

Consumer decision-making processes in digital environments—A psychological perspective

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Abstract: This conceptual paper examines the influence of psychological principles on consumer decision-making within digital shopping environments, integrating psychological theories with empirical observations to understand how cognitive, emotional, and social factors shape consumer behaviors online. By reviewing existing literature and applying a constructivist epistemology and relativist ontology, the study develops a conceptual framework highlighting the impact of digital interface design, information availability, and personalized marketing on consumer choices. The paper analyzes various examples and identifies vital psychological triggers and decision-making barriers, offering strategic insights for enhancing digital marketing practices. This research contributes to academic and practical understandings of digital consumer behavior, proposing that a more profound integration of psychological insights can lead to more effective and ethically grounded marketing strategies in the digital era.

Keywords: consumer psychology; digital marketing; decision-making; information overload; personalized marketing; psychological principles

1. Introduction

In the rapidly evolving landscape of digital commerce, the intricacies of consumer behavior have garnered significant attention from both the academic and commercial sectors. The shift from traditional brick-and-mortar shopping to digital platforms has expanded the avenues for consumer engagement and introduced complex dynamics in decision-making processes. This transformation underscores the need to explore deeper into the psychological underpinnings guiding consumer actions in online environments (Rebitschek, 2024; Tan et al., 2024). Recognizing these factors is imperative for businesses aiming to optimize their digital strategies and for scholars contributing to the expanding body of knowledge on consumer behavior. The primary rationale for this study lies in its potential to enhance understanding of these psychological processes, thereby aiding in developing more effective marketing practices that align with the cognitive and emotional contours of the digital consumer (Wang et al., 2022; Willman-Iivarinen, 2017).

This paper explores how psychological principles influence consumer behaviors in digital shopping contexts. By integrating psychology theories with consumer behavior patterns in digital markets, this research seeks to uncover the cognitive, emotional, and social factors that impact decision-making. This exploration is crucial, as it provides insights into how consumers investigate the plethora of online information and choices, how they perceive and interact with digital marketing tactics,

and how their decision-making processes differ from offline shopping experiences. Through this analysis, the paper seeks to offer a comprehensive understanding of the psychological triggers and barriers to digital consumer decision-making, contributing not only to theoretical frameworks but also to practical marketing strategies that businesses can implement.

This paper systematically addresses the objectives above through a multi-faceted approach. A literature review will initially set the stage by presenting current understandings and gaps within consumer psychology in digital markets. The paper will then introduce a conceptual framework that integrates psychological theories with empirical findings from consumer behavior studies. This framework can be the basis for examining specific psychological factors influencing online consumer decisions. Subsequent sections have detailed analyses of examples and real-world applications that illustrate these psychological dynamics in action, supported by data from recent studies in digital consumer behavior. This comprehensive approach ensures the reliability and validity of the findings, making them valuable for both academic researchers and businesses in consumer psychology and digital marketing.

The exploration of consumer decision-making in digital environments from a psychological perspective promises to yield rich insights into the effectiveness of various marketing strategies and the consumer's journey from interest to purchase. This paper contributes significantly to the academic discourse by thoroughly examining digital consumer behaviors, ultimately offering strategic recommendations grounded in robust psychological research (Wen et al., 2014). By bridging the gap between theoretical principles and practical applications, this study may aid marketers, strategists, and academics in better understanding and leveraging the psychological aspects of consumer behavior in the increasingly digital marketplace.

2. Literature review

2.1. Decision-making in psychology

The literature on decision-making within psychology has produced a rich tapestry of theories that elucidate how individuals make choices. These theories often branch into various psychological disciplines, including cognitive psychology, behavioral economics, and social psychology, each contributing unique insights into decision-making processes. Cognitive theories typically focus on the rational processing of information and the biases that affect such processes, suggesting that decision-making is a systematic series of mental evaluations (Lurie et al., 2018). In contrast, behavioral economics introduces the concepts of irrationality and heuristics, highlighting how real-world decisions often deviate from theoretical rational choices due to psychological biases and environmental factors. Social psychology looks at how group dynamics and interactions influence individual decision-making, suggesting that decisions are not made in isolation but are significantly impacted by social context and pressures (Zhang and Chang, 2021).

One of the pivotal areas of focus within decision-making research is the phenomenon of decision fatigue, which emerges when individuals are overwhelmed by the quantity and complexity of decisions they must make over a period, leading to the deteriorating quality of decisions (Zallio and Clarkson, 2023). This concept was

first explored in depth in cognitive psychology and behavioral economics, which describe how the mental effort of making numerous decisions depletes an individual's cognitive resources (Chan, 2024). As these resources are drained, the capacity to make well-considered decisions diminishes, often resulting in either decision avoidance or an increased likelihood of opting for the simplest or default choice without thorough evaluation (Islam, 2024; Mandung et al., 2024).

Decision fatigue can be particularly pronounced in digital shopping environments where consumers are bombarded with various choices and information. Online platforms, by design, present a virtually limitless variety of products and alternatives, pushing the cognitive limits of consumers as they navigate through their options (Karimi et al., 2018). The interactive and often interruptive nature of digital marketing, with its frequent calls to action and persuasive messages, further compounds the mental load, accelerating the onset of decision fatigue. This saturation of choice and information can lead to suboptimal purchasing decisions. It can even deter consumers from completing a purchase, highlighting the direct impact of decision fatigue on consumer behavior (Lurie et al., 2018).

Understanding the impact of decision fatigue on consumer choices involves examining how it affects purchasing behavior across different contexts. The extant literature has shown that as decision fatigue sets in, consumers may resort to more heuristic-based decision-making, relying on general rules of thumb rather than deliberate analysis (Mandung et al., 2024). For example, consumers might choose products based on recognizable brand names or prices rather than on a comprehensive comparison of attributes. This shift affects individual purchase decisions and has broader implications for how products should be marketed and presented on digital platforms to minimize cognitive overload and optimize consumer engagement.

2.2. Information processing

The theory of information processing in psychology (Wertheimer and Puente, 2020) provides a framework for understanding how individuals perceive, analyze, store, and recall information. These theories often draw from cognitive psychology, positing that the human mind processes information like a computer—receiving input, processing it, and producing output. According to this model, information processing involves several stages, including attention, perception, and memory, each playing a critical role in making decisions (Odunaiya et al., 2024). Central to the theory is cognitive load, which refers to the total amount of mental effort used in the working memory. This concept is vital for understanding how individuals manage complex information, particularly in environments exposed to vast amounts of data they need to sift through and prioritize effectively (Rebitschek, 2024).

In digital environments, consumers often face a phenomenon known as information overload, where the volume of available information exceeds the person's capacity to process it effectively. This overload can impair decision-making, leading to less informed or completely avoided choices. Information processing theory (Wertheimer and Puente, 2020) helps explain how consumers navigate this overload by employing various cognitive strategies such as filtering (Selem et al., 2023; Willman-Iivarinen, 2017), which involves ignoring less relevant information, and

chunking, which consists of grouping similar pieces of information to make them easier to process. By understanding these strategies, marketers can better design digital interfaces that align with natural human information processing capabilities, enhancing the user experience and aiding decision-making (Sharma et al., 2023).

Applying the above theory to digital consumer behavior reveals several implications for designing e-commerce platforms and digital marketing strategies. For example, cognitive load can be reduced by presenting information in a clear, structured format using visual hierarchies that guide the consumer's attention to the essential elements (Szabo et al., 2021). Additionally, personalized content delivery that tailors information to the individual consumer's preferences and past behavior can help manage the information presented, making it more relevant and less overwhelming (Chen et al., 2024). These techniques not only improve the usability of digital platforms but also enhance consumer satisfaction by making the process of information processing less taxing and more intuitive.

2.3. Consumer behavior in digital markets

The digital marketplace has significantly transformed consumer behavior, necessitating a deeper understanding of how consumers interact within this evolving landscape. A substantial body of literature has focused on delineating consumers' specific behaviors and tendencies online, offering insights into the cognitive, social, and emotional factors that influence online shopping decisions. Studies have examined everything from the impact of online reviews and social proof to the effects of digital marketing tactics like retargeting and personalization (Irfan et al., 2024; Karimi et al., 2018). Thus, this has established a foundation for understanding how digital environments can facilitate and hinder consumer decision-making processes, highlighting the nuanced ways digital tools and platforms reshape traditional consumer behavior patterns.

The digital environment's impact on consumer decisions must be balanced, particularly concerning interface design and navigation ease. These features are crucial as they directly affect the usability of digital platforms and, by extension, the consumer's decision-making journey. An intuitive and well-designed interface can reduce cognitive load and streamline the shopping process, enhancing user satisfaction and potentially increasing sales. Conversely, poor design can lead to frustration and abandonment of the purchase process (Mandung et al., 2024). Navigation ease facilitates efficient information retrieval, allowing consumers to find desired products or services swiftly. This is particularly important in retaining consumer interest and minimizing bounce rates in an environment where alternatives are a click away.

Information availability is another critical aspect of digital environments that profoundly influences consumer behavior. In the digital age, consumers can access vast information about products and services, including detailed descriptions, pricing, reviews, and comparisons (Schneider et al., 2022). This level of transparency has empowered consumers, enabling more informed decision-making. However, as discussed earlier, it also presents challenges such as information overload, which can paralyze decision-making or lead to decision fatigue (Islam, 2024; Rebitschek, 2024). Effective digital platforms manage this challenge by curating content and utilizing data

analytics to present the most relevant information to individual users, enhancing decision-making.

The role of social elements within digital environments also significantly impacts consumer decisions. Integrating social media functionalities, such as sharing buttons and user-generated content, can influence shopping behaviors by leveraging community engagement and trust (Quach et al., 2022). The extant literature shows that consumers are more likely to purchase an item based on peer recommendations than on the strength of traditional advertising (Mandung et al., 2024; Odunaiya et al., 2024). Digital marketers can harness this by encouraging social sharing and incorporating user reviews directly into the product pages to enhance credibility and trust, which are paramount in consumer decision-making online. The vast research (Bažantová and Novák, 2024; Chen et al., 2024) on consumer behavior in digital markets provides invaluable insights into how different features of digital environments influence consumer decisions. By understanding these impacts, businesses can strategically design their digital interfaces to better meet consumer needs and preferences, enhancing their digital platforms' overall effectiveness. As e-commerce continues to grow and evolve, ongoing research can be essential in keeping pace with changing consumer behaviors and technological advancements, ensuring that digital markets remain responsive and attuned to the needs of modern consumers (Karimi et al., 2018).

2.4. Theoretical framework

The theoretical framework of this paper integrates psychological theory as discussed above (e.g., information processing) with consumer decision-making models in marketing to create a robust understanding of consumer behaviors in digital shopping environments. This integration is predicated on the premise that psychological principles, such as cognitive load, decision fatigue, and information processing, are fundamental to interpreting how consumers make decisions online. Marketing models traditionally focus on the stimuli-response relationship, where consumer behaviors are responses to various marketing stimuli (Rebitschek, 2024; Tan et al., 2024). By incorporating psychological theory—information processing—this framework acknowledges the internal cognitive processes that mediate this relationship, providing a more nuanced understanding of how consumers react to marketing stimuli and process and evaluate these stimuli before arriving at a decision (Wang et al., 2022; Willman-Iivarinen, 2017).

To develop a conceptual framework, explicitly linking psychological impacts with consumer behavior outcomes is essential. This linkage is achieved by identifying vital psychological factors influencing decision-making in digital shopping contexts—such as attention, memory, and emotional engagement—and connecting these factors to observable behaviors like search patterns, purchase decisions, and post-purchase evaluations (Wen et al., 2014). The framework posits that digital environment features (like interface design and information availability) serve as external cues that can trigger these psychological processes, influencing consumer behaviors. For instance, an intuitive interface design may reduce cognitive load, facilitating a smoother decision-making process that could lead to higher consumer satisfaction and an increased likelihood of purchase (Willman-Iivarinen, 2017).

Within this framework, other psychological theories explain variations in consumer behavior across different digital platforms. For example, the Theory of Planned Behavior (TPB) (Ajzen, 1991) can be adapted to understand how attitudes toward a website (affected by website design and user experience), subjective norms (influenced by social media integration and reviews), and perceived behavioral control (facilitated by navigation ease and information availability) predict the intention to purchase from a digital platform (Bažantová and Novák, 2024). Similarly, the Elaboration Likelihood Model (ELM) (Petty and Cacioppo, 2012) explains how consumers process persuasive information either centrally (with active, cognitive processing of message content) or peripherally (with a focus on cues outside the message content, such as the attractiveness of the website design), which affects their decision-making and attitude change in online settings (Chan, 2024).

Further, this framework examines the role of emotion in digital consumer decision-making by integrating insights from affective psychology. Emotions can significantly impact decision-making processes, mainly when decision fatigue and information overload are prevalent. Emotional responses to digital marketing campaigns or website aesthetics can sway consumer decisions, making them more impulsive or resistant to persuasion (Chen et al., 2024). By understanding these emotional undercurrents, marketers can tailor digital experiences that align with desired consumer emotions, enhancing engagement and conversion rates. The proposed theoretical framework (section 4.1.) provides a comprehensive approach to studying consumer behavior in digital markets by marrying psychological theories with traditional marketing models (Bažantová and Novák, 2024). This framework helps explain the underlying mechanisms of consumer decision-making and offers actionable insights for designing digital environments that enhance the user experience and positively influence consumer behaviors. Such a framework will guide future research and practice as digital markets evolve, ensuring that digital marketing strategies are psychologically informed and practically effective (Lurie et al., 2018).

3. Methodology

The methodology of this conceptual paper is designed to interrogate the interplay between psychological theories and consumer behavior within digital marketplaces, guided by specific epistemological and ontological frameworks. It adopts a constructivist epistemology, which posits that understanding consumer behavior is shaped through the subjective interpretations and social constructs that individuals and groups form. This approach acknowledges that the realities of consumer behavior are not static or universally applicable but are influenced by many individual perceptions and contextual influences, which vary across different digital platforms and consumer demographics (Willman-Iivarinen, 2017). The ontology supporting this research aligns with a relativist perspective, suggesting that the reality of consumer experiences and behaviors in digital environments is diverse, dynamic, and constructed through consumer interactions and digital marketing elements such as interface design, content presentation, and personalized marketing strategies (Bažantová and Novák, 2024).

In practice, the methodology employs a perspective approach to explore these complex, constructed realities of consumer behavior. This involves an extensive

review of existing literature to establish a solid foundation of the current theoretical and empirical knowledge concerning consumer decision-making processes in digital settings (Chan, 2024). Following this foundational work, the paper develops and proposes a novel conceptual framework that integrates established psychological theories with contemporary consumer decision-making models. This framework is pivotal, serving as the analytical lens through which various examples are discussed to elucidate the psychological impacts on consumer behaviors (Chen et al., 2024). The study seeks to bridge theoretical knowledge with sensible marketing strategies through detailed and rigorous analysis, aiming to provide substantive recommendations that enhance user experience and facilitate more effective marketing outcomes in digital environments (Bažantová and Novák, 2024).

4. Discussion

Decision fatigue emerges prominently in digital shopping environments due to the abundance of choices and the incessant flow of information consumers must navigate. Let us imagine a consumer searching online for a new smartphone to understand better. They are immediately bombarded with options varying by brand, features, price points, and user reviews. As the consumer sifts through these choices, the mental effort required to weigh each option accumulates, gradually eroding their decision-making capacity. This process can lead to either snap judgments (Chan, 2024)—where a decision is made with minimal thought—or decision paralysis, where no decision is made. Such scenarios underscore the impact of decision fatigue and highlight the need for digital interfaces that can simplify the consumer's journey (Islam, 2024; Mandung et al., 2024).

To alleviate decision fatigue, marketers can adopt several strategic approaches. Simplifying the consumer's decision-making path is crucial; this can be achieved through well-designed user interfaces that offer intuitive categorization and filters that adjust dynamically based on user preferences and behavior (Karimi et al., 2018). For example, predictive analytics can be used to present personalized recommendations, thus reducing the number of choices a consumer has to evaluate. Additionally, implementing features like decision aids or comparison tools can help consumers make informed decisions quickly, reducing the cognitive load and enhancing the shopping experience (Lurie et al., 2018). Consumers deploy selective information processing strategies to manage data overload in digital environments. They prioritize information based on perceived importance, often leading to skewed decision-making if essential data is overlooked. Marketers must, therefore, design content and structure information to align with natural human information processing tendencies (Mandung et al., 2024). This involves a clear and hierarchical presentation of information, where key details such as price, product benefits, and customer ratings are immediately visible and accessible to interpret.

Moreover, the psychological principles of attention and memory play critical roles in shaping online consumer behavior. Effective digital marketing strategies should leverage these principles by designing engaging and memorable content (Odunaiya et al., 2024). For instance, incorporating multimedia elements that appeal to the visual and auditory senses can significantly enhance information retention and

engagement. Such strategies cater to consumers' psychological needs and help differentiate the brand in a crowded marketplace. Despite the clear benefits, applying psychological insights to digital marketing takes time and effort. One primary concern is influencing consumer decisions ethically (Rebitschek, 2024). As marketers use psychological triggers to encourage purchases, they must distinguish between persuasion and manipulation. The technical challenge of personalizing experiences without infringing on privacy is another significant hurdle. With increasing scrutiny on data usage and privacy concerns, marketers must ensure that their strategies are transparent and compliant with regulations.

4.1. Digital consumer decision-making framework



Figure 1. Digital consumer decision-making framework.

The framework (**Figure 1**) initially posits that psychological theories like information processing, TPB, and ELM are pivotal in understanding consumer behavior. These theories suggest consumers absorb, process, and recall information in structured ways. For instance, information processing theory provides a framework for analyzing how consumers manage marketing stimuli, which is crucial for designing effective communication strategies. This sets a robust theoretical foundation for investigating how cognitive functions influence consumer decision-making.

Building upon this psychological groundwork, the framework progresses to the consumer decision-making model in marketing. The framework integrates psychological insights to predict how consumers select products and services. For example, understanding the cognitive limits and biases elucidated by information processing theory helps marketers design more effective advertising strategies that

align with how consumers naturally process information (Bažantová and Novák, 2024). This stage crucially links theoretical knowledge with practical applications in marketing, highlighting the role of cognitive and emotional factors in consumer decisions. Next, the framework shifts focus to the digital shopping context, where virtual interactions replace the physical attributes of traditional shopping. In this environment, the design of digital platforms—like ease of navigation and the clarity of product information—becomes critical. Here, the consumer’s decision-making process is influenced by digital cues that can either simplify or complicate the shopping experience. As such, marketers must strategically manage these elements to reduce cognitive overload and enhance user engagement (Chan, 2024).

Furthermore, the framework emphasizes specific psychological processes, such as cognitive load, decision fatigue, and emotional engagement, which are particularly pertinent in digital settings. Excessive information or complex navigation paths can lead to decision fatigue, reducing the effectiveness of consumer choices. Conversely, optimal emotional engagement can be achieved by designing interactive elements that evoke positive emotions, fostering a more satisfying shopping experience (Karimi et al., 2018). At this juncture, the framework bifurcates into two paths: cues in digital environments and stimulus-response relationships in traditional marketing. Each path requires distinct strategies; digital cues must focus on interface design and information availability, whereas traditional models rely more on direct sensory stimulation and less on interaction. Understanding these differences is crucial for marketers aiming to optimize consumer responses in varied contexts. Both paths converge on observable consumer behaviors, such as search patterns, purchase decisions, and post-purchase evaluations. These behaviors are critical metrics for assessing the effectiveness of the previous stages. Marketers can refine their strategies by analyzing these outcomes to align with consumer preferences and behaviors, enhancing overall marketing effectiveness (Lurie et al., 2018).

Our framework also recognizes the profound impact of emotional responses on decision-making processes. Positive emotional responses can significantly enhance consumer satisfaction and loyalty, while negative emotions might deter future interactions with the brand. This stage underscores the importance of emotional design in digital experiences, which can dramatically influence consumer decision-making (Mandung et al., 2024). Finally, the framework culminates in creating tailored digital experiences that align with desired consumer emotions and cognitive styles. This stage represents the ultimate goal of digital marketing—to create a personalized shopping experience that not only meets but anticipates consumer needs and preferences. Marketers can design digital environments that optimize consumer engagement and satisfaction by effectively integrating insights from all previous stages (Willman-Iivarinen, 2017).

5. Conclusion, implications, and future research directions

This paper has explored the intricate relationship between psychological principles and consumer behavior in digital environments, revealing critical insights that bridge the disciplines of psychology and marketing. Psychological phenomena such as decision fatigue and information overload significantly impact consumer

decisions, particularly in the vast and often overwhelming digital marketplace (Selem et al., 2023; Willman-Iivarinen, 2017). The application of cognitive load and the Elaboration Likelihood Model (ELM) in digital settings underscores the need for marketers to design user-friendly interfaces that facilitate, rather than hinder, the decision-making process (Sharma et al., 2023).

Furthermore, personalized and streamlined digital experiences, grounded in psychological principles, can enhance consumer satisfaction and loyalty. Ethical considerations in leveraging these psychological insights are crucial, highlighting the balance marketers must maintain between effective persuasion and consumer well-being (Chen et al., 2024). These findings underscore the necessity for a symbiotic relationship between psychology and marketing, where insights from each discipline enrich the other, leading to more effective and ethical marketing strategies (Irfan et al., 2024; Karimi et al., 2018).

5.1. Implications

Integrating psychological insights into digital marketing strategies offers numerous avenues for enhancing consumer engagement and improving conversion rates. Practical recommendations for digital marketers include customizing user experiences based on psychological profiles and behavioral data. For instance, algorithms that adapt content and recommendations in real-time based on users' browsing behaviors and past purchase histories can align offers with individual needs and desires. Simplifying decision-making processes is another key recommendation. Marketers should design intuitive and user-friendly digital interfaces, minimizing cognitive overload by offering streamlined navigation paths and clear, concise product information. This can be facilitated by using clear visual hierarchies in website design, prioritizing important information or actions, and reducing the number of choices presented at any one time through 'smart' filters and default options that guide user decisions without overwhelming them (Häubl and Trifts, 2000).

Social proof, such as customer testimonials and ratings, effectively leverages the bandwagon effect, a psychological principle where people adopt beliefs or actions if they perceive others are doing the same. Highlighting popular products or services can guide uncertain consumers toward these options, subtly influencing their purchase decisions. Additionally, creating a sense of urgency through limited-time offers or displaying limited stock levels can trigger quick decision-making by tapping into the consumer's fear of missing out (FOMO). However, while psychological principles can significantly enhance marketing effectiveness, they also raise ethical questions about manipulating consumer behavior. Digital marketers must consider the implications of using psychological tactics that may exploit consumer vulnerabilities (Kraus et al., 2021). For example, creating a false sense of urgency (e.g., countdown timers for deals that reset) can pressure consumers into making hasty decisions they might regret later, potentially leading to consumer distrust and harming a brand's long-term reputation.

Marketers are thus urged to adopt ethical standards that respect consumer autonomy and foster trust. This involves being transparent about the use of personal data and the mechanisms behind personalized marketing. Providing consumers with control over their data and choice in how marketers target them can help mitigate

ethical concerns. Furthermore, developing a marketing strategy should focus on creating genuine value for the consumer rather than merely exploiting psychological loopholes for short-term gains (Mandung et al., 2024). Adopting ethical marketing practices that consider psychological impacts extends beyond compliance and reputation management; it builds deeper relationships with consumers based on trust and respect. This approach satisfies ethical standards and aligns with consumer expectations for authenticity and personal relevance in digital engagements (Pascucci et al., 2023). By prioritizing ethical considerations, marketers can enhance brand loyalty and advocacy, critical in the digital age where consumer opinions are prominent and influential.

5.2. Suggestions for future research

Future research at the intersection of consumer psychology and digital marketing could focus on several promising areas. One area involves exploring individual differences in information processing styles and their impact on the effectiveness of different digital marketing strategies. This could help tailor digital environments that cater to diverse consumer profiles, enhancing personalization strategies. Another area of research could involve using biometric technologies, such as eye-tracking and facial expression analysis, to gain deeper insights into consumers' unconscious reactions to digital marketing stimuli. These methods could provide a more nuanced understanding of how subtle elements of website design, such as color schemes and layout, affect emotional responses and decision-making processes.

Additionally, the ethical implications of psychological marketing tactics in digital environments warrant deeper exploration. As digital marketing practices evolve, so do the moral dilemmas they present. Research could focus on developing frameworks and guidelines that help marketers navigate these challenges, ensuring that consumer rights to privacy and autonomy are preserved. By addressing these areas, future studies can offer more specific and focused research questions or hypotheses, guiding subsequent investigations more effectively. Incorporating real-world examples or case studies that illustrate successful applications of psychological principles in digital marketing can also strengthen the discussion, providing practical insights for enhancing consumer engagement and improving conversion rates.

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References

- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50(2), 179–211.
- Azizzadeh, F., Islam, M. S., Naushin, N., et al. (2022). Modeling employees' skills for sustainable banking services. *Frontiers in Sociology*, 7. <https://doi.org/10.3389/fsoc.2022.985158>

- Bažantová, S., & Novák, M. (2024). The distracting effect of mobile phones on visual attention in consumer decision-making: a gaze behavior perspective. *The International Review of Retail, Distribution and Consumer Research*, 34(2), 160–182. <https://doi.org/10.1080/09593969.2024.2319688>
- Chan, E. Y. (2024). *Consumer Behavior in Practice*. Springer Nature Switzerland. <https://doi.org/10.1007/978-3-031-50947-6>
- Chen, S., Zhao, J., Xu, H., et al. (2024). When and how does decoy effect work? The roles of salience and risk aversion in the consumer decision-making process. *Electronic Commerce Research and Applications*, 63, 101354. <https://doi.org/10.1016/j.elerap.2023.101354>
- Häubl, G., & Trifts, V. (2000). Consumer Decision Making in Online Shopping Environments: The Effects of Interactive Decision Aids. *Marketing Science*, 19(1), 4–21. <https://doi.org/10.1287/mksc.19.1.4.15178>
- Irfan, M., Ahmed, A. K., Shariati Najafabadi, S., et al. (2024). Factors Influencing Expatriate Employees' Commitment to the Private Sector in Qatar. *The International Journal of Interdisciplinary Social and Community Studies*, 19(2), 1–22. <https://doi.org/10.18848/2324-7576/cgp/v19i02/1-22>
- Islam, M. S. (2024). From data privacy to environmental sustainability: Comprehensive perspectives on smart tourism challenges. *Smart Tourism*, 5(1), 2534. <https://doi.org/10.54517/st.v5i1.2534>
- Islam, M. S. (2023). Striking a paradoxical balance: Shakespearean insights for hospitality management. *Tourism and Hospitality Research*, 14673584231188917.
- Islam, M. S. (2024). Utilization of Video Reflexive Ethnography in Hospitality and Tourism Research. *Journal of Quality Assurance in Hospitality & Tourism*, 1–34. <https://doi.org/10.1080/1528008x.2024.2334715>
- Kraus, S., Jones, P., Kailer, N., et al. (2021). Digital Transformation: An Overview of the Current State of the Art of Research. *Sage Open*, 11(3). <https://doi.org/10.1177/21582440211047576>
- Karimi, S., Holland, C. P., & Papamichail, K. N. (2018). The impact of consumer archetypes on online purchase decision-making processes and outcomes: A behavioural process perspective. *Journal of Business Research*, 91, 71–82. <https://doi.org/10.1016/j.jbusres.2018.05.038>
- Lurie, N. H., Berger, J., Chen, Z., et al. (2018). Everywhere and at All Times: Mobility, Consumer Decision-Making, and Choice. *Customer Needs and Solutions*, 5(1–2), 15–27. <https://doi.org/10.1007/s40547-017-0076-9>
- Mandung, F., Sahari, S., & Razak, S. R. (2024). Exploring Consumer Psychology in Marketing Management: A Strategic Perspective through Descriptive Inquiry and Literature Review. *Golden Ratio of Marketing and Applied Psychology of Business*, 4(1), 01–10. <https://doi.org/10.52970/grmapb.v4i1.401>
- Odunaiya, O. G., Nwankwo, E. E., Okoye, C. C., et al. (2024). Behavioral economics and consumer protection in the US: A review: Understanding how psychological factors shape consumer policies and regulations. *International Journal of Science and Research Archive*, 11(1), 2048–2062. <https://doi.org/10.30574/ijrsra.2024.11.1.0274>
- Pascucci, F., Savelli, E., & Gistri, G. (2023). How digital technologies reshape marketing: evidence from a qualitative investigation. *Italian Journal of Marketing*. <https://doi.org/10.1007/s43039-023-00063-6>
- Petty, R. E., & Cacioppo, J. T. (2012). *Communication and persuasion: Central and peripheral routes to attitude change*. Springer Science & Business Media.
- Quach, S., Thaichon, P., Martin, K. D., et al. (2022). Digital technologies: tensions in privacy and data. *J. of the Acad. Mark. Sci.*, 50, 1299–1323. <https://doi.org/10.1007/s11747-022-00845-y>
- Rebitschek, F. G. (2024). Boosting consumers: Algorithm-supported decision-making under uncertainty to (learn to) navigate algorithm-based decision environments. In: *Knowledge and digital technology*. Cham: Springer Nature Switzerland. pp. 63–77.
- Schneider, S., Beege, M., Nebel, S., et al. (2022). The Cognitive-Affective-Social Theory of Learning in digital Environments (CASTLE). *Educ Psychol Rev*, 34, 1–38. <https://doi.org/10.1007/s10648-021-09626-5>
- Selem, K. M., Islam, M. S., Aureliano-Silva, L., et al. (2023). Nexus of customer adaptation to mannequins with visit intention to full-service restaurants: Role of spatial layout. *International Journal of Hospitality Management*, 115, 103608. <https://doi.org/10.1016/j.ijhm.2023.103608>
- Sharma, P., Ueno, A., Dennis, C., et al. (2023). Emerging digital technologies and consumer decision-making in retail sector: Towards an integrative conceptual framework. *Computers in Human Behavior*, 148, 107913. <https://doi.org/10.1016/j.chb.2023.107913>
- Szabo, S., & Webster, J. (2020). Perceived Greenwashing: The Effects of Green Marketing on Environmental and Product Perceptions. *Journal of Business Ethics*. <https://doi.org/10.1007/s10551-020-04461-0>

- Tan, C. C., Islam, M. S., Sinha, R., et al. (2024). Compatibility as a pivotal design factor for digital concierge apps: exploring hotel guests' socio-psychological dynamics. *Kybernetes*. <https://doi.org/10.1108/k-12-2023-2658>
- Wang, G., Azizzadeh, F., Mohammadaminzadeh, L., et al. (2022). Experience of Principals in Private Educational Institutions to Find Sources of Income: A Qualitative Approach. *The International Journal of Educational Organization and Leadership*, 29(2), 89–101. <https://doi.org/10.18848/2329-1656/cgp/v29i02/89-101>
- Wen, C., R. Prybutok, V., Blankson, C., et al. (2014). The role of E-quality within the consumer decision making process. *International Journal of Operations & Production Management*, 34(12), 1506–1536. <https://doi.org/10.1108/ijopm-07-2013-0352>
- Wertheimer, M., & Puente, A. E. (2020). *A Brief History of Psychology*. Routledge. <https://doi.org/10.4324/9781315269306>
- Willman-Iivarinen, H. (2017). The future of consumer decision making. *European Journal of Futures Research*, 5(1). <https://doi.org/10.1007/s40309-017-0125-5>
- Zallio, M., Clarkson, P. J. (2023). The Ethics of the Metaverse and Digital, Virtual and Immersive Environments: Metavethics. In: Hassanien, A. E., Darwish, A., Torky, M. (editors). *The Future of Metaverse in the Virtual Era and Physical World. Studies in Big Data*. Springer, Cham. https://doi.org/10.1007/978-3-031-29132-6_6
- Zhang, J. Z., & Chang, C.-W. (2020). Consumer dynamics: theories, methods, and emerging directions. *Journal of the Academy of Marketing Science*, 49(1), 166–196. <https://doi.org/10.1007/s11747-020-00720-8>