

## **INTER-FIRM COOPERATION OF LACQUERWARE FIRMS IN NYAUNG-U TOWNSHIP**

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### **Abstract**

Inter-firm cooperation among industrial organizations shows an impressive landscape for the development of manufacturing firms in the industrialized nations. Inter-firm cooperation takes the forms of informal linkages in many industrial districts such as market linkages, forming joint ventures, membership of professional and trade associations and movement of skilled staff from one firm to others. Interfirm cooperation among lacquerware firms comprises the forms of cooperation with suppliers, cooperation with customers, cooperation with other firms, and cooperation with institutions. This study attempts to explore the forms of inter-firm cooperation of lacquerware firms, and to analyse the relationship between the inter-firm cooperation and the growth of lacquerware firms in Nyaung-U township. This study utilizes primary data from 55 owners of lacquerware firms from Nyaung-U township in 2018. Multiple regression analysis is applied to analyze the variables from this empirical study. In exploring the relationship between inter-firm cooperation and the growth of lacquerware firms in Nyaung-U township, it is found that cooperation with customers is an effective linkage to grow lacquerware firms in this region. However, cooperation with other firms leads to slow down the growth of lacquerware firms in the study area. Based on the findings of the study, recommendations and implications for lacquerware firms are presented.

**Keywords:** inter-firm cooperation, industrial organizations, linkages

### **Introduction**

Industrial clustering is an important topic for discussing the development patterns of many industries. A large number of academic papers investigate the empirical evidence for clusters, their definition, and their implications for economic policy. The geographic clustering of manufacturing activity has long been recognized as an important mechanism for facilitating industrial growth in both developed and developing countries (Krugman, 1991). The idea that “cluster type agglomeration of companies is favorable for entrepreneurship development by establishing of new spillover”, stimulate a lot of researchers to investigate the empirical evidence for clusters, and their implications in various economic areas (Porter, 1990). Industrial clusters can be seen as “social communities” (Morosini, 2004). One of the central hypotheses of this study is that industrial clusters facilitate market transactions by reducing transaction costs. Clusters are groups of inter-related industries that drive wealth creation in a region, primarily through export of goods and services (Komolavanij, 2008). The use of clusters as a descriptive tool for regional economic relationships provides a richer, more meaningful representation of local industry drivers and regional dynamics than do traditional methods.

Three different types of transport costs – the costs of moving goods, people, and ideas – could be reduced by industrial agglomeration (Marshall, 1920). First, the researcher argued that firms would locate near suppliers or customers to save shipping costs. Second, those researchers developed a theory of labor market pooling to explain clustering that takes advantage of scale economies associated with a larger pool of workers and firms. Finally, the researcher introduced the theory of intellectual spillovers by arguing that in agglomerations, “the mysteries of the trade

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become no mystery, but are, as it were, in the air". Firms in Silicon Valley, locate near one another to learn and to speed their rate of innovation (Saxenian, 1994). However, these agglomerations representing linkages among firms may provide gains to smaller regions, as well as large urban areas. Proximity advantages apply also to forward linkages. With proximity, transaction or delivery costs can be lower inside an agglomeration than they are when the product is delivered to buyers outside the region.

The fundamental effect of industrial concentration of manufacturing enterprises within a specific industrial district is cooperating with each other to develop and exploit marketing opportunities in the region. Interfirm cooperation can be stronger within specific industrial region which lead to improving firm performance in the region, and stronger bonding within enterprises come from the concentration of enterprise within industrial region (Xayphone & Takahashi, 2008). Inter-firm cooperation is an important benefit of industrial agglomeration of manufacturing firms in developing countries. Cooperation with subcontractors, cooperation with other supporting firms, cooperation among similar manufacturing firms and key suppliers need to be effective for the benefit of industrial concentration. Inter-firm cooperation in an industry comprises informal linkages such as market for supplies linkages, forming joint ventures, associations with the regional institutes and movement of skilled staff from one firm to others. Interfirm cooperation takes the form of cooperation with suppliers, cooperation with subcontractors, cooperation with customers, cooperation with other firms, and cooperation with institutions.

Nyaung-U township is a township of Nyaung-U District in the Mandalay Division of Myanmar. In this township, the Bagan Lacquerware cluster is prominent sector which supports and promotes the development and growth of the traditional Myanmar lacquerware crafts sector, and this condition supports the concentration of lacquerware firms in the region. The majority of raw materials and supplies required for production are acquired in the near region. It is observed that the agglomeration of Nyaung-U lacquerware industry is resulted from factor endowment and locational advantage which enhance the growth of lacquerware firms, supporting firms, and related suppliers in this township. The effective use of skillful workforce to produce cultural product, and the development of supplier network in the region are beneficial for the lacquerware firms to sustain the generation of business which is crucial for the regional development.

### **Objectives of the Study**

The overall objective of the study is to examine inter-firm cooperation of lacquerware firms in Nyaung-U township. The specific objectives of this study are:

- (1) To explore the forms of inter-firm cooperation of lacquerware firms, and
- (2) To analyse the relationship between the inter-firm cooperation and the growth of lacquerware firms in Nyaung-U township.

### **Scope and Method of the Study**

The required data is collected by conducting personal interview with managers in Nyaung-U township by using structured questionnaires. This study focuses on 55 owners out of 180 firms in the Nyaung-U township in 2018 to analyze the industrial agglomeration of lacquerware firms in this region. Therefore, the sample represents approximately 30% of employers in lacquerware manufacturing firms in the Nyaung-U township.

In order to comprehend the inter-firm cooperation of lacquerware firms, this study uses structured Likert-type questionnaires. Multiple regression is used to predict the value of a variable based on the value of two or more other variables. Program SPSS Statistics for Windows, version 23 is the main analytical tool used in this research. It provides comprehensive information such as the coefficient of each independent variable, intercept, R-squared and Adjusted R<sup>2</sup>, and Root MSE, which in turn are used to interpret the findings. This statistic program also allows investigation of the descriptive analysis.

### **Literature Review**

Location theory predicts where businesses will or should be located. Typically, firms are more productive and achieve superior technology development when near other firms because they can obtain to a large variety of key resources to their activities. It is also often argued that proximity to other similar firms increases the chance of acquiring new knowledge and of building connections and networks which support or increase productivity. The free flow of goods and ideas and internal scale economies of manufacturing enterprises have contributed to geographical concentration in many developing countries. Information spillovers, the development of the division and specialization of labor among enterprises, and the development of skilled labor markets, play critical roles in industrial development. The interrelationships between technology, innovation and industrial location behavior have come to be seen as essential features of regional development.

The concentration of firms in the region enhances specialization and helps overcome the disadvantages of being small. Developing clusters, business associations, and value chains are key ways for industries to foster business linkages and increase market access. Specialization in the main industrial operations and related supporting transactions are the basic reason to agglomerate within a specific region which has natural advantage for production, distribution to the market and outsourcing required tangible resources for production process.

Industrial development in some garment industries in many emerging economies was led by marketers who had excellent marketing expertise and effective and efficient distribution network. Thus, a spatial development strategy is needed to improve the spatial linkages of small enterprises and lastly to increase their economic performance, and, hence, their role in the socio-economic development of the region. Subcontracting linkages are an appropriate alternative for small enterprise development during the early stage of industrial development and such kinds of backward linkages can be explained as the viable strategy for the implementation of business strategies of the individual enterprises. This initial phase of the promotion of a subcontracting system is likely to encounter many problems and critics.

Clusters are “groups of interconnected firms, suppliers, related industries and specialized institutions in particular fields that are present in particular locations” (Porter, 1990). The geographical agglomeration of economic activity (which is related to urbanization) fosters subsequent economic growth (Castells & Royuela, 2011). Agglomeration is said to raise local endogenous innovation and productivity growth as it allows firm to benefit from forms of market and non-market spillovers (Martin, & Sunley, 1998). Agglomeration is measured alternatively through urbanization shares and through indices of spatial concentration based on data for sub-national regions (Brühlhart. & Sbergami, 2008).

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The impact on firms' productivity of innovative activities and agglomeration effects among firms belonging to Marshallian industrial districts have been analyzed and the possible joint effect of these two forces. The study revealed that belonging to an industrial district and making product innovations are key factors in the productivity growth of firms. Thus, innovation can be seen in many industrial areas for improving individual organizational performance, and for the development of the industry as a whole for the long-run (Antonietti, & Cainelli, 2008).

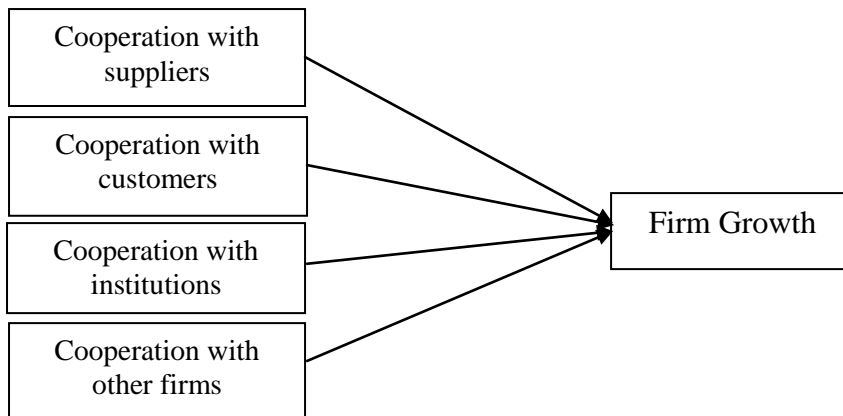
A survey on industrial agglomeration in the Philippines found that there is a positive result in terms of the nature of industrial agglomerations in the country (Macasaquit, 2008). A study on inter-firm cooperation and firm performance by doing an empirical study on the Lao garment industry cluster highlighted that cooperation with subcontractors, business associations and distant buyers influences firm performance (Xayphone & Takahashi, 2008). The empirical study of the agglomeration and networks in spatial economies discovered that the complementarities between the productivity benefits of agglomeration and those of network linkages (Johansson & Quigley, 2004).

An analysis using annual surveys of manufacturing firms from 1998 to 2005 in China documented that a positive correlation between industrial agglomeration and firm size, which was previously found in developed economies (Li, Lu & Wu, 2011). Next, by using the instrumental variable estimations, it is found that industrial agglomeration has a positive and statistically significant causal impact on firm size. Finally, as an agglomeration effect firms are more likely to become larger by locating with a number of larger firms than with a larger number of firms.

A study on the factors behind the dynamic development of motorcycle industry in China concluded that the success of the motorcycle industry in Chongqing is attributable to a combination of positive features from the Wenzhou model in the 1990s, in which industrial development is based on clustering of private enterprises, and the Sunan model in the 1980s, in which industrial development is based on the effective use of human resources recruited from existing state-owned enterprises (SOEs) (Otsuka, 2006). Learning by collective enterprises from SOEs in Chongqing coupled with the growth of the private enterprise sector fostered cluster-based industrial development.

### **Analytical Framework**

The analytical framework in Figure (1) describes the dependent variables and four independent variables in the empirical analysis of this study. The independent variables are cooperation with suppliers, cooperation with customers, cooperation with institutions, and cooperation with other firms. After that, the dependent variables of firm's growth are measured output growth, productivity growth, machine growth, employment growth in this study.



Source: Adapted from Previous Studies

Figure 1 Analytical Framework

### Analytical Results on Antecedents of Industrial Agglomeration

Inter-firm cooperation and the growth of lacquerware firms is measured on a continuous scale and multiple regression analysis is used in this study. The relationship between major forms of inter-firm cooperation of lacquerware firms and growth is analyzed as described in Table (1).

Table 1 Relationship between Inter-Firm Cooperation and Firm Growth

Independent Variables	Coefficients	Std. Error	Sig.
Constant	1.859***	0.423	0.000
Cooperation with suppliers	-0.067	0.072	0.359
Cooperation with customers	0.689***	0.100	0.000
Cooperation with institutions	0.024	0.082	0.744
Cooperation with other firms	-0.244**	0.101	0.020
R <sup>2</sup>	0.539		
Adj R-squared	0.502		
F	14.632		
Prob > F	0.000		

Note: \*\*\* and \*\* are statistically significant at 1%, and 5% levels respectively.

Source: Survey Data, 2018

According to the results in Table (1), the model explains that the variation in overall level of industrial agglomeration exists as R<sup>2</sup> value is 53.90 percent. This indicates that independent variable can explain 53.90 percent of the variations in dependent variable. Thus, the variability of the residual values around the regression line relative to the overall variability is small, and the predictions from the regression equation are good. The value F of 14.632 with a p-value of 0.000 indicates that the model as a whole is statistically significant at 1 percent level.

Cooperation with customers has effect on the growth of lacquerware firms with the regression coefficient of 0.689 at a significant level of 1 percent and it implies that the growth of lacquerware firms will increase 0.689 if the cooperation with institutions increases by one unit. Customers have inputs in the design and features of lacquerware products, and the cooperation between customers in the development of new product, the ordering of customized product can enhance the growth of lacquerware firms in the study region.

Cooperation with other firms has effect on the growth of lacquerware firms with the regression coefficient of -0.244 at a significant level of 1 percent and it implies that the growth of lacquerware firms will reduce 0.244 if the cooperation with same firms increases by one unit. Information spillovers and imitation is the fundamental nature in the early stage of industrial development in the region, and this situation leads to lessen the cooperation between same firms as those firms try to achieve competitive situation for own business. Thus, less cooperation between other firms leads to decrease the growth of lacquerware firms as a whole.

The other factors such as cooperation with suppliers has no significant relationship with the growth of lacquerware firms in the region. It was found that the traditional heritage firms possess the major portion of the region and the major raw materials and supplies are acquired near and around the region. Raw materials acquisition from suppliers is not so effective which is obvious in the area as a whole even though the management of supplier relationship is important for every firm.

Cooperation with institutions has no significant relationship with the growth of lacquerware firms in the region. The development of lacquerware industry in Nyaung-U township is the advantage of locational condition and the heritage of manufacturers in the area, the owners of lacquerware firms lack the interest to cooperate with the government institutions for the growth of the industry. This situation leads to weaken relationship to increase the growth of lacquerware firms.

### **Conclusion**

This study analyses the inter-firm cooperation of lacquerware firms in Nyaung-U township. lacquerware firms were operated as the traditional business in Nyaung-U most of the firms are stand-alone firms, and many firms are operated as cooperating with other firms. Such kind of system is the fundamental characters of lacquerware firms in Nyaung-U township, and effective establishment of such system enhance productivity improvement and ensure long-run success in the lacquerware industry.

In this study, cooperation with customers contributes to growth of lacquerware firms, this mean that the formulating and implementation of industrial development policy, training participation and sharing information can enhance the growth of lacquerware firms in this township. Cooperation with other firms leads to slow down the growth of lacquerware firms in the region.

In order to advance the growth of lacquerware firms, it is necessary to utilize the spillover advantages to be compatible with the organizational resources by monitoring the nature and the dynamism of industrial organization and changing nature of the market. Moreover, lacquerware firm's owners should attempt to have entrepreneurial spirit, and retain effective skilled labor to grasp the opportunities concerning the spillover effects in the industry. The manufacturers of lacquerware industry are required to forecast and implement ways to develop subcontracting network which can provide the fruitful effects of industrial concentration in this region.

The study of inter-firm cooperation in this study is based on primary data of survey from lacquerware firms, and most points presented are mainly based on perception of lacquerware firm's owners to reflect the current situations of lacquerware industry. Information concerning the industrial data of lacquerware firms represents for a limited period from secondary data, and further study could be undertaken with specific time series data of lacquerware industry. A

further study regarding the whole supply chain of lacquerware firms could be done to analyze firm growth and other performance indicators of lacquerware industry.

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