

The Impact of Visual Stimuli on Online Shopper's Emotion: Applying S-O-R Theory in Online Fashion Retail

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Abstract: This study investigates the impact of visual stimuli on consumer emotions and purchase behaviour in online shopping environments, using the Pleasure, Arousal, and Dominance (P-A-D) model as a theoretical framework. It investigates how visual aspects, including website aesthetics, product photography, and design complexity, influence consumer pleasure, arousal, and dominance, ultimately influencing purchase intentions. Visually appealing and well-planned visual material makes consumers feel better, increasing engagement and the likelihood of purchasing. Furthermore, it discovers that increased arousal can lead to impulsive purchasing behaviours, yet a sense of power or control increases consumer confidence and satisfaction. The study emphasises the necessity of combining visual and experiential aspects to create immersive online buying experiences. Theoretical implications recommend a more in-depth analysis of the P-A-D model's applicability in e-commerce. In contrast, managerial implications assert visual design optimisation to improve consumer interactions and sales.

Keywords: *Online fashion retail, visual stimuli, S-O-R theory, P-A-D model*

1. Introduction

In the rapidly evolving world of online fashion retail, understanding the customer journey is vital for achieving success. This journey encompasses the various touchpoints and experiences consumers encounter, from their initial engagement with a brand to the final purchase. Tan (2024) shows that customer engagement is significantly enhanced when fashion retail websites offer informative content, leading to more significant interaction and loyalty. Additionally, customer experience is crucial in shaping traditional and electronic word-of-mouth, particularly in fast-fashion retail (Anggraeni & Dhillon, 2022). As online shopping becomes increasingly dominant, especially after the COVID-19 pandemic, fashion retailers must strategically adapt to maintain relevance. Integrating physical and online stores through omnichannel strategies has emerged as a critical approach, creating a seamless customer journey that blurs the lines between shopping channels (Mahyadin@Mahidin, 2024).

Malaysia's online fashion retail business has increased, owing primarily to the COVID-19 epidemic, which has pushed e-commerce trends. Increased internet penetration, rising disposable incomes, and altering consumer behaviour contribute to this trend, with more consumers choosing online purchasing for convenience and security (Shaari et al., 2022; Mohamad, 2023; Moorthy et al., 2023). Customers' inclination for platforms that provide a seamless purchasing experience and lower the perceived dangers of online transactions has resulted in a notable increase in consumer participation in Malaysia's fashion e-commerce sector (Hong et al., 2019; Zin, 2023). Despite these positive trends, challenges remain, particularly in terms of consumer trust in personal information security and the credibility of online retailers (Hong et al., 2019; Tham et al., 2019). Some customer segments face additional hurdles to online shopping adoption, which must be addressed for long-term growth (Naseri et al., 2020).

Online fashion retail, which includes the sale of apparel, accessories, and related products via digital platforms, is gaining popularity due to its convenience, accessibility, and broad offerings. Retailers employ e-commerce websites, mobile applications, and social media to promote products and ease transactions, with features like virtual fitting rooms and personalised recommendations to improve the shopping experience. Technological developments, altering customer preferences, and the influence of e-commerce companies such as Amazon and Alibaba have all contributed to the industry's growth. As the industry evolves, innovations such as artificial

intelligence for personalised shopping and augmented reality for virtual try-ons will likely shape future growth. The successful integration of online and offline channels will be critical to delivering a customer-centric purchasing experience (Shaari et al., 2022; Hong et al., 2019).

Moreover, Siregar et al. (2023) described the rise of social media and online resale platforms, particularly among Gen Z consumers, as reshaping fashion consumption, compelling retailers to engage in these digital spaces. To enhance customer satisfaction and drive sales, online fashion retailers must identify and prioritise factors that align with consumer preferences (Morsi, 2023). Artificial intelligence has proven effective in optimising the customer experience across different journey stages (Sasanuma, 2024). Furthermore, emerging technologies like augmented and virtual reality offer new opportunities for experiential retailing, enabling fashion retailers to create immersive online shopping experiences (Hilken et al., 2021). As the e-servicescape, customer experience, and perceived value in online shopping apps continue to influence consumer behaviour, understanding and optimising the customer journey remains a critical focus for online fashion retailers (Patel, 2023; Poorrezaei et al., 2023). E-servicescape refers to an online environment that describes how customers feel when they visit a website, similar to how they feel when visiting a physical store (Koering, 2003).

Many retailers need help to influence consumer behaviour using visual stimuli effectively. This challenge derives from the complexities of consumer perceptions within the dynamic retail environment and the uneven success of visual merchandising methods. Not all tactics achieve the desired effects, such as the effectiveness of visual merchandising, which is determined by the consumer's emotional and psychological orientation (Susanto & Adiwijaya, 2023). Retailers must customise their visual tactics to meet the preferences of their target audience. Besides that, combining many sensory stimuli, such as audio and visual signals, complicates the process, emphasising the importance of providing a cohesive sensory experience that resonates with customers (Li & Pan, 2023). In consumer behaviour research, the stimulus-organism-response (S-O-R) theory, presented as a hierarchical model, was proposed by Mehrabian and Russell (1974) to explain better the willingness to buy in response to stimuli. This model is considered more effective than directly linking stimuli to purchase intentions.

Stimulus is made up of all external environmental factors in a store, including atmosphere (Donovan et al., 1994), store design (Jang et al., 2018; Nusairat et al., 2020), brand image (Simanjuntak et al., 2020), crowding (Anninou et al., 2018) as well as colour, scent, and music (Roschk et al., 2017). These stimuli evoke various consumer responses (Nagano et al., 2023). Prior research has examined the reactions via the lenses of emotional states (Anwar et al., 2020), satisfaction (Roschk et al., 2017), and perceived quality (Nusairat et al., 2020). Based on these responses, Nagano et al. (2023) have concluded that consumer behaviour is either avoidance or approach. Approach behaviour is a positive attitude towards the surroundings, such as remaining in a place. On the other hand, avoidance behaviour represents a negative attitude towards the surroundings, for instance, running away from a location. The organism in S-O-R theory emphasises emotion, where three emotional states of pleasure, arousal, and dominance are used. These three emotional states are the P-A-D model (Donovan & Rossiter, 1982).

The S-O-R (Stimulus-Organism-Response) theory explains the effect of visual stimuli on consumer behaviour in online fashion shopping. The visual design also influences impulse buying since appealing cues may stimulate emotional responses that lead to spontaneous purchases (Lee et al., 2021). This concept asserts that external visual stimuli, such as high-quality images and effective visual merchandising, influence customers' internal processes in specific behaviours. Hence, aesthetic presentation is also essential in capturing attention and developing emotional connections with items (Mo et al., 2022). Nevertheless, poor visual quality harms customer emotions and attitudes (Mo & Dingbang, 2022). Thus, mental visualisation, such as touch based on visual stimuli, might increase product appeal and purchase likelihood. Sha and Lin (2022) explained that visual complexity influences behaviour differentially across age groups, implying that retailers should consider their target demographic when developing online stores. Lin & Lin (2022) found that retailers should reduce layouts and decorations since the excessive visual complexity in clothing stores distracts older shoppers. Therefore, using the S-O-R theory can assist online businesses in understanding how visual stimuli influence consumer behaviour to increase engagement and sales through strategic visual communication.

As a result, this study aims to discuss the characteristics of visual stimuli in online fashion retail among online customers and identify the effects of visual stimuli on pleasure, arousal and dominance (P-A-D) that affect online shopper's emotions and behaviour. In addition, this study looks into how P-A-D can affect online buyers' intentions to purchase online. A literature review is being developed to outline the gaps in knowledge that will serve as the foundation for a theoretical model to predict P-A-D from visual stimuli that influence the consumers' desire to make an online retail fashion purchase.

2. Literature Review

Visual Stimuli Attributes in Online Fashion Retail (S)

Visual stimuli influence customer behaviour, especially in marketing and product presentation. Colour, design, and images significantly impact consumer perceptions, emotions, and purchasing decisions. Visual stimuli draw attention, stimulate emotions, and communicate product information, all contributing to a better overall consumer experience. For example, visual attractiveness in e-commerce can lead to impulse purchases (Karim et al., 2021). Still, visual marketing methods like colour and design are critical for consumer engagement (Huang et al., 2023). Additionally, visual stimuli can elicit significant emotional responses, impacting consumer decisions, as demonstrated by visual imagery's effect on food cravings and purchasing behaviour (Shahriari et al., 2019).

Visual stimuli are essential in online marketing, influencing consumer behaviour, engagement, and purchasing decisions. Elements such as website design, images, and colour influence the online purchasing experience. Knowing these elements aids in strategy optimisation and improves marketers' customer relations. A website's visual attractiveness, such as homepage attraction and product reviews, directly impacts consumer pleasure and arousal, influencing purchase decisions (Sivakumar et al., 2023). Colour also plays an essential role in influencing purchase intention, and different colours induce specific emotions. Warm colours imply urgency, whereas cool tones arouse peace and trust (Kong et al., 2018).

Furthermore, clean and engaging graphics improve consumer experiences but might need clarification (Damen et al., 2021). Incorporating multimedia features such as audio and video can also improve the website's visual stimuli experience. Mardhatilah (2023) explained that combining visual and audio stimuli improves attention and information retention. Websites with dynamic visual content, such as videos or interactive graphics, tend to engage consumers better than static images alone (Murtarelli et al., 2021). This multimedia approach draws attention and allows for a more immersive user experience, enabling extended interaction periods and a more profound content investigation. Figure 1 indicates an example of a website for a men's fashion brand in Malaysia that provides attractive colour tones and portrays images and information suitable for stimulating Muslim customers.

Apart from that, Instagram has become a top social media site for visual stimulation. Since its establishment in 2010, it has become a primary hub for image and video sharing, considerably impacting social interaction, marketing, and personal expression. The platform's design prioritises visual material over language, increasing user engagement with features such as filters, stories, and reels that promote creative expression. This visual focus effectively appeals to marketers, who use it to engage customers (Mardhatilah, 2023; Pelletier et al., 2020). According to Radzi & Bolong (2021) and Marengo (2023), visually appealing content on Instagram can positively influence users' emotions, increasing happiness and satisfaction. However, it can also lead to adverse outcomes, such as feelings of inadequacy, particularly among adolescents. Instagram also plays an integral part in social movements, employing visual content to disseminate messages and mobilise support. This demonstrates the importance of visual stimuli in personal expression and social discourse (Fathir et al., 2022). Instagram relies on visual stimuli to engage users, impact emotions, and drive social connections, making it an essential platform for personal and marketing initiatives. Figure 2 shows the looks for Elrah Exclusive on the Instagram platform, in which the photos are presented in high quality and match their target market, focusing on the young generation.

Figure 1: Elrah Exclusive Websites

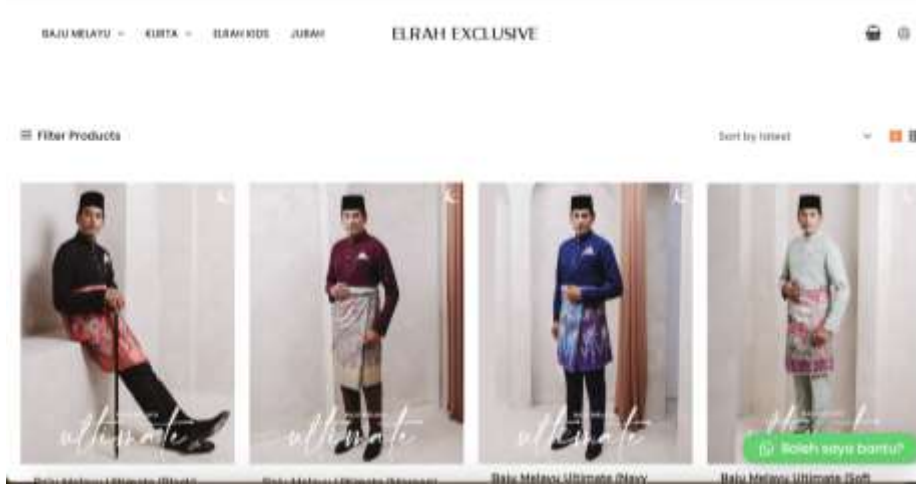
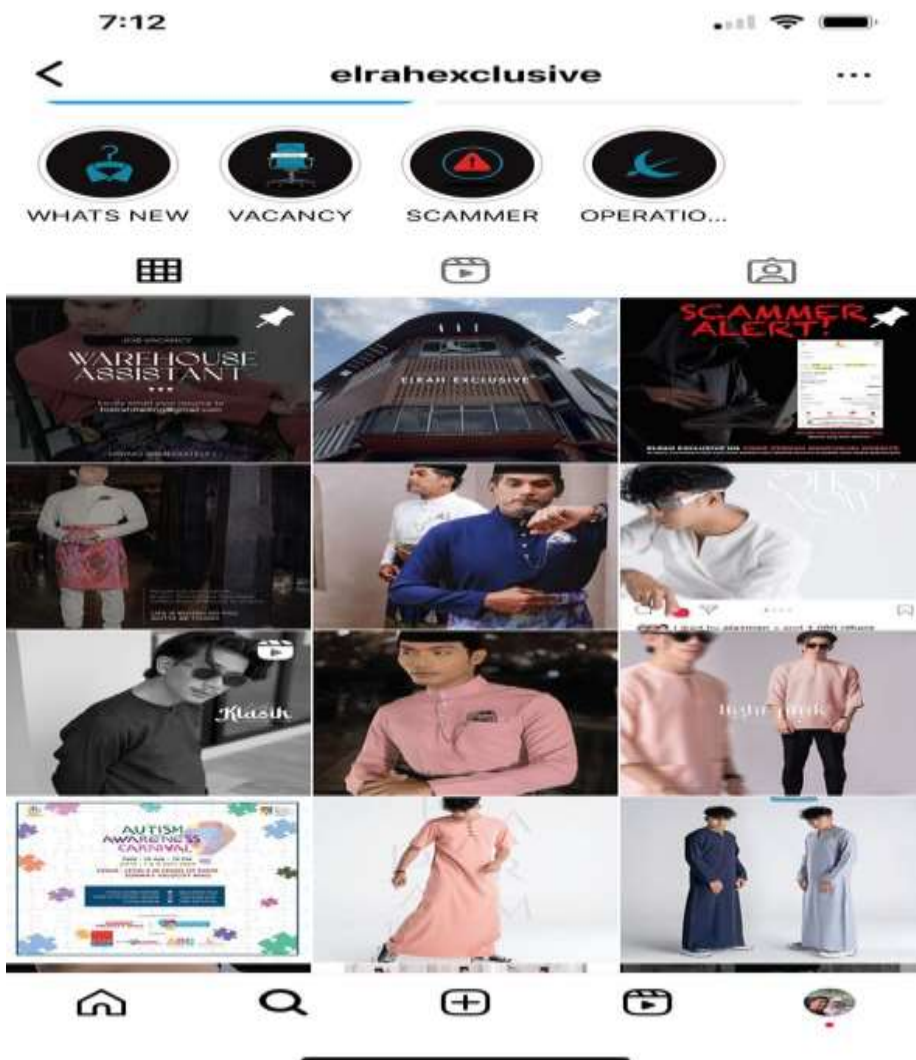


Figure 2: Elrah Exclusive on Instagram



Mehrabian and Russell Theory (P-A-D model) (O)

The pleasure-arousal-dominance (P-A-D) model featured three dimensions of basic emotions: pleasure (which refers to feeling happiness or satisfaction), arousal (which refers to feeling in the stimulus), and dominance (which refers to feeling in control over conditions) (Mehrabian & Russell, 1974). This model is critical in influencing online consumer behaviour. It offers a refined understanding of how emotional reactions to stimuli can influence purchase decisions, making it essential in online fashion retail.

The S-O-R theory and the P-A-D model are interconnected in understanding consumer behaviour in online fashion retail. The S-O-R theory focuses on the interaction between environmental stimuli, internal psychological processes, and behavioural responses. At the same time, the P-A-D model specifically categorises emotional responses into three dimensions: pleasure, arousal, and dominance. The external stimuli presented through website design and marketing strategies influence the internal emotional states of consumers, which are categorised into pleasure, arousal, and dominance. These emotional states, in turn, drive consumer responses, such as purchase intentions and brand loyalty.

Pleasure refers to the satisfaction or enjoyment gained from aspects such as website aesthetics and ease of navigation, which have been connected to increased purchase intentions and customer loyalty (Hoffman et al., 2015; Mazaheri et al., 2011). Visually appealing websites boost user satisfaction, increasing engagement and purchase likelihood (Dewi et al., 2019; Santo & Marques, 2021). As the pleasurable experience derived from engaging with a well-designed website can lead to favourable consumer responses such as brand loyalty and repeat purchases, this finding supports the S-O-R theory (Yang et al., 2020).

Arousal measures the level of excitement elicited by stimuli such as dynamic content and promotions, which can increase engagement and lead to impulsive purchases. In online fashion retail, dynamic visuals, interactive features, and promotional offers can heighten arousal levels, subsequently influencing impulsive buying behaviour (Liu et al., 2019). This aligns with the S-O-R model, where heightened arousal as a response to stimuli can lead to increased impulsive purchasing actions. Nevertheless, excessive arousal may create decision fatigue (Daroch et al., 2021). Arousal encourages the excitement induced by visual cues such as animations or brilliant colours—increases engagement and might lead to impulsive purchasing, though excessive arousal may promote decision fatigue (Shukla & Misra, 2021; Chen et al., 2021).

Dominance refers to consumers' sense of control over decision-making, with clear information and ease of choice increasing confidence and decisiveness (Alsaggaf & Althonayan, 2018). Optimising these emotional qualities allows online platforms to provide more engaging and enjoyable experiences, enhancing customer loyalty and conversion rates. Moreover, dominance refers to users' sense of control while surfing a website. Clear visuals and easy navigation increase this sensation of control, leading to positive purchase intentions, whereas poor visual clarity can result in confusion and reduced purchase rates (Kudeshia & Kumar, 2017; Lee et al., 2017). In online fashion retail, this can manifest through features that empower consumers, such as personalised recommendations and user-generated content, which suggest that the perception of dominance can significantly affect how individuals respond to various stimuli in their environment (Krause et al., 2020).

Purchase Intention as Response (R)

Purchase intention is the likelihood that a consumer intends to buy a product or service in the future, and it is a strong predictor of actual purchasing behaviour. It is impacted by intrinsic (personal preferences and emotional responses) and extrinsic (marketing and social influences) aspects. According to Bhatti and Rehman (2020), marketers may enhance consumer interaction and forecast sales by better understanding purchase intention. The combination of pleasure, arousal, and dominance in response to visual stimuli significantly impacts purchasing intentions. Pleasurable experiences, measured by pleasant emotional responses, have been linked to higher purchase intentions (Huang et al., 2019; Ma et al., 2020). For example, a visually appealing website that induces pleasure can increase user satisfaction and stimulate repeat transactions (Ma et al., 2020). Similarly, increased arousal levels might trigger impulsive purchasing behaviours, especially when consumers are confronted with appealing promotional offers or limited-time discounts (Chen & Wang, 2022; Takaya, 2019).

3. The Stimuli-Organism-Responses (S-O-R) & Proposed Conceptual Framework

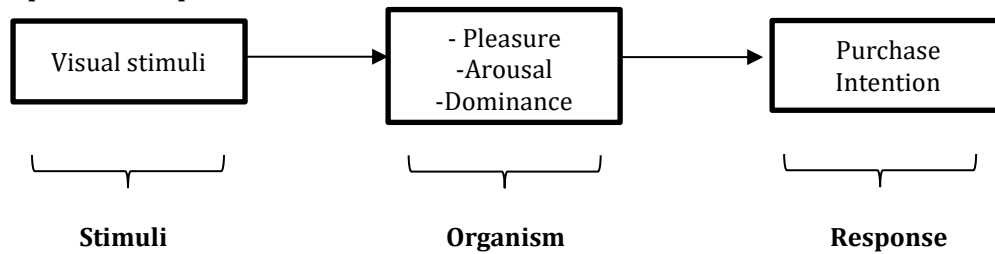
The Stimulus-Organism-Response (S-O-R) model is a fundamental paradigm in consumer behaviour research that describes how external stimuli influence internal cognitive and emotional processes (the organism), resulting in observable behaviours. Mehrabian and Russell (1974) created this concept, frequently utilised in retail, internet purchasing, and consumer engagement. Due to its elements, the S-O-R theory provides a robust framework for understanding consumer behaviour in online fashion retail. In the world of online fashion shopping, a variety of stimuli have a substantial impact on consumer attitudes and purchase behaviours. These stimuli include website design, product display, and marketing methods. Stimuli in online fashion shopping might be visual components like product photos, website design, and promotional content. For example, it emphasises the significance of atmospheric signals in the fashion retail industry. It points out that a well-thought-out online space can improve customer comfort and impact buying intentions (Ballantine et al., 2015). Similarly, interactive technologies, such as augmented reality, allow consumers to visualise products more engagingly, reducing uncertainty and enhancing the shopping experience (Baytar et al., 2020). This aligns with the S-O-R framework, where the online environment serves as a stimulus that can evoke positive emotional responses from consumers.

According to the S-O-R model, exterior stimuli such as marketing cues and product features trigger internal responses influenced by consumers' psychological and emotional states. These responses can influence behaviours such as purchasing or brand loyalty (Negash, 2024; Hossain, 2023; Laato et al., 2020). The organism component of the S-O-R model consists of psychological processes such as emotions, perceptions, and cognitive assessments that mediate the link between stimulus and reaction. Individual values and emotional states might cause distinct responses to the same stimuli, especially in crises like the COVID-19 pandemic (Rayburn et al., 2021). This emphasises the necessity of knowing the organism's involvement in perceiving inputs, which can significantly impact customer behaviour. Factors such as perceived value, emotional attachment, and cognitive evaluations play crucial roles in online fashion retail. For example, it discusses how emotional attachment to fashion apps can influence consumer responses, highlighting the significance of perceived value in shaping online shopping behaviours (Patel, 2023).

Additionally, Lee & Lee's (2019) study that explores the concept of online retail therapy posits that favourable emotional experiences associated with online shopping can enhance consumer attitudes toward online platforms. These internal psychological processes are critical in determining how consumers interpret stimuli and decide their purchasing actions. The response aspect of the S-O-R model encapsulates the behavioural outcomes resulting from the interaction between stimuli and the organism. In online fashion retail, responses can manifest as purchase intentions, brand loyalty, or engagement with marketing content. For instance, it examines how social media marketing activities can drive impulse buying intentions among consumers, demonstrating the direct link between stimuli (social media interactions) and consumer responses (impulse purchases) (Safeer, 2024). Furthermore, the study highlights how online flow experiences can lead to awe and influence purchase intentions, showcasing the importance of engaging online environments in eliciting consumer responses (Khare et al., 2023).

In conclusion, the S-O-R theory offers a comprehensive framework for analysing consumer behaviour in online fashion retail. By understanding how various stimuli affect internal psychological processes, marketers can better predict consumer behaviour and tailor their strategies to enhance engagement and drive purchasing decisions. The interplay between external stimuli, internal evaluations, and behavioural responses underscores the complexity of consumer interactions in the digital fashion marketplace. The S-O-R model is often used to investigate impulse purchases, particularly in sensory-rich contexts. Thus, Figure 3 presents the proposed conceptual framework for this research:

Figure 3: Proposed conceptual framework



4. Discussion

Recent studies highlight the critical impact of visual merchandising on consumer emotions and purchasing behaviour in online environments. Strategic visual design elements, such as website aesthetics and product videos, enhance pleasure and arousal, effectively converting browsers into buyers (Sivakumar et al., 2023). These emotional responses—pleasure, arousal, and dominance—are powerful drivers of consumer decisions, especially in e-commerce settings (Alshohaib, 2024). Beyond mere aesthetics, the psychological influence of visual content is significant. For instance, marketer-generated and user-generated images in the online hotel sector can shape booking intentions by eliciting strong emotional responses (He, 2023). Similarly, visual complexity, particularly on mobile shopping platforms, plays a crucial role in consumer behaviour, where the right balance of appeal and clarity optimises user experience and encourages purchases (Liu et al., 2019). Additionally, integrating sensory marketing elements like audio and visual stimuli enhances consumer engagement, creating immersive experiences that drive behaviour on digital platforms (Mardhatilah, 2023).

The relationship between pleasure, arousal, and dominance is central to understanding consumer purchase intentions in online shopping. Positive emotional experiences, such as those evoked by well-designed visual merchandising, often lead to repeat purchases (Alshohaib, 2024). Arousal can influence consumer behaviour in various ways, with heightened arousal linked to impulsive buying in online contexts (Liu et al., 2019). Dominance, or the consumer's sense of control, can foster positive engagement and brand loyalty (Effendi, 2023; He et al., 2019). A well-designed online shopping environment that balances these emotions can significantly increase purchase intentions (Yang et al., 2020). Hence, leveraging these emotional dimensions through effective visual design and engaging content is critical to driving consumer engagement and sales in online retail. By integrating insights from both models (S-O-R and P-A-D), marketers can better design online shopping experiences that enhance consumer satisfaction and engagement.

5. Managerial & Theoretical Implications

The study highlights numerous critical managerial implications for e-commerce companies. Businesses should invest in visually appealing and intuitive website designs to maximise consumer satisfaction and purchase intentions. Companies can drive impulsive buying behaviours by exploiting emotional cues through dynamic content and engaging images, but these aspects must be balanced carefully to prevent overwhelming customers. Furthermore, combining multifaceted features such as audio and user-generated material can result in immersive experiences that strengthen emotional bonds and influence purchasing decisions. A significant feature of this technique is managing visual complexity, especially on mobile platforms where clarity is essential for user engagement. Therefore, providing control during the purchasing experience can boost brand loyalty and encourage repeat purchases. By emphasising visual appeal, emotional engagement, and user-friendly interfaces, e-commerce managers may develop more effective, emotionally resonant shopping experiences that drive consumer behaviour and sales.

The study proposes various theoretical implications for understanding customer behaviour in online shopping contexts. It emphasises the role of the Pleasure, Arousal, and Dominance (P-A-D) model in understanding how visual stimuli influence customer emotions and purchasing intentions. The study supports the idea that emotional reactions—such as the pleasure obtained from visually appealing designs, the arousal induced by dynamic content, and the dominance resulting from a sense of control—are essential in influencing consumer behaviour using the P-A-D model. The findings imply that these emotional characteristics do not exist in isolation but rather interact to influence how customers interact with online platforms and make purchases.

Furthermore, the study increases our theoretical understanding of how visual merchandising and sensory marketing concepts lead to emotional involvement. It emphasises that visual content's psychological influence extends beyond aesthetics, influencing booking intentions and purchasing behaviour via emotional responses. This highlights the importance of models that account for the intricate interplay between visual complexity, emotional reactions, and consumer behaviour.

Conclusion

In conclusion, the study emphasises the importance of visual inputs in determining consumer emotions and behaviours in online buying settings. Using the Pleasure, Arousal, and Dominance (P-A-D) model shows how aesthetic appeal, visual complexity, and sensory integration influence purchasing intentions. Positive emotional experiences accompanied by appealing graphics and engaging content can increase consumer satisfaction and boost sales. It also demonstrates how the intentional use of visual and sensory aspects may result in immersive and engaging experiences, increasing consumer engagement and loyalty. The study's findings imply that online merchants should create visually appealing and user-friendly platforms that balance pleasure, manage arousal, and nurture a sense of control to optimise consumer interactions and increase purchase rates. This complete approach not only improves theoretical understanding but also gives practical insights for marketers looking to improve the effectiveness of their digital initiatives and achieve successful e-commerce outcomes.

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