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Adoption E-Commerce for Export Market of Small and Medium Enterprises in Thailand

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Abstract

This research aims to analyze small and medium enterprises (SMEs) who are exporters in Thailand to e-commerce adoption for export market. The study presents four hypotheses in order to understand the point of view of SMEs to e-commerce adoption into global marketplace. The author collected the data by questionnaires sent to prospect SMEs. The usable questionnaires with complete information reached at 21.5% of total questionnaires. For statistics analysis, the study applies t-test, One-way ANOVA, Chi-square test and simple regression model to examine the hypotheses. The results showed SME's realization between exporter and non-exporter and also different size of SME exporters toward the benefit of e-commerce to export market being as the same at the high level. The study also presented the relationship between SME exporter and e-commerce adoption which is dependent significantly. In addition, this research concluded that e-commerce adoption of Thai SME exporters does not impact positively to export intensity significantly. The findings of the study suggested Thai SMEs both exporter and non-exporter now realize the great benefits of e-commerce to global market at high level and nowadays employ e-commerce as one of a strategic management to their global commercial. However, e-commerce adoption of SMEs has not increased the export intensity nevertheless. It probably implies SME exporters have not strongly took advantage of e-commerce to export market substantially. With data analysis, e-commerce of Thai SMEs mostly still lacks full functionality of e-commerce to serve various demands from customers over global marketplace promptly. This is a challenge for Thai SME exporters to improve their competence with e-commerce adoption in order to gain the competitive advantage.

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Keywords: SMEs; Export; E-commerce; Thailand

1. Introduction

Currently the e-commerce has been growing rapidly. Development of internet and expansion of infrastructure and technology are key drivers to exponentially increase of e-commerce value inevitably. E-commerce is about using

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computer system and internet to propose the businesses including selling, buying, exchanging products, servicing and information (McKay and Marshall, 2004). By 1999, approximately 300 million users accessed the internet and nearly 75 million users made purchases online from e-commerce, worth approximately US\$110 billion. In 2012, global e-commerce sales were estimated to reach over the US\$ 13.7 trillion (WTO, 2013). E-commerce provides many contributions to both sellers and buyers; e.g. Napier et al. (2001) indicated that by implementing and using e-commerce sellers can access narrow markets segments that are fast distributed while buyers can gain the benefit by accessing global markets with a variety of available products and services from sellers around the world.

Small Medium Enterprises (SMEs) play a vital role in economic development of many countries around the world. The benefits of e-commerce are not only for large firms but also SMEs can gain benefit from e-commerce (OECD, 2000). Especially SMEs are attempting to harness the benefits from e-commerce which is a strategic management for their rapid growth (Ramakrishnan et al., 2012; Elizabeth et al., 2011). SMEs can use e-commerce for creating value-added, new services and new business models, expanding their businesses and competing in global market (Mesut et al., 2014). For instance, SMEs in Indonesia have been aware of the presence of B2B market place as well as joining in B2B marketplace website (Kurni, 2007; Veronica S. M., 2012). In Taiwan, operations and marketing aspects of e-commerce have strong impacts on performance of SMEs in B2B and B2C contexts (Ramakrishnan et al., 2012).

SMEs have also applied e-commerce into the business in order to improve operational aspects such as order processing, order fulfillment and delivery both domestic and international market. For instance, e-commerce helped Italian SMEs to develop new markets and to enhance communication with customers. However, although SMEs account for more than half of total employment and added value in many countries, SMEs do not contribute to export trade because they faced the critical barriers include the lack of capital, capacity, and the general process for export market (James H.T., Richard W. W. and Ian T., 2001).

For e-commerce adoption of SMEs in Thailand, the report by UNCTAD showed that most of enterprises especially SMEs in Thailand did not employ e-commerce for their business trade from internet (UNCTAD, 2013). Consequently, SMEs in Thailand have started realizing the importance of applying e-commerce based on a review of the literatures; though, the aspect of export business from Thai SMEs by e-commerce has been studied a little (Lertwongsatien and Wongpinunwatana, 2003; Laosethakul and Bouton, 2007; Graham, 2011).

Therefore, the objective of this research is to study the Thai SMEs' realization on benefit of e-commerce to export market, dependence between SME exporters and e-commerce adoption, and also to find the relationship between e-commerce adoption and export intensity. While the result of this research could help SME-exporter to develop their capacity and functionality more on e-commerce for export market. Besides related institutions both public and private sectors which are responsible for enhancing SMEs' performance for exporting could prepare a plan to support Thai SMEs and to develop SMEs' e-commerce as strategic management in order to enter into export industry consequently.

2. Related Literature and hypotheses

2.1. E-commerce and Type of Commercial Transactions

OECD (2001) defined the meaning of e-commerce that is the purchase or sale of goods between the business, households, individuals, governments and other organization over computer networks limited with the internet in narrow definition. E-commerce consists of the exchange of data to facilitate the financing and payments (Rosen, 2000). Growing of internet and development of infrastructure and technology are key drivers to exponentially growth of e-commerce inevitably.

E-commerce was initially founded since 1995 which was the sale of banner advertisements. Currently e-commerce is classified with 3 types including Business-to-Consumer (B2C), Business-to-Business (B2B) and Consumer-to-Consumer (C2C) (Veronica S.M., 2012). However, WTO reported that there are numerous types of commercial transactions include electronic communications in the area of B2B, B2C, and business to government (B2G) (WTO, 2013) as follows:

- B2B is e-commerce between businesses such as between a manufacturer and a wholesaler, or between a wholesaler and a retailer. The report showed the revenue of B2B e-commerce comprise 90% of all e-commerce, amounted to US\$12.4 trillion by the end of 2012.
- B2C is defined as business selling to the general public. Global B2C transaction accounted for US\$1.2 trillion at the end of 2012.

- B2G is e-commerce between companies and public sectors. It involves with public procurement and other government-related processes.

2.2. SMEs in Globalization

SMEs are recognized by governments worldwide as business networks to facilitate innovation and economic development (Besser and Miller, 2011). Although SMEs in both developing and developed countries are small but these enterprises make a lot of contributions to the economy (Mesut et al., 2014). The development of production, technology, transportation and communication enhance SMEs to develop their products and services as well as gain competitive advantage to deliver value to global marketplace. SMEs play a vital role in economic development of many countries around the world (McKay and Marshall, 2004). SMEs make up a majority of business and employ the majority of workers in both manufacturing and services sectors. SMEs cater mostly to their domestic market and their contribution to GDP (WTO 2013). The studies of SMEs in this kind of subject clearly show that internet technology has led to an increase in the international trade (Totochi and Kakamanshadi, 2011). The Australian Bureau of Statistics defines the typical characteristics of small and medium enterprises (SMEs) as follows (Jentzsch and Miniotas, 1999).

- The enterprise is independently owned and operated
- Most of the operating capital is provided by the owner(s)
- The enterprise is closely controlled and managed by the owner(s)
- The principal decision making is performed by the owner(s)

For many SMEs in developing countries, e-commerce is able to support SMEs' businesses to the great opportunities for a global value chains. E-commerce in China has expanded by 120% a year over last ten years. In Latin America, e-commerce has grown to US\$43 billion from US\$1.6 billion in the past decade which Brazil accounted for 59% of Latin America market. E-commerce allows developing countries to compete in international trade, but the full potential of its benefits can be realized only when governments create business environments that introduce the power of the internet (International Trade Centre, 2013). Several studies found the benefits and impact of e-commerce (Nejadirani et.al, 2011). This leads us to first and second hypothesis:

H1.1 SMEs both exporter and non-exporter in Thailand realize on the benefit of e-commerce which has an important role to export market at the same level.

H1.2 SME exporters in different size in Thailand realize on the benefit of e-commerce which has an important role to export market at the same level.

2.3 Adoption of E-commerce and Internet in Thailand

Lertwongsatien and Wongpinunwatana (2003) studied factors affecting a firm's decision on e-commerce in Thailand. The results showed that firms applying Information Technology strongly, establishing IT department, are more likely to adopt e-commerce. Also e-commerce was employed by SMEs to support their environmental strategies. In addition, Laosethakul and Bouton (2007) identified the critical factors for e-commerce. The details were conducted by nine e-commerce companies with different industries in Thailand. The results explained that social behavior and national culture are the major influences for the success of e-commerce. Besides, Thailand's infrastructure also played a vital role in the success of its e-commerce growth. Graham (2011) examines the websites allow Thai silk producers in Thailand to expand market and reduce in the use of intermediaries. The study also reported that Thai silk industries are rarely able to employ internet as a tool of development their marketplace. Moreover, UNCTAD (2013) reported that more than 95% of enterprises in Thailand did not use e-commerce both placing and receiving order from internet. This leads us to hypothesis as follows:

H2. SME Exporters in Thailand are independent with adoption of e-commerce to obtain the opportunity into export market.

2.4 Thai SMEs and Export Business

The number of employee is the most common measure to distinguish between small, medium and large-sized enterprise. However, the definition of SMEs in Thailand is explained by Table 1 (Tulus, 2008). The office of SMEs promotion (OSMEP, 2013) reported the total number of SMEs was approximately 2.7 million enterprises in 2014. It is about 98.5% of total enterprises. It created the employment at 11.78 million people or 80.4% of total employment system. SMEs made GDP in 2013 approximately at 37.4% of total GDP. Nevertheless, total number of SME exporters is about 22,095 enterprises or 55% of total exporters. The export by SMEs in 2013 accounted for only 26% of total export value or 1,716,819 million baht (OSMEP, 2013). This leads us to final hypothesis:

H3. Adoption of e-commerce has positively impact on export intensity of SMEs in Thailand.

Export market of SMEs in Thailand in 2014 is shown in Table 2 which is expressed that nearly 50% of export market by SME is located in ASEAN+3 region including ASEAN, China and Japan.

Table 1 Definition of SMEs in Thailand

Thailand (SMEs)	Employee	Fixed assets	Invested Capital
MIE – Manufacturing	<4		<0.5 m. baht
SE - Manufacturing & Services	<50	<50 m. baht	<20 m. baht
- Trading:			
- Wholesaling	<25	<50 m. baht	1-9 m. baht
- Retailing	<15	<30 m. baht	1-9 m. baht
ME- Manufacturing & Services	51-200	50-200 m. baht	20-100 m. baht
- Trading:			
- Wholesaling	26-50	50-100 m. baht	1-9 m. baht
- Retailing	16-30	30-60 m. baht	1-9 m. baht

Table 2 Export Market Share of Thai SMEs in 2014

Export Market	Value (Billion Baht)	Market Share
ASEAN	509.4	27%
China	233.9	12%
EU	198.4	10%
Japan	185.2	10%
USA	149.6	8%
Others	640.6	33%
Total	1,917.1	100%

2.5 Research design

In the light of the literature, we argue that Thai SMEs realize the benefit of e-commerce through using for export market and propose the four hypotheses and the relationship among the constructs are shown in Fig. 1. as follows:

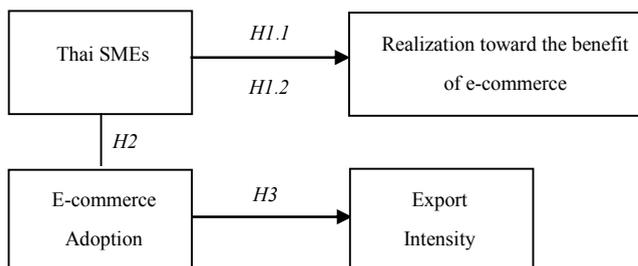


Fig. 1. Research Framework.

3. Discussion of results

3.1 Research Goal

This research aims to identify the adoption of e-commerce by Thai SMEs to the export market. The contribution could show whether Thai SMEs realize an important role as well as apply for e-commerce to international trade as one of strategic management. In addition, the study will introduce whether e-commerce employed by Thai SMEs has increased sales volume to international trade. Also the research then could recommend what SMEs are able to enhance their e-commerce ability so that they can manage them to compete with global players efficiently.

3.2 Sample and Data Collection

The survey of this study is conducted on small and medium enterprises located in Thailand, mostly in Bangkok Metropolitan area, North and North-eastern part. To test four hypotheses, a field survey using questionnaires to acquire the data. The research sent questionnaire to 400 entrepreneurs and staffs operating their businesses at seminars and exhibition. However, there are 86 questionnaires (21.5%) which are able to be collected and fill out the research questionnaire completely. Finally, there are available 46 SMEs that are exporting companies in which are expressed in details in Table 3 and Table 4.

Table 3 Respondents

Enterprises	Number of Enterprises	E-commerce		
		Adoption	Not Adoption	N/A
SMEs	68	48	20	0
Exporter	46	39	7	0
Non-Exporter	22	9	13	0
LEs	17	12	3	2
Exporter	16	12	3	1
Non-Exporter	1	0	0	1
N/A	1	1	0	0
Exporter	1	1	0	0
Non-Exporter	0	0	0	0
Total	86	61	23	2

Table 4 SME Exporters

Type of Business	Number of SMEs
Health and Beauty Product	4 (9%)
Clothes	2 (4.3%)
Agriculture	4 (9%)
Service	2 (4.3%)
Jewelry	2 (4.3%)
Antique and Thai Traditional Product	1 (2%)
Furniture and Home Decor	4 (9%)
Consumer Product	17 (37%)
N/A	2 (4.3%)
Others	8 (17%)
Total	46 (100%)

Number of respondents being especially SME exporters is about 70% of total SME sample. They now adopt e-commerce for their business at 85%. Most of SME exporters in this research are doing businesses in consumer, agriculture, health & beauty product and furniture & home decor sector at 37%, 9%, 9% and 9% respectively. While

SME exporters use e-commerce channels to interact with customer mostly by email, own website and shopping website as shown in Table 5. For payment channel of customer, 74% of total financial transaction for SME exporter in Table 6 is made by bank transfer. Cheque & Paypal as well as credit card are equal at 5% of total financial transaction. In addition, types of customer for Thai SMEs who are adopting e-commerce expressed in Table 7 are intermediaries, producer & manufacturer and retailer at 46%, 26% and 26% of total serially.

Table 5 E-commerce Channel of SME-Exporter

Channel for e-commerce	Own Website	Shopping Website	Email	Social Media	N/A
Number of SMEs (39 enterprises)	20 (51%)	7 (18%)	21 (54%)	5 (13%)	5 (13%)

Table 6 Payment Channel for Customer

Payment Channel	Credit Card	Bank Transfer	Direct Debit	L/C	Cheque & Paypal	N/A
Number of SMEs (39 enterprises)	5 (13%)	29 (74%)	3 (8%)	9 (23%)	5 (13%)	1 (3%)

Table 7 Type of Customer

Type of Customer	Intermediaries	Producer & Manufacturer	Organization	Retailer	Government	N/A
Number of SMEs (39 enterprises)	18 (46%)	10 (26%)	9 (23%)	13 (33%)	0 (0%)	1 (3%)

3.3 Analyses and Results

Data was collected by questionnaires which were used in the analysis and found acceptable with Cronbach’s alpha scores at 0.898. Data obtained from those 86 questionnaires were analysed by SPSS and proposed main hypotheses tested by t-test, One-way ANOVA, Chi-square test, and Simple regression function.

To compute the statistics analyses, SPSS was employed to execute the reliability analysis on SMEs’ realization toward the benefit of e-commerce to export market which is expressed in Table 8. The five items of SMEs’ realization on its benefit are shown as the following:

- Save transaction costs
- Reduce cost in advertising and promotion
- Speed communication between buyer and seller
- Minimize transport obstacles
- Remove physical limitations of time and space

Table 8 Reliability Analysis

Dimensions	Cronbach’s Alpha	No. of items
SMEs’ realization toward the benefit of e-commerce	0.898	5

To test *H1.1*, this research applies t-test to test the hypothesis. Medium level of SMEs’ realization toward the benefit of e-commerce to export market is equal 3 according to Likert-Scale from 1 to 5. For Table 9, it shows summary of SMEs’ realization toward the benefit of e-commerce to export market. SME exporters realize the benefit of e-commerce for export market around 39.1% at high level and 19.6% at very high level whereas non-exporters (SMEs) appreciate the benefit of e-commerce to export market at 40.9% at high level and 4.5% very high level

respectively. The mean observed by this survey reaches at 3.7 points and 3.4 points for exporters and non-exporters correspondingly. The data was tested by independent sample t-test at $\alpha=0.05$ cut off with t-statistics = -1.484, Sig. = 0.143, offering acceptance for *H1.1* It could be concluded that SMEs both exporter and non-exporter in Thailand realize the benefit of e-commerce for export market as the same at high level.

Table 9 SMEs' realization toward the benefit of e-commerce to export market

	Number of SMEs	The Benefit of E-Commerce to Export Market				
		Very High	High	Medium	Low	Very Low
Exporter	46	9 (19.6%)	18 (39.1%)	18 (39.1%)	1 (2.2%)	0
Non -Exporter	22	1 (4.5%)	9 (40.9%)	10 (45.5%)	2 (9.1%)	0
Total sample size	68	10 (14.7%)	27 (39.7%)	28 (41.2%)	3 (4.4%)	0

The study has also separated size of Thai SME exporters regarding number of employees into 4 groups which are introduced in Table 10. To test *H1.2*, this research applies One-Way ANOVA at $\alpha=0.05$ cut off with F-ratio = 0.570, Sig. = 0.638, offering acceptance for *H1.2*. It could be summarized that Thai SME exporters in different size of enterprise realize the benefit of e-commerce for export market as the same at high level. The level of four groups on realization toward the benefit of e-commerce to export market is presented in Fig. 2.

Table 10 SME exporters' realization toward the benefit of e-commerce to export market

Number of Employees	Number of SMEs	The Benefit of E-Commerce to Export Market				
		Very High	High	Medium	Low	Very Low
Less 5	12	3 (25%)	6 (50%)	2 (16.6%)	1 (8.3%)	0
5-25	16	3 (18.8%)	7 (43.8%)	6 (37.5%)	0	0
25-50	8	1(12.5%)	4 (50%)	3 (37.5%)	0	0
50-200	10	1 (10%)	2 (20%)	7 (70%)	0	0

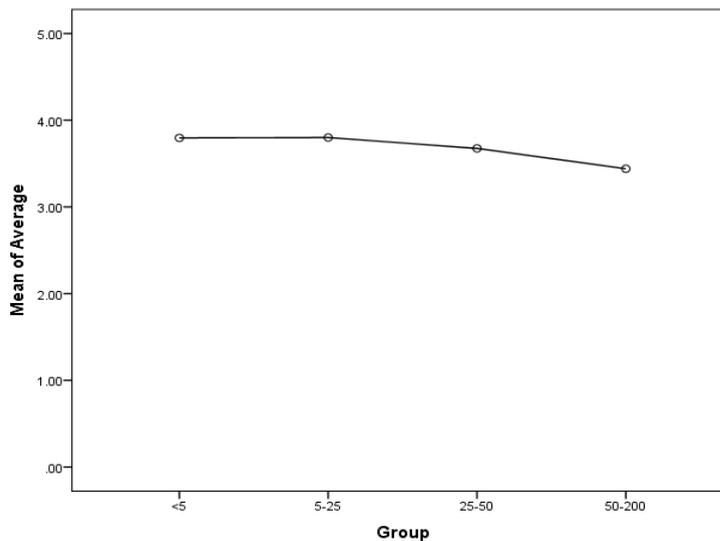


Fig. 2. Level of realization toward the benefit of e-commerce of four SMEs group.

To test *H2*, this research employs Chi-square test to test the hypothesis. The research considers the data about dimensions between e-commerce adoption and SME exporter as shown in Table 11. It shows that 85% of exporters

adopt e-commerce for their businesses prominently whereas 15% of respondents do not apply e-commerce. Nevertheless, non-exporters consider e-commerce for their commercials only 41% of total sample whereas they do not pay attention to e-commerce adoption at 60% approximately. The data was tested at $\alpha= 0.05$ cut off with Chi-square value = 13.79, Chi-square critical value = 3.841, offering rejection for $H2$. It could be concluded that E-commerce adoption depends on type of SMEs in Thailand. There is a relationship between SME exporters and adoption of e-commerce significantly. Only SME exporters in Thailand likely adopt e-commerce for their export market which is different from SME non-exporter noticeably. The result also implied that SME exporters use e-commerce as a tool to manage their businesses with marketplaces remarkably.

Table 11 E-commerce adoption of SMEs

SMEs	E-commerce adoption		
	Yes	No	Total
Exporter	39 (84.8%)	7 (15.2%)	46
Non-Exporter	9 (40.9%)	13 (59.1%)	22
Total sample size	48 (70.6%)	20 (29.4%)	68

For e-commerce adoption to export intensity, this study applies simple regression analysis to the data collected by questionnaires. To test $H3$, this search would like to find out whether e-commerce adoption of SME has impact to a change of export market. The dependent variable of regression is export intensity which is export volume over total sales. While an independent variable of testing is e-commerce adoption of SME exporters that it is a dummy variable (0 or 1). The data was executed by SPSS that shows R Square equals 0.003 (0.3%) at $\alpha= 0.05$, Sig. = .756 as shown in Table 12 offering acceptance for $H3$. It could be expressed that even SME exporters adopt e-commerce for their businesses considerably but e-commerce adoption of SMEs in Thailand does not impact to increase of export intensity significantly.

Table 12 Simple Regression Analysis

Model	R	R Square	Std. Error of the Estimate	Change Statistics				
				R Square Change	F Change	df1	df2	Sig. F Change
1	.05	.003	34.08826	.003	.098	1	39	.756

4. Conclusion

Increase of e-commerce value to global market among trade competition. It is not only support SMEs to enhance their performance including time utilization, cost reduction toward global market but also could help SMEs to gain benefit for creating value-added, new services and new business models and also for expanding their businesses. Therefore, e-commerce has a vital role to export market for small and medium enterprises undoubtedly.

This research thus aims to focus on SMEs toward e-commerce adoption for export market. This is to understand Thai SMEs to this perspective very well. The study tested the hypotheses to recognize how Thai SMEs’ realization toward e-commerce into export market is. The research employed t-test, One-way ANOVA, Chi-square, and simple regression for statistics analysis whereas the data was collected on Thai SMEs by questionnaires.

The questionnaires were sent to 400 Thai SMEs located in Thailand, Bangkok Metropolitan area, North and North-eastern part, which 21.5% of total with complete information were collected. Most of respondent are doing business in consumer, health & beauty, agriculture and furniture & home decor sector respectively.

The results of this research showed that SMEs both exporter and non-exporter realize the benefit of e-commerce adoption to export market as the same at high level. Most SME exporters around 60% more recognize the great benefit of e-commerce to export market whereas SME non-exporters around 45% also know the benefit of e-commerce too. To consider size of SME exporters, SME exporters in different size realize the benefit of e-commerce as the same at high level also. To consider relationship between SME exporter and adoption of e-commerce to export market, 85% of SME exporters are currently employing the e-commerce for their businesses noticeably. The test shows that SME exporters are dependent on e-commerce for commercial significantly whereas SME non-exporter is independent though. However, e-commerce adoption by Thai SME exporters has not increased the export intensity from result of testing considerably even though SMEs in other countries could gain benefit with e-commerce by previous studies.

This research finds that even SME exporters in Thailand highly realize the benefit of e-commerce and are dependent on them but in fact SME exporters have still not implemented the full functionality of e-commerce usefully. From data collection, it presents that most of SME exporters use their own website and email at 51% and 54% to interact with customer. As surveying their websites, it finds that they don't have functionality both placing and receiving order over website which is similar to the research of UNCTAD reported in 2013. The website of SME exporters mainly display their products and there is no functionality to serve demand from customer promptly. Managerial approach of e-commerce is still not efficient and not convenient for marketplace.

Moreover, the payment transaction for customer even now is employed by bank transfer and L/C at 74% and 23% whereas credit card and direct debit are proposed only 13% and 8% respectively. In addition, most of SMEs' websites are not active and incomplete regarding full capacity of e-commerce. SME exporters still need to develop placing order, receiving order, payment mode and other functions in order to improve their performance such as export sales, financial liquidity, number of new customers, reduction of cost etc.

Therefore, even Thai SME exporters realizes the great benefit of e-commerce adoption but it probably indicates that SME exporters have not strongly took advantage of e-commerce to export market considerably. The challenge of Thai SME exporters is to improve their competences of e-commerce to become more efficient and competitive advantage as particular aspects.

Furthermore, public and private sector in Thailand could strongly help Thai SME exporters to develop and to support Thai SMEs' website. With strategic plans, related institutions should probably present the successful e-commerce to Thai SME exporter and then select some prospect Thai SMEs to join the developing program. Consequently, SME exporters could be improved their capabilities of business management over e-commerce adoption and develop a strategic plan to compete into the global market efficiently. For further research, the author suggests researchers who are interested in this area to focus more on a strategic management to increase export intensity over e-commerce adoption. Also, the study should understand the obstacles of e-commerce adoption by Thai SMEs in order to increase the competence of e-commerce utility for export sales in addition.

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