



## Online impulsive and compulsive buying behavior in Vietnam

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### ABSTRACT

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This study aims to investigate the factors contributing to online impulsive and online compulsive buying behaviours among Vietnamese consumers, given the increasing prevalence of online shopping. A survey of 562 participants (104 offline and 548 online) and Partial least squares structural equation model (PLS-SEM) were recruited to empirically examine the proposed research model. We found that (1) Performance Expectancy, Facilitating Conditions, Social Influence, Effort Expectancy and Stimulus shared positive relations with Online Buying Intention; (2) Scarcity posed significant impact on both Online Impulsive and Compulsive Buying Behaviors; (3) Online Buying Intention was only a key determinant of Online Impulsive Buying Behavior; and (4) Online Impulsive Buying proved to be a significant predictor of Online Compulsive Buying Behavior. By integrating the Unified Theory of Acceptance and Use of Technology (UTAUT) model with Stimulus-Organism-Response (SOR) framework, the research revealed a meaningful underlying mechanism regarding how consumers' technological acceptance, platforms' stimulus, and scarcity can motivate their actual impulsive and compulsive purchasing behaviors in prevalent online settings. Platform designers should offer more and more technological usefulness and conveniences to increase consumers' online buying intentions, while marketers should consider scarcity as the focal point of their strategies.

**Contribution/Originality:** This research revealed a strong relationship between online impulsive and compulsive buying behavior. Each has been extensively studied alone, but few papers have examined their correlation. Interestingly, Scarcity was found to directly motivate these peculiar behaviors. Being tested in a developing country where empirical evidence is lacking will extend the applicability of the UTAUT and SOR models.

## 1. INTRODUCTION

Since the mid-1990s, online shopping has been steadily growing to be one of the most dominant forms of electronic commerce (Nikhashemi, Yasmin, Haque, & Khatibi, 2011). The Internet in 2011 was rapidly expanding, far faster than in any nation in the region. Customers are more involved in the practice of Internet shopping, and offline shops have been progressively shifting to online-based platforms to seek new customer bases. The trend of online shopping in Vietnam has been continuously escalating, and the number of people accessing and using online

shopping channels has also significantly increased.

In previous research, Bighiu, Manolică, and Roman (2015) found significant associations between online shopping and impulsive and compulsive purchases. Before online shopping, impulsive buying behavior was extensively studied in the in-store environment (Rook & Fisher, 1995). However, compared to the direct setting, the online environment is more conducive to impulsive purchasers (Liu, Li, & Hu, 2013). Furthermore, the rapid growth of e-commerce and advances in technology have made impulsive consumption more popular than ever (Chan, Cheung, & Lee, 2017). Today, shopping has become a habit that could lead to a psychological problem known as compulsive buying behavior (Black, Shaw, McCormick, Bayless, & Allen, 2012; McElroy, Keck Jr, Pope Jr, Smith, & Strakowski, 1994). Kukar-Kinney, Ridgway, and Monroe (2012) found that those who tend to buy compulsively are more likely to practice online shopping than those who do not possess this behavior. In addition, Song, Chung, and Koo (2015) discovered that Scarcity and discount promotions would considerably attract consumers' attention. In 2020, these two behaviors will have a significant influence on the trend of buying online.

During the investigation process, the research team has uncovered a new approach when delving into the causes of online impulsive and online compulsive buying behaviors by combining both the UTAUT and SOR models with the new variable, Scarcity. The UTAUT model of Venkatesh (2000) has been used in many previous studies to ascertain the factors inducing the adoption and acceptance of information systems in online buying behavior. UTAUT considers that an individual's adoption of new technology is a function of four core determinants: Performance Expectancy (PE), Effort Expectancy (EE), Social Influence (SF), and the Facilitating Condition (FC). Meanwhile, the SOR model of Mehrabian and Russell (1974) is one of the most frequently referenced models for predicting online consumer behavior and includes three main components: Stimulus, Organism, and Response. When applying the above two theoretical models, the authors have made certain adjustments to build a research model proper to the context and objectives of this research.

The survey was carried out over four months and gathered 583 valid responses for later analysis. The authors believe that investigating the decisive factors of online buying behavior in Vietnam, namely impulsive and compulsive buying, will provide in-depth references and analysis for the government, the marketers, and the consumers themselves.

## 2. LITERATURE REVIEW

### 2.1. UTAUT and SOR Model

The Unified Theory of Acceptance and Use of Technology is developed based on eight well-established theories to assess the success possibilities of new technology introductions (Venkatesh, Morris, Davis, & Davis, 2003). Although initially applied to organizational contexts, its extensive application to online shopping makes UTAUT a suitable model for explaining customer buying intention and actual internet buying behavior (Celik, 2016). Concerning the model's constructs, performance expectations, effort expectations, and social influences all have an effect on behavioural intention. However, facilitating conditions and behavioural intention are directly linked to user behaviour. Contrary to the traditional shopping method, buying online is considered accepting and using technology to make purchases.

The Stimulus-Organism-Response model is one of the most commonly used frameworks in online shopping research, as it provides the foundation for empirical studies of consumer behavior. It demonstrates the effect of stimuli from the environment (S) on the subject (O) and leads to response behaviors (R) (Mehrabian & Russell, 1974). For instance, Xu, Zhang, and Zhao (2020) observed that environmental stimuli could trigger an individual's internal cognitive process and stimulate responses in the online shopping environment. Today, the impressive emergence of e-commerce has marked the expansion of the SOR framework to improve the understanding of consumer response and subsequent online shopping behavior (Kim & Lennon, 2013; Mosteller, Donthu, & Eroglu, 2014). Hence, the authors decided to integrate the SOR model into this study.

## 2.2. Online Buying Intentions and Behaviors

By acting as an indicator of how much desire and effort one has to execute a given behavior, intention captures a motivational element that could affect the formation of the said behavioral achievement (Ajzen, 1991). In other words, the stronger the intention, the more likely a behavior will be performed. Hence, this paper regards buying intention as an individual's willingness to make a purchase (Tirtiroglu & Elbeck, 2008), while online buying intention is viewed as a consumer's intention to engage in online relationships and transactions with retailers on their websites (Zwass, 1998). To the extent that one has enough desire and exerts enough effort to purchase online, one will succeed in doing so.

### 2.2.1. Online Impulsive Buying Behavior

Impulsive buying behavior is an unplanned, decide-on-the-spot purchase based on the result of unexpected exposure to a stimulus. Emotional and cognitive reactions may accompany but are not prerequisites to this behavior (Piron, 1991). Here, the decide-on-the-spot characteristic should include the "location" element, not just the "time" aspect. Piron argued that if consumers who view a commercial and immediately want the advertised product would still need to transport to the point-of-sale to acquire the said item, such consumption would then be planned and no longer spontaneous. Consequently, the online environment is deemed more responsive and favourable for impulsive purchases than its offline equivalent, which a plethora of subsequent studies also advocate (Chan et al., 2017; Liu et al., 2013; Song et al., 2015; Tanveer, Kazmi, & Rahman, 2022; Wu, Chen, & Chiu, 2016). Such unreflective and unintended purchases can account for a noteworthy proportion of consumers' online consumption, which has captured constant attention from academicians and practitioners worldwide (Bellini, Cardinali, & Grandi, 2017).

### 2.2.2. Online Compulsive Buying Behavior

More than a century ago, Kraepelin (1915), was the first to mention compulsive buying. Since then, numerous scholars have made significant contributions to the literature, which delineates compulsive buying behavior and provides empirical bases for future research. Most noticeably, it is defined as "a chronic, repetitive purchasing behavior that occurs as a response to negative events or feelings" (O'Guinn & Faber, 1989) through excessive purchasing of products that one does not necessarily need and cannot afford (Hoyer & MacInnis, 2007). Subsequently, Frost, Steketee, and Grisham (2004) and Ridgway, Kukar-Kinney, and Monroe (2008) together postulated that the financial, social, or personal ramifications of individuals who appear compulsively driven to consume would likely be completely disregarded. In the present, consumers are increasingly subjected to technological and communicational advancements in e-commerce and multinational corporations' marketing efforts. As a result of increased commercialization and the spread of marketing messages via the Internet, it is not surprising to see a flourishing pattern of unusual consumer behaviour, like compulsive buying. Hence, the online environment is believed to emerge as the biggest trigger for compulsive buyers (Bighiu et al., 2015).

## 2.3. UTAUT and SOR Models with Online Buying Behaviors

### 2.3.1. UTAUT Model with Online Buying Behavior

The subject of online shopping behaviour is no longer lacking in research. Overall, among extant studies, the research that applied the UTAUT model of Escobar-Rodríguez and Carvajal-Trujillo (2014) to study the factors that have influence on the customers' intention and actual behaviors of buying airline tickets is quite prominent because it provided similar results to Venkatesh et al. (2003). Their findings suggested that all four independent factors were major drivers leading to online ticket-buying intention and actual online buying behavior.

As for Vietnam-related research, Dung (2009) applied the UTAUT model to investigate only Vietnamese consumers' intentions to buy online airline tickets and shared similar results as above. Another interesting study is Loc (2016), which ignored the behavioral intention variable to examine online shopping behavior on smartphones

directly. Final results indicated that all independent variables exerted direct and significant impacts on Ho Chi Minh City consumers' online shopping behavior. Recently, Ha, Long, Thuy, and Anh (2019) measured decisive determinants of customers' intentions and, especially, online shopping behavior through e-commerce websites in Vietnam. Their findings revealed that Performance Expectancy, Effort Expectancy, Social Influence, and Facilitating Conditions together positively affected buying intention, whereas Online Buying Intention was a crucial predictor in explaining Vietnamese consumers' online buying behavior.

### *2.3.2. SOR Model with Online Impulsive Buying Behavior*

With the rise of online retail, the SOR model has been widely used in research concerning online buying. And it was Adelaar, Chang, Lancendorfer, Lee, and Morimoto (2003) that conducted the first study of online impulsive purchasing intention. The results showed that simultaneously playing music and showing lyrics on the World Wide Web page would result in a higher impulsive buying intention. Since then, a wealth of literature has explored more website-related factors and their role in developing such buying behavior. For example, using the SOR model, Verhagen and Van Dolen (2011) posited that stimulation from websites would cause positive emotions, activating the urge to buy and then impulsive purchases. Liu et al. (2013) revealed that website cues (Visual appeal, Website ease of use, and Product availability) are critical determinants of the urge to buy impulsively. Moreover, Turkyilmaz, Erdem, and Uslu (2015) emphasized that the web content (Information and Emotions) would positively impact the users and induce their online impulsive purchasing behavior.

Ha and Duc (2018) investigated impulsive online purchasing behaviour on social networks in Vietnam. They found that online store stimuli, personalized advertising, and Reliance on Electronic word-of-mouth would positively and indirectly affect the Urge to buy impulsively. Furthermore, the study of Ninh, Duong, and Thang (2019), tested in the e-commerce environment, documented that website quality, Product presentation, Promotional activity, Customer services and Reference group were the indirect yet crucial indicators of the online impulsive buying behavior of Vietnamese consumers.

### *2.3.3. SOR Model with Online Compulsive Buying Behavior*

Scholars worldwide have been constantly drawn to the phenomenon called compulsive buying. This is because this purchasing behavior has influenced over fifty million Americans (Dittmar & Drury, 2000), with detrimental effects such as psychological and financial instability. However, research on compulsive shopping behavior is mainly examined offline, with little attention paid to recognizing this problem in the online context (Black et al., 2012; Larose, 2001). As a result, Weinstein, Mezig, Mizrachi, and Lejoyeux (2014) proposed that future research should concentrate on the study of online compulsive shoppers because they are the fastest-growing demographic with special features that differentiate them from other forms of compulsive buyers.

And one of the first studies to apply the SOR model to do so is by Umer and Attiq (2018), which examined this buying behavior on social networks. They assumed that social factors (Social capital and Peer communication) affect Perceived enjoyment, the Urge to buy, and then Compulsive buying behavior. According to the authors, the facts that the buyer can trust and feel more comfortable shopping online will motivate them to make a purchase. Subsequently, the Urge to buy was found to be a positive and significant predictor in explaining the irrational factors underlying compulsive purchasing behavior.

## *2.4. Integrated UTAUT and SOR Model with "Scarcity"*

Indeed, studies of online impulsive and compulsive buying behavior are inclined towards the SOR model. However, to study online buying, one technology adoption and behavior model (such as UTAUT) should be first considered to explain the affecting factors. To illustrate, Kukar-Kinney et al. (2012) called for the societal perspective of compulsive buying behavior to be studied in multiple societies. For example, in Western

individualism, individuals' needs and desires are determined by their choices, including purchasing decisions. By contrast, people in collectivist societies (like Vietnam) are thought to view shopping as a way to socialize. They buy things according to the surrounding trends because they feel pressure to be recognized and to enhance their image. In other words, they indulge in a buying behavior that aligns them with their reference groups instead of the product's real use. This internalization, represented by the variable Social Influences, in turn made them impulsive and compulsive purchasers (Halepete, Littrell, & Park, 2009). Nonetheless, the two behaviors measured in this study are unique and specific. As a result, a single model application cannot fully explain other potential factors (Stimulus and Scarcity) that can provoke these abnormal buying behaviors.

To illustrate, the SOR model takes into account the online platform stimulus, such as personalized recommendations, ease of reference, or the websites' credibility and security – elements that the Performance Expectancy or Effort Expectancy is not able to justify thoroughly. The authors, thus, anticipate that the two models' integration will enhance the final research model's explanatory ability. In addition, one of the most advantageous FOMO (Fear of Missing Out) marketing tools--Scarcity, has long been used to progressively stimulate online consumption. Contrary to the influencing factors generated by online platforms, society, and consumers in the UTAUT and SOR models, Scarcity impacts consumer sentiment from the fourth party's perspective-- the salesperson--posing a differentiation that caught the authors' attention.

All things considered, the research team decided to apply the UTAUT, combined with the SOR model and the new variable Scarcity, to investigate the influencing factors of Vietnamese consumers' online impulsive and online compulsive buying behaviors.

### 3. RESEARCH METHODOLOGY

#### 3.1. Hypothesis Development

*Performance Expectancy (PE)*: According to Venkatesh et al. (2003), Performance Expectancy refers to how much time and effort consumers believe current technologies save them. The value of the technology will grow, and consumers' decisions to use it will be upbeat if the costs are lower than the benefits (Alwahaishi & Snásel, 2013; Sin, Chong, & Lin, 2013). Online purchases are predicted to follow comparable tendencies. In light of these results, the following theory is put forth:

*H1: "Performance Expectancy" has a positive impact on online buying intention.*

*Effort Expectancy (EE)*: A quantitative measure of how well technology is used is called effort expectancy. According to Venkatesh et al. (2003), the effort required to comprehend and operate the IT equipment has a direct impact on the purchase intention. This is especially true during the technological discovery phase. Hansen (2006) asserts that consumers' main motivation for using an online purchasing platform is to maximize comfort by reducing the amount of physical and mental effort required to complete a job that is not available from other networks. So, we formulate a hypothesis as follows:

*H2: "Effort Expectancy" has a positive impact on online buying intention.*

*Social Influence (SI)*: According to Venkatesh et al. (2003), social influence is the user's sense that other people think they should utilize the technology. Because purchasing something online is a conscious choice, the internalization impacts of this variable should have an impact on the purpose. Social norms were discovered to have a considerable impact on customers' purchase intentions when evaluated in other voluntary circumstances where the target technology offers privacy, comfort, and confidence, such as internet shopping (Tai & Ku, 2013). Therefore, a hypothesis is created as follows:

*H3: "Social Influence" has a positive impact on online buying intentions.*

*Facilitating Condition (FC)*: The degree to which a person thinks they will always have external help while adopting new technology is known as the facilitating condition (Venkatesh et al., 2003). This aspect evaluates how well-versed the user is and how helpful the technology providers are. Particularly, online purchasing has

comparable knowledge and resource needs that enable buyers to get beyond restrictions like non-tactile purchasing, no direct interaction with merchants, and online payment methods (Song & Zahedi, 2005). Thus, we speculate that:

*H4: "Facilitating Condition" has a positive impact on online buying intention.*

*Stimulus–Online Platform Characteristics (ST):* Stimulus is often associated with physical cues in the stores—the environment described by the Bitner (1992) service framework. However, because of its usefulness in differentiating store environments and e-commerce platforms, the Bitner services framework is often referred to as the online services landscape (Harris & Goode, 2010), which is related to environmental stimuli (website design and features) that emerge during an online shopping experience to increase customer purchase intention. So, a hypothesis is proposed:

*H5: "Stimulus" has a positive impact on online buying intentions.*

*Scarcity (SC):* Scarcity (limited-quantity and limited-time offers) has long been used as a marketing tactic to encourage customers' consumption. Compared to the offline setting, the online display of scarcity messages is more visible and up-to-date regarding product availability and promotion periods. Hence, these signs will reduce consumers' buying hesitation but promote their purchasing pressure, emphasizing their loss aversion and expected regret of not making such purchases (Kahneman & Tversky, 2013).

Song et al. (2015), considering the effect of the scarcity message, revealed that this promotion strategy positively affected the product's attractiveness, which prompted adjustments in customers' normative assessments and contributed to their immediate and on-the-spot product acquisitions. Furthermore, due to their vulnerability to impulse purchases (Faber & O'guinn, 1992), compulsive buyers are highly susceptible to a desire to spend and, as a result, have a weaker defense mechanism against actual purchases in response to the nature of limited offers.

*H6: "Scarcity" has a positive impact on online buying intentions.*

*H7: "Scarcity" has a positive impact on online impulsive buying behavior.*

*H8: "Scarcity" has a positive impact on online compulsive buying behavior.*

*Online Buying Intention (BI):* Buying Intention represents a shift between social and personal-related variables and personal use of technology (Venkatesh et al., 2003). It is the closest determinant of technology usage in various UTAUT studies conducted in diverse technological environments such as mobile Internet (Viswanath Venkatesh, Thong, & Xu, 2012) and so on. They provide evidence that stronger customer intentions will induce a higher determination to shop online.

In terms of impulsive online shopping, since consumers can buy goods from websites and 24/24 retail services are available with IT development, their impulsive purchases are undoubtedly expected to increase (Dittmar, Long, & Bond, 2007). When intending to buy online, consumers have less time to consider, and impulse purchases will be out of habit instead of necessity due to the greater attraction of stimuli from advertising or promotions for a short time or in limited quantities (Kahneman & Tversky, 2013).

For online compulsive buying behavior, attractive points of online shopping, such as high accessibility and engaging online visibility, are believed to increase such behavior. Furthermore, as many people constantly want to avoid being reminded of normative criteria (Larose, 2001), they tend to shop alone at night through online channels. Therefore, online shopping may be the best way to purchase compulsively in an isolated shopping environment.

*H9: "Online Buying Intention" has a positive impact on online impulsive buying behavior.*

*H10: "Online Buying Intention" has a positive impact on online compulsive behavior.*

*Online Impulsive Buying Behavior (IB):* Historically, consumer impulse and compulsive buying behaviors were studied separately (Flight, Rountree, & Beatty, 2012). However, d'Astous (1990) argued that, while both behaviors are at the top of the consumer behavior chain, impulsive purchasing is placed in a lower position than compulsive. In other words, the former will lead to the latter in consumer behavior. Subsequently, several researchers examined

this special relationship and came up with similar conclusions (Moon, Farooq, & Kiran, 2017; Shoham, Gavish, & Segev, 2015).

H11: “Online Impulsive Buying Behavior” has a positive impact on online compulsive buying behavior.

### 3.2. Research Model

Figure 1 represents the proposed theoretical model. In this study, the authors use a combination of two original theoretical models, the Unified Theory of Acceptance and Use of Technology (UTAUT) built and developed by Venkatesh et al. (2003) and SOR (Stimulus-Organism-Response) model of Mehrabian and Russell (1974), as the basis for building a research model for the article. From the above theoretical bases, the research team proposes an expected model: The model to study the factors affecting spontaneous or continuous online shopping behavior in Vietnam includes: 6 independent variables and 3 dependent variables.

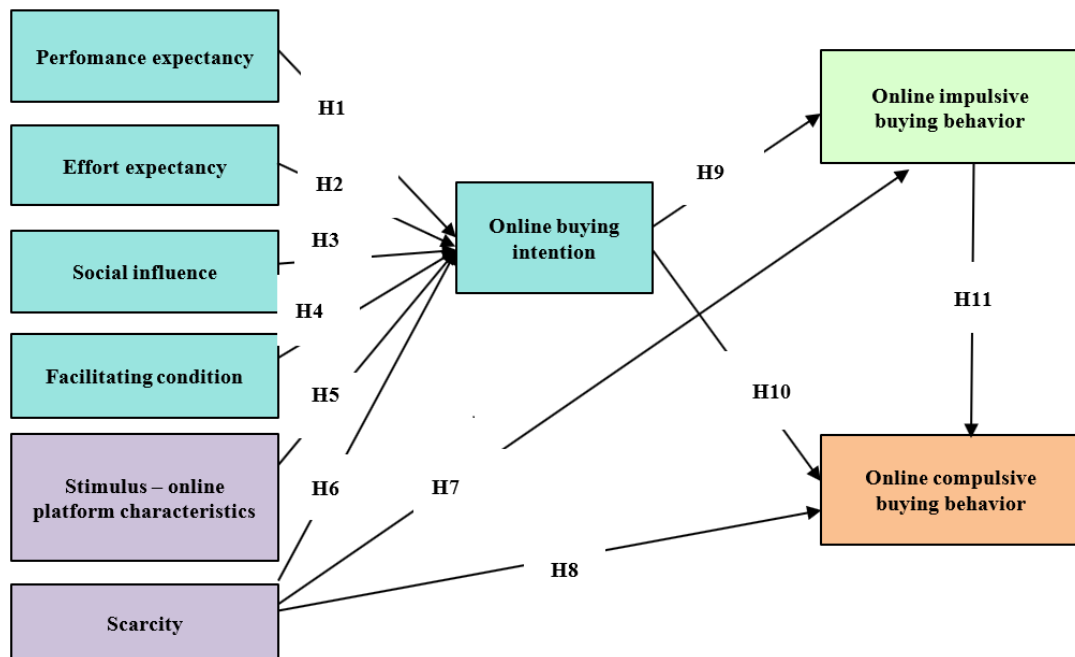


Figure 1. Proposed theoretical model.

### 3.3. Measures and Estimation Approach

The survey questionnaire was built on previous studies. In which the scales for Performance Expectancy (PE), Effort Expectancy (EE), Social Influence (SI), Facilitating Conditions (FC), and Behavioral Intention (IN) are referenced from Venkatesh et al. (2003), Yang (2010), and Celik (2016). Stimulus (ST) and Scarcity (SC) are adopted from Mo, Li, and Fan (2015) and Chen and Yao (2018). All questions were constructed on a 5-point Likert scale, from 1 (strongly disagree) to 5 (strongly agree).

In this study, the assumed causal relationships in the theoretical model were estimated using structural equation modelling (SEM). This is because SEM can look at complex models in a way that multiple regression can't (Lowry & Gaskin, 2014). Specifically, PLS-SEM was used because (1) most of the items used in this study were nonnormally distributed; (2) the UTAUT–SOR integrated model has not been tested in earlier literature; and (3) the proposed model was complex. The two-stage procedure presented by Henseler, Ringle, and Sinkovics (2009) was applied, which first evaluates the reliability and validity of all variables in the measurement model and then assesses the structural model.

## 4. RESULTS AND DISCUSSION

### 4.1. Findings

Reliability and validity analyses for each variable of the measurement model were conducted. The results are shown in Table 1. Hair, Black, Babin, and Anderson (2010) suggested that reliable constructs must have their Composite Reliability (CR) and Cronbach's Alpha exceed 0.70, while all the items included in the constructs must have loadings greater than 0.70. Thus, three items—SI1, FC3, and IB1—were dropped.

**Table 1.** Quality criterion (AVE, composite reliability, cronbach's alpha) and factor loadings.

Variables	Items	Loading	AVE	Composite reliability	Cronbach's alpha	T-statistics
Performance expectancy (PE)	PE1	0.85	0.69	0.90	0.85	65.622
	PE2	0.83				50.570
	PE3	0.83				40.903
	PE4	0.81				48.883
Effort expectancy (EE)	EE1	0.82	0.71	0.92	0.90	52.340
	EE2	0.85				53.100
	EE3	0.86				63.006
	EE4	0.84				50.374
	EE5	0.82				43.864
Social influence (SI)	SI2	0.79	0.62	0.87	0.80	30.877
	SI3	0.78				26.092
	SI4	0.83				46.873
	SI5	0.74				23.594
Facilitating conditions (FC)	FC1	0.84	0.70	0.88	0.79	52.527
	FC2	0.84				43.340
	FC4	0.83				38.996
Stimulus (ST)	ST1	0.76	0.62	0.89	0.85	35.977
	ST2	0.82				49.321
	ST3	0.81				47.647
	ST4	0.79				39.524
	ST5	0.76				33.323
Scarcity (SC)	SC1	0.81	0.68	0.89	0.84	36.200
	SC2	0.84				46.874
	SC3	0.83				50.913
	SC4	0.82				36.885
Behavioral intention (BI)	BI1	0.87	0.72	0.93	0.90	54.480
	BI2	0.89				95.533
	BI3	0.87				70.992
	BI4	0.88				86.663
	BI5	0.71				24.438
Online impulsive buying (IB)	IB2	0.82	0.68	0.91	0.88	54.009
	IB3	0.81				44.261
	IB4	0.85				60.315
	IB5	0.81				49.854
	IB6	0.83				55.326
	IB6	0.83				55.326
Online compulsive buying (CB)	CB1	0.79	0.66	0.92	0.90	49.317
	CB2	0.84				60.948
	CB3	0.81				41.871
	CB4	0.80				42.661
	CB5	0.82				44.265
	CB6	0.82				54.003

The average variance extracted (AVE), which should be greater than 0.5, was used to assess the convergent validity of variables (Henseler et al., 2009). Furthermore, the variables' discriminant validity was assessed using the Heterotrait-Monotrait Ratio of Correlation (HTMT). According to Henseler, Ringle, and Sarstedt (2015), for the variables' discriminant validity, the average correlations of the indicators across constructs should be less than 0.90. The results in Tables 2 and 3 show that all of the measurement model's reliability and validity tests are met, and the



constructs may be used to evaluate the structural model. Figure 2 shows the results of PLS estimation for the structural model. Hypotheses related to customers' online buying intentions (H1, H2, H3, H4, H5) were accepted, while H6 was rejected. Hypotheses H7 and H9 were validated, and 23.1% of the variation in online impulsive buying could be explained using this model. The model also explained 51.5% of the variation in online compulsive buying behavior and confirmed two hypothesis, H8 and H11, whereas hypothesis H10 regarding the impact of online buying intention on online compulsive buying behavior was rejected at the 5% significance level.

Table 2. Heterotrait – Monotrait Criterion.

	BI	EE	FC	CB	IB	PE	SC	SI	ST
BI	1								
EE	0.62	1							
FC	0.68	0.77	1						
CB	0.24	0.09	0.09	1					
IB	0.43	0.19	0.17	0.78	1				
PE	0.68	0.71	0.72	0.11	0.23	1			
SC	0.23	0.12	0.13	0.46	0.42	0.17	1		
SI	0.48	0.40	0.30	0.36	0.43	0.47	0.37	1	
ST	0.61	0.63	0.68	0.24	0.38	0.61	0.34	0.53	1

Table 3. Structural equation model results.

Hypothesis	Relationship	Coefficients	p-value	R <sup>2</sup>	Q <sup>2</sup>	f <sup>2</sup>	Hypothesis testing
H1	PE → BI	0.252	0.000	0.495	0.348	0.06	+
H2	EE → BI	0.129	0.017			0.02	+
H3	SI → BI	0.145	0.000			0.03	+
H4	FC → BI	0.233	0.000			0.05	+
H5	ST → BI	0.125	0.013			0.02	+
H6	SC → BI	0.050	0.166			0.00	-
H7	SC → IB	0.303	0.000	0.231	0.155	0.13	+
H9	BI → IB	0.317	0.000			0.12	+
H8	SC → CB	0.172	0.000	0.515	0.337	0.05	+
H10	BI → CB	-0.064	0.077			0.01	-
H11	IB → CB	0.659	0.000			0.69	+

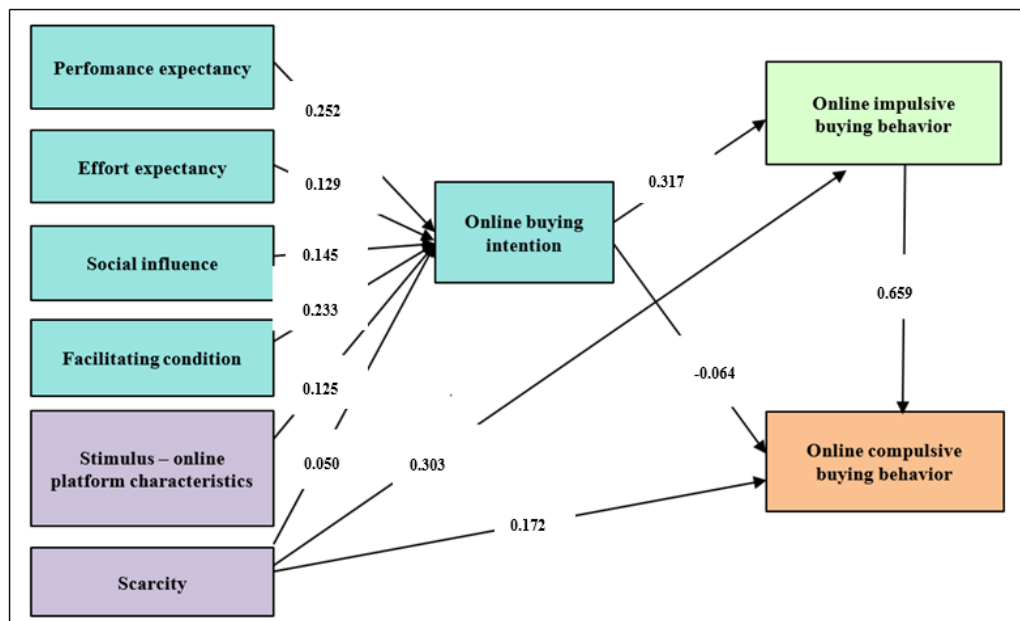


Figure 2. Research results.

Among the constructs that could significantly explain consumers' online buying intention, Performance Expectancy was the most meaningful one ( $\beta = 0.252$ ,  $p = 0.00$ ), followed by Facilitating Conditions ( $\beta = 0.233$ ,  $p = 0.00$ ); Social Influence ( $\beta = 0.145$ ,  $p = 0.00$ ); Effort Expectancy ( $\beta = 0.129$ ,  $p = 0.02$ ); and Stimulus ( $\beta = 0.125$ ,  $p = 0.01$ ). Although no significant effect on behavioral intention was found, Scarcity did exert its influence on online impulsive ( $\beta = 0.303$ ,  $p = 0.00$ ) and online compulsive buying behavior ( $\beta = 0.172$ ,  $p = 0.00$ ). Furthermore, while Online Buying Intention imposed considerable impacts on online impulsive buying behavior ( $\beta = 0.317$ ,  $p = 0.00$ ), it did not affect online compulsive buying ( $\beta = -0.064$ ,  $p = 0.08$ ) at 5% significance level. Notably, Online Impulsive Buying had a significant impact on online compulsive behavior ( $\beta = 0.636$ ,  $p = 0.00$ ).

#### 4.2. Discussion

One of the top priorities of every country is to understand people's consumption behavior and adopt appropriate policies to simultaneously develop the economy and improve their citizens' living standards. Combined with current technological developments, the substantially growing trend of impulsive and compulsive purchases on online platforms is undoubtedly worth further in-depth understanding. Using an integrated model of UTAUT and SOR, this study aims to complete findings regarding the factors influencing these two abnormal behaviors in Vietnam. To specify, CB-SEM analysis revealed that (1) Performance Expectancy, Effort Expectancy, Social Influence, Facilitating Condition and Stimulus significantly affected Online Buying Intentions; (2) Scarcity posed positive impact on Online Impulsive and Compulsive Buying Behaviors; (3) Online Buying Intention was a key determinant of Online Impulsive Buying Behavior; and (4) Online Impulsive Buying behavior was confirmed to positively affect Online Compulsive Buying Behavior.

Specifically, the result uncovered that Performance Expectancy significantly and positively impacts consumers' intention to buy online ( $\beta = 0.252$ ,  $p \leq 0.05$ ). This result is consistent with previous research (Alwahaishi & Snásel, 2013; Sin et al., 2013) showing that the higher the technology's value, the more likely consumers are to use it. In other words, technological convenience will stimulate productivity as well as save time and effort, thus boosting online buying intentions.

Effort Expectancy was found to pose a significant effect on online buying intention ( $\beta = 0.129$ ,  $p \leq 0.05$ ). This result aligns with previous research (Gefen, Karahanna, & Straub, 2003; Venkatesh & Davis, 2000). Notably, Hansen (2006) stated that one of the main motivations for customers to use online shopping channels is to minimize physical and mental effort to complete shopping tasks. Therefore, the less effort customers put into buying online, the more they are willing to purchase.

Social Influence was also found to have a significant and positive impact on online buying intention ( $\beta = 0.145$ ,  $p \leq 0.05$ ). These results are consistent with the previous research conducted by Venkatesh et al. (2003). This shows that social entities such as family and friends are of great value in forming an individual's online shopping intention. When the important ones begin to adopt technology to shop online, an individual will tend to do the same.

The results revealed that Facilitating Condition positively influenced online buying intention ( $\beta = 0.233$ ,  $p \leq 0.05$ ). This is similar to the results of Song and Zahedi (2005). This proves that the technology providers' willingness to provide support really has a significant impact on consumers' buying intentions. At the same time, the linkage between web-based commerce activities and web-customer behaviors still needs further investigation.

Stimulus was found to play a vital role in explaining consumer's intention to buy online ( $\beta = 0.125$ ,  $p \leq 0.05$ ). This result has been verified by Hopkins, Grove, Raymond, and LaForge (2009) and Williams and Dargel (2004). It means that aiming at increasing a customer's shopping intention and the online service displays that involve environmental stimuli, such as website features and design, will appear to be helpful when there are ongoing online shopping experiences.

Surprisingly, the research results exhibited no significant relationship between Scarcity and online buying intention, which provides a similar conclusion as Kahneman and Tversky (2013). Consequently, most Vietnamese

consumers find themselves not urged to buy under purchasing pressure regarding the limited-quantity or limited-time offer of discounts. Therefore, e-marketers must be thorough when establishing new marketing strategies to encourage customers' online consumption.

Nonetheless, Scarcity exerted a direct and positive influence on online impulsive ( $\beta = 0.303$ ,  $p \leq 0.05$ ) and online compulsive buying behavior ( $\beta = 0.172$ ,  $p \leq 0.05$ ). The results were consistent with prior research showing that scarcity directly elicits impulsive and compulsive buying behavior (Chatvijit, 2012); (Kukar-Kinney, Scheinbaum, & Schaefer, 2016). In addition, according to Faber and O'guinn (1992), due to the existence of limited offers, compulsive shoppers are especially vulnerable to the temptation to buy. To conclude, the quantity and time restrictions offered can make consumers, who have no prior intention of buying, execute impulsive and compulsive online purchases.

The research results also indicated that online buying intention imposed a substantial effect on online impulsive buying behavior ( $\beta = 0.317$ ,  $p \leq 0.05$ ), which was verified by the results of a previous study (Kahneman & Tversky, 2013). However, the authors found that online buying intention had no significant relationship with online compulsive buying behavior. Certain purchasing conditions are thought to increase the likelihood of purchasing online, and consumers are more likely to adhere to their natural impulsive tendencies in such circumstances.

Our research also confirmed a crucial implication: online impulsive buying behavior significantly impacted online compulsive buying behavior ( $\beta = 0.659$ ,  $p \leq 0.05$ ). This finding was consistent with that of D'Astous, Maltais, and Roberge (1990); Shoham et al. (2015); and Moon et al. (2017). Due to a lack of self-control and self-regulatory responses, consumers who constantly and regularly practice online impulsive buying behavior will likely manifest online compulsive buying behavior.

## 5. CONCLUSION AND IMPLICATIONS

Based on the UTAUT (Venkatesh et al., 2003) and SOR model (Mehrabian & Russell, 1974), the paper developed and tested the theoretical framework of relationships between six independent constructs, including four original UTAUT's: Performance Expectancy (PE), Effort Expectancy (EE), Social Influence (SI), Facilitating Conditions (FC), one SOR's-Stimulus (ST), and a newly introduced variable Scarcity (SC). The results revealed that PE, EE, SI, FC, and ST together share positive relationships with the Online Buying Intention (BI), which are similar to the results of Escobar-Rodríguez and Carvajal-Trujillo (2014) and Celik (2016). On the other hand, although unable to recognize the relationship between SC and BI, the authors discovered that this new variable did directly and significantly influence both Online Impulsive (IB) and Online Compulsive Buying (CB) Behaviors. Moreover, IB was confirmed to be a decisive determinant in explaining CB. With these results, the research team has made theoretical contributions to the research topic of online shopping-related behaviors.

One of the research limitations is the sample's age distribution, as about 86% of the respondents were between the ages of 15-30, which means the final research results might not be entirely valid for other age brackets. Thus, further research is expected to overcome this limitation and improve findings concerning the effect of age on abnormal purchasing behaviors.

According to a previous study (Ashraf, Thongpapanl, & Auh, 2014), cultural differences across countries have been found to have substantial impacts on individual expectations and adoptions of online shopping. Moreover, since the respondents in this research are mainly students and office staff in Hanoi, the above conclusions can be partial. Future research should engage other regions with different cultural factors to conceptualize and determine if there is a cultural difference in terms of these buying behaviors.

The study has recognized the issue of poor response while conducting the survey. Individuals with compulsive buying behavior, on the other hand, would be potentially more likely to reject inclusion in the research because impulse control problems are frequently stigmatized and repulsed. As a result, the measured incidence of compulsive purchasing is likely to underestimate the true prevalence of this behavior among responders.

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