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Article

Retailers' behavioral intention and behavior in adopting e-commerce platforms

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Abstract: This study conducts research on retailers' behavioral intentions and behavior in adopting e-commerce platforms (ECPs) and uses the unified theory of acceptance and use of technology (UTAUT2) model as well as add other factors such as Personalization Platform, Seamless Interaction. The findings show that Effort Expectancy, Social Influence, Hedonic Motivation, Retailers' Capacity, Integration Strategies have a positive impact on retailers' behavioral intention of adopting ECPs and Performance Expectancy has a negative impact on retailers' behavioral intention of adopting ECPs. At the same time, Behavioral Intention, Facilitating Conditions have a positive impact on retailers' behavior adopting ECPs and Seamless Interaction has a negative impact on retailers' behavior adopting ECPs. With important implications, these findings are proposed to relevant parties, helping retailers and ECPs suppliers identify factors affecting retailers' behavioral intention and behavior in adopting ECPs in Vietnam.

Keywords: behavioral intention; e-commerce; effort expectation; performance expectation; UTAUT2

1. Introduction

An e-commerce platform is a software application to create a space for online buying and selling. For business people, ECPs have main functions such as location, interface for customer contact, display and sales; manage product categories, orders, inventory, customer data, and customer feedback; deploy and manage all promotion operations and marketing programs (Ha Van Duong, 2022). ECPs are software systems or tools that allow businesses to build and manage online stores. They provide important features and functionality to carry out e-commerce operations, including product management, ordering, payments, shipping, customer management, and marketing (Optimizely, 2023).

The development of ECPs has brought a lot of convenience to consumers in Vietnam. From there, it will change consumers' behavioral intentions and the ECPs usage behavior of Vietnamese retailers. Vietnamese retailers' behavioral intention and usage of ECPs are spending more time interacting with customers on ECPS and more customers are willing to place orders of greater value and quantity. ECPs allow for a quick and convenient commercial buying and selling process, contributing to the growing development of the Vietnamese e-commerce market (Ha, 2023).

E-commerce plays an important role in creating online sales channels for businesses and providing convenience for consumers when shopping online. Therefore, studying the intentions and behaviors of retailers in applying ECPs is

extremely necessary, contributing to promoting E-commerce development in general and helping retailers and ECPs providers identify factors that influence retailers' behavioral intention and behavior in adopting ECPs to further enhance the supply of goods through ECPs in Vietnam. From identifying the factors that influence retailers' behavioral intentions and behavior in adopting ECPs, this study used research methods including qualitative research to answer the survey questions and quantitative research to process data using statistical methods, run data processing software to meet research aims.

In Vietnam, the e-commerce sector continues to grow strongly with a growth rate of over 25% and a scale of over 25 billion USD. This growth rate can be maintained in the three-year period 2023–2025. However, the scale of e-commerce in Vietnam is still small, accounting for about 8.5% of total retail sales of goods. In contrast with the rapid growth in scale, e-commerce in Vietnam is unsustainable. The main factors of unsustainability are the digital divide, digital human resources and the environment (VECOM, 2024). Therefore, research into retailers' behavioral intentions and behavior in adopting ECPs will contribute to promoting the growing development of the Vietnamese e-commerce market.

Up to now, there have been many studies on behavioral intentions and behavior in adopting ECPs from the perspective of general consumers or from the perspective of young consumers, generation Z, etc. and research in different scopes such as a locality, a city, a country or region, etc. This study conducts research on behavioral intentions and behavior in adopting ECPs from the perspective of retailers, showing differences compared to many previous studies. At the same time, this study is conducted within the scope of Vietnam, which is one of the countries promoting the development of e-commerce and this is a business model that is becoming increasingly popular and a trend in Vietnam.

2. Literature and hypotheses

2.1. Behavioral intention, behavior in adopting ECPs and the UTAUT2 model

ECPs have attracted retailers with promising benefits. ECPs can help retailers transform their business models from traditional markets to electronic markets, which enable online transactions, buy and sell faster with a variety of products and services. Behavioral intention and usage behavior of ECPs are described in retailers' business plans and strategies. Many retailers have embraced this technological trend by developing online stores. These stores provide greater customer accessibility, provide convenience, are more efficient, and generate more revenue (Ha, 2023). In a rapidly evolving technological environment, ECPs can be considered an emerging core requirement in the contemporary business world. This is one of the platforms to conduct electronic transactions and share relevant information about products or services, contributing to promoting the behavioral intention and usage behavior of ECPs of retailers. With the availability of the high-speed Internet and advances in smart mobile devices, ECPs have increased their adoption rate significantly (Zhang et al., 2012). According to Aqeel et al. (2020), retailers are more interested in linking

with ECPs than setting up their own websites, and this activity affects their ECPs' usage behavior. Since then, many sellers are adopting digital platforms and e-commerce technology to reduce business risks and meet consumer needs (Kumar and Ayedee, 2021).

There are many studies related to retailers' behavioral intention and behavior using of ECPs that have applied the UTAUT model. The study of Venkantesh et al. (2012) combined eight theories of technology acceptance to develop the UTAUT model to become the UTAUT2 model, explaining users' acceptance and use of technology platforms. Dutta and Shivani (2020) used a modified UTAUT2 technology acceptance model to determine the intention and use of ECPs by micro and small women entrepreneurs. The study of Misra et al. (2022) on factors impacting behavioural intentions to adopt the electronic marketplace of small businesses integrated the UTAUT model with additional constructs from Protection Motivation Theory to assess small sellers' readiness in the adoption of electronic market platforms. This study inherits the variables of the UTAUT2 model and adds variables to explain the acceptance and use of ECPs by retailers with moderating variables and dependent variables as shown in **Figure 1**.

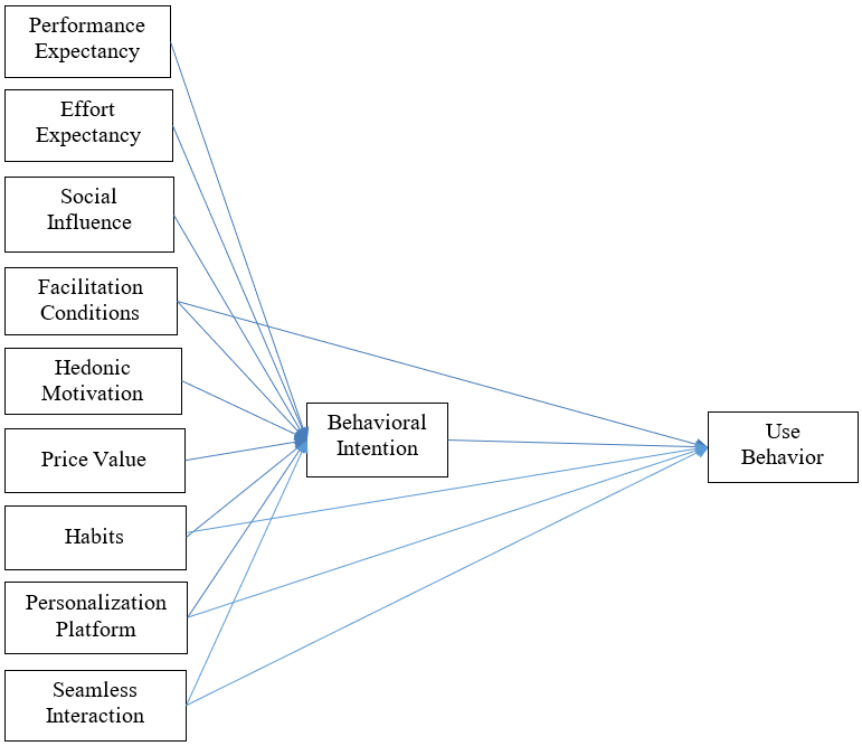

Figure 1. The proposed model.

Source: Venkatesh et al. (2012) and author's supplement.

2.2. Hypothesis development

Inheriting the UTAUT2 model and adding other elements such as Personalization Platform, Seamless Interaction to propose a research model on retailers' behavioral intention and behavior in adopting ECPs in Vietnam as shown in **Figure 1**. Moderating variables and dependent variables of the model are as follows.

Performance Expectation (PE) refers to the extent to which users believe that

using system technology will help them achieve performance in their work (Venkatesh et al., 2012). In the context of ECPs, this is the extent to which the availability of the ECPs will improve sellers' performance or the extent to which users believe that using ECPs will help them achieve performance in their job (Dutta and Shivani, 2020). Many studies show a significant relationship between performance expectancy and ECPs adoption. According to Wang et al. (2008), increased performance expectancy is associated with a stronger behavioral intention in adopting ECPs. Wijaya and Handriyantini (2020) found that performance expectancy had a positive impact on ECPs adoption. Therefore, this study proposes:

H1: Performance expectancy positively influences Vietnamese retailers' behavioral intention in adopting ECPs.

Effort Expectancy (EE) refers to the degree of facility associated and ease in users' adopting the technologies (Venkatesh et al., 2012). The study of Agarwal (2020) indicated that effort expectancy has a significant positive influence on retailers' behavioral intention in adopting technology platforms. Effort expectancy is a factor that has a significant positive influence on behavioral intention to use ECPs (Mansur et al., 2019). On ECPs, effort expectancy can promote quick commodity transactions, significantly improve online transaction quality in the use of ECPs, and effort expectancy has a positive impact on behavioral intention to use. ECPs (Ha, 2023). Hence, this study proposes:

H2: Effort expectancy positively influences Vietnamese retailers' behavioral intention in adopting ECPs.

Social Influence (SI) refers to the degree to which users perceive those important others such as relatives, friends and colleagues believe them should use the new technology platforms (Venkatesh et al., 2012). Social influence has been important as this encourages sellers to use ECPs (Oliveira et al., 2016). Encouragement from friends and partners has played an important role in increasing sellers' awareness and willingness to adopt technology (Alshehri et al., 2019). The study of Li and Li (2020) found that social influence has a significant positive influence on retailers' behavioral intention in adopting technology platforms. Thus, the following hypothesis is posited:

H3: Social influence positively influences Vietnamese retailers' behavioral intention in adopting ECPs.

Facilitating conditions (FC) refer to the extent to which users believe the availability and adequacy of resources and support for them to use technology (Venkatesh et al., 2012). In applying ECPs, facilitating conditions is an important factor that encourages sellers to use ECPS services (Rogers et al., 2014). Facilitating conditions are important in that they influence the adoption of ECPs (Subawa et al., 2019). Facilitating conditions is a factor in assessing whether retailers have the necessary personal knowledge and resources to use technology platforms, and Ariffin et al. (2020) demonstrated that facilitating conditions is a predictor directly of retailers' behavioral intention to adopt technology platforms. Hence, the following two hypotheses are proposed:

Hypothesis 4a (H4a): Facilitating conditions positively influence Vietnamese retailers' behavioral intention in adopting ECPs.

Hypothesis 4b (H4b): Facilitating conditions positively influence Vietnamese retailers' behavior of using ECPs.

Hedonic motivation (HM) refers to the user's enjoyment or pleasure derived from the use of new technology. This is an important factor in forming users' behavioral intention to adopt technology (Venkatesh et al., 2012). In the context of ECPs, this is the extent to which the fun and pleasure are derived from using ECPs (Dutta and Shivani, 2020). Behavioral intention to transact retail goods on ECPs is significantly influenced by hedonic motivation (Kamalia et al., 2022). Besides, hedonic motivation has a significant positive impact on behavioral intention to use ECPs for retail goods transactions (Ha, 2023). Thus, this study proposes:

Hypothesis 5 (H5). Hedonic motivation positively influences Vietnamese retailers' behavioral intention in adopting ECPs.

Price value (PV) refers to the user's ability to compare the costs incurred with the benefits of using the technology, and it is also the user's perception of the trade-off between costs and benefits received from the application of technology (Venkatesh et al., 2012). In the context of ECPs, price value refers to retailers' cognitive tradeoff between the perceived benefits of ECPs and the monetary cost of online retail. Retail merchandise transactions tend to be online through ECPs and value is the main concern due to paying less and getting fair prices along with other benefits (Singh et al., 2017). Behavioral intention to transact retail goods through ECPs is significantly influenced by price value (Hungilo and Setyohadi, 2020), and price value significantly affects behavioral intention to use ECPs when transacting the retailing of goods (Ezennia and Marimuthu, 2022). The study of Dutta and Shivani (2020) also found that price value has a significant positive influence on retailers' behavioral intention in adopting ECPs. So, the following hypothesis is posited:

Hypothesis 6 (H6). Price value positively influences Vietnamese retailers' behavioral intention in adopting ECPs.

Habits (HA) refer to the usual behavior or tendency that users have settled into and tend to automatically use technology (Venkatesh et al., 2012). According to Yoga and Triami (2021), behavior intentions in adopting ECPs are significantly influenced by habits. ECPs usage habits in transacting the retailing of goods have a positive impact on behavioral intentions, and these habits have a positive impact on usage behavior in transacting the retailing of goods (Wulandari et al., 2022). The study of Setiyani et al. (2023) also found that behavioral intentions in adopting ECPs are significantly influenced by habits. Thus, two hypotheses are proposed:

Hypothesis 7a (H7a): Habits positively influence Vietnamese retailers' behavioral intention in adopting ECPs.

Hypothesis 7b (H7b): Habits positively influence Vietnamese retailers' behavior in adopting ECPs.

Personalization Platform (PP) is a tool that uses smart technologies to provide uers with a personalized experience (Sanan, 2024). According to Sanan (2024), the personalization platform has outstanding features, such as smart search, behavioral analysis, triggered emails, advanced segmentation, campaign automation, real-time segmentation and activation. These are important features that are helping to push retailers to increase the use of personalization platforms in merchandise transactions. Dougherty (2024) believes that e-commerce personalization platforms have many benefits, such as increased engagement and conversion rates, cultivating customer loyalty and retention, and elevating customer satisfaction. In particular, the Enhanced

Personalization Strategy in ECPs leverages the latest technology and social media trends to enhance brands and drive stronger customer connections. From there, it has a positive impact on many e-commerce businesses using personalization features for their ECPs. Hence, the two following hypothesis are posited:

Hypothesis 8a (H8a): Personalization platform influences Vietnamese retailers' behavioral intention in adopting ECPs.

Hypothesis 8b (H8b): Personalization platform positively influences Vietnamese retailers' behavior in adopting ECPs.

Seamless Interaction (SE) refers to the smooth and uninterrupted flow of communication and interaction across various digital touchpoints between a business and its customers. Seamless interaction involves integrating communication, design, and technology strategies to create a users' cohesive, relevant and harmonious experience (Gulbrandsen, 2024). According to Gulbrandsen (2024), seamless interactions rely heavily on integrating communication strategies, design, technology and data analytics. Businesses must consolidate data from various touchpoints to better understand the behavior of transactions. Therefore, seamless interactions influence users' behavioral intentions, preferences, and expectations during the strategic deployment of advanced technologies. Seamless interactions involving transitions between channels, ensuring a consistent and consistent experience throughout the goods transaction process will influence merchants' behavioral intention to use technology platforms (Piotrowicz and Cuthbertson, 2014). Seamless interactions across various digital touchpoints influence transaction usage behavior across technology platforms (Juaneda-Ayensa et al., 2016). Seamless interactions between online and offline transaction channels positively impact behavioral intentions, increasing commoditized transactions across retail platforms (Trenz et al., 2020). Therefore, there are two hypotheses:

Hypothesis 9a (H9a): Seamless interaction influences Vietnamese retailers' behavioral intention in adopting ECPs.

Hypothesis 9b (H9b): Seamless interaction positively influences Vietnamese retailers' behavior in adopting ECPs.

Behavioral intention (BI) refers to a user's desire to engage in a particular behavior and willingness to adopt a technology in the future. At the same time, this is one of the factors that determine users' technology usage behavior (Venkatesh et al., 2012). Abubakar and Ahmad (2013) also argue that behavioral intention is an important variable affecting behavior studied in technology adoption models. According to Ha and Nguyen (2022), behavioral intention to use ECPs is significantly correlated with ECPs usage behavior. Besides, behavioral intention has a positive impact on the behavior of using ECPs (Ha, 2023). This study proposes:

Hypothesis 10 (H10): Behavioral Intention positively influences Vietnamese retailers' behavior in adopting (Use Behavior is abbreviated as UB) ECPs.

3. Research methodology

3.1. Research design

The goal of this study was explained to all participants and through preliminary research with 20 respondents, this study also completed the observed variables in the

research model.

Qualitative research is applied to answer the research questions with explanatory data, demonstrating the results that this study found are the retailers' behavioral intentions and behaviors in adopting ECPs in Vietnam.

Quantitative research applied to quantitative analysis is to collect data from the market collected through surveys, process these data through statistical methods, run data processing software such as SPSS 25.0, AMOS 24.0 and provide results of Cronbach's Alpha reliability coefficient and EFA, CFA, SEM analysis to meet the research objectives.

3.2. Sample and data

The study uses primary data collected from the responses of retailers using ECPs in Vietnam through a questionnaire with each section representing each construct. There are five options in the questionnaire scale, from 1 (Strongly disagree) to 5 (Strongly agree). With purposive sampling and sampling performed according to Hair et al. (2014), the minimum sample size to use EFA is 50, preferably 100 or more. The ratio of observed samples to an analyzed variable is 5:1 or 10:1. Therefore, the sample size in this study is 520 (10 × 52 = 520). Therefore, the number of 652 samples collected from the interviewed retailers ensures a sufficient sample size for this study.

4. Research results

4.1. Demographic statistics

There were 700 questionnaires distributed and 652 questionnaires collected. The results of analysis using SPSS 25.0 software are as follow **Table 1**:

Table 1. Demographic profile.

Item	Optional	Frequency	Percentage
Number of years in operation	1–5 years.	345	52.91
	6–10 years.	126	19.33
	11–15 years.	112	17.18
	15 years and up.	69	10.58
Operating capital	0.5–5 million USD.	326	50.00
	6–10 million USD.	257	39.42
	Over 10 million USD.	69	10.58
Revenue	1–5 million USD.	286	43.87
	6–10 million USD.	192	29.45
	6–15 million USD.	102	15.64
	Over 15 million USD.	72	11.04
Retail sector	Consumer goods.	216	33.13
	Goods for production.	162	24.85
	Food products.	239	36.66
	Other goods.	35	5.36

Source: Primary data, processed in 2024.

The number of years of operation of a retail establishment in the period from 1 to 5 years is 52.91%, accounting for the highest rate. The operating capital of retailers ranging from 0.5 to 5 million USD has the highest ratio of 50%. Retail revenue accounts for the highest proportion of 43.87%, ranging from 1 to 5 million USD. Among the retail industries, the food retail industry accounts for 36.66%, which is the highest proportion, consumer goods account for 33.13%, which is the second proportion, goods for production and other goods account for the proportion 24.85 and 5.36% respectively.

4.2. Cronbach's alpha reliability analysis

The scale has a Cronbach's Alpha coefficient ≥ 0.60 which is accepted for reliability and variables with a total correlation coefficient less than 0.3 will be eliminated (Hulin et al., 2001). Results of variables with an alpha coefficient greater than 0.6 and a total correlation coefficient greater than 0.3. Therefore, all scales qualify for EFA, as can be seen in **Table 2**.

Table 2. Independent, moderating and dependent variables in the research.

No.	Code	Observed variables	Corrected Item-Total Correlation
	PE	**Cronbach's alpha = 0.873**	
1	PE1	Using ECPs makes it easy for us to sell online anywhere.	0.721
2	PE2	Using ECPs helps us understand online selling easily.	0.681
3	PE3	Using ECPs delivers on us expectations of online selling.	0.599
4	PE4	Using ECPs allows us to sell online faster.	0.579
5	PE5	Using ECPs is suitable for online retail business and beneficial in our retail business.	0.619
6	PE6	Using ECP makes us more comfortable selling online.	0.777
7	PE7	Using ECP makes it more convenient for us to sell online 24/24.	0.606
	EE	**Cronbach's alpha = 0.828**	
8	EE1	Using ECPs helps us speed up our online sales transactions.	0.688
9	EE2	Using ECPs helps us sell many high-quality products.	0.530
10	EE3	Using ECPs helps us sell online more safely.	0.632
11	EE4	Using ECPs helps us understand online sales information.	0.582
12	EE5	Using ECPs helps us have enough information to sell online.	0.594
13	EE6	Using ECPs helps us increase efficiency in online selling.	0.556
	SI	**Cronbach's alpha = 0.840**	
14	SI1	Our behavior of using ECPs in online sales is influenced by many influencers.	0.674
15	SI2	Many influencers have advised us to use ECPs for online sales.	0.607
16	SI3	People familiar with me have advised us to use ECPs for online sales.	0.600
17	SI4	Our online sales ECPs in usage behavior is influenced by colleagues and friends.	0.592
18	SI5	We received support for using ECPs for online sales from our family.	0.580
19	SI6	We have received support for using ECPs to sell online from many people in our neighborhood.	0.668

Table 2. (*Continued*).

No.	Code	Observed variables	Corrected Item-Total Correlation
	FC	**Cronbach's alpha = 0.830**	
20	FC1	We are authorized to control the use of ECPs for online sales.	0.679
21	FC2	We are knowledgeable about using ECPs for online sales.	0.583
22	FC3	We are guaranteed trading conditions when using ECPs.	0.608
23	FC4	We have all the necessary resources to sell online on ECPs.	0.589
24	FC5	Our sales are safe when we use ECPs.	0.600
25	FC6	We have smart devices and support from ECPs suppliers for online sales.	0.551
	HM	**Cronbach's alpha = 0.816**	
26	HM1	We feel comfortable selling online via ECPs.	0.539
27	HM2	We feel lucky to sell online through ECPs.	0.524
28	HM3	We find it interesting to sell online via ECPs.	0.668
29	HM4	We feel happy selling online through ECPs.	0.579
30	HM5	We feel excited about selling online through ECPs.	0.728
	PV	**Cronbach's alpha = 0.779**	
31	PV1	Using ECPs helps us save time selling online.	0.560
32	PV2	Using ECPs helps us save a lot of online sales costs.	0.633
33	PV3	Using ECP helps us pay for the appropriate internet subscription costs.	0.667
34	PV4	Using ECPs helps us avoid having to pay transaction check fees when selling online.	0.414
35	PV5	Using ECP helps us avoid any additional costs for online sales.	0.516
	HA	**Cronbach's alpha = 0.680**	
36	HA1	We usually sell online through ECPs.	0.592
37	HA2	We can sell online ourselves through ECPs.	0.381
38	HA3	We have a habit of selling online through ECPs.	0.502
39	HA4	When selling online, we also receive transaction instructions from ECPs suppliers.	0.507
40	HA5	When no one simulates, We can still use ECPs to sell online.	0.510
	PU	**Cronbach's alpha = 0.661**	
41	PP1	I believe that ECPs always ensure personalized customer experience.	0.411
42	PP2	I find that ECPs always ensures interaction with customer actions.	0.434
43	PP3	I believe that ECPs always collect complete customer information to provide appropriate products.	0.368
44	PP4	I believe that ECPs always collect sufficient customer information to promote other products more appropriately.	0.466
45	PP5	I believe that ECPs contribute to attracting new customers.	0.458
46	PP6	I believe that ECPs contribute to increasing sales revenue.	0.438

Table 2. (*Continued*).

No.	Code	Observed variables	Corrected Item-Total Correlation
	SE	**Cronbach's alpha = 0.664**	
47	SE1	I believe that ECPs always ensure the fluid and uninterrupted flow of communication.	0.408
48	SE2	I believe that ECPS always ensure interaction between retailers and their customers across various digital touchpoints.	0.429
49	SE3	I believe that ECPS always ensure the integration of technology, design and communication strategies to create user experiences.	0.374
50	SE4	I believe that ECP always ensures interaction and transactions with customers and potential customers in marketing and sales activities.	0.464
51	SE5	I believe ECP always ensures a seamless, personalized experience that builds trust and encourages customers to return.	0.464
52	SE6	I believe that ECPS always ensure the integration of technology, design and communication strategies to create user experiences.	0.449
	BI	**Cronbach's alpha = 0.760**	
53	BI1	Our online sales will continue via ECPs.	0.594
54	BI2	When we need to sell goods, we will use ECPs.	0.578
55	BI3	We would recommend others to sell online via ECPs.	0.604
	UB	Cronbach's alpha = 0.700	
56	UB1	When we have trouble using ECP, certain people and communities help us sell online.	0.484
57	UB2	We may not need help from others when selling online via e-ECPs.	0.530
58	UB3	Although we have never used ECPs, we could use it for online sales.	0.534

Source: Venkatesh et al. (2012) and the authors' suggestions.

4.3. Exploratory factor analysis

The analysis results show that EFA is consistent with current data when KMO (Kaiser-Meyer-Olkin) and Bartlett's tests for independent variables are 0.807 (greater than 0.5). Besides, Sig = 0.000 < 0.05 shows the observed variables are correlated with each other in the population. With varimax rotation (absolute value below: 0.3), it showed the 12th factor has the lowest Eigenvalues of 1.127 > 1 and 52 observed variables formed into 12 groups, as can be seen in **Table 3**.

Table 3. Exploratory factor analysis for independent variables

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings	
	Total	**% of Variance**	**Cumulative %**	**Total**	**% of Variance**	**Cumulative %**	**Total**	**Cumulative %**
1	6.519	12.537	12.537	6.519	12.537	12.537	4.084	7.854
2	3.569	6.864	19.401	3.569	6.864	19.401	3.492	14.569
3	3.336	6.416	25.817	3.336	6.416	25.817	3.321	20.956
4	2.900	5.577	31.394	2.900	5.577	31.394	3.317	27.336
5	2.561	4.925	36.319	2.561	4.925	36.319	2.990	33.086
6	2.551	4.906	41.225	2.551	4.906	41.225	2.752	38.377
7	2.438	4.688	45.913	2.438	4.688	45.913	2.326	42.851
8	2.082	4.003	49.916	2.082	4.003	49.916	2.262	47.202
9	1.658	3.188	53.104	1.658	3.188	53.104	2.140	51.318

Table 3. (*Continued*).

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings	
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	Cumulative %
10	1.293	2.486	55.590	1.293	2.486	55.590	1.514	54.229
11	1.162	2.235	57.825	1.162	2.235	57.825	1.500	57.114
12	1.127	2.167	59.992	1.127	2.167	59.992	1.497	59.992
13	0.952	1.830	61.822					

Extraction Method: Principal Component Analysis.
Source: The author's calculation from SPSS 25.0.

With varimax rotation (absolute value below: 0.3) for the independent variables, it shows that the factor loading coefficients are all greater than 0.5 and 3 new factors are found to be separated from the observed variables HA1 and HA2; PP5 and PP6; SE5 and SE6. The variables HA1 and HA2 have characteristics related to Retailers' Capacity (RC). The RC hypothesis is similar to the HA hypothesis. Variables PP5 and PP6 are associated with attracting new customers through ECPs. Therefore, this new factor is named Attracting customers (AC). The AC hypothesis is similar to the PP hypothesis. Variables SE5 and SE6 are associated with the integration of technology, design, and communication strategies. Therefore, this new factor is named Integration Strategies (IS). The IS hypothesis is similar to the SE hypothesis, as can be seen in **Table 4**.

Table 4. Rotated component matrix for independent variables.

Variables	Component											
	1	2	3	4	5	6	7	8	9	10	11	12
PE6	0.834											
PE1	0.782											
PE7	0.727											
PE3	0.718											
PE2	0.712											
PE5	0.698											
PE4	0.636											
SI6		0.776										
SI1		0.760										
SI3		0.715										
SI2		0.687										
SI4		0.684										
SI5		0.651										
FC1			0.791									
FC3			0.742									
FC5			0.729									
FC2			0.709									
FC4			0.707									

Table 4. (*Continued*).

Variables	Component											
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
FC6			0.683									
EE1				0.801								
EE3				0.769								
EE5				0.714								
EE4				0.708								
EE6				0.702								
EE2				0.628								
HM5					0.853							
HM3					0.808							
HM4					0.731							
HM1					0.698							
HM2					0.681							
PV3						0.817						
PV2						0.779						
PV1						0.732						
PV5						0.688						
PV4						0.591						
SE2							0.783					
SE4							0.749					
SE3							0.733					
SE1							0.624					
PP2								0.777				
PP3								0.748				
PP4								0.737				
PP1								0.645				
HA5									0.839			
HA4									0.807			
HA3									0.755			
PP6										0.819		
PP5										0.807		
SE6											0.762	
SE5											0.708	
HA1												0.817
HA2												0.772

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.
Source: The author's calculation from SPSS 25.0

The analysis results show that EFA is consistent with current data when KMO (and Bartlett's tests for dependent variables are 0.679 (greater than 0.5). Besides, Sig = 0.000 < 0.05 shows the observed variables are correlated with each other in the

population. With varimax rotation (absolute value below: 0.3), it showed the 2nd factor has the lowest Eigenvalues of 1.571 > 1 and 6 observed variables formed into 2 groups, as can be seen in **Table 5**.

With varimax rotation (absolute value below: 0.3) for the dependent variables, it shows that the factor loading coefficients are all greater than 0.5 and 2 new factors are found to be separated from BI and UB, as can be seen in **Table 6**.

Table 5. Exploratory factor analysis for dependent variables.

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings	
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	Cumulative %
1	2.341	39.018	39.018	2.341	39.018	39.018	2.034	33.901
2	1.571	26.177	65.194	1.571	26.177	65.194	1.878	65.194
3	0.654	10.899	76.093					

Extraction Method: Principal Component Analysis.
Source: The author's calculation from SPSS 25.0.

Table 6. Rotated component matrix for dependent variables.

Variable	Component	
	1	2
BI3	0.832	
BI1	0.815	
BI2	0.808	
UB3		0.808
UB2		0.787
UB1		0.764

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
Source: The author's calculation from SPSS 25.0.

4.4. Confirmatory factor analysis

The KMO coefficient result is 0.804 (greater than 0.5), which shows that CFA is suitable for real data and Sig = 0.000 < 0.05 slso shows the observed variables are correlated with each other in the population. With promax rotation (absolute value below: 0.3) and the number of observations is 652 as well as linking e1 and e6, e4 and e5, e4 and e6, e9 and e12, e10 and e12, e16 and e19, e20 and e21, e21 and e24, e22 and e24, e26 and e30, e27 and e28, e28and e30, e29 and e30, e34 and e35, e38 and e39 to correct for covariance show that this model has a Chi-square = 2466.554, with 1492 degrees of freedom (df); Chi-square/df = 1.653 < 3 with p value = 0.000 (Hair et al. (2010) found that CMIN/df values of 2 or less are acceptable, CMIN/df values of 5 or less are acceptable). The other indicators such as CFI = 0.922; TLI = 0.913; GFI = 0.887 (Byrne and Campbell (1999) showed the GFI value must be ≥ 0.80. A CFI value of 0.8 or higher is acceptable for a good model fit (CFA ranges from 0 to 1). Kline (2011) found the most used fit index (GFI, AGFI, NFI, NNFI, CFI and IFI) should be ≥ 0.85 in CFA and SEM methods. Shadfar and Malekmohammadi (2013) showed that TLI ≥ 0.85 is a good value level and > 0.8 is an average value level); RMSEA = 0.032 < 0.06 (Hu and Bentler (1999) indicated RMSEA values of 0.06 or

less are good, RMSEA values of 0.08 or less are acceptable); PCLOSE = 1.000 > 0.05. (According to Hu and Bentler (1999) *P* value of Close fit (PCLOSE) of 0.05 or more is good, a PCLOSE value of 0.01 or more is acceptable). The results show that all indicators meet the requirements and the model is completely consistent with the market data in this study. Because the standardized, unstandardized coefficients are greater than 0.5 and the total variance values are greater than 0.5 as can be seen in **Figure 2**.

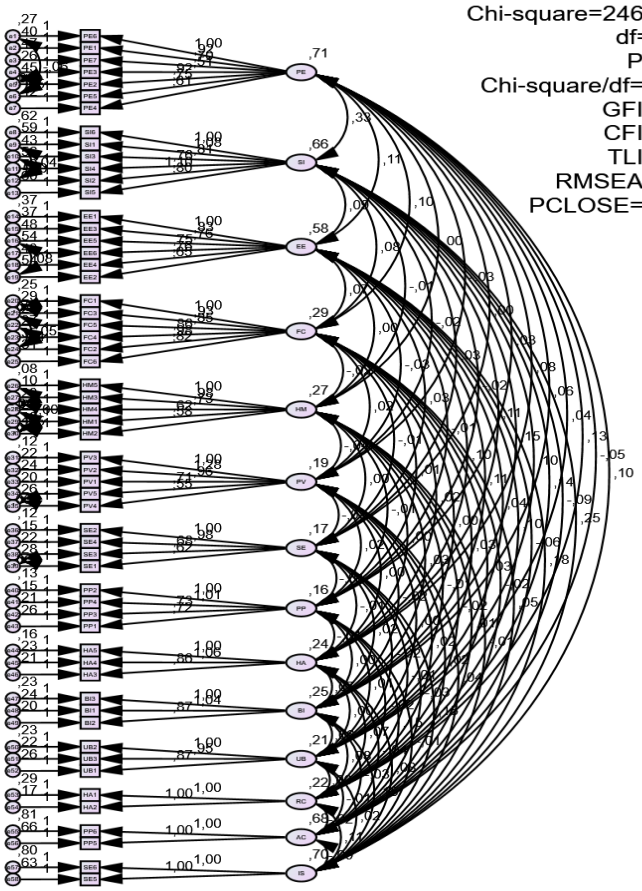

Figure 2. Confirmatory factor analysis.

Source: The author's calculation from AMOS 24.0.

4.5. Structural equation modeling

The analysis results show that Chi-square = 2,490,688; df = 1497; $p = 0.000$; Chi-square/df = 1.664; CFI = 0.920; TLI = 0.912; GFI = 0.886; RMSEA = 0.032; PCLOSE = 1.000. The results of SEM analysis show the fit of the research model and this model achieves compatibility with the market data as can be shown in **Figure 3**.

With 95% confidence standard, the sig of PE on BI is 0.047 < 0.05, the sig of EE on BI is 0.004 < 0.05, the sig of SI on BI is 0.000 < 0.05, the sig of HM on BI is 0.003 < 0.05, sig of RC on BI is 0.002 < 0.05, sig of IS on BI is 0.011 < 0.05 show that the variables PE, EE, SI, HM, RC and IS have effect on BI. At the same time, the sig of BI on UB is 0.000 < 0.05, the sig of FC on UB is 0.007 < 0.05, the sig of SE on UB is 0.008 < 0.05 show that the variables UB, BI, and SE have effect on UB. The remaining variables are not significant with sig > 0.05, as can be shown in **Table 7**. There are

five variables that have a positive effect on BI: EE, SI, HM, RC and IS. The variable PE has a negative effect on BI. There are two variables that have a positive effect on UB, respectively, such as: BI and FC. The variable SE has a negative effect on UB, as can be shown in **Table 7**.

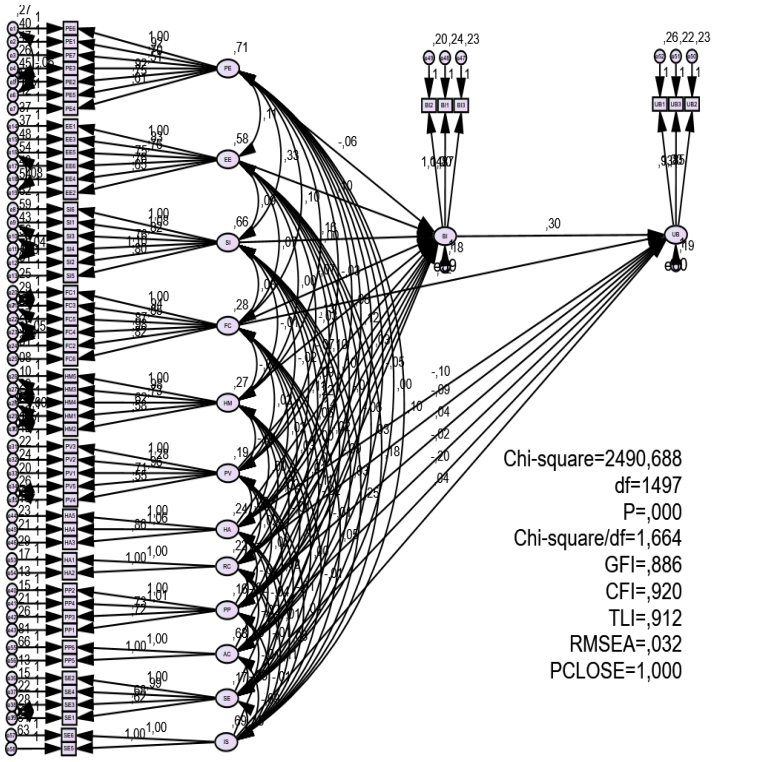

Figure 3. Structural equation modeling.

Source: The author's calculation from AMOS 24.0.

Table 7. Regression weights and standardized regression weights.

			Unstandardized Coefficients				**Standardized Coefficients**
			Estimate	**S.E.**	**C.R.**	***P***	**Estimate**
BI	←	PE	−0.064	0.032	−10.983	0.047	−0.107
BI	←	EE	0.099	0.035	20.849	0.004	0.149
BI	←	SI	0.155	0.038	40.085	***	0.250
BI	←	FC	−0.069	0.046	−10.513	0.130	−0.073
BI	←	HM	0.128	0.043	20.982	0.003	0.132
BI	←	PV	−0.073	0.057	−10.289	0.197	−0.064
BI	←	HA	0.086	0.053	10.619	0.105	0.085
BI	←	RC	0.217	0.069	30.119	0.002	0.202
BI	←	PP	0.062	0.073	0.853	0.394	0.050
BI	←	AC	−0.002	0.038	−0.059	0.953	−0.004
BI	←	SE	−0.005	0.074	−0.069	0.945	−0.004
BI	←	IS	0.115	0.045	20.530	0.011	0.190
UB	←	BI	0.304	0.061	40.946	***	0.328
UB	←	FC	0.124	0.046	20.716	0.007	0.142
UB	←	HA	−0.104	0.055	−10.895	0.058	−0.110

Table 7. (*Continued*).

			Unstandardized Coefficients				Standardized Coefficients
			Estimate	**S.E.**	**C.R.**	***P***	**Estimate**
UB	←	RC	−0.089	0.067	−10.337	0.181	−0.090
UB	←	PP	0.037	0.073	0.507	0.612	0.032
UB	←	AC	−0.022	0.039	−0.563	0.573	−0.039
UB	←	SE	−0.203	0.077	−20.656	0.008	−0.180
UB	←	IS	0.036	0.044	0.814	0.416	0.064

Source: Author's calculation from AMOS 24.0.

With repeated sampling of $N = 1000$ and implementation of Bootstrap method was used to estimate summary statistics and gave reliable results with C.R < 1.96 deducing p-value > 5% as can be shown in **Table 8**.

Table 8. Bootstrap method on SEM.

Parameter			**SE**	**SE-SE**	**Mean**	**Bias**	**SE-Bias**	**C.R = Bias/SE-Bias**
BI	←	PE	0.038	0.001	−0.067	−0.001	0.001	−1.0
BI	←	EE	0.042	0.001	0.097	−0.001	0.001	−1.0
BI	←	SI	0.048	0.001	0.158	0.002	0.002	1.0
BI	←	FC	0.052	0.001	−0.068	0.001	0.002	0.5
BI	←	HM	0.047	0.001	0.128	0.000	0.001	0
BI	←	PV	0.062	0.001	−0.070	0.003	0.002	1.5
BI	←	HA	0.054	0.001	0.089	0.002	0.002	1.0
BI	←	RC	0.082	0.002	0.221	0.005	0.003	1.6
BI	←	PP	0.082	0.002	0.067	0.005	0.003	1.6
BI	←	AC	0.039	0.001	−0.003	−0.001	0.001	−1.0
BI	←	SE	0.082	0.002	−0.007	−0.002	0.003	0.6
BI	←	IS	0.049	0.001	0.119	0.003	0.002	1.5
UB	←	BI	0.070	0.002	0.305	0.001	0.002	0.5
UB	←	FC	0.050	0.001	0.127	0.003	0.002	1.5
UB	←	HA	0.060	0.001	−0.107	−0.003	0.002	−1.5
UB	←	RC	0.077	0.002	−0.085	0.002	0.002	1.0
UB	←	PP	0.084	0.002	0.041	0.004	0.003	1.3
UB	←	AC	0.044	0.001	−0.024	−0.001	0.001	−1.0
UB	←	SE	0.088	0.002	−0.206	−0.003	0.003	−1.0
UB	←	IS	0.055	0.001	0.037	0.001	0.002	0.5

Source: The authors' calculation from AMOS 24.0.

5. Discussions results

5.1. Factors affecting behavioral intention in adopting ECPs

Effort expectancy positively influences Vietnamese retailers' behavioral intention in adopting ECPs. This finding is related and consistent with the studies of Venkatesh et al. (2012), Agarwal (2020), Mansur et al. (2019) and Ha (2023). This

result shows that Vietnamese retailers' clear understanding of using ECPs, can use the features of ECPs to serve their online retail business. Thereby, effort expectancy can significantly improve goods retail transaction quality and positively impact Vietnamese retailers' behavioral intention in adopting ECPs.

Social influence positively influences Vietnamese retailers' behavioral intention in adopting ECPs. This result is compatible with the findings of Venkatesh et al. (2012), Oliveira et al. (2016), Alshehri et al. (2019), Li and Li (2020). This result shows that Vietnamese retailers are very interested in the recommendations and incentives of influencer such as friends, family, colleagues, etc. in forming their behavioral intention in adopting EPCs.

Hedonic motivation positively influences Vietnamese retailers' behavioral intention in adopting ECPs. These findings coincide with the study results conducted by Venkatesh et al. (2012), Dutta and Shivani (2020), Kamalia et al. (2022), Ha (2023). This indicates that Vietnamese retailers feel comfortable, lucky and happy when adopting ECPs, which can increase retail sales, motivating Vietnamese retailers to increase their behavioral intention in adopting ECPs.

Retailers' capacity positively influences Vietnamese retailers' behavioral intention in adopting ECPs. This finding is relevant and consistent with the proposed hypothesis. Retailers' capacity for using ECPs, such as understanding the ECPs' landscape, selecting appropriate ECPs, understanding management, operations, transaction security compliance on ECPs, etc. Once again, it shows that the Vietnamese retailers' capacity contributes to raising awareness of the behavioral intention of using ECPs and contributes to meeting their online retail needs.

Integration strategies positively influence Vietnamese retailers' behavioral intention in adopting ECPs. This finding is also relevant and consistent with the proposed hypothesis. Integration strategies are associated with the integration of technology, design, and communication strategies. Therefore, Vietnamese retailers, in addition to integrating online channels, must also integrate technology, design and communication strategies to meet online retail needs. From there, it contributes to promoting their behavioral intention to increasingly use ECPs.

Performance expectation negatively influences Vietnamese retailers' behavioral intention in adopting ECPs. This finding is not consistent with the study of Venkatesh et al. (2012), Dutta and Shivani (2020), Wang et al. (2008), Wijaya and Handriyantini (2020). This result is because ECPs regulations in Vietnam still need to be supplemented and completed; e-commerce logistics infrastructure has not kept up with market growth. From the qualitative research results, it also shows that the majority of retailers in Vietnam have joined the retail market within the last 5 years, so they do not have much experience and distribution networks remain one of the major challenges to the use of ECPs by Vietnamese retailers. In the other hand, information technology infrastructure plays a very important role in socio-economic development, serving as a foundation for developing applications in all aspects of social life, contributing to promoting innovation and modernization of economic sectors. However, reality shows that the information technology infrastructure system in Vietnam is still limited. Telecommunications and information technology infrastructure development is still slow, sometimes affecting the use of ECPs to sell online faster, as well as more conveniently in selling online 24/24.

5.2. Factors affecting use behavioral in adopting ECPs

Behavioral intention positively influences Vietnamese retailers' behavior of using ECPs. This result is compatible with the findings of Venkatesh et al. (2012), Abubakar and Ahmad (2013), Ha and Nguyen (2022), Ha (2023). This describes appropriate Vietnamese retailers' behavioral intentions or business plans that play an important role in the behavior of using ECPs. The more a retailer's behavioral intention is towards using ECP, the more likely their ECP use behavior will increase.

Favorable conditions positively influence Vietnamese retailers' behavior of using ECPs. This finding is consistent with the study of Subawa et al. (2019) and Ariffin et al. (2020). This shows that Vietnamese retailers with enough resources and necessary conditions will have a lot of knowledge and technical resources to receive appropriate ECPs, helping to manage and operate ECPs effectively. Besides, data connection and other favorable conditions will also contribute to motivating Vietnamese retailers to increase the behavior of using ECPs for their online retail business.

Seamless interaction negatively influences Vietnamese retailers' behavior of using ECPs. This result is not compatible with the study of Juaneda-Ayensa et al. (2016), Gulbrandsen (2024). This shows that Vietnamese retailers have not really ensured the integration of communication, design and technology strategies to create a cohesive, relevant and harmonious user experience. Qualitative research results also show that the majority of retailers in Vietnam joined the retail market within the last 5 years and mainly provide consumer goods, have not expanded the supply of goods for production, food products, other goods, so they don't have much experience, have not yet consolidated data from various touchpoints to better understand transaction behavior, nor have they switched between channels, ensuring a consistent and consistent experience throughout their online retail business. In addition, the information technology infrastructure system in Vietnam is still limited, the development of telecommunications and information technology infrastructure is still slow, sometimes causing communication flow to be interrupted. ECPs do not yet ensure interaction between retailers and their customers across various digital touchpoints.

6. Conclusions and recommendations

The UTAUT2 model is inherited and supplemented with the Personalization Platform and Seamless Interaction to establish this research model. The findings show that Effort Expectancy, Social Influence, Hedonic Motivation, Retailers' Capacity, Integration Strategies have a positive impact on retailers' behavioral intention of adopting ECPs and Performance Expectancy has a negative impact on retailers' behavioral intention of adopting ECPs. At the same time, Behavioral Intention, Facilitating Conditions have a positive impact on retailers' behavior adopting ECPs and Seamless Interaction has a negative impact on retailers' behavior adopting ECPs. With important implications, these findings are proposed to relevant parties, helping retailers and ECPs suppliers identify factors affecting retailers' behavioral intention and behavior in adopting ECPs in Vietnam as follow.

Firstly, Vietnamese retailers continue to develop a clear understanding of the use of ECPs. From there, they can use and exploit all the features of ECPs to serve their

online retail business. At the same time, they promote the business promotion role of ECPs to help reduce operating costs, collect detailed information about customer data, reach new customers, optimize sales activities, and diversify information, information for product selection, etc. Thereby, their effort expectancy can significantly improve goods retail transaction quality and positively impact their behavioral intention in adopting ECPs.

Secondly, social influence positively influences Vietnamese retailers' behavioral intention in adopting ECPs. Therefore, ECPs suppliers need to promote brand building and promote supplier image, implement marketing campaigns, professional customer care, etc. Investing in after-sales activities will play an important role in attracting more new retailers from positive reviews from influencers. In addition, retailers that have used ECPs will spread applications from ECPs on their website so that many other retailers know and use ECPs more widely.

Thirdly, hedonic motivation positively influences Vietnamese retailers' behavioral intention in adopting ECPs. Hence, ECPs suppliers and managers should pay attention to the impact of hedonic motivation on retailers' behavioral intention in adopting ECPs. Suppliers need to perfect their information technology infrastructure, technology platform services supporting e-commerce transactions, secure online payment systems, marketing services, online marketing communications and other services to meet all retailer needs, helping retailers feel comfortable and happy when using ECPs. Suppliers should also clearly understand retailers' needs to provide timely retailer care, thereby increasing retailers' behavioral intention in adopting ECPs more and more.

Fourthly, retailers' capacity positively influences Vietnamese retailers' behavioral intention in adopting ECPs. Thus, retailers should increase their capacity in adopting, management, operations; ensure information quality, transaction quality, and sales application quality; ensure safety and information security, transaction security compliance on ECPs, etc. Besides, retailers need to regularly update new features of ECPs as well as make additional investments to meet the needs of the online retail business.

Fifthly, integration strategies positively influence Vietnamese retailers' behavioral intention in adopting ECPs. Therefore, Vietnamese retailers, in addition to integrating online channels, must also integrate technology, design and communication strategies to meet online retail needs. At the same time, retailers need to integrate marketing activities in parallel with public relations, corporate communications, media relations and other popular means to convey online marketing and online retail.

Sixthly, performance expectation negatively influences Vietnamese retailers' behavioral intention in adopting ECPs. Hence, ECPs regulations in Vietnam still need to be supplemented and completed; complete infrastructure, such as the retailer's internal infrastructure, transaction infrastructure; enhance the ease of use of ECPs so that the online retail process is as simple as possible; ensure e-commerce logistics infrastructure keeps up with market growth; ensure the distribution and retail network is compatible with the use of ECP by Vietnamese retailers.

Seventhly, behavioral intention positively influences Vietnamese retailers' behavior of using ECPs. Thus, ECPs providers enhance retailers' ECPs usage behavior

by providing accurate and complete information about ECPs such as the characteristics of ECPs that retailers need to know, online business models, the huge amount of information from many different sources, globally applied technical standards, the retailer's customer reach, the interactivity between actors in the market, the level of personalization customization, payment speed, transaction speed, product and price customization, social and digital communication advantages, etc. At the same time, ECPs suppliers should improve and develop highly compatible ECPs with friendly interfaces, helping retailers find products that best suit their needs and increase the behavior of using ECPs of retailers.

Eighthly, favorable conditions positively influence Vietnamese retailers' behavior of using ECPs. In order for Vietnamese retailers to continue to take advantage of having enough resources and necessary conditions for the appropriate use of ECPs as well as to help retailers manage and operate ECPs effectively in Vietnam, it is necessary to build an e-commerce ecosystem and digital economy, ensuring a favorable environment for e-commerce development, supporting retailers to apply science, technology and techniques in their operations. At the same time, retailers need to increase investment in infrastructure to serve e-commerce operations, focus on developing information technology human resources, regularly accessing and updating modern technology platforms and advanced services for e-commerce.

Ninthly, seamless interaction negatively influences Vietnamese retailers' behavior of using ECPs. Therefore, Vietnamese retailers need to proactively connect and engage with potential customers and customers at multiple touchpoints and ensure an integrated experience between them. On the boat, a seamless, personalized experience helps build trust and encourage customers to return, ensuring the integration of communication, design and technology strategies to create a cohesive user experience cohesive, consistent and harmonious. At the same time, Vietnamese retailers aggregate data from various touchpoints to better understand transaction behavior as well as conversions between channels to ensure a consistent experience in their online retail business.

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