Multiple Regression Analysis on the Influencing Factors in Smes Adoption of Cross-Border E-Commerce：Evidence from China

Zhang Qiang[1]； Siti Aida Samikon[2]；Xia Jintao[3]

[123]Post Graduate Centre,Limkokwing University of Creative Technology, Malaysia
E-mail:[1]zhangqiang0031@163.com ; [2]sitiaida.samikon@limkokwing.edu.my;
[3]xiajintao1991@gmail.com

Abstract： The goal of this study was to identify and empirically investigate the variables affecting China's small and medium-sized businesses' adoption of cross-border e-commerce. The various context components were added to the Technology-Organization-Environment framework to create the conceptual model for the current study. The framework was created using a two-pronged approach that included a questionnaire survey and a review of the existing literature. A survey using a questionnaire was then carried out, and 117 small and medium-sized businesses questionnaires were gathered. Using multiple regression analysis, the researcher put the model and related hypotheses to the test. The findings show that the adoption of cross-border e-commerce by small and medium-sized businesses is highly influenced by the level of technology, organizational level, competitive pressure, and policy support. The findings and conclusions of the study, as well as the future research prospects, are discussed.

Keywords: Small and medium-sized enterprises; Cross-border e-commerce; TOE Framework, Variable

1. INTRODUCTION

In recent years, the international economic environment is not good. The financial crisis in 2008 depressed the world economy. In addition, with the outbreak of COVID-19 in 2020, the cost of domestic labor and raw materials has been rising. China's traditional international trade has been greatly hindered, and the import and export of foreign trade have been sluggish. However, the import and export of cross-border e-commerce have advanced by leaps and bounds. In 2020, China's cross-border e-commerce export trade value was 1.12 trillion yuan, an increase of 40.1% over the same period of last year, and the cross-border e-commerce import trade value was 3.07 trillion yuan, making great contributions to stabilizing China's foreign trade import and export.

The diffusion of innovation (DOI) theory (Rogers, 1995) and the technology, organization, and environment (TOE) theory (Tornatzky &Fleischer, 1990) are the two main ideas that have been the foundation of the existing literature on cross-border e-commerce adoption up to this point. The DOI idea serves as the immediate ancestor of the TOE theory. The TOE framework thus completes the DOI theory. The TOE idea is a frequently used framework in

the literature when discussing CBEC adoption (Hsu et al., 2006; Oliviera & Martins, 2010). (Zhu et al,2006). Although it has been shown that people's cultural backgrounds or racial characteristics significantly influence their choice to adopt such technology (Darioshi & Lahav, 2021)(Ongori, 2009), the present literature mostly ignores the influence of such elements. Additionally, the model lacks details regarding unique employee and manager traits (Ghobakhloo&Tang,2013).

At present, CBEC enterprises face many challenges in the process of e-commerce development (Cheng et al 2019). While there are many successful CBEC players like Amazon, Ali Baba, eBay, and Jingdong, it does not mean there is no e-commerce failure. Many global seller enterprises on the platforms make the CBEC a competitive environment. Lack of knowledge of understanding the key determinants influencing the small and medium-sized enterprises (SMEs) adoption on the usage of the CBEC platform trading will result in many sellers' unsuccessfully continuance to use the platform to sell their products. Moreover, even with CBEC success, the results are not as much as expected (Valarezo et al,2018). Although the government has introduced many policies and measures to promote cross-border e-commerce among SMEs in China, after all, the time for enterprises to contact cross-border e-commerce is still very short, and their experiences in various aspects are still immature, which leads to the phenomenon that many SMEs follow the crowd, blindly participate in cross-border e-commerce platform and loss profits even failed. So there are two research questions .First, what are the factors that affect SMEs' application of cross-border e-commerce? Second, how can SMEs better develop cross-border e-commerce? There is no in-depth research on this, which has become a problem to be solved by SMEs in China, and it is also the key research issue of this research. To fill these research gaps, this research tries to explore the influencing factor on SMEs adopting the CBEC platform for business trading. The significance of this research could be both theoretical and practical.

2. LITERATURE REVIEW

2.1 Variable Overview

2.1.1Technology factors

Rogers (1995) believed that the main factors affecting the innovation adoption of individuals, organizations, and even the whole industry are technological dimensions （Orr，2003）. Xie and Li (2012) conducted a comprehensive analysis and research on the key factors affecting the implementation of e-commerce and believed that the external environment of enterprises, their technology, and e-commerce technology are important factors influencing the adoption of e-commerce technology by enterprises (Xie&Li,2012).

2.1.2 Organization factors

Some scholars, such as Xu (2012), believe that organizational resources are the ability of organizations in terms of material and systems before and after the adoption, and the richness of organizational resources is conducive to organizational innovation, which is an important

factor in the adoption of innovation. Liang (2017) believes that organizational resources are a necessary factor in the adoption of technology by enterprises, and after the completion of technology adoption, new technologies should be combined with the original resources of organizations. Johanson and Vahlne (1977) pointed out that enterprise internationalization means not stopping at the domestic market, but expanding the foreign market through technological innovation. According to Chen and Hu(1992), the proportion of overseas employees in all employees, the establishment of overseas branches, and the level of export profits of enterprises are important standards to measure internationalization. Gibbs and Kraemer (2002) believe that the larger the scope of sales in the international market, the more enterprises will adopt e-commerce.

2.1.3 Environment Factors

Scholars have emphasized from different perspectives that "one of the main driving forces for SEMs to adopt Internet-related technologies is the pressure of competition" (Chu,2013). Hu(2015) believes that policy support plays an important role in promoting the adoption of cloud computing, and these policies mainly include supportive policies, special allocations, tax incentives, etc. Liu and Yu(2016) analyzed the current situation and influencing factors of cross-border e-commerce in China and believed that national policies and talents were important factors that should not be underestimated.

2.2 Technology-Organization- Environment (T-O-E) Overview

As per Salwani et al (2009), T-O-E Framework was developed by Xu et al (2004） for organizational adoption based on the Contingency Theory of Organizations. Awa（2012） believes that it expects a nonexclusive arrangement of components to anticipate the probability of adoption. The framework proposes that an organization should be consistent with its surroundings and environmental needs and its strength is determined by both internal and external factors like environment, organization size, and organization strategy (Teo et al,2009). Three key determinants were distinguished that influence organizational adoption: technology, organization, and environment. It is imperative when one is making a decision, three factors of influence need to be looked into namely technology development organizational conditions, business ,and organizational re-configuration, and industry environment (Zhu, et al 2003) (Arpaci et al 2012). Within the T-O-E framework, technological development presents the technologies accessible to an organization. The organization context outline the organization’s characteristics well the environmental context outlines the business field that consists of industry, competitors, regulations, and relationships with the government. As per Xu et al(2004), these are external factors that can have restraints and opportunities for technological innovations. The drawback of T-O-E is the assumption that the model will apply to large organizations, where customers make certain of congruity and fewer grievances than SMEs (Ava et al,2012). According to Xu et al(2004), there are

three contexts that leverage technology innovation adoption, and implementation process and these contexts of the T-O-E framework can be listed as follows.

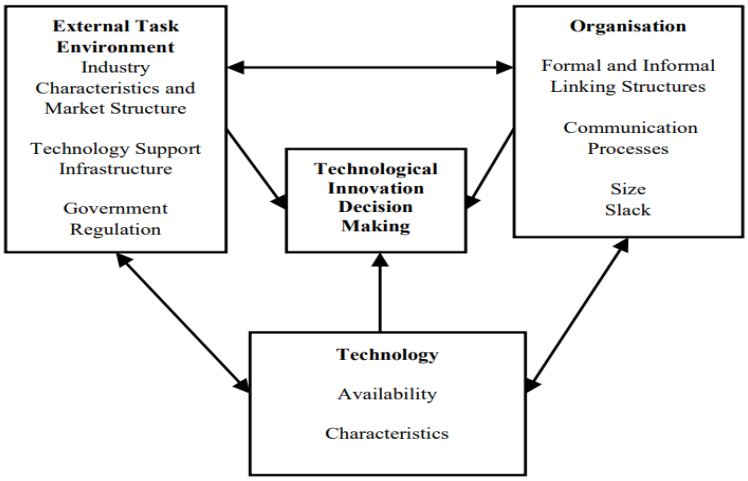

Figure2.1:The technology–organization–environment framework

3. HYPOTHESIS DEVELOPMENT

3.1. Technology factors

The application of cross-border e-commerce cannot be separated from the support of technology. Without a good technical level, the development of cross-border e-commerce will only be powerless. Therefore, the first hypothesis of this study is put forward:

H1: The technological level of enterprises has a positive impact on the willingness of SEMs to apply cross-border e-commerce.

3.2. Organization factors

Compared with large enterprises, the capital scale of small and medium-sized enterprises is often small, and cross-border e-commerce merchants are extremely scarce. Some small and medium-sized enterprises in China not only take the lead in traditional fields at home but also have a reputation abroad. Their products are sold well abroad. After a comprehensive analysis, the third and fourth hypothesis of this study is put forward:

H2: Organizational resources have a positive impact on the willingness of SMEs to apply cross-border e-commerce.

H3: The level of internationalization positively influences the willingness of SMEs to apply cross-border e-commerce.

3.3. Environment Factors

Most small and medium-sized enterprises in China exist in the form of clusters. When the competitors in the cluster apply cross-border e-commerce and take the leading position in the industry through cross-border e-commerce, it is likely to prompt their enterprises to join the ranks of cross-border e-commerce. Small and medium-sized enterprises in China are unable to successfully apply cross-border e-commerce on their due to their low ability level, and government support can promote their development of cross-border e-commerce. Based on the above analysis, the fifth and sixth hypothesis of this study is put forward**:**

H4: Competitive pressure has a positive impact on SMEs' willingness to apply cross-border e-commerce.

H5: Policy support has a positive impact on SMEs' willingness to apply cross-border e-commerce.

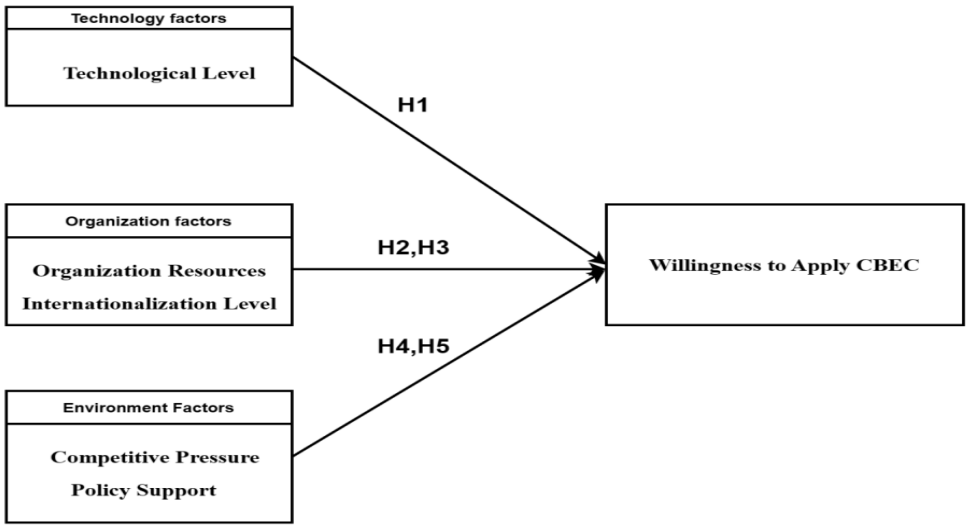

Figure 3.1: Conceptual Framework

4.DATA AND METHODOLOGY

This research uses quantitative analysis methods. The use of questionnaires is a method of analysis based on collecting individual attitudes and situations from respondents using a uniform questionnaire. The questionnaire in this research is designed based on the valid scale verified by previous authors. After that, pre-research was conducted through small-scale questionnaires, and group discussions were organized to improve the questionnaire design further. Finally, it was distributed on a large scale through online questionnaires. The study distributed the questionnaire on the WenJuanXing website (https://www.wjx.cn/), one of China's largest professional data collection websites, with over one million respondents

answering the questionnaire every day. We selected the sample service provided by WenJuanXing, a professional data collection service for research purposes. WenJuanXing helps us to select the SMEs managers adopting CBEC platform trading and remove invalid questionnaire responses randomly.

In this paper, 158 questionnaires were collected online from April 2022 to August 2022 and in total, 117 valid questionnaires were retained after excluding unqualified questionnaires (short response time, illogical response, and extreme response), with an effective rate of 74.05%.

5.DATA ANALYSIS

5.1 Descriptive analysis of variables

Table 5.1 Gender of respondents

gender	frequency	Percentage of
male	42	35.9%
female	75	64.1%
total	117	100.00%

As can be seen from Table 5.1, males and females accounted for 35.9% and 64.1% of the samples.

Table 5.2 Age of respondents

age	frequency	Percentage of
20-30	46	39.3%
30-40	29	24.8%
40-50	35	29.9%
Over 50 years old	7	6.0%
total	117	100.00%

In terms of the age of the respondents, only 6% were over 50 years old, and 94% were between 20 and 49 years old.

Table 5.3 Industry status of respondents' enterprises

industry	frequency	Percentage of
Food manufacturing industry	16	13.7%
Garment Textile Industry	23	19.7%
Chemical manufacturing	4	3.4%
Medical and health-care	14	12.0%
Rubber plastic products	6	5.1%
Electronic and electrical appliances	27	23.1%

Packaging printing	5	4.3%
Craft of style	5	4.3%
other	17	14.5%
total	117	100.00%

As can be seen from Table 5.3, 23.1% of respondents belong to the electronic and electrical appliances industry, which is the largest number. Chemical manufacturing was the smallest sector, with 3.4% of respondents.

Table 5.4 Enterprise categories of respondents

Category of Enterprise	frequency	Percentage of
Medium-sized enterprise	55	47.0%
Small business	52	44.4%
Micro enterprises	10	8.5%
total	117	100.00%

As can be seen from Table 5.4, more than 80% of respondents own small and medium-sized enterprises, while only 8.5% are micro-enterprises.

Table 5.5 The working years of respondents in the enterprise

Years of service	frequency	Percentage of
Within 1 year	21	17.9%
1-3 years	27	23.1%
3-5 years	33	28.2%
More than 5 years	36	30.8%
total	117	100.00%

As can be seen from Table 5.5, 17.9% of respondents have worked in the enterprise for less than 1 year, 23.1% for less than 1 to 3 years, 28.2% for less than 3 to 5 years, and 30.8% for more than 5 years. Most of the interviewees have worked for more than three years, indicating that they are very familiar with the business situation of the enterprises and have a more clear attitude on whether to apply cross-border e-commerce, which is helpful to the research of this paper to some extent.

5.2 Analysis of reliability

Reliability analysis refers to the measurement of the credibility of the collected data to verify its consistency and ensure the authenticity and reliability of the data needed for this study.

This paper selects the most commonly used Cronbach's Alpha coefficient method to test the reliability of the data. Cronbach's Alpha coefficient should be greater than 0.6. The larger the coefficient value, the higher the reliability and consistency of sample data. The relevant inspection standards are shown in Table 5.6.

Table 5.6 Test criteria for Cronbach's Alpha coefficient value

Cronbach's Alpha coefficient value range	Condition of reliability
Above 0.9	The reliability is very good
0.8-0.9	The reliability is good
0.7-0.8	The reliability is good
0.6-0.7	The reliability is acceptable
Below 0.6	Lack of reliability

In this paper, SPSS26.0 software was used for the reliability analysis of the data, and Cronbach's Alpha values of each variable were obtained, as shown in the following table.

Table 5.7 Cronbach's Alpha coefficient of each variable

Factor of variables	Name of variable	Number of questions	Cronbach′s Alpha numerical value
Technical factors	The technical level of the enterprise	4	0.804
Factors of organization	Leadership support	3	0.753
	Organization Resources	3	0.808
	Degree of internationalization	3	0.809
Environmental Factors	Pressure of competition	4	0.759
	Policy Support	3	0.765
Factors affected	Willingness to apply	3	0.843

As can be seen from Table 5.7, Cronbach's Alpha values of all variables are greater than 0.7, indicating good reliability of the collected data.

5.3 Analysis of validity

For validity analysis, scholars use structural validity analysis most, which focuses on testing whether the measured value is consistent with the theory, that is, whether the measured value can truly reflect the assumed theory.

Factor analysis is the most commonly used method in structural validity analysis. Factor analysis adopts the method of dimensionality reduction, and combines all the original variables in the scale according to their similarity to form multiple independent indicators, which are called common factors, and then verifies its structural validity according to the characteristics of the original variables corresponding to each common factor.

Firstly, the KMO value test and Bartlett sphericity test are used to determine whether the collected data can be factor analyzed. Generally speaking, the prerequisite for factor analysis

is that the KMO value is greater than 0.7. The larger the KMO value is, the stronger the correlation between measurement items will be, and the more suitable the data will be for factor analysis. At the same time, Bartlett spherical test should reach a significant level, that is, significance <0.05, to show that there is a correlation between each measurement item, and the data can be factor analyzed.

It can be seen from Tables 5.8 and 5.9 that the collected data can be used for factor analysis.

Table 5.8 KMO values of explanatory variables and Bartlett spherical test results

Explanatory variable factor	Name of variable	KMO numerical	Bartlett test for sphericity		
			Chi-square test value	Degree of freedom	Significance of
Technical factors	The technical level of the enterprise	.759	155.489	6	.000
Factors of organization	Leadership support Organization Resources Degree of internationalization	.853	433.614	36	.000
Environmental Factors	Pressure of competition Policy Support	.818	243.364	21	.000
Synthesize all explanatory factors		.847	1086.951	190	.000

Data source: The researcher uses SPSS26.0 to draw

Table 5.9 KMO values of explained variables and Bartlett spherical test results

Name of variable	KMO value	Bartlett Test of sphericity		
		Chi-square test value	Degree of freedom	Significance of
Willingness to apply	.705	150.571	3	.000

Data source: The researcher uses SPSS26.0 to draw

In this paper, multiple factor analysis was carried out on 20 questions, and the questions were adjusted and deleted according to the corresponding principles (if the common factor negative load of all components of a certain item is less than 0.5, the item was deleted to ensure that there is no cross load between components, and each principal component contains at least 3 questions). Q5, Q6, and Q7 were removed successively, so leadership support was removed from the questionnaire, namely, hypothesis H2 was deleted. In the end, the remaining 17 questions formed 5 common factors after factor rotation, and all the factor loads were above 0.5. The total variance of the original variables was explained by 69.022%. Factor analysis was used for principal component analysis, and the score of each factor was set to obtain the independent variable of this paper. The relevant results are shown in Table 5.10 and Table 5.11.

Table 5.10 Factor analysis results of all explanatory variables

	composition				
item	1	2	3	4	5
Q1	.856				
Q2	.741				
Q3	.722				
Q4	.717				
Q18		.789			
Q20		.768			
Q19		.640			
Q8			.818		
Q9			.759		
Q10			.754		
Q16				.835	
Q17				.774	
Q14				.596	
Q15				.565	
Q12					.866
Q13					.761
Q11					.678

Table 5.11 Explain the total variance

	Initial characteristic value			Extract the sum of loads squared			Sum of the squares of rotating loads		
composition	total	Percentage of variance	Cumulative %	total	Percentage of variance	Cumulative %	total	Percentage of variance	Cumulative %
1	5.816	34.209	34.209	5.816	34.209	34.209	2.621	15.417	15.417
2	2.292	13.481	47.691	2.292	13.481	47.691	2.476	14.564	29.980
3	1.431	8.420	56.110	1.431	8.420	56.110	2.224	13.080	43.060
4	1.326	7.801	63.911	1.326	7.801	63.911	2.223	13.078	56.138
5	.869	5.111	69.022	.869	5.111	69.022	2.190	12.884	69.022
6	.795	4.674	73.696						
7	.668	3.932	77.628						
8	.571	3.360	80.988						
9	.553	3.252	84.240						
10	.503	2.957	87.197						
11	.444	2.613	89.810						
12	.390	2.296	92.106						
13	.343	2.015	94.121						
14	.294	1.732	95.853						
15	.268	1.576	97.429						
16	.244	1.432	98.861						
17	.194	1.139	100.000						

Application intention is the explained variable of this paper. As can be seen from Table 5.12, the three test questions of the explained variable are combined to form the only factor, and the validity of the variable is good. In addition, principal component analysis was conducted again to set the score of this factor and obtain the dependent variable of this paper.

Table 5.12 Factor analysis results of explained variables

item	composition
	1
Q21	.910
Q22	.866
Q23	.847

5.4 Research hypothesis testing

Multicollinearity test

Before conducting multiple linear regression analysis, it is necessary to test the multicollinearity of variables. If there is a linear correlation between explanatory variables, the results of the regression model may be distorted. Relevant inspection indicators are shown in Table 5.13.

Table 5.13 Multicollinearity test indicators

Indicator Name	Standard of inspection
tolerance	If the tolerance of an independent variable is less than 0.1, there is a collinearity problem
VIF	If the VIF value of the variable is greater than 10, there is a collinearity problem

SPSS26.0 software was used in this paper to test the multicollinearity of each explanatory variable, and the results showed that their VIF value and tolerance were both 1. Comparing the test results with Table 5.13, it was found that there was no linear correlation between the explanatory variables in this paper. The test results are shown in Table 5.14.

Table 5.14 Results of model multicollinearity test

Variable of explanation	Collinear statistics	
	tolerance	VIF
The technical level of the enterprise	1.000	1.000
Policy Support	1.000	1.000
Organization Resources	1.000	1.000
Pressure of competition	1.000	1.000
Level of internationalization	1.000	1.000

Analysis of regression

In this research, "willingness to apply cross-border e-commerce" is taken as the explained variable, and then the five common factor scores (enterprise's technical level, policy support, organizational resources, competitive pressure,and internationalization level) are taken as the explanatory variable to conduct multiple linear regression analysis and verify the hypothesis proposed. The results of the regression analysis are shown in Table 5.15 and Table 5.16.

Table 5.15 Model Summary

model	R	R party	Adjusted R squared	Error in standard estimation	Durbin Watson
1	.602a	.363	.334	.81606079	2.276

a. Predictive variables

Table 5.16 Results of multiple linear regression analysis

	Unnormalized coefficient		Coefficient of normalization		
model	B	Error of standard	Beta	t	Significance of
（variable）	-7.815E-17	.075		.000	1.000
Technical Level	.267	.076	.267	3.521	.001
Policy Support	.412	.076	.412	5.444	.000
Organization Resources	.256	.076	.256	3.377	.001
Competition Pressure	.224	.076	.224	2.953	.004
Internationalization Level	.077	.076	.077	1.012	.314

As can be seen from Table 5.16, R square is 0.363, indicating that the overall fit of the model is good. As can be seen from Table 5.16, at the significance level of 5%, enterprises' technical level, organizational resources, competitive pressure, and government support all have a positive impact on SMEs' intention to apply cross-border e-commerce, while the level of internationalization does no influence on it. Therefore, only hypotheses H1, H3, H5, and

H6 pass the verification.

6.FINDING AND DISCUSSION

The summarized empirical research findings are shown in Table 6.1.

Table 6.1 Summary of empirical research results

Factor of variables	Research hypothesis Results
Technology Factors	H1：The technical level of enterprises can positively affect the willingness of SMEs to apply cross-border e-commerce
Organization Factors	H2：Organizational resources can positively influence SMEs' willingness to apply cross-border e-commerce H3：The internationalization level cannot positively affect the willingness of SMEs to adopt cross-border e-commerce
Environment Factors	H4：Competitive pressure can positively affect SMEs' willingness to apply cross-border e-commerce H5：Policy support can positively influence SMEs' willingness to apply cross-border e-commerce

Improving policies to promote the application of cross-border e-commerce by SEMs

1. The technical level

According to the empirical study of this paper, the technical level of enterprises has a positive impact on the application of cross-border e-commerce by SMEs. The technical level of the enterprise includes the information technology foundation of the enterprise, the computing ability of the staff,and the ability to maintain the system.

First of all, the application of cross-border e-commerce is based on the computer and the Internet. If the information technology demand cannot match the cross-border e-commerce foundation, it will not be able to carry out cross-border e-commerce activities smoothly. Therefore, small and medium-sized enterprises should have a good information technology foundation and be supported by stable, efficient, and compatible cross-border e-commerce platforms. Secondly, most enterprises rely on third-party cross-border e-commerce platforms to reach transactions with customers, which requires employees to have certain technical capabilities.

Through continuous improvement of their technology, enterprises can give customers more perfect service and obtain more market. Therefore, technical factors have become an

important factor affecting the application of cross-border e-commerce by SMEs.

2. Organization Resources

Among organizational factors, organizational resources have a positive impact on the application of cross-border e-commerce by SMEs. In the application of cross-border e-commerce, SMEs need not only a large amount of financial support but also professional and technical personnel in the early stage, which is a big challenge for SMEs. The richer the organizational resources and stronger the strength of the enterprise, the more capable the enterprise will be to bear the risk of cross-border e-commerce application failure and the economic losses caused by the failure.

3. Level of internationalization

Although some small and medium-sized enterprises are famous and have branches in foreign countries with high product sales, this situation is relatively uncommon. It is more common for enterprises to explore foreign markets through the application of cross-border e-commerce, improve their degree of internationalization and obtain more market competitive advantages. Therefore, The degree of internationalization of enterprises does not positively affect the application of cross-border e-commerce.

4. Competition Pressure

In order not to lag behind the market competition, enterprises will also actively and effectively carry out cross-border e-commerce competition with competitors to gain more competitive advantages and occupy more market shares.

5. Policy Support

Among the environmental factors, government support has a positive impact on the application of cross-border e-commerce by SMEs, and among all the study variables, the influence degree of government support is the largest.

If the government introduces some relevant policies that can effectively guarantee the operation and promote the development of enterprises when promoting the development of cross-border e-commerce, then enterprises will actively apply cross-border e-commerce and meet the call of the country.

7.CONCLUSIONS, LIMITATIONS, AND FUTURE RESEARCH

The definition of research contribution refers to new knowledge generated by research, such as new ideas, inventions, concepts, or insights, among other things. It differs from replication, which is used to see if the theory holds in different countries. It primarily refers to original contributions in social science research, that is, our contributions, rather than replicating the

same models in different countries. It is divided into two categories: theoretical contributions, and practical contributions.

From a theoretical standpoint, this research uses a new model to validate the applicability and validity of TOE model. This research model provides a holistic view of SMEs adoption of the CBEC platform for trading. Thus, our study provides perhaps the most comprehensive understanding to date of adoption for the literature contribution. Besides, it will offer guidance for government policymakers and small and medium-sized enterprises.

From a practical point of view, the government can actively promote the development of cross-border e-commerce in industrial clusters by developing cross-border e-commerce exchange associations with leading enterprises as the core and playing its guiding role to reduce the perception of competitive pressure. In addition, the government should build cross-border e-commerce parks according to the industrial characteristics of each region. It can not only further promote the cross-border e-commerce industrial agglomeration and improve the public service ability, but also cultivate the competitive advantages of local well-known brands, and accelerate the cross-border e-commerce industry in China to go abroad. Small and medium-sized enterprises need to invest a large amount of capital in the early application of cross-border e-commerce, and often the enterprises are unable to apply cross-border e-commerce because of insufficient funds and financing difficulties. Therefore, the relevant government departments should provide more policy support, such as relaxing the loan standards for small and medium-sized enterprises or stipulating specific support funds. It is specially used to guide and encourage small and medium-sized enterprises in China to carry out cross-border e-commerce. Meanwhile, the government should introduce targeted and phased preferential tariff and tax policies for cross-border e-commerce according to the development status of cross-border e-commerce of small and medium-sized enterprises in China to help more small and medium-sized enterprises to apply cross-border e-commerce and promote the growth of the national economy. The availability of professionals has a certain impact on the application of cross-border e-commerce. China is in great demand for talent. In a situation where cross-border e-commerce merchants are in such short supply, it is difficult for SMEs to apply cross-border e-commerce, because SMEs are small in scale and weak in the capital, and it is difficult to attract experienced e-commerce merchants to stay in their enterprises, resulting in a serious brain drain. Therefore, small and medium-sized enterprises can select a group of employees with talent in cross-border e-commerce and an understanding of business operations for training according to their characteristics, because they know how to use cross-border e-commerce can further enhance the competitive advantage of enterprises. This internal communication and training can not only bring new ideas to the enterprise but also reduce operating costs. In addition, enterprises can also cooperate with schools to train students in relevant majors. In this way, students can not only develop comprehensively in school, but also have the opportunity to practice in enterprises to

improve their practical ability and adaptability, and the needs of enterprises for cross-border e-commerce talents can also be met. Enterprises can choose to join some cross-border e-commerce industrial parks according to their actual conditions In addition, if an enterprise wants to successfully apply cross-border e-commerce, it must have a cross-border e-commerce platform. In addition, enterprises can use third-party cross-border e-commerce platforms to solve the problems, but be careful not to choose too many cross-border e-commerce platforms, and only one or two cross-border e-commerce platforms can be operated diligently. More attention should be paid to the research and development of basic products and services, and efforts should be made to innovate and improve the competitiveness of enterprises.

Even though the study outcomes have important managerial and academic implications, they are not devoid of limitations. Firstly, due to relatively small sample size, the outcomes should be generalized with caution. Secondly, while the study included SMEs from various socioeconomic sectors in China, it did not represent all sectors and could not elicit an equal proportion of responses within included sectors. Thus, on account of disproportional representation, the application of results is limited.

Future research can invest in focusing on specific industries of SEM adoption CBEC platforms. In addition, it can expand the scope of the sample collection to include more people from different provinces, cities, ages, occupations, and education levels so that the sample data can be more convincing and the findings more generally applicable.

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