

## **Factors Affecting E-Commerce Applications in Small and Medium Enterprise in Ho Chi Minh City**

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**Abstract.** E-commerce is increasingly asserting its role in bringing better business performance to small and medium enterprises, as well as allowing small and medium enterprises to compete with larger enterprises. However, the number of SMEs enterprise in Ho Chi Minh city adopting e-commerce is insignificant due to lack of understanding the reason why integrating it into business operations. Therefore, this research aims to state which factors affect e-commerce applications in small and medium enterprise in Ho Chi Minh city and suggest administrative implications to help support e-commerce adoption. The article uses quantitative and qualitative research methods with tools such as the scale of influencing factors tested by Cronbach's Alpha reliability coefficient, exploratory factor analysis (EFA) and multivariate regression analysis through statistical software SPSS. The results of this study contribute to helping small and medium enterprises realize the importance and benefits of e-commerce application in their business development strategy, and managers of small and medium-sized enterprises to consult to plan e-commerce development strategies. The author also has supplemented the amount of academic knowledge by determining the factors affecting e-commerce applications in small and medium enterprise in Ho Chi Minh city. The recommendations from the results of this study may lead to the development of strategies for top managers at small and medium enterprises in Ho Chi Minh city.

**Keywords:** E-commerce application, small and medium enterprises in Ho Chi Minh City, exploratory factor analysis, regression analysis

## **1. Introduction**

In the context of economic integration and development, Ho Chi Minh City has constantly created a favorable and breakthrough investment environment to encourage and support the development of small and medium-sized enterprises, especially in the field of e-commerce. In recent years, the application of e-commerce by small and medium-sized enterprises in Ho Chi Minh City has always faced difficulties in terms of capital, human resources and legal basis (Ministry of Industry and Trade, 2021). The limited understanding of the benefits of e-commerce as well as the fear and lack of initiative in changing business directions have partly hindered the application of e-commerce in small and medium-sized enterprises in Ho Chi Minh City. Therefore, research to reliably determine the factors affecting the application of e-commerce in small and medium enterprises in Ho Chi Minh City is really necessary and the basis for small and medium enterprises in Ho Chi Minh City makes appropriate decisions. Research that meets practice is also the shortcomings of previous studies in the following points: (1) Simultaneously consider the relationship of four factors of Technological innovation, Organizational factor, External factors Leadership characteristics; Research aimed at small and medium enterprise, meeting the growing needs of this type of enterprise; (2) Elements of Technological innovation, Organizational factor, External factors Leadership characteristic are considered thoroughly and systematically; (3) Data processing method is both qualitative and quantitative, bringing high reliability and accuracy

## **2. Literature Review**

E-commerce is built and developed on the basis of a grouping of technical, organizational, environmental and leadership characteristics (Anh Thu, 2012). These factors are tested and confirmed to have an impact on e-commerce integration in small and medium enterprises. Success in the application and development of e-commerce in small and medium-sized enterprises is often related to: (1) The role of business leaders: The more actively the leader is aware and supportive, the better the application process will be. E-commerce is more convenient for businesses. (2) The role of the industry as an information source, infrastructure, and the higher the pressure of suppliers and buyers, the more it promotes e-commerce application businesses. (3) Internal resources such as financial, technical and human resources are the main factors that facilitate the application of e-commerce (Minh Hien, 2007).

Nazir and Zhu (2018) refer to e-commerce to the adoption of innovation using different IT systems and within the organizations. Thus, it refers to the technologies available within organizations and how technological contextual factors affect the adoption of technologies in businesses. Rahayu and Day (2017) further note that the technological context relates to those facets such as perceived benefit, compatibility, and cost of technology, that influence the adoption of e-commerce technology. The perceived benefit includes the potential benefits that e-commerce will bring to the organization (Tiago & Maria, 2010). There are numerous factors related to the organizational context that influence e-commerce adoption. According to Villa & Picon (2018), organizational factors refer to the nature of an organization and its resources. Also, it refers to the structure of the business, size of the business, resources, and technology readiness. Kurnia (2015) suggests that factors relating to the environmental context in developing countries play an important role than factors concerning organizational and technological context. According to Mbayo & Asa (2015), environmental factors relate to the external influences that can directly or indirectly affect e-commerce adoption.

## **3. Research Hypotheses and Models**

Based on the literature review, the author forms a hypothesis for the study of factors affecting the application of e-commerce in small and medium-sized enterprises in Ho Chi Minh City, including 4 groups: organizational factors, external environment, technological innovation and leadership characteristics (Choi, 2007; Luu Tien Thuan, 2015; Kumar, 2016 and Hariandi, 2019).

Hypothesis H1: Technological innovation has a positive impact on e-commerce application in small

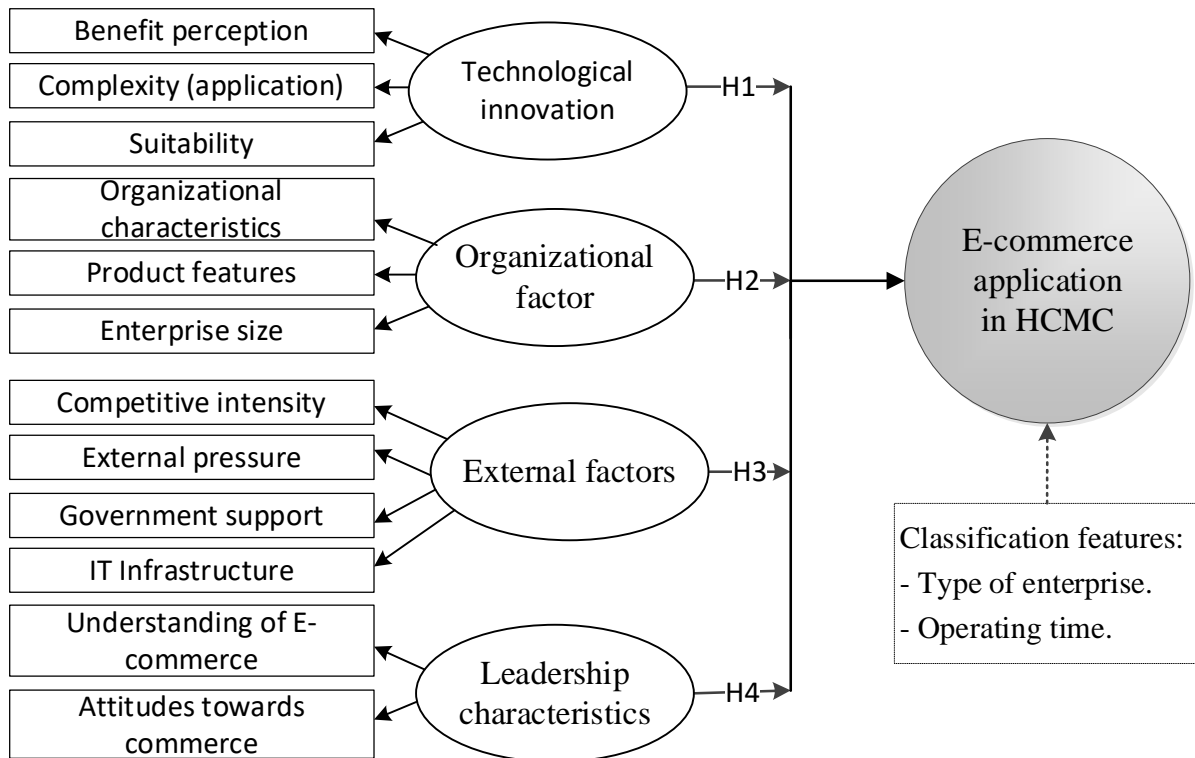
and medium enterprises in Ho Chi Minh City.

Hypothesis H2: Organizational factor has a positive impact on e-commerce application in small and medium enterprises in Ho Chi Minh City.

Hypothesis H3: External factors have a positive impact on e-commerce application in small and medium enterprises in Ho Chi Minh City.

Finally, Hypothesis H4: Leadership characteristics have a positive impact on e-commerce application in small and medium enterprises in Ho Chi Minh City.

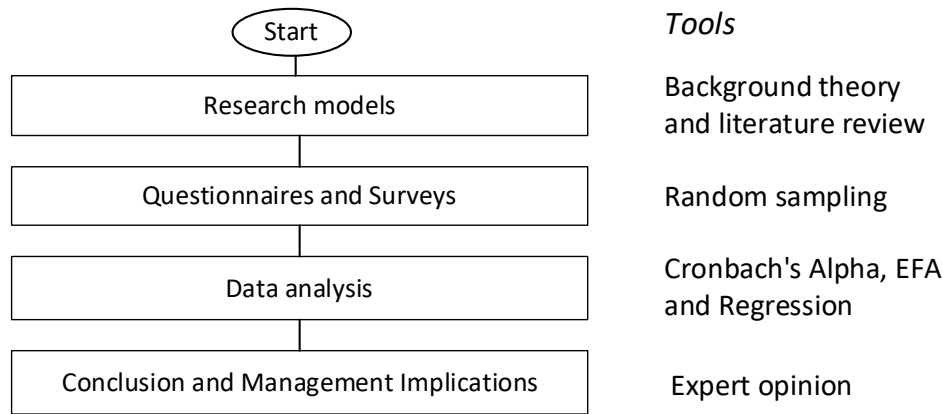
The model with 4 factors affecting the application of e-commerce in small and medium enterprises in Ho Chi Minh City is summarized in Figure 1 as follows.



**Figure 1** Research model (Source: Author's proposal, 2023)

#### 4. Research Method

Research, survey and evaluate the current status of e-commerce application in small and medium enterprises in Ho Chi Minh City applying quantitative method. Based on survey results to evaluate current policies as well as to suggest appropriate governance implications, the detailed research procedure is shown in Figure 2 below.



**Figure 2** Research Process (Author, 2023)

*Research model:* Forming a model based on the purpose of the research. The model is formed based on the literature review and the underlying theories.

*Questionnaires and Surveys.* The survey questionnaire consists of 4 parts with 73 questions. Part A collects business information, Part B collects information related to e-commerce applications at small and medium enterprises. Part C collects to assess factors affecting e-commerce application in small and medium enterprises, Part D includes categorical information (demographic). The survey uses paper ballots and through Google form, a form of random sampling. Data was collected through a survey of small and medium enterprises in Ho Chi Minh City with a sample size of 139.

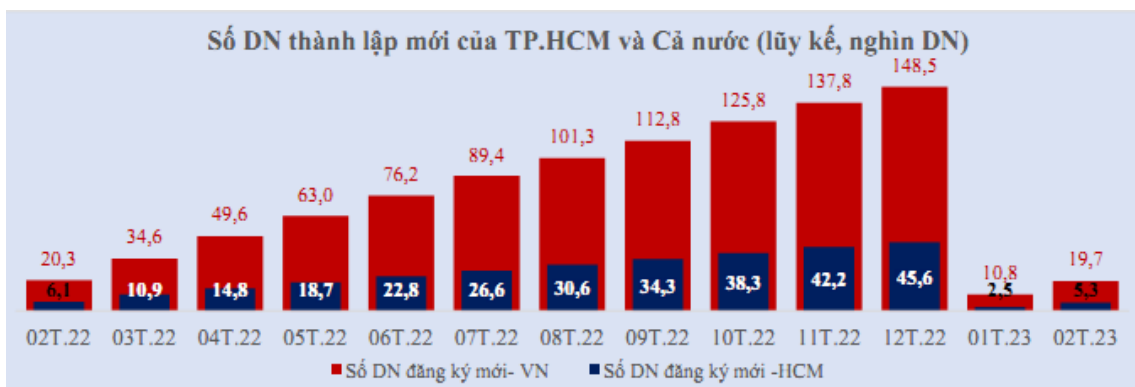
*Data analysis.* Using statistical analysis software SPSS 22.0 to determine the frequency, test the reliability of the scale (Cronbach's Alpha coefficient), exploratory factor analysis EFA as well as multivariate regression analysis. The results of the analysis were also evaluated and compared with the conclusions of previous studies.

*Conclusion and Management implications.* Concluding as well as proposing management implications based on the actual situation as well as based on the results of data analysis.

## 5. Research Results

### 5.1 State of e-commerce applications in small and medium enterprise in Ho Chi Minh city

As of 20/12/2022, Ho Chi Minh city had 45.600 newly registered enterprises with a total registered capital of 472.559 billion VND. Over the same period, the number of business registration certificates increased by 42.3%. Retail sales of goods in 2022 are estimated at VND 625.520 billion, up 20.5% over the same period. Gross domestic product (GRDP) in 2022 will increase by 9.03%, of which the industrial and construction sector will increase by 12.92% and the trade in services will increase by 8.37%.



**Figure 3** Number of newly established enterprises in Ho Chi Minh City (Ho Chi Minh City Statistical Office, 2023)

Ho Chi Minh city is considered to have the largest e-commerce activity, accounting for 47.7% of the total number of organizations and individuals selling online across the country. E-commerce activities in Ho Chi Minh City are currently developing rapidly in both width and depth, and tend to continue to grow strongly when the number of users using mobile devices connected to the Internet increases. The Ministry of Industry and Trade (2021) assessed that the state management of e-commerce is still limited, especially in policies to promote and develop e-commerce in small and medium-sized enterprises as well as policies on tax management, origin and flow management, have not kept pace with reality.

*Information technology infrastructure:* According to the Vietnam E-Commerce Association (2021), on average, each business in Ho Chi Minh City has 12.5 computers. 47% of businesses have an intranet and 74% of businesses have an internet connection. *Regarding the perception of business leaders:* The perception of the effectiveness of information technology and e-commerce application of business leaders is still unclear. *Regarding the software application in business management:* Accounting management software applications, document management, customer management, human resource management, salary are currently being widely applied. Some businesses have spent more than 5% of total operating costs on digitization and e-commerce. *Regarding the application of information technology and e-commerce in enterprises:* 86.5% of small and medium-sized enterprises applied information technology to serve office work; 40% of businesses have websites, 13% focus on e-commerce. *Regarding the human resources for information technology and e-commerce for enterprises:* the whole city has about 9,000 people working in the field of information technology; 25 Universities, Colleges and Intermediate schools have vocational training in information technology.

Similarly, *policies to support enterprises to apply information technology and develop e-commerce:* Ho Chi Minh City has issued a number of documents directing the application of information technology and development of e-commerce such as Decision 4328/QĐ-UBND in 2020 approving the Project on developing the e-commerce industry on the Internet. Ho Chi Minh City area to 2025 (Ministry of Industry and Trade, 2022). The city has focused on investing in building infrastructure for e-commerce. Training, consulting, propaganda, and seminars on e-commerce are promoted. However, there are still certain shortcomings that are the perception of business leaders about the effectiveness of e-commerce business despite the high rate of internet connection. Businesses have not oriented applications towards e-commerce, and the team of highly qualified information technology specialists is very lacking. The application of e-commerce in small and medium-sized enterprises in Ho Chi Minh City has just stopped at a primitive and effective level in terms of the application of e-commerce in business (Ministry of Industry and Trade, 2021).

## 5.2 Research results

Hệ số Cronbach's Alpha của thang đo, dựa trên kết quả thống kê ở Bảng 1, thấy rằng hệ số Cronbach's Alpha của các nhân tố đều lớn hơn 0.6 nên đạt yêu cầu. Lưu ý rằng và hệ số tương quan biến – tổng của tất cả 3 biến quan sát đều lớn hơn 0.3 nên thang đo đủ điều kiện để tiến hành đi đến các bước phân tích tiếp theo.

**Bảng 1.** Thống kê hệ số Cronbach's Alpha của các nhân tố của mô hình nghiên cứu

Factor	Acronym	Cronbach's Alpha coefficient
Technological innovation	ĐMCN	0.750
Organizational factors	YTTC	0.820
External factors	YTBN	0.880

Leadership characteristics	ĐĐLĐ	0.700
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(Source: Author extracted from SPSS software, 2023)

The results of the exploratory factor analysis for the independent variables are presented in Tables 2 and 3 below. Include 12 observed variables to analyze the model. The analysis results are as follows: KMO index = 0.809 and Chi-Square statistics of Bartlett's Test have Sig index. = 0.000 < 0.05; obtained 03 factors, at the stop Eigenvalue = 1,178 > 1; extracted variance is 64,434 > 50%.

**Table 2.** KMO and Bartlett's test of independent variables

KMO coefficient		.809
Bartlett's test	Approx. Chi-Square	2608.749
	df	135
	Sig.	.000

(Source: author's analysis results, 2023)

**Table 3.** Factor rotation matrix

	Hệ số tải			
	1	2	3	4
SPH	.833			
SPT	.776			
NTLI	.748			
ĐĐTC		.814		
QMDN		.737		
ĐĐSP		.731		
SEBN			.865	
CĐCT			.839	
SHTCP			.807	
CSHT.CNTT			.606	
HB.TMĐT				.827
TĐ.TMĐT				.754

(Source: author's analysis results, 2023)

Based on the results of the factor rotation matrix, these factors are grouped together and named specifically as follows:

The first factor includes variables NTLI, SPT and SPH; keep the name of the factor as Technological Innovation and denoted as ĐMCN. The second factor includes the variables of ĐĐTC, ĐĐSP và QMDN; keep the name of the factor as Organizational factor and denoted by YTTC. The third factor includes the variables CĐCT, SEBN, SHTC and CSHT.CNTT keeping the name of the factor as External factor and the symbol YTBN. The fourth factor includes two variables HB.TMĐT and TĐ.TMĐT, still keeping the factor's name Leadership characteristics and symbol is ĐĐLĐ.

**Table 4** Descriptive statistics of the regressors

Factors	Acronym	Median	P-value
<b>Technological innovation</b>	<b>ĐMCN</b>	<b>3.1400</b>	.000
Awareness of benefits	NTLI	3.3726	
Complexity (applicable)	SPT	1.3806	
Suitability	SPH	1.1209	
<b>Organizational factors</b>	<b>YTTC</b>	<b>3.4049</b>	.002
Organizational Features	ĐĐTC	3.4305	
Product Features	ĐĐSP	2.8972	
Enterprise Size	QMDN	2.7021	
<b>External factors</b>	<b>YTBN</b>	<b>2.8444</b>	.001
Competitive Intensity	CĐCT	3.4228	
External pressure	SEBN	3.5136	
Government Support	SHTCP	2.7902	
IT Infrastructure	CSHT.CNTT	2.9431	
<b>Leadership characteristics</b>	<b>ĐĐLD</b>	<b>3.2143</b>	.000
Understanding of e-commerce	HB.TMĐT	2.0129	
Attitude towards e-commerce	TĐ.TMĐT	1.9491	
R <sup>2</sup>			.51
DW			2.08

(Nguồn: Kết quả phân tích của tác giả, 2023)

The results of the linear regression analysis (Table 4) show that 51.2% of the variation of e-commerce application factor is explained by 4 components (Figure 1); the regression equation is:

$$\text{UDTMDT} = 0.440 \cdot \text{YTBN} + 0.368 \cdot \text{YTTC} + 0.317 \cdot \text{ĐĐLD} - 0.125 \cdot \text{ĐMCN}$$

Have not rejected the hypotheses H1, H2, H3, H4; concluding factors: External factors, Organizational factors, Leadership characteristics and Technological Innovation have an impact on E-commerce application. Note that the factor of Technological Innovation has a negative impact on the application of E-commerce in SMEs. The resulting model is also the basis for experts to propose governance implications.

## 5. Conclusions and Management Implications

The formation of a research model on factors affecting e-commerce application in small and medium-sized enterprises in Ho Chi Minh City plays a very important and necessary role in order to provide authentication solution that helps small and medium enterprises make appropriate decisions to apply e-commerce to improve competitiveness; at the same time, it helps state management agencies to have positive solutions to support small and medium enterprises in the city to apply e-commerce. With the above analysis results, it is clear that the application of e-commerce in small and medium enterprises in Ho Chi Minh City is affected by many factors. Specifically, these include: external factors, organizational factors such as organizational characteristics, product features; leadership characteristics as well as dependence on Technological innovation. Among those factors, in addition to external pressure, the intensity of competition requires each small and medium-sized enterprise to strengthen the promotion and further improve the organizational structure, develop a clear strategic direction for e-commerce development, improve the understanding of e-commerce in the unit. The support of the city government in ensuring the information technology infrastructure, legal mechanisms as well as policies

to encourage the application of e-commerce are extremely important, contributing to promoting the development of e-commerce applications for small and medium enterprises in Ho Chi Minh City.

### **5.1. Management implications**

*External factor* has an average value of 2.844 (the lowest) but has the coefficient  $\beta = 0.44$  (the highest). Currently, the external pressure is not great, but increasing pressure will strongly promote the application of e-commerce for small and medium enterprises. In order for enterprises to survive and develop in the context of increasingly fierce competition and increasing pressure from outside, SMEs need to take advantage of the existing advantages of IT infrastructure to conduct e-commerce applications for businesses as soon as possible, this will help businesses improve their competitiveness. In addition, the government has now made many moves related to the issuance of e-commerce development policies such as Decree No. 52/2013/ND-CP, Decision No. 689/QD-TTg, etc. Therefore, small and medium enterprises should carefully study the legal documents related to the aspect of e-commerce. At the same time, enterprises need to develop specific projects with contents suitable to the e-commerce development program of the Prime Minister to receive financial support for implementation.

*Organizational factors*: Coefficient  $\beta = 0.368$ , which is quite good (average value: 3.42). Small and medium enterprises in Ho Chi Minh City needs to maintain this steady state, limit possible risks and promote existing advantages. Specifically, it is necessary to re-evaluate the organizational structure as well as the size of the enterprise and make adjustments; change the organizational structure model, enterprise size if necessary to better match the organizational model of an enterprise applying e-commerce in business activities. Besides, products of enterprises are important factors to create competitiveness for enterprises, especially small and medium enterprises. Therefore, enterprises should pay attention to the characteristics of their products, should not e-commerce products that are not suitable; and need a product selection strategy as well as product design and development to meet the requirements of the application of e-commerce.

*Leadership characteristics*: Coefficient  $\beta = 0.317$ , which is average (mean value: 3.2). How business leaders think about e-commerce and have the right and sufficient knowledge about e-commerce also greatly affects the application of e-commerce in enterprises. Specifically, if leaders perceive e-commerce as a fertile land for enterprises to exploit, they will have policies related to the application of e-commerce; along with that, the application of this e-commerce also requires leaders to have enough knowledge to be able to make more accurate decisions.

*Technological innovation*: Coefficient  $\beta = -0.125$ , which is average (mean value: 3.14). To be able to survive and develop in the fiercely competitive market in the context of the explosion of e-commerce, there is no other way that businesses that have been applying e-commerce have to improve their own competitiveness by innovating technology to keep up with the rapid development of this field. However, when enterprises implement technological innovation, enterprises need to consider whether this change is really necessary or not. This consideration should be based on factors such as: the available resources of the enterprise, the complexity of administration and use of new technology as well as the suitability of the technology.

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