



Print ISSN: 1738-3110 / Online ISSN 2093-7717
JDS website: <http://kodisa.jams.or.kr/>
<http://dx.doi.org/10.15722/jds.20.02.202202.1>

The Extended S-O-R Model Investigating Consumer Impulse Buying Behavior in Online Shopping: A Meta-Analysis

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Received: December 15, 2021. Revised: January 08, 2022. Accepted: February 05, 2022.

Abstract

Purpose: The online distribution channel has attracted the attention of retailers by potential impact on consumers' purchase intention. The objectives of this study are to provide an insight into how to encourage consumers' impulse buying behavior on commercial website as well as attempts to reveal factors that influence consumers' impulsive buying behavior in the online shopping environment. **Research design, data and methodology:** The research framework is based on the stimulus-organism-response (S-O-R) framework. The Meta-analysis method carried out the research, gathering data from 37 published studies. **Results:** The research findings suggest that intrinsic motivations such as perceived ease of use, perceived enjoyment, and online flow experience play a significant role in boosting consumers' hedonic value when buying and online. In addition, these findings help online retailers use appropriate marketing stimuli such as offering pricing incentives, promotion tactics, and improved communication effectiveness. Also, obtaining a better grasp of how to build a website to improve the consumer experience generally helps consumers feel the urge to buy impulsively and act without hesitation. **Conclusions:** This research confirms a direct positive relationship between marketing stimuli and hedonic shopping value, which may support an applied theoretical framework for future research and provide managerial implications for retailers in online distribution channels.

Keywords: Meta-Analysis, Online Distribution Channels, S-O-R, Marketing Stimuli, Hedonic Shopping Value, Impulse Buying Behavior.

JEL Classification Code: M10, M31, M39.

1. Introduction

With the tremendous growth of e-commerce over the last decade, consumer acceptance of online shopping is increasing (Rosário & Raimundo, 2021). Consumers used to be reluctant to purchase items through e-commerce distribution channels. However, recently, due to the competition between retailers, consumers have acquired more value from online shopping, not just in terms of

product quality but also in terms of after-sales services quality. Online shopping has become a much more comfortable and straightforward process. Consumers then recognize the value and advantages of electronic commerce and develop buying habits on commercial websites and mobile apps (Chiu, Wang, Fang, & Huang, 2014). Consumers are becoming more reliant on online shopping. During the COVID-19 pandemic, consumers are panic buying, they stored goods and necessities, the purchase

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decision process is unplanned and quickly, especially through e-commerce distribution channels. (Chiu, Oh, & Cho, 2021). In modern marketing, retailers often take advantage of external stimuli to increase consumer buying emotions. In order to improve consumers' psychological incentives to buy, marketers invest a significant amount of time and effort in developing retail environments and the subsequent retail interactions (Park, Kim, Funches, & Foxx, 2012). It has been estimated that around 60 percent of in-store purchases are done by impulsively buying, with online shoppers being more likely to be impulsive. As a result, various marketing stimuli, such as products, communications, shop atmosphere, and price attributes, have been used to drive impulsive buying behavior (Mohan, Sivakumaran, & Sharma, 2013).

In addition, impulsive buying behavior is often stimulated by hedonic shopping value (Hosseini, Zadeh, Shafiee, & Hajipour, 2020). According to Tyrväinen, Karjaluoto, and Saarijärvi (2018), in the online context, buying decisions are often based on hedonic shopping value, such as promotions like flash sales activities on e-commerce distribution channels that give consumers a sense of urgency. That makes consumers easier to purchase than usual, with the mentality of not wanting to miss out on a bargain (Zhang, Cheng, & Du, 2018). As well as live-streaming selling activities, consumers will be attracted by streamers and forget their needs and buying budgets. Streamers will make them spend beyond their budgets and plans (Wongkitrungrueng & Assarut, 2020). Therefore, retailers often focus on the consumer's hedonic shopping value through externally motivated marketing stimuli in order to get the consumer's impulsive buying behavior. Besides, the consumer's interaction with the commercial website will have a strong impact on the consumer's intention. When consumers perceive using a website or mobile application as easy and comfortable, shopping is no longer just a necessity but an entertainment option that encourages impulsive purchasing behavior. According to Zanjani, Milne, and Miller (2016) in the context of online shopping, the experience of online flow is the psychological state of being fully engaged in an activity when the consumer is engaged in a shopping activity, especially when combined with stimulating marketing activities. They tend to be more focused, engaged, and likely to forget about potential risks. Therefore, the online flow experience plays a very important role in navigating perceived value and enhancing the purchase intention of consumers (Gao & Bai, 2014). Interactive activities in the online environment can trigger the consumer's online flow experience through website browsing, communication effectiveness, and website atmosphere (Barta, Flavian, & Gurra, 2021).

For that reason, this study was conducted with the stimulus–organism–response (S–O–R) framework, which

aims to motivating factors that impact consumer's hedonic shopping value in order to gain competitive benefits for retailers' websites to achieve impulsive buying behavior like perceived ease of use, perceived enjoyment, and online flow experience. In addition to the activities of marketing stimuli, factors such as product quality, communication effectiveness, web atmospherics, and price attribution are also examined to find the factors that can stimulate impulsive buying behavior.

2. Literature review and hypotheses

2.1. Research framework - S-O-R framework

This study applies the S-O-R framework that has been extensively tested in studies of the effects of stimuli on consumers' cognitive and emotional states, thereby change consumer intention or behavior (Mehrabian & Russell, 1974). Shopping motivation factors and marketing activities are proposed as initial input effects stimulus (Stimuli) and hedonic shopping value as (Organism) finally, urge to buy impulsively and impulsive buying behavior as the outcome (Response).

2.2. Motivation and hedonic shopping value

Perceived ease of use is described in the technology adoption model (Davis, 1989) as “the degree to which a person feels that utilizing a specific system will be effortless.” Numerous studies have shown that perceived ease of use influences consumers' attitudes toward adopting new technologies, particularly buying through websites or mobile apps (Roy & Balaji, 2018). Additionally, perceived ease of use has a direct correlation with perceived usefulness (Perry, 2016). Rather than learning how to utilize it, shoppers spend that time enjoying the shopping experience. It demonstrates that when consumers find internet shopping convenient and helpful, they will use it. Thus, the perceived ease of use aspect enhances the perceived value of buying by decreasing shopping process challenges such as insufficient product information, a complex purchase procedure, and restricted alternative payment methods (Avcilar & Ozsoy, 2015). The finding of Yang (2010) has shown that when consumers believe online shopping to be truly easy, their sense of hedonic shopping value increases. Based on that, this study proposes:

H1: Perceived ease of use has positive influence on hedonic shopping value.

Earlier research examined perceived enjoyment as a motivating factor affecting consumers' hedonic shopping

value (Arnold & Reynolds, 2003; To, Liao, & Lin, 2007). Perceived enjoyment is described as the consumer's perception of fun, enjoyment, and joy when participating in online shopping. According to Van der Heijden (2004), in hedonic system, perceived enjoyment has a stronger impact on purchase intention than perceived usefulness. Therefore, consumers will refuse to buy online even though it is useful but difficult and tedious. Furthermore, online shopping is now seen as a place to entertain, find joy, and relieve stress (Martínez-López, Pla-García, Gázquez-Abad, & Rodríguez-Ardura, 2016). This study argues that perceived enjoyment affects hedonic shopping value of consumers in a positive way, the more pleasure consumers receive, the higher hedonic shopping value of consumers. Therefore, we propose the following hypothesis:

H2: Perceived enjoyment has positive influence on hedonic shopping value.

This study proposes an online flow experience factor based on flow theory to explain the motivational impact on hedonic shopping value. The concept of flow is defined differently in different activities and different environments, including online and offline. In this study, two main dimensions, concentration and loss of control, were focused on to describe the online flow experience (Wilder, Csikszentmihalyi, & Csikszentmihalyi, 1989). When consumers interact with e-commerce websites, they will gradually focus more on shopping activities through the websites' attractive design and functions. More specifically, online marketing campaigns are also important factors in attracting consumers' concentration (Koufaris, 2002). Consumers thoroughly immerse themselves in the online flow experience, focusing only on specific objectives and ignoring their original utilitarian buying motives. Lee and Wu (2017) indicated that consumer concentration is positively related to their hedonic value.

H3: Online flow experience has positive influence on hedonic shopping value.

2.3. Marketing stimuli and hedonic shopping value

Drawing on the 4P factors in the marketing mix (Yudelson, 1999; Kotler & Keller, 2009), this study proposes marketing stimuli factors to examine the positive impact on hedonic value in online shopping context as a consequence of urge to buy impulsively. Research by Mohan et al. (2013) revealed that the initial factors of marketing stimuli such as product quality, communication effectiveness, web atmospherics, and price attribution play a significant role in forming impulsive buying behavior.

Product quality refers to how well a product fulfills the

demands of consumers, performs its function, and complies with consumer expectations and norms. In competition, product quality is a factor that is always put on the forefront by marketers to develop in order to capture consumer buying intention, which leads to impulse buying behavior (Ladhari, Souiden, & Dufour, 2017). There are two factors that need to be determined in product quality: how consumers define quality and how it can be improved in order to get consumers satisfaction and trust. According to the findings by Han and Jeong (2013), overall product quality substantially impacts consumers' emotions and feelings, including comfort, pleasure, and tenderness. Furthermore, other variables in marketing stimuli contribute to enhancing consumers' perceptions of quality of the products (Baker, Grewal, & Parasuraman, 1994). Hedonic shopping value focuses on how consumers consider the sensory adventure, comfort, pleasure, and emotional dimensions of the shopping experience. In the research of hedonic shopping value, consumers are typically lured to a state of comfort, greater trust, and successful communication through marketing techniques (Kim, Song, & Youn, 2020). Perceived ease of use aspect also plays an essential part in enhancing awareness of product quality. According to the results of the study conducted by Ampadu et al. (2022), recommended product quality has a positive and statistically significant influence on online consumers' impulsive buying behavior. As a consequence, this research attempts to demonstrate the following hypothesis:

H4: Product quality has positive influence on hedonic shopping value.

Communication effectiveness is one of the expected outcomes of promotion strategy. It can be defined as the degree to which a campaign is successful in conveying information about goods and services to their target consumers with the goal of causing consumers to comprehend the product and have an intention to purchase it online (Hänninen & Karjaluoto, 2017). The level of effectiveness is determined by the content that marketers convey, which may include product information, promotions, and discounts. Additionally, it is dependent on how to communicate with consumers via various communications channels. Consumers are more effectively approached in the context of online shopping via social media, e-commerce platforms, and communication campaigns are more influential since they reach their intended audiences with more precision owing to the use of transaction histories and consumers profile (Hudson, Roth, Madden, & Hudson, 2015). Furthermore, communication effectiveness nowadays comes not just from conventional communication marketing tactics but also from loyal consumers who raise awareness about a product or service

via e-word of mouth. Consumers that are loyal to a brand not only repurchase but also recommend others in their social network, write reviews, provide good feedback on products, and become brand evangelists (Kotler, Kartajaya, & Hooi, 2017). Thus, we have:

H5: Communication effectiveness has positive influence on hedonic shopping value.

In the virtual environment, web atmospherics has been identified as how merchants create websites with the purpose of creating positive effects to boost consumer reaction to purchase intention and experience (Dailey, 2004). The study by Kim, Kim, and Lennon (2009) has suggested that marketers develop websites that concentrate on presenting product information and background music to boost the emotional state as well as entertainment experience of consumers. In addition, Kim and Lennon (2013) pointed out that the website design, layout as well as the font size, font style, and primary color of the website also have a significant influence on consumers' enjoyment and arousal. More importantly, variables that lead to negative emotions and unpleasantness, such as threats of leaks of personal information and payment information, should be carefully considered in web atmospherics. In addition, it is essential to guarantee the efficiency of web browsing and navigation on the website in order to provide an online shopping experience and boost hedonic value (Zheng, Men, Yang, & Gong, 2019). Therefore, when online atmospherics are made precisely, consumers acquire trust, appeal, and satisfaction, which will significantly influence the enjoyable shopping journey (Vijay, Prashar, & Sahay, 2019). Based on that, we hypothesized:

H6: Web atmospherics has positive influence on hedonic shopping value.

Price refers to the monetary value consumers have to spend on the products, which is a decisive factor for shopping. In online shopping, product price is a stimulus that retailers usually pay special attention to. Because nowadays there are so many websites that can make it easy for consumers to compare the prices of products, the price factor becomes very sensitive, especially for low-income or low-budget consumers (Xu & Huang, 2014). So when finding a product at a bargain price, consumers will not ignore it even though the product is not really necessary for their needs or it is outside of the consumer's shopping plan (Kimiagari & Malafe, 2021). The manner in which the price is attributed is not only in terms of product price but also includes delivery costs and promotional prices, which are especially necessary to predict consumer buying behavior along with impulsive purchases. Additionally, price

attribution is taken into consideration across each e-commerce distribution channel in order to attract the potential consumers. Consumers with hedonic motivation always consider price as the most important stimulus, leading to impulsive buying behavior (Park et al., 2012).

H7: Price attribute has positive influence on hedonic shopping value.

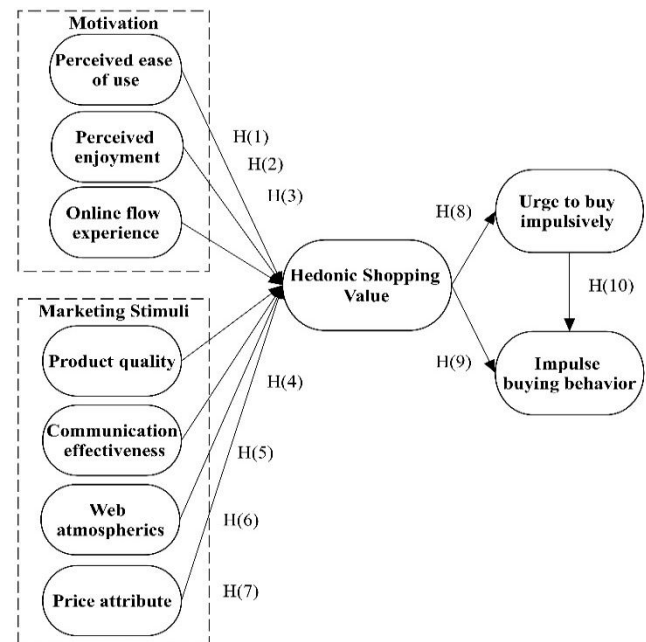


Figure 1: The research framework

2.4. Relationship between Hedonic Shopping Value, Urge to Buy Impulsively and Impulse Buying Behavior

Impulse purchasing behavior describes the act of buying rapidly, suddenly, and unplanned. Impulse buying behavior is generally the result of an urge to buy impulsively and hedonic value. Urge to buy impulsively is the irresistible want to buy a product instantly, despite the risks and potential consequences. In addition, hedonic value in shopping is the pleasure of shopping emotional experiences such as enjoyment, comfort, and exploration. When consumers fall into a comfortable and pleasant emotional state due to the stimulus received from marketing stimuli, it will lead to urge to buy. They would ignore the initial shopping goal and lose control, resulting in impulsive buying behavior. Previous research has demonstrated that hedonic shopping value has a significantly positive effect on urge to buy and impulse purchasing behavior (Beatty & Ferrell, 1998; Chan, Cheung, & Lee, 2017; Zheng et al., 2019). Furthermore, urge to buy is also mentioned as a

determining factor of impulsive buying (Mohan et al., 2013; Huang, 2016). Thus, this research presents the following hypotheses:

- H8:** Hedonic shopping value has positive influence on urge to buy impulsively.
- H9:** Hedonic shopping value has positive influence on impulse buying behavior.
- H10:** Urge to buy impulsively has positive influence on impulse buying behavior.

3. Research Methodology and coding

The authors used a quantitative method to test the hypotheses given in the research framework. The meta-analysis method (Wasserman, Hedges, & Olkin, 1988) combined the results of several previous studies with the same background and research objectives. The authors

implemented a spacious search based on the database of journals such as Science Direct, Taylor & Francis Online, Google Scholar, and Google search engines. These studies were searched by using several keywords either related to research model “perceived ease of use,” “perceived enjoyment,” “online flow experience,” “marketing stimuli,” “hedonic shopping value,” “urge to buy impulsively,” and “impulse buying behavior.” The authors also check the reference list of collected papers to find the relevant article. In the initial search, we found 52 studies. After careful review, 37 of the latest studies published from 2010 to 2022 that meet the following criteria will be collected: The language of the collected articles was English, the research domain included marketing and advertising, and management. Moreover, the data is only used in quantitative articles that applied the hypothesis test, the sample size must be shown in the article along with the correlation coefficient or standardized regression coefficient in each hypothesis test. Finally, this study uses correlation coefficient *r* and *t*-value to compute effect size at 95% confidence interval. A total of 37 studies were collected and are shown in Table 1.

Table 1: Studies Used in Meta-Analysis

Studies Alphabetically by Source and Codes for Hypotheses Tests ^{a, b}	
Avcilar & Ozsoy, 2015 (PEOU-HSV), 13	Nguyen et al., 2018 (PA-HSV), 25
Badgaiyan & Verma, 2015 (UBI-IBB), 21	Ozen & Engizek, 2014 (HSV-IBB), 2
Bandyopadhyay et al., 2021 (UBI-IBB), 21	Ozturk et al., 2016 (PEOU-HSV), 8
Chauhan & Dagar, 2021 (HSV-IBB), 23	Park et al., 2012 (PA-HSV, HSV-IBB), 16
Chen & Chi, 2021 (CE-HSV), 25	Rezaei et al., 2016 (UBI-IBB, WA-HSV), 18
Deliberali et al., 2020 (PA-HSV), 3	Song et al., 2016 (CE-HSV), 9
Dey & Srivastava, 2017 (PE-HSV), 19	Sultan et al., 2021 (CE-HSV), 17
Gao & Bai, 2014 (WA-HSV), 21	Verhagen & Van Dolen, 2011 (HSV-IBB, UBI-IBB), 7
Han et al., 2018 (PQ-HSV), 11	Setyani et al., 2019 (HSV-UBI, PE-HSV), 12
Irani & Hanzae, 2011 (PA-HSV), 1	Wang et al., 2013 (PE-HSV), 12
Kesari & Atulkar, 2016 (PE-HSV), 21	Wang, 2014 (PEOU-HSV), 4
Kim & Kim, 2020 (PEOU-HSV), 10	Wu et al., 2013 (WA-HSV), 14
Kim & Lennon, 2013 (WA-HSV), 20	Yang et al., 2021 (HSV-IBB), 21
Kimiagari & Malafe, 2021 (PA-HSV, HSV-IBB), 21	Yin & Qiu, 2021 (OFE-HSV), 25
Konuk, 2019 (PQ-HSV), 21	Yu et al., 2018 (PE-HSV), 25
Lee & Chen, 2018 (PA-HSV, PQ-HSV), 5	Zhang et al., 2018 (HSV-UBI, UBI-IBB), 15
Lee & Wu, 2017 (OFE-HSV), 6	Zheng et al., 2019 (HSV-UBI, WA-HSV), 12
Leong et al., 2018 (UBI-IBB), 4	Zhou, 2020 (OFE-HSV), 22
Moon et al., 2017 (PA-HSV), 24	

^a**Note: Codes in parentheses:** PEU= Perceived Ease of Use; Pe= Perceived Enjoyment; OFE= Online Flow Experience; PQ= Product Quality; WA= web atmospherics; CE= Communication Effectiveness; PA= Price Attribute; HSV= Hedonic Shopping Value; UBI= Urge to Buy Impulsively; IBB= Impulse Buying Behavior.

^b**Journals are footnoted in order:** 1. African Journal of Business Management; 2. Asia Pacific Journal of Marketing and Logistics; 3. Brazilian Business Review; 4. Computers in Human Behavior; 5. Fashion and Textiles; 6. Industrial Management & Data Systems; 7. Information & Management; 8. International Journal of Hospitality Management; 9. International Journal of Business and Management; 10. International Journal of Environmental Research and Public Health; 11. International Journal of Contemporary Hospitality Management; 12. International Journal of Information Management; 13. International Journal of Marketing Studies; 14. International Journal of Retail & Distribution Management; 15. Internet Research; 16. Journal of Business Research; 17. Journal of Cleaner Production; 18. Journal of Hospitality and Tourism Technology; 19. Journal of Indian Business Research; 20. Journal of Research in Interactive Marketing; 21. Journal of Retailing and Consumer Services; 22. Kybernetes; 23. Millennial Asia; 24. Spanish Journal of Marketing; 25. Sustainability.

Table 2: Summary of the effect size of path coefficients

Hyps	Pairwise relationship	k	Total	Effect size & 95% confidence Interval			Heterogeneity			
		Studies	n	r	LCI	UCI	p-value	Chi-square	Q-value	I-squared
H1	PEOU-HSV	4	1346	0.142	0.089	0.194	0.000	5.229	11.941	74.876
H2	PE - HSV	5	2222	0.342	0.305	0.379	0.000	16.758	47.896	91.649
H3	OFE - HSV	3	1281	0.432	0.386	0.475	0.000	16.483	136.298	98.533
H4	PQ - HSV	3	806	0.315	0.251	0.376	0.000	9.205	23.429	91.464
H5	CE - HSV	3	1527	0.281	0.24	0.32	0.000	12.76	37.096	94.609
H6	WA - HSV	5	1882	0.689	0.664	0.712	0.000	36.558	106.135	96.231
H7	PA - HSV	7	4356	0.292	0.265	0.319	0.000	19.816	85.373	92.972
H8	HSV - UBI	3	1469	0.486	0.446	0.524	0.000	20.286	25.172	92.055
H9	HSV - IBB	6	2389	0.297	0.26	0.344	0.000	14.929	91.347	94.526
H10	UBI - IBB	6	2891	0.508	0.480	0.535	0.000	30.014	202.297	97.528

4. Research Analyses and Results

The result of meta-analysis is shown in table 2, the heterogeneity tests indicate that, only the causal path of perceived ease of use on hedonic shopping value has medium heterogeneity. In contrast, the remaining causal paths have high heterogeneity. Moreover, all of Q-values are also higher than Chi-square and p-value ($p=0.000$) indicating that all-subsets effect sizes are high heterogeneity. Thus, the findings confirm that the random-effects model is an appropriate basis for a meta-analysis. The relationship between web atmospherics and hedonic shopping value shows strongest correlation ($r=0.689$). The correlation of urge to buy impulsively on impulse buying behavior ($r=0.508$) indicates a strong correlation. Besides that, all the correlations of other constructs relative to hedonic value also reveal a large correlation. Additionally, all the relationships have none 95% confidence intervals contain zero. Confirm that all of these correlations are significant, then all of hypotheses are supported.

5. Conclusions and implications

According to the study findings, the web atmosphere has the most significant influence on hedonic shopping value, which is consistent with the findings of Zheng et al. (2019). It is not surprising that the statistics suggest that web atmosphere delivers consumers with the greatest amount of hedonic value when they buy through e-commerce distribution channels. With the findings of this research, online retailers may gain a wider awareness of the importance of web atmospherics and how website design can boost hedonic value, generate feelings of joy and pleasure, and ultimately lead to impulsive buying behavior.

Additionally, online retailers should focus on maintaining and improving the appropriate elements of their website in order to improve the overall comfort of the

purchasing experience while also reducing potential risks. By displaying a privacy policy on the company's website, retailers may convince consumers that their personal and payment information will remain confidential. Online retailers should regularly update their commercial websites and provide better web design with rapid, informative, and convenient features in order to generate a sense of comfort in consumers' consciousness. The biggest contribution of this study is to elucidate the impact of marketing stimuli on hedonic shopping value. Based on that, retailers can build an integrated marketing strategy by combining product, price, and communication strategies to maximize the effect of stimulating consumers. Therefore, this study suggests that retailers need to offer high quality products at a reasonable price along with promotions, especially discounts on shipping or free shipping. In addition, the results also show that intrinsic motivations have a statistically significant impact on hedonic shopping value. In which the impact of online flow experience is most noticeable. That means retailers need to focus on building an environment that can create flow experience by increasing concentration and cognitive enjoyment. That will increase hedonic shopping value, making consumers feel satisfied with their shopping experience and leading them to feel the urge to buy instantly. In addition, the perceived ease of use and perceived enjoyment factors also need to be considered in the consumer's shopping enjoyment. This study has consistent results with the study of Avçilar and Özsoy (2015) which confirmed that perceived ease of use is significant in relation to hedonic shopping value. Consequently, the online shopping process should be designed to be simple and straightforward to execute, particularly in the payment and product information search processes. Considering that, at its core, online shopping is a hedonic activity. Furthermore, the findings of the research revealed the existence of a positive relationship between hedonic shopping value on urge to buy impulsively and impulse buying behavior.

In conclusion, this study was conducted with a meta-

analysis of 37 published studies. The research model, which was based on the S–O–R framework, investigated the mechanism that causes consumers to engage in impulse buying behavior while shopping online. In order to explore impulse buying behavior, we used major marketing stimuli such as product quality, website atmosphere, price attribute, and communication effectiveness as the primary marketing stimuli. The study's contribution was to provide meta-analysis evidence to confirm the relationship proposed in the research framework.

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