

## **FACTORS AFFECTING ON SMEs PERFORMANCE IN LAO PDR**

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**Abstract:** *Small and medium sized enterprises (SMEs) play a very important role in enhancing economic development in Laos. This study examines the factors that determine SME performance. We used the Logit model, with 722 samples from GIZ survey. The factors that have a positive and significant effect on Lao SMEs performance include the nationality of owner as Lao, the owner received management training since starting the business, the owner got some advice for developing the business, the firm size, the technology level, the firm mainly sold to foreign markets, and the business is located at shopping center. This study suggests policy makers or private agencies should provide more training for owners and managers, as well as capital for expanding businesses to increase their assets and employees.*

**Keywords:** *SMEs Performance, Business Growth, Laos*

### **INTRODUCTION**

Lao PDR has achieved rapid development since it began transitioning to a market economy over two decades ago. During the last 5 years (2008-2012), Laos' economy averaged more than 7.5% annual growth, with GDP per capita reaching USD 1,396 and the economy growing by 7.93% in 2012 (BoL, 2012). Small and medium-sized enterprises (SMEs) play a very important role in enhancing economic development in Laos (Kyophilavong, 2008). In recent years, the Lao government has promoted the Lao SME development in order to improve the conditions for private sector or SME development and improvement of vocational education and training (GIZ, 2012). According to GIZ (2012), SMEs in Laos lack competitiveness and this limited competition could leave the economy vulnerable in the long run, particularly as international firms enter the fray in greater numbers in the wake of AFTA and WTO implementation.

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There were many studies on SME performance in developed and developing countries such as in studies of Lefebvre *et al.* (2003) found that SME performance depends on the firm's size, technology and whether the product is sold on the foreign market. Networking, particularly with informal governance institutions, was also important for SME performance (Biggs and Shah, 2006; McMillan and Woodruff, 2003; Watson, 2007). A recent study confirmed that the age of the firm has a positive effect on SME performance (Rosenbusch *et al.*, 2011). In addition, the technological level and human resource management determined firm performance and business efficiency, as found by Aragón-Sánchez and Sánchez-Marín (2005). A few empirical studies have been conducted to assess the factors affecting SME performance in Laos. Inmyxai and Takahashi (2009) have demonstrated that human resources as developed through education, training, technology and business finance have a positive effect on SME performance. Kyopilvong (2008) found that capital intensity, firm size, and education level of labors have contributed to the firm's labor productivity. However, the effect of factors on SME performance was examined in several studies in developed and developing countries. Little research has been conducted to demonstrate this issue and empirical studies on this issue are lacking in Laos. Moreover, assessment of SME promotion policy is not well understood. Therefore, this study is interesting for researchers and policy makers. The main purpose of this study is to examine the factors' effects on SMEs performance in terms of business growth, which is measured by three indicators, namely output, turnover and profits, by using data from the Enterprise Survey 2013 of Lao-German HRDME Programme.

The rest of the paper is organized as follows: the second section describes the methodology; the third section provides the results and discussions; and the conclusion is given in the final section.

## **METHODOLOGY**

### **Data Sources**

To examine the factors' effects on SME performance in Lao PDR, the cross-section data that were collected by Enterprise Survey 2013 of Lao-German HRDME Programme from GIZ is used for this study, which was conducted by the survey in October 2013 with 722 enterprises from five provinces in Laos,<sup>1</sup> namely Vientiane Capital, Champasack, Savannakhet, Luangprabang and Luangnamtha provinces.

### **Empirical Model**

To examine the factors' influence on SME performance in Lao PDR, this study use business growth to indicate SME performance. Business growth is measured by changes in output, turnover and profits, with the data available from GIZ. We have used a Logit model to identify the factors' effect on SME performance. This

model is particularly suited to the task at hand because it is designed to handle regressions involving dichotomous dependent variables. This consideration is singularly important since business owners were asked to say whether their output, turnover and profit increased or not. These responses, coded 1 for increasing and coded 0 for other are called the dependent variable. The Logit model will figure out the probability of which factor is affecting the SME performance by calculating marginal effect in every single factor based on the explanatory variables were conducted in the model. The factors affecting SME performance would be demonstrated by Logit model, which the authors refer in Lefebvre et al (2003) as follow:

$$\text{Prob}(\text{BUG} = 1) \text{Ln}(P_i/1-P_i) = \alpha + \beta(\text{COE}) + \lambda(\text{TSO}) + \varphi(\text{COB}) + \gamma(\text{SEB}) + \delta(\text{TLE}) + \pi(\text{OFS}) + e_i$$

BUG denotes business growth, which is measured by three indicators such as output, turnover and profit as the dependent variables and they are dummy variables equal to one if output, turnover or profit increased and zero for otherwise; the authors wish to measure the factors' effects on SME performance. COE is a vector of characteristics of the entrepreneurs; TSO is a vector of training skills for owner-managers; COB is a vector of characteristics of the business; SEB is a vector of size of enterprise/business; TLE is a vector of technology level of enterprise/business; and OFS is a vector of other factors;  $\alpha$  is the constant;  $\beta$ ,  $\lambda$ ,  $\varphi$ ,  $\gamma$ ,  $\delta$  and  $\pi$  are corresponding vectors of coefficients, and  $e_i$  normally distributed random error term. The details of variables and summary of variables used in the model are shown on Table 1-2. In addition, in order to check multicollinearity problem, correlation of variables were estimated (Table 3). It shows that there is no multicollinearity problem in our model.

## RESULT AND DISCUSSION

Based on analyzing the factors affecting SME performance in Lao PDR by using Logit model, as mentions above that SME performance is investigated on business growth in 2013 compared to the year before (2012), which was measured by three indicators as their output, turnover and profit. The results were shown in Table 4. There were 18 of 46 independent variables that were found to be statistically significant on SME performance. Our result shows that female as business owner age of owner, owner ever ran another before starting current business were found to have negative effect and significant on SME performance. This was similar results to Vos *et al.* (2007). However, owner's nationality as Lao has a significant and positive effect on SME performance in terms of output and turnover this is consistent in study of Kyophilavong (2008).

The training for the owner or entrepreneur is a very important factor to determine SME performance. Particularly, owners who (participated management

**Table 1**  
Shows the Variables and Definition of Variables for using on Model

Variables	Definition of variables		Expected sign
<b>Dependent variables</b>			
BUG	Business growth, which is measured by three indicators as following below		
OUI	Output has increased (in 2013 compared to 2012)	1 = yes; 0 = otherwise	Positive
TUI	Turnover has increased (in 2013 compared to 2012)	1 = yes; 0 = otherwise	Positive
PRI	Profit has increased (in 2013 compared to 2012)	1 = yes; 0 = otherwise	Positive
<b>Independent variables</b>			
<i>Characteristics of the Entrepreneur (COE)</i>			
AOB	Age of owner-manager	year	Positive
GOM	Gender of owner-manager	1 = female; 0 = otherwise	Negative
NOM	Nationality of owner-manager	1 = Lao; 0 = otherwise	Positive
EDU1	Education level of owner-management as completed upper secondary	1 = yes; 0 = otherwise	Positive
EDU2	Education level of owner-management as completed vocational/technical	1 = yes; 0 = otherwise	Positive
EDU3	Education level of owner-management as completed university and higher	1 = yes; 0 = otherwise	Positive
BRB	Before starting current business the owner ran another business but closed	1 = yes; 0 = otherwise	Negative
BTR	Before starting current business the owner was trader	1 = yes; 0 = otherwise	Positive
BWF	Before starting current business the owner worked for family business	1 = yes; 0 = otherwise	Positive
BEA	Before starting current business the owner was employed by another business	1 = yes; 0 = otherwise	Positive
OIP	Owner enterprise has investment plan for business	1 = yes; 0 = otherwise	Positive
OLR	Owner-manager knows business laws and regulations relating to the business	1 = yes; 0 = otherwise	Positive
<i>Training Skills for Owner-manager (TSO)</i>			
OCS	Owner-manager completed vocational and technical skills training	1 = yes; 0 = otherwise	Positive
OTS	Owner-manager got management training when started business	1 = yes; 0 = otherwise	Positive
OMT	Owner-manager got management training since started business	1 = yes; 0 = otherwise	Positive
OAD	Owner-manager got some advice for developing the business	1 = yes; 0 = otherwise	Positive
OSI	Owner-manager want to learn some skills in order to improve the business	1 = yes; 0 = otherwise	Positive
<i>Characteristics of the Business (COB)</i>			
AFI	Age of the firm at the time since date of incorporation	year	Positive
EML	Enterprise as member business organization of LNCCI	1 = yes; 0 = otherwise	Positive
EMC	Enterprise as member business organization of Provincial CCI	1 = yes; 0 = otherwise	Positive
EMA	Enterprise as member business organization of Business Association	1 = yes; 0 = otherwise	Positive
EMG	Enterprise as member business organization of Business Group	1 = yes; 0 = otherwise	Positive
EFI	Enterprise form as individual enterprise	1 = yes; 0 = otherwise	Negative
EFS	Enterprise form as sole limited company	1 = yes; 0 = otherwise	Positive
EFL	Enterprise form as limited company	1 = yes; 0 = otherwise	Positive
EFM	Enterprise form as mixed company	1 = yes; 0 = otherwise	Positive
EPC	Enterprise as public company form	1 = yes; 0 = otherwise	Positive
ESJ	Enterprise status as joint-venture	1 = yes; 0 = otherwise	Positive
EOF	Enterprise status as wholly owned foreign	1 = yes; 0 = otherwise	Positive
<i>Size of Enterprise/Business (SEB)</i>			
NOE1	Number of employees (5 - 19 persons)	1 = yes; 0 = otherwise	Positive
NOE2	Number of employees (20 - 99 persons)	1 = yes; 0 = otherwise	Positive
NOE3	Number of employees (more than 99 persons)	1 = yes; 0 = otherwise	Positive
ASS1	Company asset between 100-250 million kip	1 = yes; 0 = otherwise	Positive
ASS2	Company asset between 250-750 million kip	1 = yes; 0 = otherwise	Positive
ASS3	Company asset between 750-1,200 million kip	1 = yes; 0 = otherwise	Positive
ASS4	Company asset above 1,200 million kip	1 = yes; 0 = otherwise	Positive
<i>Technology Level were used for Enterprise/Business (TLE)</i>			
TSE	Technology level was used as small fixed motorized equipment	1 = yes; 0 = otherwise	Positive
TLM	Technology level was used as large machinery	1 = yes; 0 = otherwise	Positive
TMV	Technology level was used as motorized vehicles	1 = yes; 0 = otherwise	Positive
<i>Other factors (OFS)</i>			
BPD	The business/enterprise mainly provides to domestic customers	1 = yes; 0 = otherwise	Positive
BDE	The business/enterprise mainly direct export (provides to customers abroad)	1 = yes; 0 = otherwise	Positive
LBT	Location of business/enterprise at traditional market	1 = yes; 0 = otherwise	Positive
LBS	Location of business/enterprise at shopping center	1 = yes; 0 = otherwise	Positive
LBC	Location of business/enterprise at commercial district	1 = yes; 0 = otherwise	Positive
LBI	Location of business/enterprise at industry area	1 = yes; 0 = otherwise	Positive
IBP	The inputs were imported for business production	1 = yes; 0 = otherwise	Positive

**Table 2**  
**Summary Statistics of Variables to use for Model**

<b>Variables</b>	<b>Definition of variables</b>	<b>Obs</b>	<b>Mean</b>	<b>Std. Dev.</b>	<b>Min</b>	<b>Max</b>
OUI	Output has increased (in 2013 compared to 2012)	722	0.35	0.48	0	1
TUI	Turnover has increased (in 2013 compared to 2012)	722	0.36	0.48	0	1
PRI	Profit has increased (in 2013 compared to 2012)	722	0.34	0.47	0	1
AOB	Age of owner-manager	722	45.82	12.51	17	85
GOM	Gender of owner-manager	722	0.48	0.50	0	1
NOM	Nationality of owner-manager	722	0.95	0.22	0	1
EDU1	Education level of owner-management as completed upper secondary	722	0.26	0.44	0	1
EDU2	Education level of owner-management as completed vocational/technical	722	0.13	0.33	0	1
EDU3	Education level of owner-management as completed university and higher	722	0.31	0.46	0	1
BRB	Before starting current business the owner ran another business but closed	722	0.02	0.15	0	1
BTR	Before starting current business the owner was trader	722	0.08	0.27	0	1
BWF	Before starting current business the owner worked for family business	722	0.03	0.18	0	1
BEA	Before starting current business the owner was employed by another business	722	0.03	0.18	0	1
OIP	Owner enterprise has investment plan for business	722	0.42	0.49	0	1
OLR	Owner-manager knows business laws and regulations relating to the business	722	0.73	0.44	0	1
OCS	Owner-manager completed vocational and technical skills training	722	0.49	0.50	0	1
OTS	Owner-manager got management training when started business	722	0.41	0.49	0	1
OMT	Owner-manager got management training since started business	722	0.45	0.50	0	1
OAD	Owner-manager got some advice for developing the business	722	0.58	0.49	0	1
OSI	Owner-manager want to learn some skills in order to improve the business	722	0.66	0.47	0	1
AFI	Age of the firm at the time since date of incorporation	722	9.33	7.58	0.5	52
EML	Enterprise as member business organization of LNCCI	722	0.06	0.23	0	1
EMC	Enterprise as member business organization of Provincial CCI	722	0.06	0.24	0	1
EMA	Enterprise as member business organization of Business Association	722	0.10	0.29	0	1
EMG	Enterprise as member business organization of Business Group	722	0.14	0.35	0	1
EFI	Enterprise form as individual enterprise	722	0.82	0.39	0	1
EFS	Enterprise form as sole limited company	722	0.10	0.30	0	1
EFL	Enterprise form as limited company	722	0.04	0.19	0	1
EFM	Enterprise form as mixed company	722	0.01	0.08	0	1
EPC	Enterprise as public company form	722	0.00	0.06	0	1
ESJ	Enterprise status as joint-venture	722	0.03	0.18	0	1
EOF	Enterprise status as wholly owned foreign	722	0.03	0.17	0	1
NOE1	Number of employees (5 - 19 persons)	722	0.39	0.49	0	1
NOE2	Number of employees (20 - 99 persons)	722	0.11	0.32	0	1
NOE3	Number of employees (more than 99 persons)	722	0.03	0.17	0	1
ASS1	Company asset between 100-250 million kip	722	0.16	0.36	0	1
ASS2	Company asset between 250-750 million kip	722	0.11	0.32	0	1
ASS3	Company asset between 750-1,200 million kip	722	0.06	0.24	0	1
ASS4	Company asset above 1,200 million kip	722	0.16	0.37	0	1
TSE	Technology level was used as small fixed motorized equipment	722	0.03	0.16	0	1
TLM	Technology level was used as large machinery	722	0.04	0.20	0	1
TMV	Technology level was used as motorized vehicles	722	0.02	0.14	0	1
BPD	The business/enterprise mainly provides to domestic customers	722	0.98	0.15	0	1
BDE	The business/enterprise mainly direct export (provides to customers abroad)	722	0.29	0.46	0	1
LBT	Location of business/enterprise at traditional market	722	0.08	0.27	0	1
LBS	Location of business/enterprise at shopping center	722	0.01	0.10	0	1
LBC	Location of business/enterprise at commercial district	722	0.03	0.16	0	1
LBI	Location of business/enterprise at industry area	722	0.01	0.12	0	1
IBP	The inputs were imported for business production	722	0.25	0.44	0	1



**Table 4**  
**Result of Estimation of the Factors Affect SMEs Performance from Logit Model by Marginal Effect**

Independent Variables	OUI		TUI		PRI	
	dy/dx	z	dy/dx	z	dy/dx	z
<b>Characteristics of the Entrepreneur (COE)</b>						
AOB Age of owner-manager	-0.0028 *	-1.60	-0.0041 **	-2.31	-0.0033 *	-1.90
GOM Gender of owner-manager	-0.1040 ***	-2.60	-0.0935 **	-2.31	-0.0888 **	-2.26
NOM Nationality of owner-manager	0.1644 *	1.73	0.1775 *	1.86	0.1284	1.32
EDU1 Education level of owner-management as completed upper secondary	-0.0455	-0.88	-0.0637	-1.24	-0.0591	-1.19
EDU2 Education level of owner-management as completed vocational/technical	-0.0280	-0.43	-0.0553	-0.86	-0.0545	-0.89
EDU3 Education level of owner-management as completed university and higher	0.0128	0.22	-0.0138	-0.23	-0.0069	-0.12
BRB Before starting current business the owner ran another business but closed	-0.2880 ***	-4.99	-0.3033 ***	-6.05	-0.2832 ***	-5.53
BTR Before starting current business the owner was trader	-0.1666 ***	-2.85	-0.1620 ***	-2.69	-0.1286 **	-2.11
BWF Before starting current business the owner worked for family business	-0.1359	-1.58	-0.1569 *	-1.91	-0.1304	-1.56
BEA Before starting current business the owner was employed by another business	-0.2359 ***	-3.56	-0.2476 ***	-3.88	-0.2316 ***	-3.72
OIP Owner enterprise has investment plan for business	-0.0200	-0.49	-0.0002	-0.01	-0.0030	-0.07
OLR Owner-manager knows business laws and regulations relating to the business	0.0161	0.33	0.0172	0.35	0.0065	0.13
<b>Training Skills for Owner-manager (TSO)</b>						
OCS Owner-manager completed vocational and technical skills training	-0.0396	-0.76	-0.0230	-0.44	-0.0093	-0.18
OTS Owner-manager got management training when started business	0.0519	0.99	0.0404	0.76	0.0411	0.80
OMT Owner-manager got management training since started business	0.1143 **	2.18	0.1392 ***	2.64	0.1251 ***	2.45
OAD Owner-manager got some advice for developing the business	0.0904 **	2.25	0.0718 *	1.76	0.0480	1.21
OSI Owner-manager want to learn some skills in order to improve the business	0.0639	1.48	0.0546	1.25	0.0511	1.20
<b>Characteristics of the Business (COB)</b>						
AFI Age of the firm at the time since date of incorporation	0.0024	0.80	0.0035	1.16	0.0041	1.41
EML Enterprise as member business organization of LNCCI	0.1605	1.40	0.1067	0.94	0.1048	0.98
EMC Enterprise as member business organization of Provincial CCI	0.0751	0.80	0.0516	0.56	0.0716	0.80
EMA Enterprise as member business organization of Business Association	-0.1897 ***	-3.68	-0.1957 ***	-3.79	-0.1999 ***	-4.26
EMG Enterprise as member business organization of Business Group	0.0908	1.33	0.0919	1.33	0.0689	1.05
EFI Enterprise form as individual enterprise	0.0262	0.20	0.0309	0.23	0.1035	0.95
EFS Enterprise form as sole limited company	-0.0859	-0.70	-0.0932	-0.75	-0.0108	-0.08
EFL Enterprise form as limited company	-0.0243	-0.16	0.0058	0.04	0.0807	0.51
EFM Enterprise form as mixed company	0.0950	0.30	0.0320	0.10	0.0950	0.31
EPC Enterprise as public company form	-0.2254	-1.55	-0.2332 *	-1.62	-0.1726	-0.93
ESJ Enterprise status as joint-venture	0.0693	0.50	0.1363	0.93	0.1736	1.23
EOF Enterprise status as wholly owned foreign	0.2095	1.08	0.2170	1.10	0.1695	0.92
<b>Size of Enterprise/Business (SEB)</b>						
NOE1 Number of employees (5 - 19 persons)	0.0722	1.48	0.0727	1.48	0.0818 *	1.71
NOE2 Number of employees (20 - 99 persons)	-0.0083	-0.10	-0.0264	-0.34	0.0177	0.22
NOE3 Number of employees (more than 99 persons)	0.4023 ***	2.74	0.4025 ***	2.73	0.2554 *	1.58
ASS1 Company asset between 100-250 million kip	-0.0140	-0.24	-0.0057	-0.10	-0.0138	-0.24
ASS2 Company asset between 250-750 million kip	0.0351	0.51	0.0511	0.73	0.0386	0.57
ASS3 Company asset between 750-1,200 million kip	0.1294	1.37	0.1603 *	1.68	0.1477 *	1.58
ASS4 Company asset above 1,200 million kip	0.1131	1.46	0.1666 **	2.12	0.1346 *	1.77
<b>Technology Level were used for Enterprise/Business (TLE)</b>						
TSE Technology level was used as small fixed motorized equipment	0.1358	1.06	0.1253	0.98	-0.0492	-0.45
TLM Technology level was used as large machinery	0.0667	0.57	0.0353	0.31	-0.0528	-0.56
TMV Technology level was used as motorized vehicles	0.2590 *	1.59	0.1406	0.86	0.0631	0.42
<b>Other factors (OFS)</b>						
BPD The business/enterprise mainly provides to domestic customers	0.1350	1.39	0.1448	1.52	0.0882	0.84
BDE The business/enterprise mainly direct export (provides to customers abroad)	0.0421	0.93	0.0773 *	1.67	0.0724 *	1.62
LBT Location of business/enterprise at traditional market	0.0745	0.91	0.0717	0.87	0.0725	0.90
LBS Location of business/enterprise at shopping center	0.2646	1.18	0.4292 **	2.21	0.2468	1.11
LBC Location of business/enterprise at commercial district	-0.0430	-0.36	-0.1143	-1.08	-0.0267	-0.23
LBI Location of business/enterprise at industry area	0.0262	0.15	0.0127	0.08	0.0409	0.25
IBP The inputs were imported for business production	-0.0399	-0.87	-0.0196	-0.42	-0.0397	-0.89
Number of obs	=	722	=	722	=	722
LR chi2(46)	=	125.76	=	133.62	=	108.09
Prob > chi2	=	0.0000	=	0.0000	=	0.0000
Pseudo R2	=	0.1341	=	0.1418	=	0.1165

Note: Estimated Coefficient statistically significant at a (\*) 90%, (\*\*) 95%, and (\*\*\*) 99% confidence levels

training after starting their business and those who received some advice for developing their business were found to have better performing SMEs, which is consistent with the study of Nazar and Saleem (2009), who found that owner management receiving training skills contributed to firm's performance. This can imply that the entrepreneur who received management training after starting the business and got some advice for developing their business will have positive effects on their performance. Focusing on the characteristics of the business found that the enterprise being a member of the Business Association (BA) and the enterprise being a public company have negative and significant effects on SME performance.

Turning to firm size, which was measured in terms of the number of employees, the study found that having more than 99 employee had a positive, significant effect on SME performance (increased in output, turnover and profit); the firm with employees of 5-19 persons has also a positive effect on SME performance in terms of a firm's profit, but insignificant for output and turnover. Overall, we concluded that the firm size is an important factor affecting a firm's performance, which is similar to studies by Biggs and Shah (2006), Watson (2007) and Kyophilavong (2008). In terms of assets, the study found that having assets valued between 750-1,200 million kip and above 1,200 million kip have a positive and statistically significant effect on SME performance in terms of turnover and profit, but insignificant on firm's output. This is similarly with the result of Titman & Wessels (1988). Technology level used in the business is an important factor for SME performance has a positive effect and statistically significant on SMEs performance in terms of firm's output, which is consistent with the studies by Wilkinson & Brouthers (2006) and Nazar & Saleem (2009). In addition, engaging mainly in direct export (mainly serving customers abroad) and being located at a shopping center were found to have a positive and statistically significant effect on SME performance, which is in line with Lefebvre *et al.* (2003).

## CONCLUSION

Small and medium sized enterprises (SMEs) play a very important role in enhancing economic development in Laos. However, the factors affecting SMEs performance are not clear. Therefore, this study aims to examine the factors determining SME performance, for which we used a Logit model, with a sample of 722, covering 172 respondents in Vientiane Capital, 77 respondents in Luangnamtha province, 156 respondents in Luangprabang province, 157 and 160 respondents in Savannakhet and Champasack province respectively. This study found 8 factors that have a negative and statistically significant effect on SME performance: age of owner, female as business's owner, before starting current business the owner ran another business but closed, before starting current business the owner was trader, the owner worked for family business before starting current

business, business the owner was employed by another business before starting current, enterprise as business organization of Business Association member, and enterprise as public company. The study also found 10 factors that have a positive and significant effect on SME performance: nationality of owner as Lao, owner received management training since starting business, owner got some advice for developing the business, size of business including business with 5-19 employees, and more than 99 employees, but look at in terms of asset valued between 750-1,200 million kip, and above 1,200 million kip; technology level; the business/enterprise mainly engages in direct export (serves customers abroad); and business/enterprise located at shopping center. Based on the results, this study suggests policy makers or private agencies should provide more training skills for owner-managers and capital for expanding their business, as it may lead to an increase in asset value and employees. In addition, government should support more capacity building in international competition to boost Lao SMEs' survival with strong competition of SMEs in ASEAN and other regions.

#### *Note*

1. The total of 722 samples size were collected from five main provinces, covered 23.82%, 22.16%, 21.75%, 21.61% and 10.66% of total samples were collected from Vientiane Capital, Champasack, Savannakhet, Luangprabang and Luangnamtha provinces, respectively.

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