terms of method and approach; inductive in orientation; interpretive in paradigm; and employs grounded theory as its research strategy. The data collection sources include a review of theoretical foundations and interviews. The statistical population consists of experts in the field of neuromarketing (those with publications and articles in the specialized domain), university professors specializing in marketing, and psychologists active in the field of neuromarketing. Using a purposive non-probability snowball sampling method, the opinions of 15 participants were gathered through semi-structured interviews until theoretical saturation was achieved. Data analysis was conducted using MAXQDA software and involved three coding stages: open coding, axial coding, and selective coding. The research findings led to the identification of 19 main categories and 69 subcategories. These were incorporated into a paradigm model, with online impulsive buying decision-making as the core category, and included causal conditions (cognitive factors, impuslive factors, personality factors, and old brain stimuli), contextual conditions (environmental factors, situational factors, marketing-oriented factors, demographic factors, and cultural factors), intervening conditions (economic factors, ethical factors, and technical factors), strategies (utilizing neuroscience tools and employing neuromarketing), and consequences (analyzing consumers' impuslive behavior, optimizing customer relationships, creating effective advertisements, increasing online impulsive sales, and optimizing branding).

Keywords: *Neuromarketing, Online Impulsive Buying, Grounded Theory*.

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1. Introduction

In the online environment, consumers are highly susceptible to irrational purchasing behaviors, such as impulsive buying [1-4]. Previous studies have shown that the likelihood of impulsive purchases online is 5% higher compared to offline shopping [5]. An unexpected purchase or an immediate buying decision is classified as impulsive buying. According to Chan et al. (2017), online impulsive buying is a pleasurable and non-reflective process that also involves cognitive reactions [6]. Consumers are more likely to engage in impulsive buying when experiencing a favorable impuslive reaction (e.g., pleasure or happiness). Unplanned purchases are significant for retailers as they influence the overall basket value at the point of purchase, category management, and sales of new products. Reports on social media consumers indicate that 63% of purchases are unplanned, 23% are impulsive, and only 14% are planned [7, 8]. Encouraging unplanned purchases may be crucial for retailers in achieving higher profit margins. Thus, retailers need a better understanding of unplanned purchases, which encompass explicit consumer opinions and implicit unconscious decision-making [9].

Approximately 80-95% of consumer decisions are influenced by the unconscious mind, which plays a significant role in shaping consumer behaviors and choices. The conscious mind, which includes analytical and deliberate thinking, has a lesser influence compared to the unconscious mind. Conscious decision-making is usually influenced by information and rational analysis [10]. Decoding the “buyer’s brain” is of great interest to consumer and market researchers as it promises a better understanding of the underlying brain processes leading to purchasing behavior. Consumer neuroscience has recently gained popularity. The integration of neuroimaging applications with traditional marketing research theories and methodologies aims to study human behavior in response to various marketing stimuli. The goal is to provide data that cannot be obtained through conventional marketing approaches [11].

Such hidden data could be used to influence consumer buying behavior, making the high costs of neuromarketing studies beneficial by improving product design and increasing revenue. Early studies have demonstrated that neuromarketing techniques can highlight not only what consumers prefer but also what they are likely to purchase [12]. Today, managers face immense pressure to discover factors that drive customer attitudes and behaviors. Unfortunately, traditional methods suffer from well-known limitations and have remained largely unchanged since their introduction decades ago. Consequently, there is a growing interest in brain-based approaches that may enable managers to directly examine customers' thoughts, feelings, and underlying intentions [13].

The primary task of marketing is to create an impuslive connection between consumers and products, evoking emotions that encourage them to buy. Understanding buyers' impuslive states during decision-making allows for the design of effective and responsive user interfaces for online marketing and product promotion [14]. Online impulsive buying is primarily driven by immediate impuslive reactions rather than rational thinking, and consumers often make purchases based on spontaneous reactions to products [15]. The design and functionality of online shopping platforms increase the likelihood of such behaviors [16]. Technological advancements in digital shopping environments simplify the buying process and make impulsive purchases more frequent compared to traditional offline shopping [17].

The online shopping environment is more conducive to impuslive purchasing compared to its offline counterpart, as it frees consumers from constraints such as inconvenient store locations, limited operating hours, and social pressure from staff and other customers [18]. Mehrabian and Russell (1974) introduced the Stimulus-Organism-Response (SOR) framework, which has been widely used to examine consumer behavior in fields such as information science, virtual reality, neuroscience, and retailing [19]. This model consists of three interconnected components. The first component, stimulus (S), refers to the shopping environment (e.g., a traditional physical store, an online store, or a fully immersive virtual store). Retail environmental stimuli include a combination of store atmosphere, technical features, and situational cues [20, 21].

Higher levels of arousal positively influence pleasure in various contexts, indicating a dynamic interplay between these impuslive states. This relationship is particularly important in online shopping environments, where visual and auditory stimuli can be carefully crafted to evoke strong impuslive responses [22]. Internal emotions, particularly pleasure and arousal, significantly impact impulsive online buying decisions [23]. Impuslive responses play a crucial role in influencing impulsive buying, shaped by interactions between cognitive and impuslive states, intrinsic characteristics, and external stimuli [17]. Consumers

experiencing high levels of arousal and pleasure are more likely to make impulsive purchases.

Consumer behavior involves a series of psychological and physical processes that begin before purchasing and continue post-consumption. Consumers do not always exhibit rational and logical behavior. When they acquire something spontaneously, without thought or planning, they engage in impulsive buying. Moreover, unexpected and sudden purchases, also known as impulsive buying, are often accompanied by cognitive and impuslive responses that are irrational [8].

Neuromarketing, as an interdisciplinary field, examines human behaviors through neuroscience. This field applies scientific theories and methods to better understand human cognitive and impuslive responses to marketing stimuli [11]. Neuromarketing utilizes consumers' psychophysiological responses as variables in the decision-making process, which has been successfully applied in marketing [24]. It can also provide hidden insights unavailable in traditional marketing studies, enhancing the value of neuromarketing research.

Neuroscience methods use tools and techniques to measure, map, and record brain and neural activity during behavior. These methods generate neural representations of activities in response to exposure to stimuli, allowing neuroscientists to observe neural processes in real-time. Neuroscience methods are classified into three main categories: (1) Electromagnetic (e.g., Electroencephalography [EEG], Magnetoencephalography [MEG], and Steady-State Topography), (2) Metabolic (e.g., Functional Magnetic Resonance Imaging [fMRI] and Positron Emission Tomography [PET]), and (3) Peripheral (e.g., Electrocardiography, Eye Tracking, Facial Electromyography, and Skin Conductance) [25-27].

Real brain studies reveal that no decision can be made without impuslive involvement. Neuromarketing provides insights into information processing and decision-making, examining how businesses interact with the brain in detail. It is used to optimize marketing management by analyzing neural decision-making and understanding the processes that occur in the human brain throughout the purchasing process [28].

Using neuromarketing allows for a deeper understanding of consumer behavior mechanisms and how consumers respond to different marketing stimuli [13]. Professor Ale Smidts, a Nobel Prize-winning economist, is known as the father of neuromarketing. In 2002, Smidts coined the term "neuromarketing," defining it as "a set of techniques to identify brain mechanisms for better understanding consumer behavior and developing more effective marketing strategies" [26]. Neuromarketing gained popularity in 2003 due to the efforts of Read Montague, who conducted experiments using neuroscience technologies to compare consumer responses to Coca-Cola and Pepsi. Since then, the use of neuroscience biometric techniques for marketing purposes has increased due to the interest of companies and brands in their potential.

Thus, the objective of this study is to design an online impuslive purchasing decision model with a neuromarketing approach.

2. Methodology

In this study, the grounded theory approach will be employed to develop an impuslive online purchase decision model. Grounded theory systematically analyzes data to develop theories, starting with a set of observations or empirical data and aiming to construct a well-founded theory from the data. This method examines the factors influencing online purchasing behavior and contributes to a deeper understanding of the process through neuromarketing.

The statistical population of this study consists of four groups: (1) neuromarketing experts with publications, articles, and specialized knowledge in neuromarketing, (2) online marketing specialists, (3) neuroscience specialists with publications and research experience in online purchasing, and (4) psychologists involved in neuromarketing. The sampling in this study was conducted using a non-random approach, including purposive and snowball sampling methods. In purposive sampling, the researcher intentionally selects individuals to collect the most relevant and in-depth information. In this study, the opinions of 15 experts were gathered through semi-structured interviews until theoretical saturation was reached. The interviewees provided their verbal consent, and the interviews were conducted via phone and video calls. All interviews were recorded, transcribed, and analyzed using MAXQDA software.

The use of grounded theory in this study aids in a better understanding of impuslive online purchasing decisions. Through the neuromarketing approach, a deeper analysis of consumer behavior can be achieved. This method contributes to the development of a data-driven and well-documented theory that can improve marketing strategies in the online environment.

In the analysis phase, collaboration with multiple analysts and experienced qualitative researchers (based on their research background) was considered during the interview and data analysis process. Additionally, various data collection techniques such as interviews, library research, and internet searches were employed to gather the maximum amount of data throughout the study. Transferability was ensured through detailed and rich descriptions of the collected data, as well as the use of specific coding and symbolic analysis procedures during the analytical stage. To achieve this, interviews were reviewed multiple times to extract the maximum amount of unique content.

To ensure confirmability, details of the research, including documentation and note-taking, were recorded at all stages to provide reliability. Confirmability requires reviewing and judging raw data, interpretations, suggestions, and findings.

Reliability was calculated using Holsti's method, where the texts were coded in two stages. Ultimately, reliability was measured based on the observed agreement percentage. In this method, categories were initially identified and extracted by the researcher and then re-extracted by experts. By comparing the two stages, the reliability coefficient was calculated using Holsti's method.

Table 1. The Results of Reliability Test

Interview No.	Coded Units (First Coder)	Coded Units (Second Coder)	Agreements	Reliability
Interview 3	21	24	18	0.80
Interview 5	20	19	18	0.92
Interview 15	23	20	19	0.88
Total	64	53	55	0.86

The findings indicate a high level of agreement between the two coding stages, demonstrating the reliability of the coding process using Holsti's method.

3. Findings and Results

The demographic analysis of the study participants reveals that the sample consists of 8 women and 7 men. In terms of educational background, 5 participants hold a Ph.D. in psychology, while 10 participants have a Ph.D. in marketing. Regarding work experience, 6 participants have less than 10 years of experience, whereas 9 participants have between 10 to 15 years of experience in their respective fields.

Table 2. Key Points and Initial Coding

Initial Coding	Key Points
Visual Stimuli	When we enter a store and purchase an unplanned item because an environmental stimulus caught our attention.
Fast Thinking	In many situations, especially impuslive ones, our brain cannot reason about everything.

The paradigm model of grounded theory consists of several key elements that aid in analyzing and understanding phenomena. These elements include causal conditions, the phenomenon, contextual conditions, intervening conditions, strategies, and consequences. In this section, each element related to impuslive online purchasing decisions with a neuromarketing approach is explained.

Core Category (Phenomenon)

The phenomenon refers to the main idea, event, or occurrence that drives actions or reactions for its management. In this study, the core phenomenon is the impuslive online purchasing decision with a neuromarketing approach.

Causal Conditions

Causal conditions refer to events and occurrences that lead to the emergence or development of a phenomenon. In this study, causal conditions include the factors shaping and necessitating impuslive online purchasing decisions, identified through interviews.

Table 3. Causal Conditions of Online Impulsive Purchasing Decisions

Extracted Codes	Subcategories	Causal Conditions
Hedonic Motivation	Cognitive Factors	Causal Conditions

Normative Evaluation		
Decision-Making with the Old Brain		
Fast Thinking		
Negative Impuslive Arousal (Fear)	Impuslive Factors	
Positive Impuslive Arousal (Interest)		
Satisfaction from Immediate Rewards		
Self-Centeredness	Old Brain Stimuli	
Contradiction Acceptance		
Focus on Beginning and End		
Visual Stimuli		
Excitement		
Experiential Openness	Personality Factors	
Extraversion		
Self-Esteem		
Impulsivity		
Agreeableness		

Contextual Conditions

Contextual conditions refer to a set of specific features related to the phenomenon, including the time and place of occurrences. In this study, contextual conditions relate to factors affecting impuslive online purchasing decisions.

Table 4. Contextual Conditions of Online Impulsive Purchasing Decisions

Extracted Codes	Subcategories	Contextual Conditions
Product Features	Marketing-Oriented Factors	Contextual Conditions
Advertisements		
Discounts		
Branding		
Sales Promotions		
Website Usability	Environmental Factors	
Website Visual and Impuslive Appeal		
Website Utility and Communication		
Time Pressure	Situational Factors	
Browsing Web Pages		
Online Store Wandering		
Easy Payment		
Limited Quantity		
Access to Financial Resources		
Age	Demographic Factors	
Gender		
Materialism	Cultural Factors	
Individualism		
Fashion Orientation		

Intervening Conditions

Intervening conditions are general factors that influence strategies and can act as facilitators or constraints. In this study, intervening conditions refer to factors affecting neuromarketing strategies.

Table 5. Intervening Conditions of Online Impulsive Purchasing Decisions

Extracted Codes	Subcategories	Intervening Conditions
Lack of Research Budget	Economic Factors	Intervening Conditions
Lack of Facilities		
Lack of Experts	Technical Factors	
Insufficient Knowledge of Neuromarketing		
Privacy Concerns	Ethical Factors	
Risk of Consumer Mind Manipulation		

Strategies

Strategies involve specific actions, tactics, or interactions derived from the core phenomenon. In this study, strategies include the implementation and execution of neuromarketing strategies.

Table 6. Strategies for Online Impulsive Purchasing Decisions

Extracted Codes	Subcategories	Strategies
Recording Arousal Levels	Neuroscientific Tools	Strategies
Tracking Consumer Neural Activities		
Measuring Brain Mechanisms		
Studying Physiological Responses		
Analyzing Brain Responses to Marketing		
Studying Customer Decision-Making	Neuromarketing Utilization	
Extracting Hidden Customer Information		
Subliminal Effects		
Old Brain Stimulation		
Consumer Mind Penetration		

Consequences

In this study, consequences refer to the potential outcomes of employing neuromarketing in impuslive online purchasing.

Table 7. Consequences of Online Impulsive Purchasing Decisions

Extracted Codes	Subcategories	Consequences
Direct Customer Needs Assessment	Understanding Consumer Behavior	Consequences
Consumer Behavior Analysis		
Customer Behavior Prediction		
Understanding Consumer Preferences		
Exploring Consumer Mental Patterns		
Improving Marketing Campaigns	Optimizing Customer Relations	
Customer Loyalty Acquisition		
Customer Satisfaction Achievement		
Enhancing Ad Effectiveness	Creating Effective Ads	
Increasing Ad Conversion Rates		
Advertisement Psychology		
Increasing Sales via Brain Influence	Enhancing Online Impuslive Sales	
Recognizing Brand Preferences	Optimizing Branding	
Identifying Audience Personas		
Accessing Deep Impuslive and Neural Layers		
Developing More Precise Brand Strategies		

To enhance the coding classification process, the theoretical comparison tool proposed by Strauss and Corbin was used. Based on this, the final 69 extracted codes were categorized into 19 categories. The researcher gained deeper insights into interviewees' experiences through interviews and data analysis, continuously refining categories through iterative coding processes until theoretical saturation was reached. The relationships among various categories and subcategories were established during open and axial coding, leading to the development of the impuslive online purchasing decision model with a neuromarketing approach.

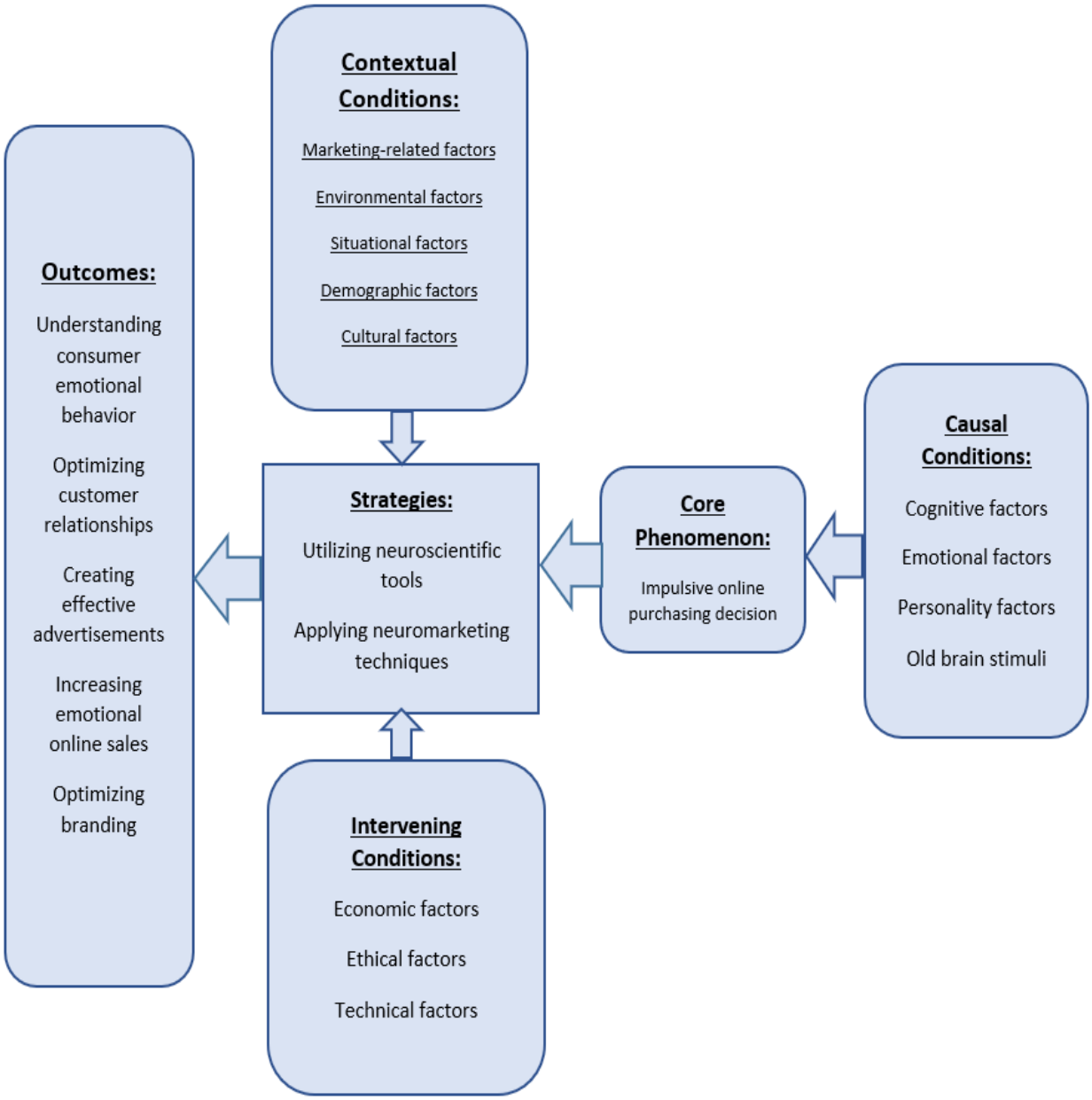

Figure 1. Axial Coding Based on the Paradigm Model for Online Impulsive Purchasing with a Neuromarketing Approach

4. Discussion and Conclusion

The present study aimed to design an online impuslive purchasing model using a neuromarketing approach, employing grounded theory. Impuslive, cognitive, personality, and old brain stimulus factors were identified as causal conditions influencing impuslive online purchasing decisions. Contextual conditions, within which the core phenomenon occurs, include marketing-oriented factors, environmental factors, situational factors, demographic factors, and cultural factors. The intervening conditions identified in this study are economic, ethical, and technical factors. Regarding strategies, the primary actions and initiatives that can facilitate the analysis of impuslive online purchasing decisions include leveraging neuromarketing and utilizing neuroscientific tools. The outcomes of implementing these strategies include increased sales, the development of effective advertisements, identification of impuslive buyer behavior, optimization of customer

relationships, and brand optimization. These results are consistent with previous studies.

Impuslive purchasing conditions are created by consumers' internal stimuli and external triggers. Therefore, impulsive consumers can be identified using neuromarketing techniques, and the shopping environment can be designed to increase the likelihood of their impulsive purchases. Purchase motivations are also crucial in impuslive buying decisions. These motivations are intrinsic to consumers; therefore, marketers should design offers that evoke and facilitate appropriate motivations. Purchasing decisions are strongly linked to emotions, as people buy products to reward themselves. With the help of findings from neuroscience methods, marketing strategies can become significantly more consumer-focused.

Neuromarketing serves as a tool in consumer research, providing supplementary information about consumer preferences and decision-making processes. It aids in better understanding the subconscious aspects of human purchasing decisions. Marketing managers need to answer questions about what happens when price changes are introduced, product features such as color and size are altered, or distribution channels are modified. They also need to determine which advertising strategies to pursue. Neuroscience is a valuable tool for addressing such questions.

When combined with traditional market research tools such as surveys and online questionnaires, neuroscience methods can help identify neural changes associated with product or service-related decisions within the four P's of marketing. This contributes to a deeper understanding of consumer preferences across various business sectors. Neuromarketing helps marketers gather accurate and reliable information about consumer preferences and behaviors, which may include emotions, reactions, and choices.

By utilizing data obtained through neuromarketing, companies can better understand consumers' needs and desires and design and deliver their products and services accordingly. Aligning with customer needs and desires significantly reduces the likelihood of new product failure. Companies can introduce their products to the market with greater confidence, gaining a competitive advantage. Focusing on consumer behavior can help businesses identify purchasing patterns and preferences, ultimately enhancing marketing strategies and offering more suitable products.

Authors' Contributions

Authors equally contributed to this article.

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Declaration of Interest

The authors report no conflict of interest.

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Ethical Considerations

All procedures performed in this study were under the ethical standards.

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