International Journal of Accounting and Economics Studies, 12 (7) (2025) 103-108

International Journal of Accounting and Economics Studies

Website: www.sciencepubco.com/index.php/IJAES
https://doi.org/10.14419/4ja3sx81
Research paper

The Role of Self-Confidence in Moderating The Influence of Attitude and Digital Stimuli on Online Impulse Buying

Dhita Dhora Damayanti[1] *, Budhi Haryanto [2], Lilik Wahyudi [2], Catur Sugiarto [2]

[1] Universitas Sebelas Maret, Universitas Islam Lamongan
[2] Universitas Sebelas Maret
**Corresponding author E-mail: dhitadhorad@student.uns.ac.id*

Received: July 7, 2025, Accepted: September 4, 2025, Published: November 4, 2025

Abstract

Digital transformation has fueled an escalation in online impulse buying, driven by stimuli such as visual appeal, convenience, and promotions. However, consumer responses are often shaped by internal psychological factors like self-confidence. This study aims to analyze the moderating role of self-confidence in the relationship between consumer attitudes, digital stimuli, and online impulse buying behavior. A quantitative method was applied, involving 223 Shopee users selected through purposive sampling. Data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) with moderation interaction tests. The results reveal that self-confidence strengthens the influence of attitude on impulse buying but significantly weakens the impact of visual appeal. No significant moderation effect was found for convenience and promotion stimuli, suggesting that the universal appeal of these utilitarian and heuristic cues operates independently of this psychological trait. Self-confidence acts selectively as a moderator: it reinforces internal pathways (attitude) while neutralizing specific external stimuli (visuals). These findings enrich the Stimulus-Organism-Response (SOR) and Cognitive Emotion Theory (CET) frame-works in the context of digital retail. Online impulse buying is not only shaped by external stimuli but also heavily dependent on individual psychological characteristics, where self-confidence critically determines how stimuli are translated into spontaneous purchasing decisions. This study provides actionable managerial implications for psychographic marketing and policy recommendations for consumer protection in the evolving global e-commerce landscape.

Keywords: *Visual Appeal; Self-Confidence; Online Convenience; Impulse Buying; Promotion; Attitude.*

1. Introduction

1.1. The digital transformation of impulse buying in a global context

Impulse buying behavior, originally defined as unplanned purchases triggered by in-store promotional stimuli, has undergone a fundamental transformation in the digital era. The modern retail landscape is dominated by e-commerce, which continues to grow at a rapid pace. Projections indicate that the number of online shoppers will exceed 288.45 million by 2025, with increasing transaction frequency, as 34% of online shoppers in the US make purchases at least once a week. In this context, impulse buying is no longer an exception but a core component of online consumer behavior, with an estimated 40% to 80% of all e-commerce purchases being unplanned.
This phenomenon is particularly prominent in the dynamic Asian market. In Southeast Asia, e-commerce has evolved into "content-driven commerce," where influencer marketing and live commerce account for approximately 20% of online sales. China has witnessed an explosion in live-streaming e-commerce, where Key Opinion Leaders (KOLs) and interactive features serve as powerful triggers for impulse purchases. Platforms like Shopee in Indonesia, one of the fastest-growing e-commerce markets, provide an ideal environment to investigate the mechanisms underlying this behavior. This evolution is supported by a seamless digital ecosystem, including one-click payments, Buy Now, Pay Later (BNPL) options, and social media integration, which collectively reduce cognitive barriers to spontaneous purchases.

1.2. Theoretical framework: a nuanced application of SOR and CET

To understand these complex dynamics, this study adopts two primary theoretical frameworks: the Stimulus-Organism-Response (SOR) model and Cognitive Emotion Theory (CET). The SOR model, developed by Mehrabian and Russell (1974), posits that external stimuli (S) from the environment trigger internal states within an individual (Organism, O), which in turn lead to behavioral responses (R). In the context of e-commerce, stimuli such as visual appeal, convenience, and promotions (S) influence consumers' internal psychological states, such as attitude (O), which then drive impulse buying (R). Meanwhile, CET provides a basis for understanding how cognitive evaluations of stimuli shape emotions, which ultimately influence consumer behavior.
The unique contribution of this study lies in its in-depth investigation of the 'Organism' stage in the SOR model. Instead of assuming that all individuals respond to stimuli in the same way, this research tests self-confidence as a selective moderator. This approach aims to

uncover how specific psychological traits filter and reshape consumer responses to different types of digital stimuli, providing a more nuanced understanding of the internal processes that convert stimulus into action.

1.3. Self-confidence as a psychological moderator in consumer decision-making

Self-confidence, defined as an individual's belief in their ability to make quick and appropriate purchasing decisions in a digital environment, is a critical psychological factor. The literature suggests that individuals with high self-confidence (or self-esteem) tend to rely more on internal evaluations and are less susceptible to external cues. This provides a strong theoretical basis for the hypothesis that self-confidence can weaken the influence of affective stimuli, such as visual appeal.
Furthermore, compensatory consumption theory suggests that individuals with lower self-esteem may engage in impulse buying to compensate for perceived deficiencies in their self-worth. This indicates that consumers with low self-confidence may be more vulnerable to impulsive triggers. Conversely, high self-confidence is often associated with more rational and controlled decision-making. Thus, self-confidence is positioned as a key variable that can either strengthen or weaken the relationship between digital stimuli, attitudes, and impulse buying behavior.

1.4. Hypothesis development

Based on the theoretical framework and expanded literature review, the study's hypotheses are formulated to test the selective moderating role of self-confidence:

- The hypothesis that self-confidence weakens the influence of visual appeal is based on the idea that confident individuals are more resistant to external cues and rely more on rational judgment.
- The hypothesis that self-confidence strengthens the relationship between attitude and behavior is supported by self-efficacy theory, which posits that belief in one's own abilities facilitates decisive action consistent with internal attitudes.
- This study will also explore the moderating effect of self-confidence on convenience and promotion to test whether its influence is consistent across all types of stimuli.

2. Research Methodology

2.1. Research design and data collection

This study uses a quantitative and causal approach to test the relationships between digital stimuli (online convenience, visual appeal, sales promotion), consumer attitude, and online impulse buying behavior. This approach also evaluates the mediating role of attitude and the moderating role of self-confidence. This design was chosen to provide an objective and measurable understanding of the relationships between constructs within a model based on the SOR and CET frameworks. The research population consists of active users of the Shopee e-commerce platform in Indonesia, given that Shopee recorded the highest number of visits throughout 2023. Data was collected through an online questionnaire using a 5-point Likert scale (1 = strongly disagree to 5 = strongly agree). Variables were measured using validated scales from previous research: online convenience from Jiang et al. (2013), visual appeal from Lee et al. (2022), sales promotion from Karbasivar & Yarahmadi (2011), attitude toward impulse buying from Liang et al. (2021), online impulse buying from Park et al. (2006), and self-confidence from Hsu et al. (2012).

2.2. Sample characteristics and methodological considerations

The sampling technique used was purposive sampling, with the criterion that respondents must be Shopee users who have made at least one purchase in the last three months. A total of 223 valid responses were collected and deemed suitable for analysis, representing various regions across Indonesia. This research sample consists of 223 users of the Shopee platform in Indonesia, selected through purposive sampling. While this sample provides a robust dataset for PLS-SEM analysis in a highly relevant market context, we acknowledge its limitations. The focus on a single platform (Shopee) and a single country (Indonesia) means the findings may not be generalizable to users of other platforms (e.g., Tokopedia, Lazada, TikTok Shop) or other cultural contexts. Future research should aim to replicate these findings across different platforms and geographical regions to enhance external validity.

2.3. Measurement and analysis strategy (PLS-SEM)

Data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) with the help of SmartPLS software. This method was chosen for its suitability for models involving latent variables, complex relationships including mediation and moderation, and its tolerance for non-normally distributed data. The analysis procedure included an evaluation of the outer model for construct validity and reliability (through indicator loadings, Average Variance Extracted (AVE), and Cronbach's alpha) and an evaluation of the inner model to test the strength of the relationships between variables. To ensure terminological consistency as suggested by peer review, the term "Visual Appeal (VA)" is used consistently throughout the text, tables, and figures, replacing the previously used abbreviation "DTV". The moderation test was conducted by including an interaction term between the independent variables and the moderator variable.

3. Analysis and Results

3.1. Measurement model evaluation

The analysis of the measurement model showed that all constructs met the required thresholds for validity and reliability. The values for indicator loadings, Average Variance Extracted (AVE), and Cronbach's alpha for each variable were within acceptable ranges, confirming that the measurement instruments used in this study are valid and reliable for testing the structural model.

3.2. Structural model and moderation analysis

The structural model was evaluated to test the proposed hypotheses. To enhance the clarity and interpretability of the results, as recommended in the peer review, the structural model, along with its path coefficients is visualized in Figure 1.

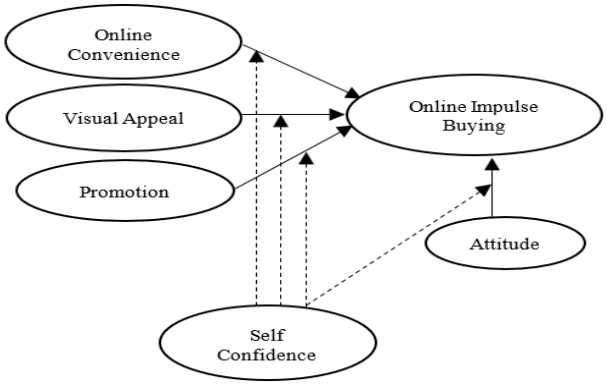

Fig. 1: PLS-SEM Structural Model.

Figure Description: This figure will display the PLS-SEM model diagram. Latent variables (Online Convenience, Visual Appeal (VA), Promotion, Attitude, Self-Confidence, and Online Impulse Buying) will be represented in ovals. Arrows will connect these variables to indicate the hypothesized paths. The moderating paths from Self-Confidence to the relationships between VA -> OIB, Promotion -> OIB, Online Convenience -> OIB, and Attitude -> OIB will also be shown as arrows pointing to the main paths. Each arrow will be labeled with its path coefficient (β) and significance level (e.g., $p < 0.01$ or an asterisk). This visualization allows the reader to quickly grasp the significant and non-significant relationships within the model.)

The moderation interaction analysis specifically tested the role of self-confidence in influencing the strength of the relationships between stimuli, attitude, and online impulse buying. The results of the moderation test are summarized in Table 1.

Table 1: Interaction Effect Results

	Original Sample (β)	t-statistic	P Value
OC*SC -> OIB	0.025	0.605	0.546
VA*SC -> OIB	-0.190	4.131	0.000*
Prom*SC -> OIB	0.037	0.913	0.361
Attitude*SC -> OIB	0.150	2.703	0.007*

*Note: OC = Online Convenience; VA = Visual Appeal; Prom = Promotion; OIB = Online Impulse Buying; SC = Self-Confidence. Significant at $p<0.05$.

The analysis results show two statistically significant moderation effects:

1) The interaction between visual appeal and self-confidence (VA*SC) shows a significant negative effect on online impulse buying (β=−0.190, t=4.131, p=0.000). This means that self-confidence weakens the influence of visual appeal on impulse buying.
2) The interaction between attitude and self-confidence (Attitude*SC) shows a significant positive effect on online impulse buying (β=0.150, t=2.703, p=0.007). This indicates that self-confidence strengthens the influence of a positive attitude on impulse buying behavior.
3) Conversely, the interaction between online convenience and self-confidence (OC*SC) and the interaction between promotion and self-confidence (Prom*SC) did not show statistically significant moderating effects, with p-values of 0.546 and 0.361, respectively.

4. Discussion

The analysis of interaction effects reveals that consumer self-confidence plays a distinct role in moderating the relationship between digital stimuli and online impulse buying behavior. These findings highlight the complexity of the 'Organism' stage in the SOR framework, where internal psychological characteristics selectively filter external influences.

4.1. Self-confidence as an amplifier of internal conviction

The first significant finding is the positive moderating effect of self-confidence on the relationship between attitude and impulse buying (β=0.150, p=0.007). This suggests that self-confidence acts as a catalyst, empowering consumers to translate their positive attitudes toward impulse buying into tangible actions. When consumers have high confidence in their decision-making abilities, they are less likely to hesitate in acting on their attitudinal inclinations. This finding aligns with self-efficacy theory and previous research showing that self-confidence can influence purchase intentions and decision-making. In other words, a positive attitude toward spontaneous shopping has a stronger impact when supported by a solid internal conviction.

4.2. Self-confidence as a shield against visual temptation

The second significant finding is the negative moderating effect of self-confidence on the relationship between visual appeal and impulse buying (β=−0.190, p=0.000). This result implies that self-confidence acts as a cognitive shield against visual enticements. Visual appeal, such as aesthetic design and attractive product images, typically operates through an affective or emotional pathway to trigger impulse purchases. However, in individuals with high self-confidence, this pathway appears to be superseded by a more cognitive and rational processing route. Confident consumers are less likely to be swayed by mere visual allure and rely more on personal evaluations and substantive product information. They are more resistant to visual temptations, suggesting that their rationality can override the emotional responses typically triggered by visual stimuli.

4.3. Deconstructing the non-significant results: why convenience and promotion transcend self-confidence

One of the most profound aspects of this study, which directly addresses a weakness identified in the peer review, is the explanation for the non-significant findings. Self-confidence did not significantly moderate the influence of online convenience (p=0.546) and promotion (p=0.361) on impulse buying. This is not a failure of the model but a meaningful finding that reveals the boundaries of self-confidence's influence.

4.3.1. The universal utility of online convenience

Online convenience—encompassing ease of access, simple navigation, and an efficient transaction process—has become a basic expectation and a primary driver in e-commerce. As many as 76% of online shoppers cite convenience as a key determining factor. Convenience is not a persuasive stimulus that is evaluated differently based on levels of self-confidence; rather, it is a universal utility. Its value lies in efficiency and effort reduction, which appeals to all consumer segments, both confident and not. Due to its fundamental and non-negotiable nature in the modern shopping experience, its influence on purchasing behavior tends to be uniform and not moderated by cognitive traits like self-confidence.

4.3.2. The heuristic power of sales promotions

Sales promotions, such as flash sales, limited-time offers, and coupons, function as powerful heuristic cues with mass appeal. These stimuli are designed to trigger a rapid emotional response—such as excitement, urgency, or fear of missing out (FOMO)—and encourage System 1 (automatic and intuitive) decision-making. This process effectively bypasses the deep cognitive evaluation (System 2), where self-confidence would play a moderating role. The response to a "50% off, ends in 10 minutes" offer is likely to be primal and emotional for most consumers, regardless of how confident they are in their decision-making abilities. The power of promotion lies in its ability to shorten the decision pathway, making its influence relatively immune to moderation by traits associated with cognitive deliberation.

5. Implications and Future Research Directions

5.1. Theoretical contributions to the stimulus-organism-response model

The findings of this research significantly enrich the SOR framework. By demonstrating that self-confidence selectively moderates some pathways (attitude and visual appeal) but not others (convenience and promotion), this study underscores that the 'Organism' does not process all stimuli uniformly. An individual's internal characteristics act as a complex filter, amplifying some influences while being bypassed by others that have universal or heuristic appeal. This encourages a more sophisticated understanding of the S-O-R interaction in a digital environment.

Table 2: Psychographic Marketing Framework Based on Consumer Self-Confidence

Consumer Segment	Psychological Tendency	Marketing Objective	Specific E-commerce Tactics
Low Self-Confidence	Susceptible to visual/affective cues; Seeks external validation; May have compensatory consumption needs.	Build trust; Reduce perceived risk; Facilitate positive emotional decisions.	- Use high-quality lifestyle imagery and emotionally engaging product videos. - Display strong social proof: customer reviews, star ratings, and testimonials. - Offer clear and easy return policies to reduce purchase anxiety. - Use visually appealing promotions (e.g., bright flash sale banners).
High Self-Confidence	Relies on rational/cognitive evaluation; Resistant to visual persuasion; Values efficiency and data.	Empower rational choice; Acknowledge their intelligence; Provide data for decision justification.	- Provide detailed product specification sheets and product comparison features. - Use data-driven arguments (e.g., "95% of users agree..."). - Offer loyalty programs that reward smart choices or repeat purchases. - Ensure site navigation and checkout processes are highly efficient and frictionless.

5.2. Actionable managerial implications for psychographic e-commerce marketing

These findings offer concrete guidance for marketers to move from a one-size-fits-all strategy to a more personalized, psychographic marketing approach. By understanding consumer self-confidence levels, e-commerce platforms can design more effective interventions. Table 2 presents a practical framework for applying these insights.

5.3. Policy recommendations to enhance consumer welfare in the digital age

The growth of e-commerce also brings risks for consumers, particularly using "dark patterns"—user interfaces designed to deceive or manipulate users into making unintended purchases or surrendering personal data. These practices, such as hidden fees, trick questions, and complicated cancellation processes, exploit cognitive biases and are highly detrimental. The findings of this study suggest that consumers with low self-confidence are a vulnerable group, particularly susceptible to these manipulative tactics. Their uncertainty in decision-making makes them more easily influenced by misleading interface designs.

Based on internationally recognized principles of consumer protection, the following policy recommendations are proposed:

- Mandatory Transparency: Regulators should require e-commerce platforms to disclose all terms, conditions, and fees clearly and conspicuously, with no information buried in fine print.
- Prohibition of Dark Patterns: Deceptive design practices, such as sneaking items into shopping carts, hidden fees added at checkout, and intentionally difficult cancellation processes, should be explicitly banned.
- Empowerment of Choice: Interface designs must empower consumer choice, not subvert it. For example, options to "decline" or "disagree" should be just as prominent as the "accept" option.
- Accountability and Enforcement: Platforms must provide effective redress mechanisms for consumers, and regulatory bodies must proactively enforce consumer protection laws in the digital space to prevent exploitative practices.

5.4. Limitations and future research directions

In addition to the sample limitations already discussed, future research should broaden its contextual scope. Studies could explore emerging platforms like TikTok Shop or live-streaming-based markets to see if the moderating patterns of self-confidence remain consistent. Other psychological moderator or mediator variables, such as self-control, need for cognition, or trait impulsivity, also warrant investigation. Furthermore, examining how different cultural contexts (e.g., collectivist vs. individualistic cultures) affect the relationship between self-esteem and consumption behavior would provide valuable insights. Finally, longitudinal studies would be beneficial for assessing the stability of these variable relationships over time.

6. Conclusion

This study demonstrates that consumer self-confidence plays a crucial yet selective moderating role in the dynamics of online impulse buying. Self-confidence significantly weakens the influence of visual appeal, suggesting that confident consumers tend to be more rational and less susceptible to superficial visual cues. Conversely, self-confidence strengthens the relationship between a positive attitude toward impulse buying and actual impulsive behavior, implying that belief in one's own decision-making ability enhances the likelihood of spontaneous action. However, self-confidence does not significantly moderate the effects of convenience and promotion, indicating that these stimuli possess a universal appeal that transcends individual psychological traits.

By integrating these nuanced findings, this research enriches the SOR and CET models by showing that the 'Organism' does not process all stimuli uniformly. Practically, the study provides a framework for actionable psychographic marketing and proposes important policy recommendations to protect vulnerable consumers from manipulative practices in the digital age. These findings affirm that to comprehensively understand online impulse buying, we must look beyond external stimuli and deeply consider the psychological characteristics that shape consumer response.

References

[1] A. Ahdiat, "Pertumbuhan Nilai Transaksi Harbolnas 2013-2023," Databoks.

[2] A. Gurunathan and K. S. Lakshmi, Exploring the Perceptions of Generations X, Y and Z about Online Platforms and Digital Marketing Activities, vol. 8, no. 5. 2023. https://doi.org/10.26668/businessreview/2023.v8i5.2122.

[3] A. Karbasivar and H. Yarahmadi, "Evaluating Effective Factors on Consumer Impulse Buying Behavior," Asian J. Bus. Manag. Stud., vol. 02, no. 04, pp. 174–181, 2011.

[4] A. Mehrabian and J. A. Russell, An Approach to Environmental Psychology. The MIT Press, 1974.

[5] C. C. Liang, A. P. I. Yu, and T. H. Le, "Customers Focus and Impulse Buying at Night Markets," J. Retail. Consum. Serv., vol. 60, p. 102434, 2021. https://doi.org/10.1016/j.jretconser.2020.102434.

[6] C. L. Hsu, K. C. Chang, and M. C. Chen, "Flow Experience and Internet Shopping

[7] D. W. Rook and R. J. Fisher, "Normative Influences on Impulsive Buying Behavior," J. Consum. Res., vol. 22, no. 03, p. 305, 1995. https://doi.org/10.1086/209452.

[8] D. N. Greenfield, "Psychological Characteristics of Compulsive Internet Use: A Preliminary Analysis," Cyberpsychology Behav., vol. 02, no. 05, pp. 403–412, 1999. https://doi.org/10.1089/cpb.1999.2.403.

[9] E. C. S. Ku and C. der Chen, "Flying on the Clouds: How Mobile Applications Enhance Impulsive Buying," Serv. Bus., vol. 14, no. 01, pp. 23–45, 2020. https://doi.org/10.1007/s11628-019-00407-3.

[10] E. J. Park, E. Y. Kim, and J. C. Forney, "A Structural Model of Fashion-Oriented Impulse Buying Behavior," J. Fash. Mark. Manag., vol. 10, no. 4, pp. 433–446, 2006. https://doi.org/10.1108/13612020610701965.

[11] E. J. Park, E. Y. Kim, V. M. Funches, and W. Foxx, "Apparel Product Attributes, Web Browsing, And E-Impulse Buying on Shopping Websites," J. Bus. Res., vol. 65, no. 11, pp. 1583–1589, 2012. https://doi.org/10.1016/j.jbusres.2011.02.043.

[12] I. L. Wu, K. W. Chen, and M. L. Chiu, "Defining Key Drivers of Online Impulse Purchasing," Int. J. Inf. Manage., vol. 36, no. 03, pp. 284–296, 2016. https://doi.org/10.1016/j.ijinfomgt.2015.11.015.

[13] J. Howard, Consumer Behaviour: Application and Theory. McGraw-Hill, 1977.

[14] L. Aragoncillo and C. Orús, "Impulse Buying Behaviour: An Online-Offline Comparative and the Impact of Social Media," Spanish J. Mark. - ESIC, vol. 22, no. 01, pp. 42–62, 2018. https://doi.org/10.1108/SJME-03-2018-007.

[15] L. Y. S. Lo, S. W. Lin, and L. Y. Hsu, "Motivation for Online Impulse Buying: A Two-Factor Theory Perspective," Int. J. Inf. Manage., vol. 36, no. 05, pp. 759–772, 2016. https://doi.org/10.1016/j.ijinfomgt.2016.04.012.

[16] L. (Alice) Jiang, Z. Yang, and M. Jun, "Measuring Consumer Perceptions of Online Shopping Convenience," J. Serv. Manag., vol. 24, no. 02, pp. 191–214, 2013. https://doi.org/10.1108/09564231311323962.

[17] R. M. Baron and D. A. Kenny, "The Moderator-Mediator Variable Distinction in Social Psychological Research," J. Pe~nality Soc. Psychol., vol. 51, no. 06, pp. 1173–1182, 2018. https://doi.org/10.1037//0022-3514.51.6.1173.

[18] S. Kimiagari and N. S. Asadi Malafe, "The role of cognitive and affective responses in the relationship between internal and external stimuli on online impulse buying behavior," J. Retail. Consum. Serv., vol. 61, p. 102567, 2021. https://doi.org/10.1016/j.jretconser.2021.102567.

[19] S. Shim, M. A. Eastlick, S. L. Lotz, and P. Warrington, "An Online Prepurchase Intentions Model," J. Retail., vol. 77, no. 03, pp. 397–416, 2001. https://doi.org/10.1016/S0022-4359(01)00051-3.

[20] T. Himawari, K. Nakamura, and M. Suzuki, "Impact of Visual Cues on Impulse Buying Behavior in E-commerce," J. Consum. Behav., vol. 22, no. 03, pp. 200–212, 2018.

[21] T. K. H. Chan, C. M. K. Cheung, and Z. W. Y. Lee, "The State of Online Impulse-Buying Research: A Literature Analysis," Inf. Manag., vol. 54, no. 02, pp. 204–217, 2017. https://doi.org/10.1016/j.im.2016.06.001.

[22] T. Verhagen and W. Van Dolen, "The Influence of Online Store Beliefs on Consumer Online Impulse Buying," Inf. Manag., vol. 48, no. 08, pp. 320–327, 2011. https://doi.org/10.1016/j.im.2011.08.001.

[23] V. T. Clover, "Relative Importance of Impulse-Buying in Retail Stores," J. Mark., vol. 15, no. 01, pp. 66–70, 1950. https://doi.org/10.1177/002224295001500110.

[24] W. Applebaum, "Studying Customer Behavior in Retail Stores," J. Mark., vol. 16, no. 02, p. 172, 1951. https://doi.org/10.1177/002224295101600204.

[25] W. Shu and Y. H. Chuang, "The Perceived Benefits of Six-Degree-Separation Social Networks," Internet Res., vol. 21, no. 1, pp. 26–45, 2011. https://doi.org/10.1108/10662241111104866.

[26] X. Xu, L. Wang, and K. Zhao, "Exploring Determinants of Consumers' Platform Usage in 'Double Eleven' Shopping Carnival in China," Sustain., vol. 12, no. 07, pp. 1–18, 2020. https://doi.org/10.3390/su12072790.

[27] X. Zheng, J. Men, F. Yang, and X. Gong, "Understanding Impulse Buying in Mobile Commerce," Int. J. Inf. Manage., vol. 48, pp. 151–160, 2019. https://doi.org/10.1016/j.ijinfomgt.2019.02.010.

[28] Y. Lina, D. Hou, and S. Ali, "Impact of online convenience on generation Z online impulsive buying behavior," Front. Psychol., vol. 13, pp. 1–17, 2022. https://doi.org/10.3389/fpsyg.2022.951249.
[29] Y. Y. Lee, C. L. Gan, and T. W. Liew, "The Impacts of Mobile Wallet App Characteristics on Online Impulse Buying," Hum. Behav. Emerg. Technol., vol. 2022, 2022. https://doi.org/10.1155/2022/2767735.