

SYSTEMS-BASED NEUROMARKETING ANALYSIS OF CONSUMER BEHAVIOR IN FASHION USING ISM MODELING

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ABSTRACT

This study explores the evolving landscape of neuromarketing and its impact on the fashion industry, providing insights for marketing managers to enhance their strategies. The research employs Interpretive Structural Modeling (ISM) to establish contextual relationships among various elements influencing neuromarketing in the fashion sector. The study creates an ISM model that illustrates the relationships between neuromarketing enablers, facilitating a comprehensive examination of factors affecting customer behavior and brand image. Key findings highlight the significance of emotional engagement, color psychology, visual attention, and brand perception in the fashion sector. The ISM model identifies driving and dependent powers among these components, offering marketing managers a structured understanding of their interactions. The practical implications include the development of efficient marketing tactics, product design, and brand establishment for fashion companies. By utilizing neuroscientific techniques, these firms can improve their understanding of consumer behavior and maintain competitiveness in a rapidly changing market. The study emphasizes the application of neuromarketing strategies in branding, advertising, and general marketing management for fashion companies. Practical implications extend beyond the fashion industry, providing a valuable model for integrating neuroscience into marketing strategies across various sectors. Overall, the research equips marketing managers with neuroscience-based insights to enhance their tactics, product design, and branding efforts in a dynamic and competitive market. This study closes gaps in the scant literature by being the first to investigate neuromarketing in the fashion sector.

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1. INTRODUCTION

We are in this new era of world trade where Robots and artificial intelligence are deployed in restaurants, cafes, and retail establishments in addition to industries, and

customers are quickly adjusting to this new high-tech environment, modern digital innovations connect Worldwide consumers and businesses, and each stage of the search-and-purchase process (Sung et al., 2020). Understanding today's consumers mind and their

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perception towards the product or brand is important. The psychological and physiological techniques are used in sciences to generate surprising advancements in our understanding of the brain and behavior cognition. But the majority of social sciences have not yet adapted as a common method or instrument for research, neuroimaging. In particular, economics has started using neuroimaging methodologies in its investigation, leading to the development of 'neuroeconomics' (Lee et al., 2007). Market science is slower in understanding the relation between regarding decision making and exchange in relevance to imaging research or we can say neuroscience (Lee et al., 2007). The study of the nervous system, which includes the brain, spinal cord, and peripheral nervous system, is known as neuroscience. Neuroscientists are interested in how the brain affects behavior and cognitive processes. The term Neuromarketing was itself developed in 2002 by Dutch marketing professor Ale Smidt's. In the past, marketing researchers have evaluated constructs like advertising effectiveness or recall, product likeability or preference, risk, trust, attitudes, intentions, or even customer behavior, given a product, pricing, and communication, using theoretical models and self-reported approaches or a distribution plan (Casado-Aranda and Sanchez-Fernandez, 2022). Neuroscience in 1990s means the scientific study of the mental processes that result from coordinating and integrating incoming sensory signals and outgoing motor signals started to gain significance in the study of human behavior. specifically, the growth of the Recent study on cognitive and affective neuroscience has clarified the brain mechanisms through specific mental processes in the brain are important for human decision-making (Casado-Aranda and Sanchez-Fernandez, 2022). neuromarketing" or "consumer psychology" has emerged. neuroscience". This new discipline's objective is the application of neurology's discoveries to research in Using neuroscientific techniques to study consumer behavior addressing pertinent issues (Touhami et al., 2011). Neuromarketing integrates marketing with the sciences of neuroscience and psychology. The most important component in the case of marketing strategies is learning and problem-solving. In essence, developing marketing strategy involves comprehending and evaluating consumer behavior. A better knowledge and picture of consumer behavior can be attained by merging cutting-edge neurology techniques with traditional and conventional marketing practices (Deb, 2021). In order to understand and address issues in the marketing sector, neuromarketing, also known as consumer neuroscience, turns to techniques and research insights into the human brain. Consumer neuroscience uses cutting-edge neurology techniques to provide a more direct insight and picture of the consumer's "black box." (Cruz et al., 2016). In recent years, the domains of consumer behavior and branding or brand management have seen outstanding results from the application of neuroscience in combination with traditional marketing methods, both in the academic and corporate contexts. Even yet, there has

been a noticeable rise in the number of times neuroscience has been incorporated into conventional marketing tactics (Deb, 2021). The advancements in brain science have made it possible to create novel models and methods for comprehending customers' subconscious experiences in this setting (Cruz et al., 2016). Although the field of neuroimaging research is constantly developing, it is obvious that there is a scientific worry about how the techniques should be used in the commercial sector. Many of the operations in the brain's "black box" structure may be understood, and neuroimaging tools can measure actual human behavior (Goecking et al., 2021) using neuroimaging techniques, is feasible to investigate how customers' thoughts and experiences are perceived and how they unconsciously react, yielding valuable readings of those thoughts and experiences. The effectiveness of classic qualitative research methods, like as interviews and questionnaires, may thus be enhanced or even replaced by these techniques. However, these methods may have limitations if they are only based on the assumption that customers think and express their thoughts and feelings in a linear and rational way (Cruz et al., 2016). The intention of writing this research is to understand how marketing managers in fashion businesses is using this to understand the consumer buying preference. After the perusal of around 28 research paper, I have come to an understanding of that the researcher have done the researches to have an understanding about what is neuro marketing and how is it effecting consumer but through this research an individual will understand and can use this for further implication of how they can use it in real life business or can use it for further researches and also about how its effecting the consumer perception towards the products. Neuromarketing helps in understanding the complex information processing and mental processes provided by neuroscience has a significant impact on marketing management. These processes include selection, decision-making, reasoning, attitude, emotion, and memory. It significantly influences many different areas, including segmentation, targeting, positioning, brand equity, brand loyalty, etc. The aforementioned factors also have an impact on consumer perception and choice (Deb, 2021). Neuromarketing makes use of neuroscience to determine how consumers are influenced by variations in product layout, bundling, and in-store displays, why consumers choose particular products and brands over others, and how much the substance and execution of advertising campaigns effect consumers (Ismajli et al., 2022).

Based on the gaps identify in the literature the purpose of the study is to find out the answer of following research questions:

RQ1. How Neuromarketing helps in understanding the relationship between emotional engagement and brand loyalty?

RQ2. How Neuromarketing is affecting impact Consumer preference and purchase intentions?

RQ3. Can neuromarketing help to reveal the underlying causal mechanisms for consumers' perceptual and learning processes, such as motivation and emotions?

This paper will provide the readers an overview of the progress of the previous Neuromarketing research, and research diversification in Fashion industry and also in consumer behavior corporate wise also theory wise. Marketing managers will get the better understanding about the consumer preference how they think or what goes into their mind while purchasing the brand. How they can implement neuromarketing while advertising the brand or creating a brand strategy.

The rest of the paper has organized as follows: the second section is about the research methodology, the third section is about the framework or performance analysis/evaluation, the fourth section is about the present discussion, the fifth section will contain about highlights and the future research discussion, the last sixth section is about the conclusion and references.

2. LITERATURE REVIEW

There are numerous scientists who have done the examination in the field of neuromarketing yet there is extremely less literature accessible for neuromarketing which makes sense of about how advertisers are involving that for publicizing the brand. The absolute first scholarly research on the topic of neuromarketing was in 2004 by neuroscience professor from that point many individuals have done explore in this field. The paper by N. Lee et al. (2007) talked about the basic definition of neuromarketing and also discussed to enlarge the extent of neuromarketing past business brand and shopper conduct applications, to incorporate a more extensive conceptualization of promoting science.

Research done by N. Lee et al. (2017) talked about how he considered the last ten years of examination in the field of neuromarketing and present a schematic delineation of the fundamental course of a regular neuromarketing study. And afterward he recognizes three basic focal points in this delineation that have not gotten sufficient conversation in neuromarketing-important writing, and which was view as fairly risky.

The paper by Bočková et al. (2021) manages an extensive translation of the term neuromarketing, as a discipline that applies neuroscientific techniques to dissect and to comprehend human conduct corresponding to sectors and market trades.

Neuromarketing involves the most recent advances in mind examining to find out more about the psychological cycles behind client buying choices. The reason for this exploratory examination was to uncover the impression of showcasing scholastics nervous system specialists, and advertising experts in regards to neuromarketing studies, as they play a significant part for the future of neuromarketing studies. Three variables - interest and cooperation, information and mindfulness, and morals - were seen as the main parts of neuromarketing as per the three gatherings of members. Investigations of the view

of neuromarketing uncovered that nervous system specialists and advertising experts see neuromarketing more well than showcasing scholastics (Eser et al., 2011). In the paper by Madan (2010) talks about how Neuromarketing concentrates generally measure inclination between items concerning brand commonality or item inclination. In conventional promoting studies, measures, for example, the item inclination for a specific notice is in some cases hard to gauge, as a watcher might hold a mental predisposition. Notwithstanding, brand commonality and item inclination have been associated with brain action. The field of neuromarketing is as yet seen with alert from shopper insurance bunches as well as numerous scholastics because of the conceivable moral ramifications of planning notices to cause explicit neurological impacts purposefully.

The study done by Rajagopal and Rajagopal (2023) is to dissect the buyer feelings on virtual promoting with regards to social utilization environment driven by worth and way of life across the huge center customer portion. His study established on the hypothetical proverbs of hypothesis of visual insights mental hypothesis of thinking hypothesis of appearance and reality and Heider's equilibrium hypothesis which makes sense of the connection between the social self-idea and self-image coinciding the above hypotheses have been utilized as they are interrelated with the psychosocial view of buyers, which animates their purchasing choices. Every one of this predominance of occasion-based plans in neuromarketing, the capability of elective modalities in neuromarketing and the ongoing spotlight on turn around deduction in neuromarketing he contended that, taken together, these focuses have considerable ramifications for the improvement of a more intelligent neuromarketing, which thus can possibly have a constructive outcome on showcasing information, advertising practice and public discernments of promoting movement overall. Profound reactions and encounters will more often than not be brief and oblivious, so it is troublesome for buyers to give solid self-announced reactions with respect to their feelings. One method for evaluating feelings is to quantify facial articulations with facial investigation programming, which has been displayed to portray and make sense of feeling to a more noteworthy degree than is conceivable with self-revealed gauges alone for example illustrated that look programming can distinguish genuinely notable ads that change mentalities. Positive looks recognized by programming have likewise been displayed to be exceptionally connected with entertainment in light of commercials, to mentalities toward notices and to mentalities toward a promoted brand Facial articulation programming has been utilized in food promoting to file how well purchasers like the taste of explicit food varieties albeit this product might be restricted in exactness and might have the option to evaluate dependably just bigger grins, rather than more modest or slighter grins (Sung et al., 2019).

It is clear from the literature that there have been studies on setting a framework and understanding the concept of neuromarketing and how it influence the consumer buying behavior researchers have explored the area about it affects on consumer buying decision and what in the brand attracts the consumer more, but no study has focuses on establishing the levels of enablers on fashion industry in particular to check how fashion brands can use this techniques on advertising their products. Therefore, this study makes efforts in identifying the enablers and establishing the interrelationship among these enablers. In this way, this study is unique. Enablers for Neuromarketing are identified after extensive literature review and discussions with experienced academicians and working professionals of the marketing industry in the corporate

Definitions and meaning of identified enablers are described below-

- i. **Emotional Engagement (E1)** - One fundamental insight from neuromarketing research in fashion is the importance of emotional engagement (Krishna, 2012) found that emotionally charged advertisements lead to stronger neural responses in consumers, increasing brand recall and purchase intent. This supports the idea that fashion brands should aim to evoke positive emotions in their marketing campaigns (Krishna, 2012; Sung et al., 2019)
- ii. **Color Psychology (E2)**- Color plays a crucial role in fashion, influencing consumers' perceptions and choices. Research by Kim and Lennon (2008) demonstrated that the brain processes colors differently, affecting preferences for fashion items. Brands can leverage this knowledge by selecting colors that resonate with their target audience (Kim & Lennon, 2008).
- iii. **Visual Attention (E3)** - Understanding how consumers allocate visual attention is vital for effective fashion marketing. Eye-tracking studies have revealed that certain elements of fashion advertisements, such as models' faces or unique design features, draw more attention (Kim and Lennon, 2008).
- iv. **Brand Perception (E4)** - Brand perception is a critical aspect of consumer behavior in fashion. Neuroimaging studies, such as those by Plassmann et al. (2012), have shown that strong brand associations are linked to brain activity in the reward center. This highlights the importance of brand-building strategies for fashion companies (Eser et al., 2011; Madan, 2010; Plassmann et al., 2012)
- v. **Social Influence (E5)** -The impact of social influence on fashion choices is well-documented. Recent research using neuroimaging techniques, like fMRI, has explored how the brain processes social signals related to fashion Jin and Ryu (2020) found that brain regions associated with social reward are

activated when individuals perceive social approval for their fashion choices (Jin & Ryu, 2020).

- vi. **Sensory Experience (E6)** - The sensory experience of fashion products, including the feel of fabrics, influences consumer preferences. Neuroscientific studies have revealed that tactile sensations activate brain regions associated with pleasure and desire (Krishna, 2012). Fashion brands can leverage this insight to create products that offer a superior sensory experience.
- vii. **Mirror Neurons (E7)** - Mirror neurons play a pivotal role in consumer behavior within the fashion industry. Research by (Rizzolatti & Craighero, 2004) showed that mirror neurons contribute to consumers' ability to empathize with models wearing fashion items, affecting their desire to purchase (Rizzolatti & Craighero, 2004).
- viii. **Cognitive Dissonance (E8)** - Understanding how consumers reconcile conflicting beliefs regarding fashion choices, such as sustainability versus trendiness, is essential.
- ix. **Neuroeconomics (E9)** - The brain's reward system plays a crucial role in impulsive buying behaviors within the fashion industry. Research by Knutson and Bossaerts (2007) provides insights into the neuroeconomics of consumer choices, particularly in fashion (Knutson & Bossaerts, 2007)
- x. **Brand Loyalty (E10)** - Neurological studies have shed light on the brain mechanisms underlying trust-building and brand loyalty in the fashion sector. Casado-Aranda et al. (2019) investigated the neural correlates of trust and its implications for consumer behavior (Madan, 2010; Voramontri & Klieb, 2019)
- xi. **Social media Impact (E11)** - The impact of social media on consumer behavior within the fashion industry is a growing area of interest. Studies have analyzed how social media platforms trigger reward responses in the brain and influence fashion-related purchasing decisions (Lee et al., 2017; Lee, 2021).
- xii. **Influence of celebrity indorsement (E12)**- Neuromarketing studies have explored the neurological responses when consumers see their favorite celebrities endorsing specific fashion brands or items. These insights can guide celebrity endorsement strategies. (Knutson & Bossaerts, 2007) .
- xiii. **Memory and Brand Recall (E13)** - Understanding how the brain stores and retrieves information related to fashion brands and products is crucial for brand recall. Neuroscientific research on memory processes aids in designing effective branding strategies (Krishna, 2012; Madan, 2010)

- xiv. **Consumer Decision Making Model(E14)** - Neuromarketing principles have been applied to established decision-making models, such as the Consumer Decision-Making Process, to better understand the fashion consumer journey (Milner & Rosenstreich, 2013).
- xv. **Neuro Pricing Strategies(E15)** -Insights into how the brain perceives and responds to different pricing strategies, such as discounts, are essential for influencing purchase decisions (Knutson & Bossaerts, 2007)
- xvi. **Neuro Advertising Effectiveness(E16)** - Measuring the effectiveness of fashion advertising campaigns by analyzing neural responses to different ad content and formats is a critical aspect of neuromarketing research (Bočková et al., 2021)
- xvii. **Cultural Influence(17)** - Neuromarketing studies have delved into how cultural factors influence fashion choices and consumer behavior, offering insights for brands operating in diverse markets (Lee et al., 2018)

Neuromarketing insights have revolutionized the fashion industry by providing a deeper understanding of consumer behavior. Emotional engagement, color psychology, visual attention, brand perception, social influence, and sensory experience are just a few of the factors that have been explored through neuroscientific methods. These findings offer fashion brands valuable tools to craft more effective marketing strategies and design products that resonate with their target audience on a neurological level. By continuing to integrate neuromarketing research into their practices, fashion companies can stay at the forefront of a dynamic and highly competitive industry, ultimately enhancing their ability to meet the ever-evolving needs and desires of consumers.

3. RESEARCH METHODOLOGY

In this paper we are going to use ISM methodology which was developed by David Malone under Warfield's (1974). ISM stands for Interpretive Structural Modeling which is an interactive learning process that helps identify and summarize relationships between specific variables. It also used in to identify or define a problem or issue (Nagariya et al., 2021). ISM is an interactive method that takes the input from the independent professionals (Nagariya et al., 2021) ISM is a technique utilized to draw a between relationship among the factors. The excellence of ISM is that it functions admirably on the inadequately conveyed and unstructured factors. ISM assists in pursuing a choice with the variables in regards to the relatedness in a system and furthermore makes the design of the complex arrangement of elements. ISM depends on the specialists' viewpoint. The steps of ISM according are as per the following (Warfield, 1974):

- (1) The initial step is to make an underlying self-communication grid (SSIM) showing the heading of the logical relationship among the distinguished empowering influences.
- (2) Development of the underlying reachability framework utilizing the standard of V, A, X & O and check for transitivity to make the last reachability framework.
- (3) From the last reachability framework, the empowering agents are parceled in different levels.
- (4) A diagram is shaped subsequent to eliminating the connections of transitivity.
- (5) The ISM model is created from the diagram.
- (6) The ISM model is assessed for the reasonable consistency, consolidating imperative Alteration (Kumar & Rahman, 2017).

4. ANALYSIS USING INTERPRETIVE STRUCTURAL MODELING (ISM)-

ISM empowers the relevant connections among the empowering agents or boundaries or factors and characterization of the empowering influences or obstructions or factors in light of the driving and reliance power. ISM is a system that gives a reasonable connection between the driving and reliance capability of the factors. This makes ISM a reasonable strategy to use in various examination work. (Attri et al., 2013)

4.1 Model Development

A step by step method by and large embraced for the ISM examination is continued in the accompanying sub-segments.

4.2 Structural self-interaction metrics (SSIM)

In the initial step, nineteen empowering agents were concluded. For the advancement of the ISM model, a SSIM is required to have been developed. SSIM shows the course of relevant associations with the assistance of images like V, A X, and O. For making Logical connections among empowering influences exhortation from scholastics specialists was thought of. Specialists gave their significant time and their experience helped us in finishing the relationship.

To lay out an interrelationship among the empowering agents ISM (Warfield, 1974) was utilized. The master board was given the significance and meaning of the empowering agents utilized in this review. Specialists built the SSIM network among the empowering agents (I and j) utilizing pair-wise examinations. (Nagariya et al., 2021) To help the master board documentations were given (Attri et al., 2013).

Assign V if Empowering agent (I) help with accomplishing or coming to empowering influence (j);
 Assign A if Empowering influence (j) help with accomplishing or coming to empowering influence (I)
 Assign X if Empowering agents (I) and (j) help each other in accomplishing or coming to each other and

Assign O if Empowering agents (I) and (j) don't help one another or are not connected

In view of contributions from the specialists about the connections among empowering agents, SSIM is framed

4.3 Initial Reachability Matrix

The next step after SSIM is to form an initial reachability matrix (Figure 1). The initial reachability matrix is achieved after converting SSIM to metrics of binary elements (Pramod et al., 2016) (Table 1). The initial reachability matrix is achieved by properly assigning V, A, X, and O by 1 and 0. The rules discussed below are applied to achieve an initial reachability matrix (Kumar & Rahman, 2017).

1. If the (i, j) entry in the SSIM is V then (i, j) entry in the reachability metrics is made 1, and (j, i) entry is made 0.
2. If the (i, j) entry in the SSIM is A then (i, j) entry in the reachability metrics is made 0, and (j, i) entry is made 1.
3. If the (i, j) entry in the SSIM is X then (i, j) entry in the reachability metrics is made 1, and (j, i) entry is made 1.
4. If the (i, j) entry in the SSIM is O then (i, j) entry in the reachability metrics is made 0, and (j, i) entry is also made 0.

These rules are followed to develop an initial reachability matrix as shown in Table 2.

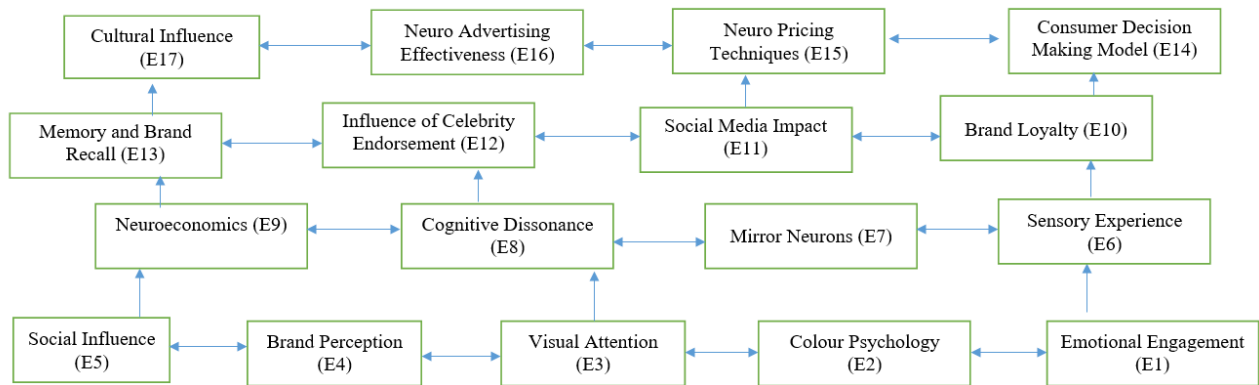


Figure 1. ISM model for Consumer behaviour in fashion industry

Table 1. SSIM of the enablers of the Fashion Industry to achieve Neuromarketing

Enablers	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Emotional Engagement (E1)	1	V	O	A	V	A	X	O	A	A	O	X	A	V	O	A	O
Color Psychology (E2)		1	V	A	X	A	O	O	A	A	X	A	A	O	O	A	O
Visual Attention (E3)			1	O	A	O	A	X	A	A	A	A	A	A	O	A	O
Brand Perception (E4)				1	O	O	O	V	A	X	O	O	A	V	O	O	O
Social Influence (E5)					1	O	A	V	A	O	V	O	A	V	A	O	A
Sensory Experience (E6)						1	O	O	X	O	O	V	X	O	O	O	O
Mirror Neurons (E7)							1	V	A	A	V	O	A	O	A	O	X
Cognitive Dissonance (E8)								1	A	O	O	O	A	X	O	O	O
Neuroeconomics (E9)									1	V	V	V	A	V	V	X	V
Brand Loyalty (E10)										1	A	O	A	O	A	O	O
Social Media Impact (E11)											1	O	A	V	O	O	A
Influence of Celebrity Endorsement (E12)												1	A	O	O	A	O
Memory and Brand Recall (E13)													1	V	X	V	V
Consumer Decision Making Model (E14)														1	O	O	O
Neuro Pricing Techniques (E15)															1	O	A
Neuro Advertising Effectiveness (E16)																1	O
Cultural Influence (E17)																	1

4.4 Final Reachability Matrix and level partitions

The concept of transitivity is applied to form the final reachability matrix. According to the concept of transitivity, suppose there are three elements a, b and c. If a relation holds between first and second and again if there is a relationship between second and third, then a relationship between first and third also exists (i.e., $a > b$, $b > c$ then $a > c$). Table 3 shows the final reachability matrix, showing transitivity by 1^a (Kumar and Rahman, 2017).

The provided table 3, containing the final reachability matrix and details on enabling factors, offers invaluable insights into these interconnections. E1 occupies a pivotal position. Its reachability metrics demonstrate direct links to Enablers 1, 2, 3, 4, 5, 7, 8, 11, 12, 14, and 17. This connectivity highlights its influence within the system. Further elucidation comes from E1's antecedent set, comprising Enablers 1, 4, 6, 7, 9, 10, 11, 12, 13, and 16. These factors directly contribute to E1's functioning. Analyzing the antecedent set reveals the drivers behind E1's performance.

Table2. Initial Reachability matrix for implementing neuromarketing in the Fashion Industry

Enablers	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Emotional Engagement (E1)	1	1	0	0	1	0	1	0	0	0	0	1	0	1	0	0	0
Color Psychology (E2)	0	1	1	0	1	0	0	0	0	0	1	0	0	0	0	0	0
Visual Attention (E3)	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0
Brand Perception (E4)	1	1	0	1	0	0	0	1	0	1	0	0	0	1	0	0	0
Social Influence (E5)	0	1	1	0	1	0	0	1	0	0	1	0	0	1	0	0	0
Sensory Experience (E6)	1	1	0	0	0	1	0	0	1	0	0	1	1	0	0	0	0
Mirror Neurons (E7)	1	0	1	0	1	0	1	1	0	0	1	0	0	0	0	0	1
Cognitive Dissonance (E8)	0	0	1	0	0	0	0	1	0	0	0	0	0	1	0	0	0
Neuroeconomics (E9)	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1
Brand Loyalty (E10)	1	1	1	1	0	0	1	0	0	1	0	0	0	0	0	0	0
Social Media Impact (E11)	0	1	1	0	0	0	0	0	0	1	1	0	1	0	0	0	0
Influence of Celebrity Endorsement (E12)	1	1	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0
Memory and Brand Recall (E13)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Consumer Decision Making Model (E14)	0	0	1	0	0	0	0	1	0	0	0	0	0	1	0	0	0
Neuro Pricing Techniques (E15)	0	0	0	0	1	0	1	0	0	1	0	0	1	0	1	0	0
Neuro Advertising Effectiveness (E16)	1	1	1	0	0	0	0	0	1	0	0	1	0	0	0	1	0
Cultural Influence (E17)	0	0	0	0	1	0	1	0	0	0	1	0	0	0	1	0	1

Table 3. Final reachability matrix for implementing neuromarketing in Fashion Industry

Enablers	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Emotional Engagement (E1)	1	1	1 ^a	1 ^a	1	0	1	1 ^a	0	0	1 ^a	1	0	1	0	0	1 ^a
Color Psychology (E2)	0	1	1	0	1	0	0	1 ^a	0	1 ^a	1	0	1 ^a	1 ^a	0	0	0
Visual Attention (E3)	0	0	1	0	0	0	0	1	0	0	0	0	0	1 ^a	0	0	0
Brand Perception (E4)	1	1	1 ^a	1	0	0	1 ^a	1	0	1	0	0	0	1	0	0	0
Social Influence (E5)	0	1	1	0	1	0	0	1	0	1 ^a	1	0	1 ^a	1	0	0	0
Sensory Experience (E6)	1	1	1 ^a	1 ^a	1 ^a	1	1 ^a	1 ^a	1	1 ^a	1 ^a	1	1	1 ^a	1 ^a	1 ^a	1 ^a
Mirror Neurons (E7)	1	1 ^a	1	0	1	0	1	1	0	1 ^a	1	0	1 ^a	1 ^a	1 ^a	0	1
Cognitive Dissonance (E8)	0	0	1	0	0	0	0	1	0	0	0	0	0	1	0	0	0
Neuroeconomics (E9)	1	1	1	1	1	1	1	1	1	1	1	1	1 ^a	1	1	1	1
Brand Loyalty (E10)	1	1	1	1	0	0	1	0	0	1	0	0	0	0	0	0	0
Social Media Impact (E11)	1 ^a	1	1	1 ^a	1 ^a	1 ^a	1 ^a	1 ^a	1 ^a	1	1	1 ^a	1	1 ^a	1 ^a	1 ^a	1 ^a
Influence of Celebrity Endorsement (E12)	1	1	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0
Memory and Brand Recall (E13)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Consumer Decision Making Model (E14)	0	0	1	0	0	0	0	1	0	0	0	0	0	1	0	0	0
Neuro Pricing Techniques (E15)	0	0	0	0	1	0	1	0	0	1	0	0	1	0	1	0	0
Neuro Advertising Effectiveness (E16)	1	1	1	0	0	0	0	0	1	0	0	1	0	0	0	1	0
Cultural Influence (E17)	0	0	0	0	1	0	1	0	0	0	1	0	0	0	1	0	1

Table 4. Iteration for levelling the enablers of the fashion industry to achieve neuromarketing

Enablers	Reachability metrics	Antecedent set
E1	1,2,3,4,5,7,8,11,12,14,17	1,4,6,7,9,10,11,12,13,16
E2	2,3,5,8,10,11,13,14	1,2,4,5,6,7,9,10,11,12,13,16
E3	3,8,14	1,2,3,4,5,6,7,8,9,10,11,12,13,14,16
E4	1,2,3,4,7,8,10,14	1,4,6,9,10,11,13
E5	2,3,5,8,10,11,13,14	1,2,5,6,7,9,11,13,15,17
E6	1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17	6,9,11,13
E7	1,2,3,5,7,8,10,11,13,14,15,17	1,4,6,7,9,10,11,13,15,17
E8	3,8,14	1,2,3,4,5,6,7,8,9,11,13,14
E9	1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17	6,9,11,13,16
E10	1,2,3,4,7,10	2,4,5,6,7,9,10,11,13,15
E11	1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17	1,2,5,6,7,9,11,13,17
E12	1,2,3,12	1,6,9,11,12,13,16
E13	1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17	2,5,6,7,9,11,13,15
E14	3,8,14	1,2,3,4,5,6,7,8,9,11,13,14
E15	5,7,10,13,15	6,7,9,11,13,15,17
E16	1,2,3,9,12,16	6,9,11,13,16
E17	5,7,11,15,17	1,6,7,9,11,13,17

The provided table 4, containing the final reachability matrix and details on enabling factors, offers invaluable insights into these interconnections. E1 occupies a pivotal position. Its reachability metrics demonstrate direct links to Enablers 1, 2, 3, 4, 5, 7, 8, 11, 12, 14, and 17. This connectivity highlights its influence within the system. Further elucidation comes from E1's antecedent set, comprising Enablers 1, 4, 6, 7, 9, 10, 11, 12, 13, and 16. These factors directly contribute to E1's functioning. Analyzing the antecedent set reveals the drivers behind E1's performance.

The intersection set sheds light on common influences shared by E1 and its antecedents. Enablers 1, 4, 7, 11, and 12 emerge as the overlapping factors. This intersection signifies potential synergy or conflict within the system. Understanding it is crucial for identifying interconnectedness and interdependencies among enabling factors, facilitating a more comprehensive analysis. Furthermore, E1's Level III categorization provides insights into its overall influence. Enablers within the same level typically exhibit similar degrees of influence. E1's classification suggests a significant position within the hierarchy of enabling factors, exerting substantial influence on system dynamics. This categorization aids researchers in prioritizing factors for further analysis and intervention, enabling a more targeted approach towards understanding and optimizing the system's performance. Enabler E1 underscores its pivotal role within the system. By examining its direct influences, antecedents, intersection set, and categorization, researchers can gain valuable insights into the system's dynamics and identify potential areas for intervention or optimization. This comprehensive understanding of enabling factors is essential for informing decision-making processes and driving effective strategies for system improvement or enhancement. E3 directly connects to Enablers 3, 8, and 14, with a Level I categorization suggesting significant influence. Its antecedent set includes multiple factors (Enablers 1-14, 16) contributing to its functionality. The intersection set comprises Enablers 3, 8, and 14, indicating shared influences. Similar to E3, E8 connects directly to Enablers 3, 8, and 14. Categorized under Level I, it signifies substantial influence. Enablers 1-5, 6-9, 11, 13, and 14 contribute to its functioning, with Enablers 3, 8, and 14 forming the intersection set. E14 has a direct connection to Enabler 3 and is categorized under Level I, suggesting significant influence. Enablers 1-9, 11, 13, and 14 contribute to its functioning, with Enabler 3 being the sole factor in the intersection set. E3, E8, and E14 exhibit similar patterns in terms of their direct influences, antecedents, intersection sets, and categorization levels.

5. CONCLUSION

This research has investigated the burgeoning field of neuromarketing and its impact on the fashion industry. The findings illuminate the significance of emotional

engagement, color psychology, visual attention, and brand perception in influencing consumer behavior within the fashion sector.

The study employed Interpretive Structural Modeling (ISM) to establish a comprehensive framework that unveils the interrelationships among various enablers of neuromarketing in fashion. This framework offers valuable insights for marketing managers, enabling them to:

- Develop Effective Marketing Strategies: By understanding the interplay between emotional engagement, color psychology, visual attention, and brand perception, marketing managers can craft targeted strategies that resonate with consumers on a deeper level. This can lead to the development of more effective marketing campaigns, product designs, and brand experiences.
- Optimize Decision-Making Processes: The ISM framework provides a structured approach to analyzing the complex web of factors influencing consumer behavior. This knowledge empowers marketing managers to make data-driven decisions that optimize marketing efforts and maximize return on investment.
- Gain a Competitive Advantage: By leveraging the insights gleaned from neuromarketing research, fashion companies can differentiate themselves from competitors. This can be achieved through the creation of innovative and emotionally engaging marketing campaigns, the design of products that cater to subconscious desires, and the fostering of strong brand loyalty among consumers.

The integration of neuromarketing research into fashion marketing practices holds immense potential for the future of the industry. By understanding the power of neuroscience, fashion companies we can gain a deeper knowledge of consumer behavior, ultimately enabling them to create more effective marketing strategies, design products that resonate with their target audience, and achieve sustainable competitive advantage in a dynamic and ever-evolving marketplace.

5.1 Future Research Directions

The above study opens doors for further exploration in the realm of neuromarketing and fashion. Here are some potential areas for future research:

- Investigate the ethical implications of neuromarketing in fashion.
- Explore the cultural nuances of consumer behavior in the fashion industry.
- Examine the effectiveness of various neuromarketing techniques in different fashion marketing contexts.
- Develop new and innovative neuromarketing methodologies specifically tailored to the fashion industry.

By delving deeper into these areas, researchers can continue to contribute valuable knowledge to the field of neuromarketing and its role in shaping the future of the fashion industry.

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