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Article

A study on retailers' behavioral intention and behavior of using the omnichannel ecommerce solution

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Abstract: Research on retailers' behavioral intention and behavior of using the omnichannel ecommerce solution (OES) used the Unified Theory of Acceptance and Use of Technology (UTAUT2) model and supplemented the other factors such as seamless supply, omnichannel integration. Research concerns about behavioral intention and behavior of using OES as this is a global trend; OES has become one of the top priorities for businesses to thrive in the rapidly changing market and retain customers; increasingly high standards are being set for digital experiences. Therefore, retailers must quickly adapt to new trends for sustainable development to keep up with the transformation and increase the use of OES. The results show that effort expectation, social influence, hedonic motive, retailers' capacity, seamlessly connecting have a positive impact on retailers' behavioral intention and behavior of using OES. Behavioral intention and favorable conditions have a positive impact on behavior of using OES. Meantime, omnichannel integration have a negative impact on behavior of using OES in Vietnam. This research helps managers and OES providers to develop their skills and expertise, and the study results may prove diagnostically useful to the retailers' behavioral intention and behavior of using OES.

Keywords: behavioral intention; behavior; omnichannel ecommerce solution; use behavior

1. Introduction

An omnichannel ecommerce solution refers to a retailer's ability to meet customers' needs for products and services across multiple channels. At the same time, this solution will integrate different customer interaction channels and bring seamless customer experience (Global Payments, 2019). An omnichannel ecommerce solution helps realize omnichannel capabilities, meeting customer needs by linking retailers' e-commerce sites and physical stores to enhance customer loyalty (Harada, 2019). This solution focuses on providing a seamless customer experience, connecting across multiple channels as well as creating experiences at every online touchpoint such as the website or in stores (Marchand, 2024).

Ha (2023) shows that the Vietnamese e-commerce market includes omnichannel ecommerce solutions and omnichannel marketing according to the trend of personalizing customers' shopping experiences. Behavioral intention and behavior of using OES by Vietnamese retailers to support the sales process. This is a fully integrated approach to the e-commerce transaction process, providing customers with an experience across all channels that aligns with the growth of e-commerce and customers' online shopping preferences.

Therefore, research on retailers' behavioral intention and behavior of using OES

will contribute to promoting diversifying business methods brings a customers' seamless shopping experience while facilitating sales and increasing retailers' sales.

2. Literature and hypotheses

2.1. Behavioral intention, behavior of using OES and the UTAUT2 model

Modern consumers have a need for an increase in many shopping channels and retailers have started to integrate various channels such as mobile, and social media and retail stores to meet the need to choose the customer's preferred shopping channel. Thereby, retailers all strive to increase their sales through the intention of using OES more and more to increase profits (Rigby, 2011). Retailers attract more customers using OES to strengthen customer relationships. More and more retailers are implementing omnichannel strategies to develop different customer segments through OES (Melero et al., 2016). The advancement of modern technology has led to more diverse shopping channels and thus many retailers have adopted omnichannel retailing. High quality omnichannel integration can help retailers maintain favorable relationships with customers and drive retailers' behavioral intention and behavior of using OES (Huang et al., 2019). The advance of the Internet and the new distribution channels prompted retailers to develop omnichannel strategies. Retailers deploy a customer-centric strategy, integrate all available channels, increase convenience and create a seamless shopping experience for the customer. Retailers design strategies that optimize the creation of added value through the use behavior of OES (De la Fuente, 2019). Retailers provide customers with a seamless shopping experience, so they need to change their behavior and trends in using OES to increase online sales (Bayram and Cesaret, 2020).

Omnichannel is a retailer's strategy in which retailer engage customers via multiple physical and digital touchpoints (Intel, 2024). Information technology that uses media in creating customer experiences and applies the UTAUT2 model to understand what variables influence the acceptance and use of technology during product transactions within retailers' omnichannel scope (Juaneda-Ayensa et al., 2016). Using omnichannel retailing is a strategy that has been used by retailers in business activities. Retailers identify the segmentation of consumers based on different characteristics to apply the right strategy for each segment. Applying the UTAUT2 model to consider behavioral determinants in omnichannel retailing deployment and identify the customer segment in retailers' omnichannel implementation (Gunawan et al., 2020). The study of Ha (2023) also adopted the UTAUT2 model and showed that the e-commerce market includes OES and retailers' behavioral intentions to create a seamless shopping experience that increases convenience among customers via omnichanal transactions.

The main points of omnichannel include a consistent browsing and shopping experience; full visibility of inventory; flexible delivery and return options; events that tie online and offline; a personal, complete view of the customer.

Venkantesh et al. (2012) developed the UTAUT model, which became the UTAUT2 model through combining eight theories of technology acceptance. The UTAUT2 model as can be seen in **Figure 1** includes dependent and moderator variables to explain adoption of technologies, including OES and other factors should

be included to verify the applicability of the technology. Especially in the current context of OES application development, studying retailers' behavioral intentions and behavior of using OES is very urgent.

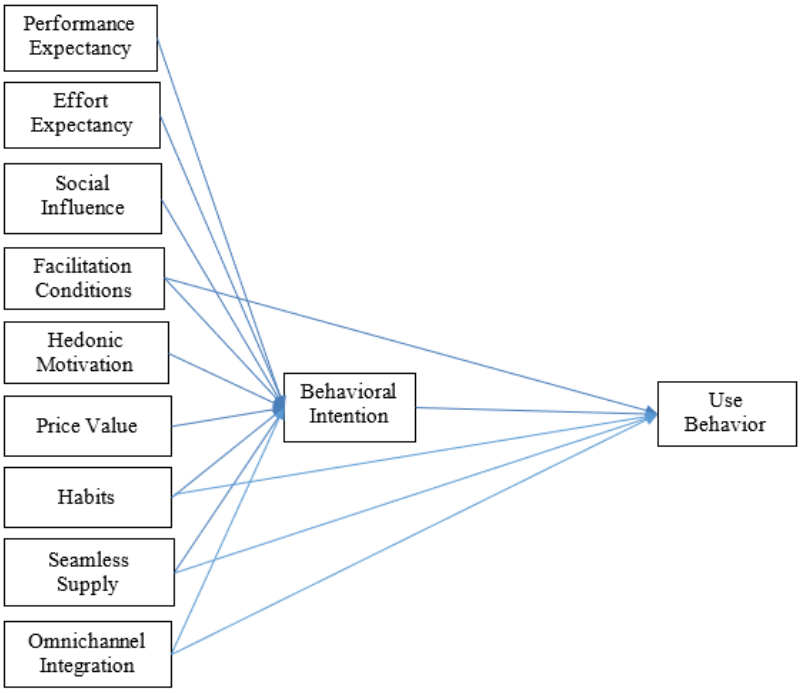

Figure 1. The proposed model.

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

2.2. Hypothesis development

Based on the theoretical basis of the UTAUT2 model, based on the actual use of OES by retailers and adding other factors such as seamless supply, omnichannel integration, the study proposes a research model on the intention and behavior of using OES of Vietnamese retailers as can be seen in **Figure 1**.

Performance Expectancy is defined as the extent to which customers believe that adopting a particular technology will improve their job performance (Venkatesh et al., 2012). The results of experimental research by Dhiman et al. (2020) showed that performance expectancy influenced behavioral intentions to use new technology platforms in goods transactions. Abed (2020) also suggested that performance expectancy influenced retailers' behavioral intention to use OES. The empirical result of Jayasingh et al. (2022) shows the influence of performance expectancy on behavioral intentions of omnichannel goods transactions. Li et al. (2022) argue that in the context of OES, performance expectancy is defined as the level of omnichannel usage, and performance expectancy is one of the factors that strongly influence behavioral intention. The following hypothesis H1 has been proposed:

Hypothesis 1 (H1). Performance expectancy positively affects retailers' behavioral intention of using OES in Vietnam.

Effort Expectancy (EE) is defined as the level of convenience associated with consumers' learning and actual use of different technologies (Venkatesh et al., 2012). Juaneda-Ayensa (2016) showed that an omnichannel strategy aimed at enhancing engagement and experience with the marketplace as well as effort expectations will

influence retailers' consideration of behavior toward OES. According to Roy et al. (2017), in the trend of investing heavily in new technology, retailers prioritize using OES to provide a seamless shopping experience. The findings of Li et al. (2022) showed that a behavioral intention to use omnichannel services is affected by effort expectancy. Jayasingh et al. (2022) also found that the influence of effort expectancy on behavioral intentions of omnichannel goods transactions. Consequently, the following hypothesis H2 has been created:

Hypothesis 2 (H2). Effort Expectancy positively affects retailers' behavioral intention of using OES in Vietnam.

Social influence (SI) is defined as the degree to which an individual changes their behavior towards using a technology platform as a result of interactions with influencers and significant others (Venkatesh et al., 2012). The results of Gunawan et al. (2020) showed that social influence, influence behavior intention in the omnichannel context. Chaudhary and Suri (2021) argued that the retail channel attracts more attention and behavioral intentions from retailers due to the significant impact of influential customers. The empirical result of Jayasingh et al. (2022) found that the influence of social influence on behavioral intentions of omnichannel goods transactions. According to Ha (2023), behavioral intention to use online commerce platforms is significantly affected by social influence. Thus, the following hypothesis H3 is postulated:

Hypothesis 3 (H3). Social positively affects retailers' behavioral intention of using OES in Vietnam.

Facilitating Conditions (FC) refer to customers' perception of the availability of resources and technical infrastructure to support the use of technology (Venkatesh et al., 2012). According to Peltola et al. (2015), online goods transactions are using digital services. These facilitating conditions cause retailers to change their service provision behavioral intentions to meet market needs. According to Peltola et al. (2015), online goods transactions through the use of digital services have caused retailers to change their intention to supply goods to meet market demand. Besides, omnichanel retail facilitates and accelerates the process of goods transactions. Thereby, retailers tend to reach different customer segments through omnichannel retail platforms (Yumurtacı Huseyinoglu et al., 2017). The results of Gunawan et al. (2020) found that facilitation condition, influence behavior intention in the omnichannel context. Therefore, two hypotheses have been postulated:

Hypothesis 4a (H4a): Facilitating conditions positively influence retailers' behavioral intention of using OES in Vietnam.

Hypothesis 4b (H4b): Facilitating conditions positively influence retailers' behavioral of using OES in Vietnam.

Hedonic motivation (HM) Hedonic motivation (HM) refers to perceived enjoyment, perceived pleasure, and its impact on users' acceptance and use of technology (Venkatesh et al., 2012). The findings of Gunawan et al. (2020) found that hedonic motivation, influence behavior intention in the omnichannel context. The study results of Li et al. (2022) show that many retail channels are chosen as the top priority of retailers and behavioral intention to use OES is positively influenced by hedonic motivation. The findings of Jayasingh et al. (2022) indicated the influence of hedonic motivation on behavioral intentions of omnichannel goods transactions. The

research results of Ha (2023) also found that hedonic motivation has a significant positive impact on behavioral intention to use e-commerce platforms. Therefore, hypotheses H5 is proposed as follows:

Hypothesis 5 (H5). Hedonic motivation positively influences retailers' behavioral intention of using OES in Vietnam.

Price value (PV) refer to the users' cognitive trade-off between the perceived benefits costs incurred of using technology (Venkatesh et al., 2012). Integrated product and price value information is consistent with the trend of omnichannel retailing and improvements in retailers' supply capabilities (Oh et al., 2012). Price value strongly influences the retail multichannel development strategy, expanding market scale in the retailer's supply chain (Jiang, 2020). Besides, price value significantly affects behavioral intention to use online trading platforms (Ezennia and Marimuthu, 2022). Therefore, the following hypothesis H6 has been created:

Hypothesis 6 (H6). Price value positively influences retailers' behavioral intention of using OES in Vietnam.

Habits (HA) are the degree of repetitive activity and the degree to which an individual tends to perform behavior automatically due to previous use and behavior of using technology (Venkatesh et al., 2012). Omnichannel transaction behavior is positively influenced by habits in the development of omnichannel retail (Rizvi and Siddiqui, 2019). These habits have increased the urgency for retailers to expand their digital presence rapidly and develop omnichannel distribution systems (Briedis et al., 2020). The study of Jayasingh et al. (2022) said that habits affect behavioral intentions of omnichannel goods transactions. The study results of Li et al. (2022) also concluded the behavioral to use omnichannel services is affected by habits. Therefore, two hypotheses have been postulated:

Hypothesis 7a (H7a): Habits positively influence retailers' behavioral intention of using OES in Vietnam.

Hypothesis 7b (H7b): Habits positively influence retailers' behavioral of using OES in Vietnam.

Seamless Supply (SS) is a link that ensures retailers optimize operations and maximize efficiency as well as align customer channel needs with retailers' supply capabilities. This is the ideal supply operation where all transactions in the market coordinate and synchronize through the most suitable supply strategies to maximize competitiveness in the market (Childerhouse, 2002). Integrating diverse retail channels to deliver a seamless, consistent supply throughout the merchandise transaction process influences the behavior and brand of omnichannel retailers (Piotrowicz and Cuthbertson, 2014). Seamless supply impacts the behavior of using omnichannel transactions regardless of the channel used (Juaneda-Ayensa et al., 2016). Seamless supply giữa các kênh giao dịch trực tuyến và ngoại tuyến tác động tích cự đến ý định hành vi tăng cường giao dịch hàng hóa qua omnichannel retailing (Trenz et al., 2020). Thus, two hypotheses have been created:

Hypothesis 8a (H8a): Seamless Supply positively influences retailers' behavioral intention of using OES in Vietnam.

Hypothesis 8b (H8b): Seamless Supply positively influences retailers' behavioral of using OES in Vietnam.

Omnichannel Integration (OI): Omnichannel integration (OI) enables retailers to

optimize inventory and increase sales, creating a seamless and consistent experience, allowing their customers the option to communicate across different channels and platforms (Saghiri and Wilding, 2015). Omnichannel retail requires seamless and complete channel integration to meet customers' expectations of an integrated shopping experience according to their preferences, and omnichannel integration influences behavior and is a way for retailers to meet this need through the use of omnichannel retail platforms (Kersmark and Staflund, 2015). The research results of Lee et al. (2019) showed that omnichannel integration impacts sales growth and omnichannel integration has a significant influence on the intention of using omnichannel retail platforms. Omnichannel integration such as social networks, mobile applications, websites are related to channel selection and online commerce platform use behavior (Silva et al., 2020). Therefore, two hypotheses are synthesized as follows:

Hypothesis 9a (H9a): Omnichannel integration positively influences retailers' behavioral intention of using OES in Vietnam.

Hypothesis 9b (H9b): Omnichannel integration positively influences retailers' behavioral of using OES in Vietnam.

Behavioral intention (BI) is determined by a user's behavioral readiness to adopt a technology (Venkatesh et al., 2012). The wave of e-commerce development has seen the emergence of many channels from the widespread use of mobile technology and changes in behavior in e-commerce transactions (Acquila-Natale and Chaparro-Peláez, 2020). Consumers' digital expectations and retailers' ability to deliver online commerce platforms have required retailers to understand their customers' growing digital needs. Thereby, the behavioral intention of retailers is directed towards the behavior of using digital platforms to enhance the ability to offer goods through multiple channels. Retailers' omnichannel strategy concentrates on offering a seamless experience for customers on OES and retailers' behavioral intention influences retailers' behavioral of using OES (Sari et al., 2023). According to Ha (2023), retailers' behavior of using online e-commerce platforms is positively influenced by their behavioral intention of using platforms. Therefore, hypothesis H10 is stated as follows:

Hypothesis 10 (H10): Behavioral intention positively influences retailers' behavioral of using OES in Vietnam.

3. Research methodology

3.1. Research design

Preliminary research was conducted to provide basic information about retailers' behavioral intention and behavior of using OES, answer initial survey questions to calibrate observed variables in the model and determine sufficient data sources from participating retailers to this research topic effectively.

Utilizing a qualitative research approach to interviewing retailers, examine retailers' behavioral intention and behavior of using OES. This study examines and describes social phenomena through understanding events that occur during retailers' use of OES, investigating and better understanding many aspects, such as attitudes and the incentives of retailers. This study also provides insight into the behavioral intention

and OES usage behavior of retailers in Vietnam.

A quantitative correlational approach with a survey research design was utilized to research on retailers' behavioral intention and behavior of using OES in Vietnam. Through analyzes such as Cronbach's Alpha reliability coefficient and confirmatory factor analysis (CFA), exploratory factor analysis (EFA), confirmatory factor analysis (CFA), structural equation modeling (SEM), this study has facilitated a deep and general understanding of the retailers' behavioral intention and behavior of using OES in the Vietnam.

3.2. Sample and data

This study used a convenience (non-probability) sampling method, drawing samples from retailers using OES in Vietnam through the implementation of a survey-based questionnaire. The developed questionnaire included items using a 5-point Likert scale from 1-strongly disagree to 5-strongly agree.

According to Yıldırım and Şimşek (2006), the required sample size is 30–500 subjects in parametric tests. The data range was 5–10 times the number of items used in the scale as suggested by Hair et al. (2010). In this study, with the number of questions being 52, the number of respondents needed is 520 (10 × 52). While the number of respondents is 596 retailers, which is considered to ensure a sufficient sample size for this study.

This sample was selected for the study because the sample size of 596 met the requirements in SEM analysis. On the other hand, according to Hair et al. (2014), the minimum sample size to use EFA is 50, preferably 100 or more; The ratio of observed sample to an analyzed variable is 5:1 or 10:1, then the sample size is appropriate for this study.

The main model fit indices in the study are based on theoretical foundations and previous studies. According to Hair et al. (2010), RMSEA (Root Mean Square Error of Approximation) values ranging from 0.05 to 0.08 indicate a good index to accept the fit of a model. Besides, a CMIN/df (Chi-square divided by degrees of freedom) value of 5 or less is acceptable, a CMIN/df value of less than 2 is considered appropriate. PCLOSE (P value of Close fit) from 0.05 or more is good and PCLOSE from 0.01 or more is acceptable (Hu and Bentler, 1999). Kline (2011) mentioned that the fit indices include GFI (Goodness-of-Fit), AGFI (Adjusted Goodness of Fit Index), NFI (Normed Fit Index), NNFI (Non-Normal Fit Index), IFI (Incremental Fit Index) and CFI (Comparative Fit Index) should be 0.85 or higher. Shadfar and Malekmohammadi (2013) suggested that the TLI value (Tucker-Lewis Index) should be 0.85 or higher.

4. Research results

4.1. Demographic statistics

Demographic statistics are a measure of retailers' characteristics through the collection of 596 returned questionnaires from 620 distributed questionnaires. The results of the analysis using SPSS 25.0 software are shown in **Table 1**.

Table 1. Demographic profile.

Item	Optional	Frequency	Percentage
Number of years in operation	1–5 years	315	52.80
	6–10 years	118	19.80
	11–15 years	96	16.11
	15 years and up	67	11.24
Operating capital	0.5–5 million USD	296	49.66
	6–10 million USD	231	38.76
	Over 10 million USD	69	11.58
Revenue	1–5 million USD	264	44.30
	6–10 million USD	162	27.18
	6–15 million USD	98	16.44
	Over 15 million USD	72	12.08
Retail sector	Consumer goods	196	32.89
	Goods for production	132	22.15
	Food products	239	40.10
	Other goods	29	4.87

Source: Primary data, processed in 2024.

The period from 1 to 5 years has a rate of 52.80%, which is the highest rate calculated for the number of retailers' number of years in operation. The retailers' operating capital has the highest rate of 49.66% in the range from 0.5 to 5 million USD. Retailers' revenue from 1 to 5 million USD accounts for the highest proportion of 44.30%. Survey data also shows that the food retail sector accounts for the highest proportion with 40.10%, followed by consumer goods accounting for 32.89%, followed by goods for production and other goods.

4.2. Cronbach's alpha reliability analysis

Cronbach's alpha coefficient is used to measure internal consistency, the scale is accepted for reliability with Cronbach's Alpha coefficient ≥0.60 and variables with a total correlation coefficient of less than 0.3 will not be accepted (Hulin et al., 2001). The analysis results show that the variables have alpha coefficients greater than 0.6, total correlation coefficients greater than 0.3, and all scales are eligible 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 = 0.870	
1	PE1	Retailers using OES can easily sell online anytime, anywhere.	0.717
2	PE2	Retailers using OES easily understand online sales clearly.	0.684
3	PE3	When using OES, retailers have many expectations for online sales.	0.597
4	PE4	Retailers using OES sell online faster.	0.565

Table 2. (*Continued*).

No.	Code	Observed variables	Corrected item-total correlation
5	PE5	Retailers using OES help make their business more relevant to trends.	0.621
6	PE6	Retailers using OES help make online sales more comfortable.	0.767
7	PE7	Retailers using OES make it more convenient to sell online 24 hours.	0.597
	EE	Cronbach's alpha = 0.826	
8	EE1	Retailers using OES contribute to increased online sales revenue.	0.682
9	EE2	Retailers using OES sell more products.	0.533
10	EE3	Retailers using OES sell online more securely.	0.637
11	EE4	Retailers using OES understand online sales information.	0.578
12	EE5	Retailers using OES have enough information to sell online.	0.593
13	EE6	Retailers using OES increase efficiency in online sales.	0.549
	SI	Cronbach's alpha = 0.837	
14	SI1	Retailers' use of OES in online sales is influenced by many influential shoppers.	0.671
15	SI2	Many influential shoppers advise retailers to use OES for online sales.	0.609
16	SI3	Many familiar advise retailers to use OES for online sales.	0.602
17	SI4	Retailer OES use in online sales is influenced by shopper loyalty.	0.577
18	SI5	Frequent shoppers support retailers using OES to sell online.	0.570
19	SI6	Many people in the neighborhood support retailers using OES for online sales.	0.659
	FC	Cronbach's alpha = 0.827	
20	FC1	The use of OES is controlled by retailers for online sales.	0.679
21	FC2	Using OES for online sales when retailers have enough knowledge.	0.574
22	FC3	Using OES for online sales ensures retailers' trading conditions.	0.604
23	FC4	Using OES for online sales ensures retailers have all the necessary resources.	0.576
24	FC5	Using OES for online sales is guaranteed by retailers to be safe.	0.600
25	FC6	Retailers' use of OES for online sales is supported by OES vendors.	0.543
	HM	Cronbach's alpha = 0.813	
26	HM1	Using OES for online sales makes the retailers feel comfortable.	0.537
27	HM2	Using OES for online sales makes retailers feel lucky.	0.521
28	HM3	Using OES for online sales makes it exciting for retailers.	0.660
29	HM4	Using OES for online sales makes retailers feel happy.	0.577
30	HM5	Using OES for online sales makes retailers feel excited.	0.724
	PV	Cronbach's alpha = 0.779	
31	PV1	Using OES for online sales helps retailers save time.	0.560
32	PV2	Using OES for online sales helps retailers save a lot of costs.	0.631
33	PV3	Using OES to sell online helps retailers pay costs appropriately.	0.669
34	PV4	Using OES for online sales helps retailers avoid paying transaction check fees.	0.513
35	PV5	Using OES for online sales helps retailers not have to pay any additional costs.	0.518
	HA	Cronbach's alpha = 0.675	
36	HA1	Retailers tend to use OES for online sales.	0.567
37	HA2	Retailers have enough staff to be able to sell themselves online through OES.	0.575
38	HA3	Retailers have employees who are in the habit of selling online through OES.	0.499

Table 2. (*Continued*).

No.	Code	Observed variables	Corrected item-total correlation
39	HA4	The retailer's sales staff receives transaction instructions from the OES supplier.	0.503
40	HA5	Retailer salespeople can use OES to sell online when no one else is simulating.	0.519
	SS	Cronbach's alpha = 0.642	
41	SS1	Retailers using OES ensure efficiency in online merchandise transactions.	0.591
42	SS2	Retailers using OES ensure cross-channel conversion in online merchandise transactions.	0.401
43	SS3	Retailers using OES ensure cross-device transitions in online merchandise transactions.	0.561
44	SS4	Retailers using OES meet all of their customers' needs in online merchandise transactions.	0.454
45	SS5	Retailers using OES ensure conversion between touchpoints in online merchandise transactions.	0.421
46	SS6	Retailers using OES ensure a seamless and consistent online merchandise transaction experience.	0.414
	OI	Cronbach's alpha = 0.671	
47	OI1	Retailers using OES ensure connectivity across many different channels in online goods transactions.	0.416
48	OI2	Retailers using OES ensure connectivity across many different platforms in online goods transactions.	0.433
49	OI3	Retailers using OES ensure seamless communication across various social media and email platforms in online merchandise transactions.	0.571
50	OI4	Retailers using OES ensure connectivity across different websites and mobile applications in online merchandise transactions.	0.459
51	OI5	Retailers using OES ensure omnichannel integration for online merchandise transactions.	0.486
52	OI6	Retailers using OES ensure seamless information integration for online merchandise transactions.	0.466
	BI	Cronbach's alpha = 0.753	
53	BI1	The use of OES to transact goods online continues to be practiced by retailers.	0.586
54	BI2	The use of OES to transact goods online will continue to be implemented by retailers.	0.570
55	BI3	The use of OES will be recommended by retailers to other retailers.	0.595
	UB	Cronbach's alpha = 0.707	
56	UB1	Retailers using OES that have difficulty using them will be supported by the platform provider.	0.498
57	UB2	Retailers using OES may not need the help of a platform provider.	0.538
58	UB3	Retailers may have never used OES, but they can use OES to sell online.	0.538

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

4.3. Exploratory factor analysis

The KMO coefficient is 0.798 (greater than 0.5) and Sig = 0.000 < 0.05, showing that the observed variables of the independent variables are correlated with each other in the population and the EFA results are consistent with the current data. Factor analysis by varimax rotation (absolute value below: 0.3) for the independent variables found 12 groups and the lowest Eigenvalues were 1.165 > 1, the 12th component as shown in **Table 3**.

The results of analysis of independent variables show that the factor loading coefficients are all greater than 0.5. At the same time, three new factors arise, including: The variables HA1 and HA2 in the HA factor have similar characteristics to the retailers' capacity, so this new factor is named Retailers' Capacity (RC). The hypothesis for this factor is that RC has a positive impact on retailers' behavioral intention and behavior of using OES. The variables OI5 and OI6 in the OI factor have similar characteristics to the retailer's seamlessly connecting, so this new factor is

named Seamlessly Connecting (SC). The hypothesis for this factor is that SC has a positive impact on retailers' behavioral intention and behavior of using OES. The SS5 and SS6 variables in the SS factor have similar characteristics to the retailer's omnichannel strategy, so this new factor is named Omnichannel Strategy (OS). The hypothesis for this factor is that OS has a positive impact on retailers' behavioral intention and behavior of using OES, as can be seen in **Table 4**.

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	6.242	12.005	12.005	6.242	12.005	12.005	4.053	7.795
2	3.587	6.899	18.903	3.587	6.899	18.903	3.461	14.452
3	3.331	6.406	25.310	3.331	6.406	25.310	3.300	20.799
4	3.002	5.773	31.083	3.002	5.773	31.083	3.288	27.122
5	2.538	4.881	35.964	2.538	4.881	35.964	2.982	32.857
6	2.526	4.857	40.821	2.526	4.857	40.821	2.760	38.166
7	2.416	4.647	45.468	2.416	4.647	45.468	2.316	42.620
8	2.073	3.986	49.454	2.073	3.986	49.454	2.212	46.874
9	1.685	3.241	52.695	1.685	3.241	52.695	2.173	51.052
10	1.338	2.573	55.268	1.338	2.573	55.268	1.532	53.998
11	1.219	2.344	57.612	1.219	2.344	57.612	1.530	56.941
12	1.165	2.241	59.853	1.165	2.241	59.853	1.515	59.853
13	0.929	1.786	61.640	-	-	-	-	-

Extraction method: Principal component analysis.

Source: The authors' calculation from SPSS 25.0.

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	0.784											
PE2	0.722											
PE7	0.718											
PE3	0.718											
PE5	0.705											
PE4	0.627											
SI6		0.773										
SI1		0.766										
SI3		0.729										
SI2		0.688										
SI4		0.671										
SI5		0.647										
EE1			0.800									

Table 4. (*Continued*).

Variables	Component											
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
EE3			0.774									
EE4			0.713									
EE5			0.710									
EE6			0.698									
EE2			0.629									
FC1				0.791								
FC3				0.741								
FC5				0.730								
FC2				0.700								
FC4				0.697								
FC6				0.676								
HM5					0.849							
HM3					0.798							
HM4					0.731							
HM1					0.701							
HM2					0.678							
PV3						0.819						
PV2						0.782						
PV1						0.730						
PV5						0.688						
PV4						0.589						
OI2							0.782					
OI4							0.736					
OI3							0.727					
OI1							0.604					
SS2								0.778				
SS3								0.744				
SS4								0.734				
SS1								0.633				
HA5									0.845			
HA4									0.800			
HA3									0.766			
SS6										0.817		
SS5										0.805		
OI6											0.751	
OI5											0.694	
HA1												0.822
HA2												0.777

Extraction Method: Principal component analysis. rotation method: varimax with kaiser normalization.

Source: The authors' calculation from SPSS 25.0.

The KMO coefficient is 0.786 (greater than 0.5) and Sig = 0.000 < 0.05, showing that the observed variables of the dependent variables are correlated with each other in the population and the EFA results are consistent with the current data. Factor analysis by varimax rotation (absolute value below: 0.3) for the dependent variables found 2 groups and the lowest Eigenvalues were 1.493 > 1, the 2sd component as shown in **Table 5**.

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	2.418	40.299	40.299	2.418	40.299	40.299	2.017	33.620
2	1.493	24.880	65.179	1.493	24.880	65.179	1.894	65.179
3	0.654	10.898	76.077	-	-	-	-	-

Extraction method: Principal component analysis.

Source: The authors' calculation from SPSS 25.0.

The results of analysis of dependent variables show that the factor loading coefficients are all greater than 0.5. Two factors were found as shown in **Table 6**.

Table 6. Rotated component matrix for dependent variables.

Variable	Component	
	1	2
BI3	0.825	-
BI1	0.810	-
BI2	0.803	-
UB3	-	0.810
UB2	-	0.786
UB1	-	0.768

Extraction method: Principal component analysis.

Rotation method: Varimax with kaiser normalization.

Source: The authors' calculation from SPSS 25.0.

4.4. Confirmatory factor analysis

The observed variables are correlated with each other in the population when the KMO coefficient is 0.792 (greater than 0.5), Sig = 0.000 < 0.05 and CFA is suitable for real data. Promax rotation result (absolute value below: 0.3) and the number of observations is 596 as well as linking e3 and e6, e5 and e6, e10 and e11, e22 and e25, e23 and e25, e38 and e39, e45 and e46 to correct for covariance show that this model has a Chi-square = 2399,667, with 1499 degrees of freedom (df); Chi-square/df = 1.601 < 3 with *p* value = 0.000 and other indicators such as CFI = 0.919; TLI = 0.911; GFI = 0.880; RMSEA = 0.032 < 0.06; PCLOSE = 1.000 > 0.05 as can be seen in **Figure 2**.

The model fits the market data perfectly, because the standardized and unstandardized coefficients are greater than 0.5 and the total variance values are

greater than 0.5.

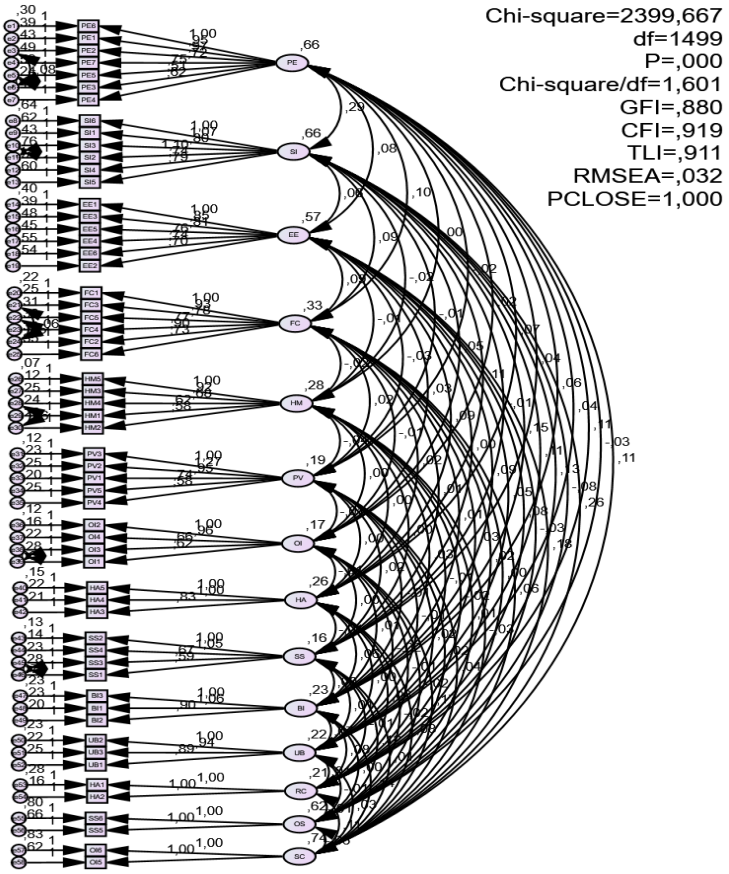

Figure 2. Confirmatory factor analysis.

Source: The authors' calculation from AMOS 24.0.

4.5. Structural equation modeling

With Chi-square = 2426.265; df = 1504; p = 0.000; Chi-square/df = 1.613; CFI = 0.917; TLI = 0.909; GFI = 0.879; RMSEA = 0.032; PCLOSE =1.000. The results of SEM analysis show that the model fits well and achieves compatibility with market data as shown in **Figure 3**.

Conducting SEM analysis with 95% confidence, the analysis results show that the Sig of SI on BI is 0.000 < 0.05, the Sig of EE on BI is 0.003 < 0.05, the Sig of HM on BI is 0.006 < 0.05, Sig of RC on BI is 0.008 < 0.05, Sig of SC on BI is 0.021 < 0.05, showing that the variables SI, EE, HM, RC and SC all have a positive impact on BI. Besides, the Sig of BI on UB is 0.000 < 0.05, the Sig of FC on UB is 0.039 < 0.05, and these two variables both have a positive impact on UB. At the same time, the Sig of OI on UB is 0.028 < 0.05, this variable has a negative impact on UB. The remaining variables in the model are not Significant with Sig > 0.05 as shown in **Table 7**.

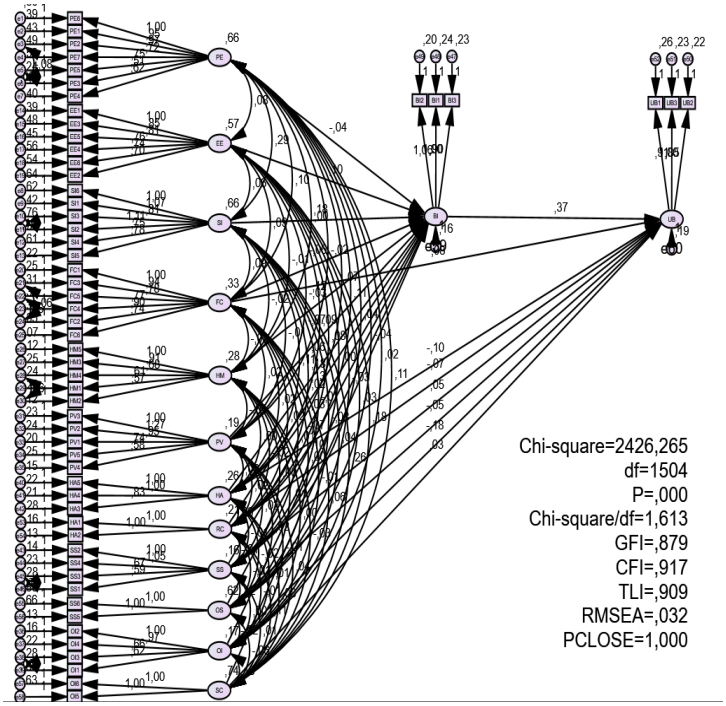

Figure 3. Structural equation modeling.

Source: The authors' 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	−0.040	0.033	−1.204	0.228	−0.067
BI	←	EE	0.102	0.035	2.945	0.003	0.160
BI	←	SI	0.180	0.038	4.715	***	0.304
BI	←	FC	−0.059	0.042	−1.414	0.157	−0.071
BI	←	HM	0.117	0.043	2.757	0.006	0.130
BI	←	PV	−0.073	0.057	−1.288	0.198	−0.066
BI	←	HA	0.058	0.051	1.121	0.262	0.061
BI	←	RC	0.185	0.070	2.659	0.008	0.176
BI	←	SS	0.023	0.071	0.327	0.743	0.020
BI	←	OS	0.032	0.039	0.832	0.405	0.053
BI	←	OI	−0.068	0.076	−0.898	0.369	−0.059
BI	←	SC	0.103	0.045	2.304	0.021	0.184
UB	←	BI	0.375	0.068	5.517	***	0.380
UB	←	FC	0.082	0.043	1.890	0.039	0.099
UB	←	HA	−0.102	0.055	−1.857	0.063	−0.109
UB	←	RC	−0.072	0.071	−1.013	0.311	−0.069
UB	←	SS	0.053	0.074	0.715	0.475	0.045
UB	←	OS	−0.049	0.041	−1.183	0.237	−0.081
UB	←	OI	−0.180	0.082	−2.193	0.028	−0.157
UB	←	SC	0.033	0.046	0.719	0.472	0.059

Source: Authors' calculation.

Conducted a Bootstrap method to estimate summary statistics and produced reliable results with C.R < 1.96, inferred *p*-value > 5% with replicate sample *N* = 1500 and results as described 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	−0.041	−0.002	0.001	−0.5
BI	←	EE	0.043	0.001	0.100	−0.001	0.001	−1.0
BI	←	SI	0.050	0.001	0.179	−0.001	0.001	−1.0
BI	←	FC	0.050	0.001	−0.059	0.000	0.001	0
BI	←	HM	0.045	0.001	0.116	−0.001	0.001	−1.0
BI	←	PV	0.061	0.001	−0.074	−0.001	0.001	−1.0
BI	←	HA	0.056	0.001	0.057	−0.001	0.001	−1.0
BI	←	RC	0.081	0.001	0.191	0.003	0.002	1.5
BI	←	SS	0.082	0.001	0.023	0.000	0.002	0
BI	←	OS	0.051	0.001	0.033	0.001	0.001	1.0
BI	←	OI	0.121	0.002	−0.071	−0.003	0.003	−1.0
BI	←	SC	0.092	0.002	0.107	0.003	0.002	1.5
UB	←	BI	0.085	0.001	0.377	0.003	0.002	1.5
UB	←	FC	0.046	0.001	0.084	0.001	0.001	1.0
UB	←	HA	0.061	0.001	−0.104	−0.001	0.001	−1.0
UB	←	RC	0.086	0.001	−0.072	0.000	0.002	0
UB	←	SS	0.093	0.002	0.055	0.001	0.002	0.5
UB	←	OS	0.055	0.001	−0.050	−0.001	0.001	−1.0
UB	←	OI	0.111	0.002	−0.189	−0.003	0.003	−1.0
UB	←	SC	0.073	0.001	0.036	0.003	0.002	1.5

Source: The authors' calculation from AMOS 24.0.

5. Discussions results

5.1. Factors affecting retailers' behavioral intention of using OES

Previous studies have emphasized the impact of Social Influence on behavioral intention such as research by Chaudhary and Suri (2021), Gunawan et al. (2020), Ha (2023), Jayasingh et al. (2022), and Venkatesh et al. (2012), our results are similar to previous studies and accept hypothesis H3. This result shows that social influence positively affects retailers' behavioral intention to use OES in Vietnam. This phenomenon may be due to the fact that today's online merchandise transactions have been chosen and used by many retailers based on their needs and suggestions from others.

The research finding shows that Effort Expectancy is the important determinant in explaining the retailers' behavioral intention of using OES in Vietnam. This is in line with previous research findings of Juaneda-Ayensa (2016), Jayasingh et al. (2022), Li et al. (2022), Roy et al. (2017), and Venkatesh et al. (2012), accepts hypothesis H3. This result proves that retailers using OES to transact goods online have a clear

understanding for the effectiveness of applying OES in Vietnam.

Findings from the research reveal the positive effect of Hedonic Motivation on the retailers' behavioral intention of using OES in Vietnam, matching with the findings of Gunawan et al. (2020), Ha (2023), Jayasingh et al. (2022), Li et al. (2022), and Venkatesh et al. (2012), and this result accepts hypothesis H5. This shows that retailers enjoy, lucky when goods transactions in OES in Vietnam.

The finding of this research shows that Retailers' Capacity positively affects the retailers' behavioral intention of using OES in Vietnam, and this finding matches the previous research findings. Because the retailer's capacity is a very important factor in the retail business and this is a contributing factor in expanding omnichannel retail. Therefore, retailer capabilities contribute to improving behavioral intention and help retailers expand their business and meet customer needs.

This study also examines the moderating effect of seamlessly connecting and finds that seamlessly connecting has a positive effect on the Vietnamese retailers' behavioral intention of using OES. Because seamless connection helps retailers interact with customers across all channels, contributing to expanding retail business activities and increasing sales. From there arises the behavioral intention to use OES in the omnichannel sales strategy.

5.2. Factors affecting retailers' behavioral of using OES

The empirical result of the research shows Behavioral Intention has a strong and positive impact on retailers' behavior of using OES. This is similar to previous studies of Acquila-Natale and Chaparro-Peláez (2020), Ha (2023), Sari et al. (2023) and Venkatesh et al. (2012), this result accepts hypothesis H10. This demonstrates retailers' behavioral intention to harness the power of OES, which will positively impact full integration with OES to perform marketing and sales functions, reaching more customers, boost engagement, drive more sales and help execute an omnichannel strategy and stand out from the competition.

The results show facilitating conditions are important for the behavior of using OES as retailers may be familiar with using the technology. These findings match with the few previous findings such as Gunawan et al. (2020), Peltola et al. (2015), Venkatesh et al. (2012), Yumurtacı Huseyinoglu et al. (2017) and this result accepts hypothesis H4b.

This study also found that Omnichannel Integration has a negative impact on retailers' behavior of using OES. This finding does not match the previous research findings such as Kersmark and Staflund (2015), Lee et al. (2019), Saghiri and Wilding (2015), and Silva et al. (2020) and this result does not accept hypothesis H9b. This shows that retailers' use of OES still does not meet the requirements for a seamlessly integrated supply chain. Therefore, they should break down silos between online and physical stores and need new technologies, in which the platform must be able to provide continuous visibility to ensure omnichannel integration when using OES.

6. Conclusions and recommendations

Using OES is a revolutionary and innovative business strategy that allows retailers to interact with customers using multiple channels to improve the customer

transaction experience. This study applied the UTAUT2 model and added other factors such as seamless supply, omnichannel integration with a sample of 596 responding retailers and tested the relationship using structural equation modeling. The empirical results of the research show that effort expectation, social influence, hedonic motive, retailers' capacity, seamlessly connecting have a positive impact on retailers' behavioral intention and behavior of using OES. Behavioral intention and favorable conditions have a positive impact on behavior of using OES. Meantime, omnichannel integration have a negative impact on behavior of using OES in Vietnam. This research helps managers and OES providers to develop their skills and expertise, and the study results may prove diagnostically useful to the retailers' behavioral intention and behavior of using OES in Vietnam as follows.

Firstly, the research finding reveals that social influence is the major determinant of retailers' behavioral intention to use OES. Paying attention to customers who are influential in forming behavioral intentions to use OES is very important. Because influencers and influential customers will drive online merchandise transactions through OES and help retailers increase their sales.

Secondly, findings show effort expectancy is the second determinant of retailers' behavioral intention to use OES. It means that OES benefits like convenience in searching for information and linking with many customers are major motivators for retailers to develop omnichannel retail outlets. Thus, retailers should invest heavily in new technology, prioritize using OES to provide a customer's seamless shopping experience.

Thirdly, these research findings show hedonic motivation is the third determinant of retailers' behavioral intention to use OES. Therefore, retailers should provide a customers' seamless shopping experience to attract more visitors. They should regularly update the various features and functions in OES to satisfy all sales transactions, understand the market's needs to promote the omnichannel retail strategy, use the latest digital touchpoints and smart technology platforms to increase consumers' experience.

Fourthly, retailers' capacity is the fourth determinant of retailers' behavioral intention to use OES. Besides understanding the needs of the market, retailers need to be able to manage and operate OES to be able to connect seamlessly. Retailers should additional investments to meet the needs of the online retail business, they continue to improve and develop highly compatible OES with a friendly interface, interacting with retail brands in a unique way to help customers find goods that best suit their needs. Retailers should increase their capacity in management, operations; ensure transaction quality, and transaction security compliance on OES.

Fifthly, these research findings show seamlessly connecting is the last determinant of retailers' behavioral intention to use OES. Because seamlessly connecting helps retailers support customers through all digital channels, engage with customers across multiple channels, retain valuable customers, enhance omnichannel sales strategies, provide a better customer experience, increasing sales and optimizing operations. Therefore, retailers need to pay special attention to linking throughout the business process, developing strong retail connections and contributing to attracting customers when shopping online.

Sixthly, the research finding reveals that behavioral intention is also the major

determinant of retailers' behavior in using OES in Vietnam. No matter where and when, many retailers' brands continue to deliver customers' seamless shopping experience thanks to the use of OES. As a result, retailers are required to have complete, real-time alignment between the inventory advertised on the app and the actual products available in-store. Retailers should maintain this consistency so that consumers are always informed that the products they are purchasing are actually available. At the same time, they need to focus on features to enhance the usefulness of OES, ensure uninterrupted sales transactions across synchronized channels, bring more convenience, and contribute to improving and promoting customer service for Vietnamese retailers using OES.

Seventhly, these research results show that facilitation conditions are the final factor that positively impacts retailers' behavioral intention to use OES. Therefore, Vietnamese retailers need to transform their current channel structure into an integrated omnichannel system. At the same time, they need to invest the necessary resources, train omnichannel operations staff, use the latest technology applications for omnichannel, create many advantages when using OES, use appropriate channels for target customer groups, provide customers with seamless shopping journeys, deliver great customer experiences and increase retail sales.

Eighthly, the advancement of technology day by day and the growing OES influence online commodity trading behavior, it is necessary to promote the development of omnichannel strategies at many retailers to create infrastructure as well as provide their customers with an uninterrupted shopping experience through omnichannel integration. Accordingly, retailers who want to succeed in competition should be aware of the omnichannel structure, make the necessary investments and readjust their strategies. At the same time, transforming the retail business model through the use of OES, creating a modern commercial transaction method, meeting transaction needs using OES to contribute to sustainable growth of Vietnamese retailers' business.

Future research directions: The ability to extend analytical results to other geographic markets is very feasible as OES is a trend that helps businesses achieve business goals and this trend is predicted to continue to accelerate in the coming years. to provide a seamless shopping experience across all channels for potential customers.

Limitations of this study: The study focuses on the Vietnamese market. This is a market that has not had the habit of doing retail business on OES for many years due to cultural differences, so the results cannot be easily transferred to other countries. Therefore, future research should focus on possible cross-cultural differences to develop a deeper understanding of the influence of behavioral intention and behavior of using OES.

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