

# Applying the Elaboration Likelihood Model to Understand How Visual Means Shape Consumer Purchase Intention

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**Abstract.** In today's consumer market, visual elements play a crucial role in consumer cognition and decision-making processes. This paper explores the impact of visual cues on consumer purchasing decisions through the lens of the Elaboration Likelihood Model (ELM). The research indicates that visual information operates simultaneously through both the central and peripheral routes, each serving different functions. Furthermore, the ELM theoretical model reveals that the central route primarily utilizes a greater volume of information and more comprehensive functional visual elements, including comparative charts and technical diagrams, which facilitate rational consumer thinking. In contrast, the peripheral route is influenced by aesthetic, emotional, and heuristic cues such as color, patterns, and design, which evoke consumers' emotional choices. Additionally, factors such as product type, cognitive load, and cultural background also moderate the effectiveness of visual persuasion. The study further suggests that dynamic contextual elements can trigger transitions between processing routes. This research provides constructive advice for sales personnel. By optimizing strategies for visual design, it aims to stand out in an increasingly digital retail environment. Simultaneously, both the government and industry levels should formulate and enforce ethical guidelines for visual marketing. The study emphasizes the importance of aligning visual marketing strategies with consumer processing mechanisms to enhance engagement and drive purchasing behavior. Ultimately, this research contributes to a deeper understanding of the theoretical and practical aspects of the visual impact on consumer behavior within the ELM framework.

**Keywords:** The Elaboration Likelihood Model; Consumer Purchase Intention; Visual cues.

## 1. Introduction

In today's consumer market, visual elements have a significant impact on consumer decision-making. With the rapid development of digital media and electronic consumption platforms, ranging from product images and infographics to video advertisements and interactive interfaces, a variety of visual stimuli continuously influence consumers' sensory experiences. These visual elements not only capture consumers' attention but also affect how they process and evaluate information. The Elaboration Likelihood Model (ELM) proposed by Petty and Cacioppo provides a robust theoretical framework for studying how individuals process persuasive information through central or peripheral pathways. As visual marketing becomes increasingly diverse, understanding the role of visual elements within the ELM framework is crucial for both theorists and practitioners in the fields of marketing and consumer behavior today.

Previous research has extensively explored the impact of visual information on consumer cognition and behavior. Petty and Cacioppo's ELM model remains a foundational theory, distinguishing between central route processing, which involves deliberate and rational analysis, and peripheral route processing, which relies on heuristic cues such as aesthetics, color, and source attractiveness. For instance, Chan et al. found that for search goods (e.g., electronics), consumers prefer detailed visual information such as comparison charts and technical diagrams, aligning with central route processing [1]. In contrast, in the context of the ELM theoretical model, during influencer live-streaming e-commerce, merchants, platforms, and consumers must implement multifaceted measures to optimize user experience and enhance purchasing intention [2]. Similarly, Dotson highlighted the cultural dimensions of visual persuasion, showing that visual metaphors and symbols can vary significantly in their effectiveness across different cultural contexts [3].

Recent advancements in technology have further expanded the scope of visual marketing. Wenyu introduced a multimodal framework integrating visual, textual, and contextual features to enhance user engagement and decision-making in e-commerce [4]. Additionally, the emergence of immersive technologies such as AR and VR has opened new avenues for visual cognition, though their mechanisms within the ELM framework remain underexplored [5].

The objective of this research is to integrate contemporary visual marketing strategies into the ELM framework. It also takes into account the technological advancements under modern technology and the psychological changes in consumers. By analyzing the impact of visual elements on consumer perception across different pathways, this study aims to understand the transition of dynamic visual elements between the two routes. Furthermore, it promotes the strategic application of this theory in today's digitized sales market.

This study has four main objectives. Firstly, to analyze the role of visual information in the central and peripheral processing paths of the ELM. Secondly, to delineate the key visual elements that influence route selection and facilitate the transition between processing routes, such as infographics, aesthetic design, color, and facial cues. Thirdly, to explore the moderating effects of product types, consumer states, and cultural contexts on visual information processing. Finally, by analyzing the current shortcomings and ethical issues in the application of visual cues, to discuss potential and viable future directions for the ELM theoretical model in commercial markets.

## **2. Theoretical Foundation**

### **2.1. The ELM Theory Model**

The ELM, proposed by Petty and Cacioppo in 1986, explains how persuasion can change attitudes and is widely applied in the fields of communication and consumer behavior research. In this theoretical model, the factors affecting an individual's attitude are triggered by two routes: the central route and the peripheral route. The central route involves factors related to the content of the information, tending towards rationally processing arguments tied to the information, based on logical reasoning and factual data, favoring a slow thinking mode aligned with rational dimensions [6]. In contrast, the peripheral route factors pay less attention to the content of the information itself. In the absence of sufficient information resources, individuals often rely on the credibility of the information source and environmental characteristics, using recommendations and social influences as primary references, leaning towards a fast thinking mode associated with emotional dimensions [7].

### **2.2. Motivation, Ability, and Visual Processing in the ELM Framework**

The ELM model posits that an individual's processing path for information (central route or peripheral route) is predominantly determined by two main factors: motivation and ability. In terms of motivation, it is influenced by involvement, argument diversity, and personal cognitive needs. Regarding ability, it is dependent on the level of expertise. When both motivation and ability are strong, individuals employ the central route for systematic thinking, leading to the formation of enduring attitudes. Conversely, when both are weak, they rely on the peripheral route, forming easily changeable attitudes through simple cues. Visual information plays distinctly different roles in these two routes.

## **3. Visual Applications of the Elaboration Likelihood Model in Consumer Markets**

The ELM model is primarily divided into the central route and the peripheral route. In the central route, visual information is typically presented in a rational and functional form. This type of information-driven visual engagement requires consumers to have a high level of cognitive involvement, and its effectiveness is moderated by product complexity and consumer expertise. In contrast, the peripheral route focuses more on emotions and intuition. Color, faces, and aesthetic

design are typical visual heuristics of the peripheral route. It is noteworthy that these two routes are not statically opposed. The cognitive state of consumers, the type of product, and environmental factors can trigger dynamic transitions between the routes.

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### **3.1. Visual Processing along The Central Route**

In the central processing route, visual information is typically presented rationally and functionally. When an individual possesses a high level of motivation and ability, they will consider and ponder various aspects of the information, conduct an in-depth analysis of the proposed concepts, logic, etc., carefully evaluate them, and decide whether to change their attitude towards matters. Customers with a higher level of knowledge tend to lean towards rational choices. The visual processing along this path is characterized by informative visuals, such as comparative charts and technical breakdown diagrams. Informative visuals further activate rational analysis within the audience. For instance, designed for placement on the front-of-pack, its primary goal is to provide consumers with a straightforward assessment of the overall nutritional quality of foods, facilitating informed and healthier choices during purchase [1]. Informational visual requirements necessitate a higher cognitive investment from consumers, and their effectiveness is moderated by product complexity and consumer expertise. According to Chan's research, for search goods, such as household appliances and medical devices, the visual design tends to follow a central route, necessitating the provision of technical parameter comparisons or functional demonstrations.

### **3.2. Visual Processing under the Peripheral Routes**

The visual information under peripheral routes emphasizes emotion and intuition. By contrast, low product involvement induces processing through a peripheral route. Here, consumers evaluate products based on superficial yet salient cues. These cues may not be directly related to the product itself [8]. Low involvement products refer to those for which consumers have relatively low motivation and ability. This leans towards a fast-thinking approach based on emotional dimensions. Under this pathway, the sensory visual processing relies on aesthetic heuristics, color heuristics, and facial heuristics. For instance, consumers often rely on highly trustworthy influencers to aid their purchase decisions, and people are more likely to rely on search engines with high rankings to achieve better information search [9, 10].

Previous research indicates that for experiential products, there is a greater reliance on peripheral routes that evoke emotional resonance through packaging aesthetics and contextual images.

### **3.3. Dynamic Transformation of Route**

The two paths in the ELM theoretical model do not exist independently. Rather, they simultaneously represent the two ends of a unified potential for elaboration. For instance, sudden visual distractions (such as shocking images in advertisements) may compel consumers to shift from the peripheral path to the central path. Conversely, the effect of repeated exposure may gradually elevate the aesthetic preferences of the peripheral path into a conceptual alignment with the central path. About repeated exposure, Apple products are presented to the public through minimalist advertising and storefront design, leaving a profound impression on consumers. At the same time, consumers associate the high-end feel of minimalist design with the products themselves. For instance, while recommendations from trusted peers often engage the peripheral route, inter-personal motivation can also prompt individuals to process product information in detail through the central route [11]. Therefore, in the ELM, when the central route dominates, it does not imply a complete disregard for the role of peripheral cues. Similarly, when the peripheral route is predominant, one cannot entirely dismiss the consideration of the value of topic-relevant information.

## **4. Route Differentiation and Regulation Mechanisms of Visual Elements**

The impact of visual information on consumer perception varies depending on the chosen routes, which is moderated by multiple factors. First and foremost, regarding the type of product, merchants need to have a thorough understanding of the products they are promoting to tailor their strategies effectively. Secondly, consumer states significantly influence this process, with cognitive load acting as an important moderating variable. Consumers experiencing fatigue or time pressure are more likely to rely on visual heuristics related to their surroundings.

### **4.1. Product Type**

In a highly competitive marketplace, marketers and retailers need to know which elements are attended to or ignored by consumers when they make a choice, as well as which top-down factors associated with consumers' personal characteristics facilitate their final decision [8]. Marketers must thoroughly understand the nature of the products they are promoting, distinguishing whether a product is a search good or an experience good. For search products, businesses should focus on promoting the objective advantages of their products to influence consumers' decisions through the central route. For experiential products, businesses should enhance their own credibility and professionalism to influence consumer decision-making through the peripheral route.

Therefore, the two routes of choice correspond to different outcomes. The central route results in consumer decisions based on logical analysis and evaluation of the objective advantages of the product, presented visually. The peripheral route results in consumer decisions based on heuristic cues such as brand credibility, aesthetics, or professionalism conveyed through visual effects.

### **4.2. Cognitive Load**

Cognitive load is primarily related to consumers' cognition. This cognition encompasses consumers' understanding of the product itself as well as their self-awareness. Consumers' understanding of the product can be interpreted as involvement. A higher level of involvement indicates that the central route has a greater influence on that consumer. Meanwhile, consumers' self-awareness is influenced by the simultaneous effects of both routes. For instance, in experiments studying the impact of model ethnicity on different consumers. High-Identification Blacks have more favorable evaluations of the advertisement, product, and model when the model is Black than White, whereas Low-Identification Blacks' evaluations do not differ depending on the model's race [12]. This is the impact of peripheral routes on high-cognitive consumers.

Therefore, the two routes of choice correspond to different outcomes. The central route results in enduring, attitude-driven decisions based on in-depth processing of product-related visual information. In contrast, the peripheral route results in more transient decisions based on simple visual heuristics and cues, such as model attractiveness, color, and simplicity.

### **4.3. Cultural Background**

Cultural differences visually influence consumers primarily through visual metaphors. Dotson pointed out that consumers form particular attitudes regarding products and their advertisements based upon these cultural connections. Differing perceptions of symbolic associations with products and the symbols themselves may have considerable influence on purchase decisions, as well [3]. This situation primarily affects consumers through peripheral routes.

The results of the peripheral route indicate that if the visual symbolism aligns with the consumer's cultural framework, it is met with positive evaluations and purchase intentions. Conversely, if there is a mismatch or lack of recognition, it receives negative or neutral evaluations.

## **5. Existing Issues and Future Directions**

### **5.1. The Significance of the Research**

The visual information processing model has significant guiding implications for marketing practices. In the e-commerce sector, the design of the main image needs to balance the information density of the central pathway with the aesthetic appeal of the peripheral routes. For instance, research by Wenyu indicates that by employing context feature modules, visual feature modules, and multimodal integration modules, the model integrates contextual features and image characteristics and classifies them into user scenarios and behavior sequence labels [4]. This framework moves beyond traditional qualitative analysis. It uses multimodal data to characterize user scenarios. This approach enhances both agility and efficiency.

### **5.2. Ethical Issues**

Firstly, the abuse of visual marketing. The abuse of visual marketing has also sparked ethical controversies. Anger brought on by deceptive visuals can negatively impact customer loyalty and satisfaction [13]. Neural exploitation primarily examines the ethical issues surrounding the use of subconscious visual cues to influence consumer behavior in fields such as advertising and marketing. This behavior may involve manipulation and deception, such as quickly flashing information in advertisements, where consumers may be influenced without being aware.

In order to address the above issues, the government can take the following measures. First, the government can adopt industry ethical guidelines and auditing. The academic and professional community should develop and enforce a clear code of ethics for visual marketing. This framework could explicitly prohibit certain practices (e.g., subliminal flashing). Furthermore, brands can conduct regular ethical audits of their visual content, perhaps using independent panels or consumer focus groups to evaluate and flag potentially misleading imagery before public release, thereby proactively mitigating ethical risks and protecting brand integrity. Secondly, the integration of consumer neuroscience with explicit feedback can be strengthened. While subconscious cues are powerful, their use should be transparent. Methodologies should combine implicit measures, such as eye-tracking (to see what captures attention) and EEG (to measure emotional arousal), with explicit post-exposure interviews. This mixed-methods approach allows researchers to discern if a positive subconscious response translates into genuine conscious approval, ensuring that influence does not equate to deception.

### **5.3. Future Research**

Future research and development can progress towards the direction of multimodal integration and immersive technology. Currently, research on the ELM theory mainly focuses on separate analyses of visual, textual, and audio elements. Therefore, there is a lack of studies on the dynamics of the ELM theory. Multimodal integration is a major trend for future development. Multi-modal integration is primarily reflected in exploring the cross-modal synergistic effects of visual, textual, and audio elements. Immersive technology is primarily reflected in three-dimensional visual perception in AR/VR environments, and the functional mechanisms of AR and VR have not yet been fully explored. The functional mechanisms of AR and VR remain underexplored, and AR and VR technologies are often mistakenly used interchangeably in the sense that both AR and VR provide enriched or enhanced shopping experiences by processing 3D images [5]. Further develop both routes' evolution of the ELM theoretical model based on visual foundations.

## **6. Conclusion**

This study applies the Elaboration Likelihood Model to explore how visual elements shape consumer purchase intentions through central and peripheral processing routes. The findings indicate that visual information serves distinct roles across both paths: central processing relies on informative

and functional visuals such as comparative charts and technical diagrams, while peripheral processing depends on aesthetic, emotional, and heuristic cues like color, facial imagery, and design aesthetics. Furthermore, factors such as product type, cognitive load, and cultural background significantly moderate the effectiveness of visual persuasion. The dynamic interplay between the two routes also reveals that contextual factors can trigger shifts in processing mechanisms. These insights offer valuable strategic implications for marketers seeking to optimize visual content in both digital and immersive retail environments. However, this research is limited by its reliance on theoretical and secondary sources, lacking empirical validation. Furthermore, addressing the issue of ethical boundaries is crucial in distinguishing between legitimate influence and unethical exploitation. Future studies should incorporate experimental or survey-based data to quantitatively assess route switching mechanisms and explore the ethical implications of emerging technologies such as AR and VR in visual consumer persuasion.

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