

Innovation, Export Performance and Profitability of Lao Garment Exporters

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ABSTRACT

This study examines the relationship between innovation and export performance and firm profitability of Lao garment factory using resource-based view theory to posit the conceptual model. Structure equation (path analysis) is used to analyze the data from the current field survey of industrial cluster of the Lao garment industry, 2007. The findings suggest that innovations (product and production process innovations) are important factors in determining export performance and hence, firm profitability. This study gives policy implications on how owners/managers of Lao garment firms decide to be innovator and how public authorities promote and stimulate the investment in innovation.

Keywords: Innovation, Export Performance, Firm Profitability, Garment Industry, Lao PDR.

INTRODUCTION

The relationship between innovation and export performance has been studied widely, and such studies have reported consistent results (Basile, 2001; Harris and Li, 2006; Hirsch and Bijaoui, 1985; Moini, 1995; Özçelik and Taymaz, 2004; Pla-Barber and Alegre, 2007; Roper and Love, 2002; Smith *et al.*, 2002; Teece, 1996; Wagner, 2001; Wakelin, 1998). The impact of innovation on firm profitability seems to vary with different types of innovation. Product and production process innovations have a different level impact on firm profitability (Geroski and Machin, 1993; Geroski *et al.*, 1993). What remain unclear is the relationship between export performance and firm profitability. Thus, inconclusive evidence remains in the literature (Kuivalainen and Sundqvist, 2006; Lu and Beamish, 2006).

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Since innovation is one key resource in creating competitive advantage for the firms (Barney, 1991; Barney *et al.* 2001; Grant, 1991), previous studies had examined the relationship between innovation and export performance and innovation and firm profitability separately. Thus, this study endeavours to link the three indicators of innovation, export performance and firm profitability into one model, in particularly in the case of Lao garment industry. It is believed that this is the first study in investigating this issue in the Lao PDR. Lao PDR is a land lock least developed country and sharing borders with five countries: China, Cambodia, Myanmar, Thailand and Vietnam. It encompasses 236, 800 square kilometers. Lao PDR has a population of approximately 6 million people with a growth rate of 2.8 per cent per year.

Lao garment industry has been developed under a new government's reform policy known as the New Economic Mechanism (NEM). This policy was first developed in 1986 which aiming at transforming the economy from centrally planned to market-oriented system. The Lao garment industry started in 1990 with only two factories. It expanded to 57 export-oriented companies and 43 subcontracting companies in 2004 (ALGI, 2006). The garment industry as a whole creates about 30,000 jobs and produces US\$100 million goods for export annually (Boutsivongsak *et al.*, 2002). The main markets of Lao garment products are EU, USA, Japan and other ASEAN members.

This study aims to determine two main research questions: Whether or not innovation performed by Lao garment firms determine their export performance and hence, firm profitability; and Whether or not high export performance leads to high firm profitability.

In the following section, the conceptual model, literature review and hypotheses development were presented. Subsequently, research methods, model assessment and test hypotheses were presented, followed by the discussion of the findings. Finally, conclusion and policy implications were noted.

CONCEPTUAL MODEL

Following resource-based view theory of the firm (Barney, 1991; Barney *et al.* 2001), the conceptual model posited that the firm's internal resource (innovation) influenced export performance, and hence, firm profitability. According to Grant (1991), internal resource is a key factor for the generation of competitive advantage of the firms. As results, it leads to better export performance and firm profitability (see Figure 1).

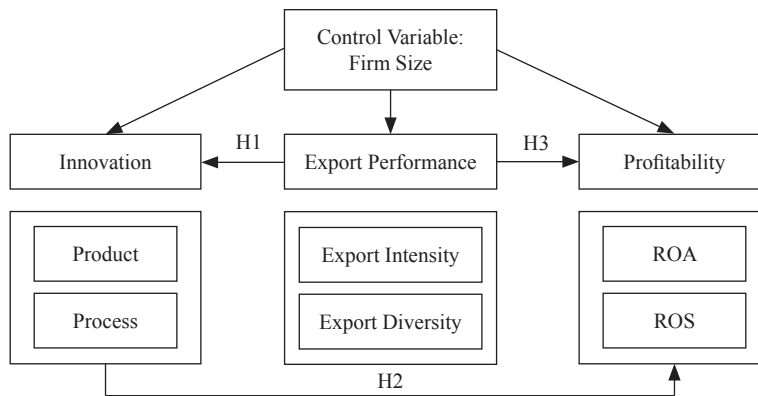


Figure 1 Conceptual model

LITERATURE REVIEW AND HYPOTHESIS

Innovation and Export Performance

Previous studies regarding the impact of innovation on the export performance had been conducted and well discussed in literature. At the firm level, Teece (1996) argued that innovating firms had incentives to expand into foreign markets; hence they can earn higher returns from their investment. A number of empirical studies had shown a positive and significant impact of innovation on export performance. Hirsch and Bijaoui (1985) examined this issue in Israel, and found that innovative firms were more likely to have export activities. Specifically, they argued that innovative firms tended to have higher export growth than non-innovative firms.

Among others, Smith *et al.* (2002) also found that innovation was an important factor for being exporting firms. Some argued that innovation played an important role in overcoming barrier to internationalization (Harris and Li, 2006). Thus, product and process innovations had a positive effect on export intensity in Turkish manufacturing firms (Özçelik and Taymaz, 2004). Roper and Love (2002) suggested that product innovations had a positive impact on likelihood and the intensity of exports in manufacturing firms in the UK and Germany. Similar results were obtained in the case of Italian firms. Basile (2001) demonstrated that the introduction of product and production process innovations had a positive impact on export behavior. Moreover, other scholars also found evidence of a positive impact of product and/or process innovation on the export behavior of firms (Pla-Barber and Alegre, 2007; Moini, 1995; Wagner, 2001; Wakelin, 1998). Based on the results of a number of preceding studies, we hypothesize that:

Hypothesis 1: Innovation is positively and significantly related to export performance.

Innovation and Firm Profitability

Geroski et al. (1993) argued that new product and production process strengthened a firm's competitive position vis-à-vis its rivals. As a result, its profit increased and remained high until rivals successfully imitated and began to eat into the innovator's rents. They further confirmed that innovating firms enjoy high profitability in the case of UK manufacturing firms. However, production process innovators have somewhat less sensitive profit margin downturns than non-innovators.

With regards to the issue, Geroski and Machin (1993) had contrasted two views of the effect of innovation - "the product view" and "the process view" - and provided some evidence to suggest that both effects were evident in their data. They stressed that it was clear that individual innovations themselves had a positive effect on profitability and growth and was equally clear that the process of innovation seemed to transform firms in some way that gave rise to what looked like generic differences between innovators and non-innovators. As a consequence, the process by which profitability and growth were generated differed noticeably between the two types of firms.

Even though the antecedent of the relationship between innovation and profitability had been investigated in developed countries, it is believed that the behavior of firms regarding this issue should not be different in the case of developing countries. Thus, we hypothesize that:

Hypothesis 2: Innovation is positively and significantly related to firm profitability.

Export Performance and Profitability

The relationship between export behavior or export performance or internationalization and firm profitability remained inconclusive in literature. In the case of small firms, internationalization intensity influenced sales performance, profit performance and directly reflected efficiency performance. However, as far as large size firms were concerned, internationalization intensity reflected only firm profitability in the case of Finnish manufacturing firms (Kuivalainen and Sundqvist, 2006).

In contrast, Lu and Beamish (2006) argued that export behavior (export activity including export intensity) had positive impact on growth, but negative impact on firm profitability in the case of Japanese SMEs. In the early stage, such firms needed to expand their international markets, they tried to achieve high growth rate. However, at this stage when they had not achieved their break-even point yet, profitability might be low. As those firms gain more experience from playing their role in international markets and whenever they reached the break-even point, profitability started to increase. Thus, in our data set we expected a positive relationship between export performance and profitability. Therefore, we hypothesize that:

Hypothesis 3: Export performance is positively and significantly related to firm profitability.

METHODS

Sample and Data Collection

Data for this study was obtained from the current field survey on industrial cluster development of Lao garment industry, 2007. The questionnaires contained a number of items in exploring the role of clustering or networking and innovating behaviors of Lao garment firms in influencing their export performance as well as profitability. Specifically, in order to assess the role of innovation on export performance and profitability, we directly asked owners/managers of Lao garment firms regarding innovation implementation during the 2004 – 2006 period. Then, in assessing the impact on innovation on export performance and profitability, we obtained the financial data from the balance sheet and profit and loss statement of each firm during that period from the database of Vientiane Capital Tax Office.

Our original survey sample consisted of 63 garment firms which include 44 manufacturing firms (exporters) and 19 subcontractors. However, as the main focus of this study was to examine the impact of innovation on export performance and firm profitability, we eliminated 19 subcontracting firms from our sample. Thus, the sample size of our research totalled 44 garment manufacturing firms which cover 84.62 percent of all population.

Measurement

Innovation

A number of previous studies used Research and Development (R&D) expenditure as an indicator in measuring innovation. Yet all Lao garment firms answered that they had no investment on R&D currently. Therefore, we directly measured innovation as “new product” and “new production process”. We asked owners/managers the following questions: Did the firm produce or introduce any new product to the market during the 2004 – 2006 period? And, did the firm implement any new product process during that period?

Export Performance

Export intensity and export probability were preference variables in measuring export behavior and export performance. However, export diversity is also used to capture export market performance (Dhanaraj and Beamish, 2003). Following

many previous studies, this study employs export intensity and export diversity in measuring export performance in this study.

Profitability

In measuring corporate performance, accounting measures such as return on asset (ROA), return on sales (ROS) and return on equity (ROE) or return on investment (ROI) were widely used in management study. However, among scholars in the field of international business, ROA and ROS were dominant measurements. By following this popularization in the field, we measured profitability in terms of ROA and ROS.

Control Variable

The relationship between firm size and innovation, export performance and corporate performance had been well discussed in literature. The results of this relationship remained inconclusive. Nevertheless, the dominant results seemed to make sense about larger firms having larger innovation capability. As a result, larger firms outperformed smaller one in terms of both export and corporate performance. To avoid the bias of firm size in analyzing, we used firm size as a controlled variable. Variance of firm size is controlled by including the log of the number of employees (Evans, 1987; Haahti *et al.*, 2005; Xayphone and Kimbara, 2007). The definitions of variables are shown in Table 1.

Table 1 Variable and definition

Variable	Definition
Innovation:	
Product Innovation (PIN)	Dichotomous variable taking value 1 if firms introduce or produce new product during 2004 – 2006, otherwise code 0.
Process Innovation (PPIN)	Dichotomous variable taking value 1 if firms implement new production process during 2004 – 2006, otherwise code 0.
Export Performance:	
Export Intensity (EXPINT)	Ratio, the ratio of export sales to total sales.
Export Diversity (EXPDIV)	Number of foreign markets.
Profitability:	
Return on Asset (ROA)	Ratio of net profit to total assets (2004 – 2006).
Return on Sales (ROS)	Ratio of net profit to total sales (2004 – 2006).
Control variable:	
Firm size (LOGFS)	Natural log of number of employees.

Analysis Tool

In analyzing our data and proving the hypotheses, path analysis were used as assessment method by using analysis of movement structures (AMOS) software. We tested the model simultaneously by imposing equality restrictions on corresponding path coefficients of research variables in one model.

MODEL ASSESSMENT AND TEST HYPOTHESES

Table 2 presents correlations, means, and standard deviations of the measures of the model constructs and the control variable (LOGFS). As show in Table 2, the average scores of the variables were 0.52 and 0.66 in terms of product and process innovation, respectively. This implied that more than half of firms in our sample were innovating firms; production process innovating firms in particular were higher than non-production process innovating firms. Considering the export intensity and export diversity variables, the average score of proportion of export sales to total revenue was 0.89 which indicated the degree of internationalization of Lao garment firms. The average score of export diversity was 3.11 countries. Interestingly, average scores of ROA and ROS were different around 10 times (15.31 and 1.51). The correlations of the study variables among innovation and export behavior variables were positively significant which illustrated the relationship of each variable. In addition, control variable had positive relationship with both innovation and export behavior variables but not for profitability.

Table 2 Descriptive data

Variable	Mean	SD.	(1)	(2)	(3)	(4)	(5)	(6)	(7)
PIN	0.52	0.50	-						
PPIN	0.66	0.47	0.46**						
EXPINT	0.89	0.16	0.36*	0.24					
EXPDIV	3.11	1.96	0.36*	0.23	0.26				
LOGFS	2.38	0.53	0.48**	0.41**	0.46**	0.45**			
ROA	15.31	32.33	0.25	0.15	0.22	0.50**	0.27		
ROS	1.51	2.96	0.01	0.08	0.10	0.00	-0.16	0.02	-

*p<0.05**p<0.01

Table 3 illustrates the results of the model estimation. The model fit statistics (Chi-square and the associated p-value) were reported. The model explained 31% of the variance in product innovation (PIN), 17% in process innovation (PPIN), 23% in export intensity (EXPINT), 21% in export diversity (EXPDIV), 26% in return on assets (ROA) and 11% in return on sales (ROS).

As seen in Table 3, the path coefficient from product innovation (PIN) and process innovation (PPIN) to export intensity (EXPINT), export diversity (EXPDIV), return on assets (ROA) and return on sales had positive sign and statistical significant, except path coefficient from PPIN to ROA and ROS. These results revealed that innovation variables (both product and process innovation) had a significant direct impact on export performance and profitability (except the impact of product innovation on profitability). Therefore, hypothesis H1 was supported by the data. Hypothesis H2 was supported in the case of product innovation but not for product innovation.

Table 3 Results of model testing

Path model	Estimate coefficient (Standardized)
PIN => EXPINT	0.13 [†]
PIN => EXPDIV	0.14 [†]
PIN => ROA	0.04 [†]
PIN => ROS	0.08*
PPIN => EXPINT	0.01 [†]
PPIN => EXPDIV	0.02 [†]
PPIN => ROA	-0.00
PPIN => ROS	-0.06
EXPINT => ROA	0.08*
EXPINT => ROS	0.22 [†]
EXPDIV => ROA	0.45**
EXPDIV => ROS	0.08 [†]
LOGFS => PIN	0.56*
LOGFS => PPIN	0.41**
LOGFS => EXPINT	0.38*
LOGFS => EXPDIV	0.35*
LOGFS => ROA	0.01
LOGFS => ROS	-0.33
<i>Explained variance (R²)</i>	
PIN	0.31
PPIN	0.17
EXPINT	0.23
EXPDIV	0.21
ROA	0.26
ROS	0.11
<i>Model fit</i>	
χ^2	4.39
p-Value	0.02

[†]p<0.10
 *p<0.05
 **p<0.01

The path coefficient from export performance to profitability had positive and statistical significant (in all of variables). This implied that export performance had direct influence on firm profitability. Thus, hypothesis H3 was also supported by the data. Considering the path coefficient from control variable (LOGFS) to others, the results showed that firm size had positive impact on innovation and export performance. However, it did not have direct influence on profitability in our study.

DISCUSSION

The objective of this study was to analyze the effect of product and production process innovation on firm export performance and profitability. In doing this we had analyzed the effect of innovation on both export intensity and export diversity and return on assets and return on sales. Moreover, the effect of export behavior on firm profitability had also been investigated in this study. We tested our model via structure equation (path analysis) by using data from filed survey. Our approach and empirical results were significant in contributing to the body of knowledge.

The findings revealed that within innovation variables, product innovation had a positive and highly significant effect on the export performance of firms in both export intensity and export diversity. Similarly, innovation was very important factor in determining export performance in the Lao garment industry. Indeed, from the perspective of resource-based view theory, innovation was one of the firm's main sources of competitive advantage not only on product innovation but also production process innovation which provided the firm with a greater competitive capacity in the international markets. These findings were in line with those of many other studies that had examined the impact of innovation on the export activity (export behavior) of firms (Pla-Barber and Alegre, 2007; Özçelik and Taymaz, 2004; Roper and Love, 2002; Basile, 2001).

With regards to the relationship between innovation and firm profitability, we observed that product innovation had a positive and significant effect on firm profitability in both return on assets (ROA) and return on sales (ROS) or profit margin measures, but it was not significant on the relationship between production process innovation and firm profitability. As seen in Table 3, path coefficient among production process innovation and firm profitability showed negative signs, permitting us to argue that non-production process innovators tended to have higher profitability than production process innovators. The details of the data set were checked and it was found that the average values of profitability of non-production process innovators were higher than the production process innovators had (ROA: 10.23 and 8.35; ROS: 1.83 and 1.51). However, the differences of these averages were not of statistical significance when we constructed *T*-test on them ($p > 0.1$ in both ROA and ROS). This might be one reason why the significant effect of

production process innovation on firm profitability could not be found. This result seems to support the argument of Geroski and Machin (1993) that product and process innovation have impact on firm profitability in different ways. Thus, any further research should take this into account and investigate it systematically and statistically.

Another observation of the result was the link between export performance and firm profitability. Our findings confirmed that export performance had strong effect on firm profitability, especially in terms of ROA measure. Based on the empirical results it is argued that the more export oriented the firms are, the greater would be their profitability. Specifically, the more the firms diversified in international markets, the bigger would be their profitability. This result was in line with the recent work of Kuivalainen and Sundqvist (2006). However, it was inconsistent with the study of Lu and Beamish (2006) who documented the negative impact on export activity on firm profitability (ROA; ROS) in the case of Japanese firms.

As far as the control variable was concerned, firm size had strong positive impact on innovation and export performance. These results were consistent with the previous studies which argued that where larger firms had more innovation capability, the higher would be their export performance. However, the relationship between firm size and profitability remain inconclusive not only from preceding studies but also from the data that were obtained.

CONCLUSION

In this study we have analyzed the relationship between innovation, export performance and firm profitability—using the resource-based view of the firm as theoretical framework. Innovation has been measured directly as “new product” introduction or production and “new production process” implementation. The export performance has been measured from a double perspective—export intensity and export diversity. Lastly, profitability has been measured using accounting measurement—return on assets (ROA) and return on sales (ROS).

The findings based on empirical analysis confirm that innovation (both product and production process innovation) is an important factor in explaining export performance. Innovating garment firms outperform non-innovating garment firms in terms of both export intensity and export diversity. This result reflected the fact that once firms started exporting, their initiatives in creating new product and implementing new production process were significant sources of competitive advantage. Moreover, this resource (innovation) also had positive influence on firm profitability in terms of return on assets. This implied that innovating firms allocated their assets more effectively than non-innovating firms. As a result, innovating firms were more profitable than firms that did not innovate. The results confirmed that innovation was important for exporters as it led firms to achieve profit maximization.

The implications of the results for policy makers are considerable. First, it appears that both product and production process innovations prove increasing of export performance. The innovation initiative can thus act as encouragement to export performance. Second, product innovation had positive impact on firm profitability (both ROA and ROS), while production process innovation had not. This implied that firms introduced new products influenced their profitability. In the case of production process innovation, the results might change for the long-term operation. In short run, firms invested big amount of money for implementing new production process. Thus, firms' profit must be low in short-term. Third, it also appears that export performance had positive impact on profitability. Therefore, innovations are important factors in determining export performance and profitability.

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