Interoperability of Competition and Embeddedness of Entrepreneurship in Industrial Clusters

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ABSTRACT

Except for the internal aspects of entrepreneurship (i.e., motivation, opportunity, perspective, and alertness), there are external aspects that affect entrepreneurship (i.e., in the industrial cluster). By comparing the machinery firms located inside and outside the industrial district of Taichung City, Taiwan, this study aims to explore the cluster effects on the entrepreneurship of firms in the Taiwan machinery cluster (TMC). This study uses the statistical tools, SEM and AMOS, to design and construct the model and to test the hypotheses. In this study, three factors affecting entrepreneurship in the TMC are defined: Competition, Embeddedness, and Specialized Knowledge. This study finds that when compared with firms outside the cluster, the industrial cluster has a positive influence on entrepreneurship. Additionally, the "relational embeddedness" factor has a significant impact on entrepreneurship and affects the adaptation ability of firms in the TMC. Finally, the "competition" factor reveals partial influence on entrepreneurship in the TMC.

1. INTRODUCTION

From Schumpeter onward, there had been many definitions describing entrepreneurship and the benefits entrepreneurship holds for economic development in a country or for a firm, where entrepreneurship has been demonstrated. Schumpeter (1965) defines entrepreneurship as emphasis on innovation such as, new products, new production methods, new markets, or forms of organization and describes entrepreneurs as the individuals who exploit market opportunity through technical and/or organizational innovation. Entrepreneurship is also emphasized on the basis of industrial innovation, such as new products, new production methods, new markets, and new forms of organization, and requires changes in the pattern of resource deployment and the creation of new capabilities to add new possibilities for positioning in markets. Engel (2014; p. 46) states that "entrepreneurship is managing a resource-deficient context, with progress dependent on recruiting people, capital and other resources; entrepreneurs are on continual quest to feed their venture's engine of value creation". Chatterji et al. (2013) discuss the link between entrepreneurship and local economic growth and indicate that initial entrepreneurship significantly influences the subsequent employment growth in industrial clusters.

The machinery industry serves as a fundamental industry that satisfies the strategic needs of a country's economic development. The connection between the machinery industry and other industries are tight, and thus the machinery industry is considered a major industry in a country. It is important to note that machinery technologies play an essential role for other industries, for economic development, and for job creation opportunities. Fransman (1986) states that Taiwan's success in the machinery industry is due to having the right country to imitate at a critical time. Taiwan's machinery industry has been considered one of the main factors for Taiwan's economic growth. After many years' accumulation of technological strength, the TMC makes it easier to seek industrial collaborations and applications.

George and Bock (2011) express that the literature of entrepreneurship is fragmented and characterized by different conceptualizations of the construct. This study reveals the venture creation phenomena of TMC, the primary influential factors of entrepreneurship for new venture establishment, and how to sustain these new breeds to become competitive, mature firms. As could be observed in research, taking industrial cluster or agglomeration as research topic usually resides in the phenomena of firms that converge together in a regional boundary that serves the similar industry. Whereas some scholars would focus on the advantages and disadvantages by agglomeration, others would address the effects of industrial cluster with respect to other economic aspects (such as innovation and competition). However, what are the effects of cluster to new business formation? Many new firms grow within an existing cluster rather than in isolation. Individuals working within a cluster can more easily perceive gaps in products or services around which they actually build their businesses. This study involves firms in the TMC and uses a questionnaire as the research tool/method to examine the gathered data and assess the hypotheses.

2. LITERATURE REVIEW

In an era where industries are becoming more dynamic, opportunities to create new products or processes become more open. This phenomenon nourishes entrepreneurship in many industries, and this type of act also makes possible the development of a firm that has been argued by many scholars to affect the firm's sustainability in the industry and economic development in many countries (Covin and Slevin, 1991; Zahra, 1993). Because of dynamic and open opportunities, developing a spatial environment (geographical areas) nourishes entrepreneurship by creating more opportunities and having knowledge sharing and spill-over from firms in the cluster with or without government intervention (Audretsch and Lehmann, 2006). Traditional theories of entrepreneurship basically restrict their attention to the profit-seeking motivation behind entrepreneurs. The neoclassical tradition considers market economies as systems in which equilibrium is achievable and represents them as such. The role of entrepreneurs is then merely a function of coordination of resources and calculation of the profit maximizing output. Accordingly, the core of the theory focuses on the "demand for entrepreneurship" and is mainly determined by profit opportunities available in the market. In other words, the traditional explanation of entrepreneurial activities merely refers to the existence of unexplored opportunities for profit (Eckhardt and Shane, 2003). Miller (1983) defines entrepreneurship as the process by which organizations renew themselves and their markets by pioneering, innovating and taking risks. Miller (1983) also finds the interaction of

entrepreneurship in different types of firms (i.e., simple firms, planning firms, and organic firms). Therefore, entrepreneurship can be defined as firm process or individual acts (owner-manager) on the path to own their business (new business creation), organization renewal, and sustainable business or market leader covering innovation, risk taking, and pioneering in the process.

In the field of innovation and spatial fields, many scholars have tried to discover whether some methods for innovation flourish more in one geographical area compared to others. In the new empirical literature, there is an appreciation for locational context and diversity of landscape that condition economic activity. This concept of location is now being defined as a geographic unit through which interaction and communication is facilitated, search intensity is increased and task coordination is enhanced. Industrial cluster or business cluster is a geographic concentration of interconnected businesses, suppliers, and associated institutions in a particular field. Clusters are considered to increase the productivity with which firms can compete, nationally and globally. Porter (1990) states that the purpose of having the business cluster is to increase productivity, drive innovation, and stimulate new business in the field. Based on the various contributions in the literature on industrial districts, Rabellotti (1998) concludes that industrial clusters can be categorized into four stylized facts: 1) a group of geographically concentrated and specialized small- and medium-sized enterprises; 2) a common behavioral code because the actors are linked by the same cultural and social background; 3) a set of linkages between enterprises based on the exchange of goods, services, labor and information; and 4) a network of public and private local institutions which support the actors in the cluster.

A final theoretical approach explains the existence of industrial agglomerations from the perspective of organizational sociology. Sociological and cognitive effects are resources needed to start a firm if it is located far from those resources. Organizational sociology increases the entry rate in clusters, but is not necessarily coupled with enhanced performance for new startup firms. Locally increased ease of entry and exaggerated expectations of success would therefore account for cluster formation (Sørensen and Sørensen, 2003). In a study of the U.S. shoe industry, Sørensen and Sørensen (2003, p. 427) find that both entry rates and failure rates were higher among concentrated plants and conclude that ''variation in the structure of entrepreneurial opportunities, rather than variations in the economics of production and distribution, maintains geographic concentration in the shoe industry''.

Breznitz and Taylor (2014) explain that the research theme of analyzing the growth of entrepreneurial clusters can be basically divided into factor-focused and structure-focused categories. Factor-focused categories refer to the studies which identify the factors that are necessary for the development and sustaining of entrepreneurial clusters. Structure-focused categories refer to the studies that focus more on the structure of the relationship, individuals, associations, or government policy within entrepreneurial clusters. Gartner (1985) conceptualizes the framework for the phenomenon of new venture creation. Gartner also states that there are four factors describing the phenomenon of new venture creation. The first factor is the "individual" factor, which refers to the personal factors involved in starting a new organization. The second factor is the "organization" factor, which refers to the type of firm that is started. The third factor is the "new venture process", which refers to the actions undertaken by the individual to start the venture. The fourth factor is the "environment" factor, which describes the situation surrounding and influencing the

new organization. This study focuses on the environment factors (cluster) of entrepreneurship, which encourages innovative action and is typically the area that highly supports the entrepreneurial process. Cluster is a particular factor within business regions and helps newly built firms to overcome the entry barrier.

Competition, as the strategic action taken by firms in the related to gain market share or position their firms in the market, could positively nourish innovation, which would bring the growth to the industry by making the firm differentiate product or process. Stam, et al. (2009) states that entrepreneurship is affected by the selection mechanism of competition. Uzzi and Gillespie (2002) state that firms would divide into low-cost strategy firms (economic firms), and differentiated firms (up-scale firms). They believe that co-location with the high-level differentiation firm would bring advantages and not require differentiation of investments and that the low-cost firm in the cluster would reap the benefit from co-location with differentiated firms.

Hypothesis 1a: *The up-scale firms (differentiated) based cluster would have a positive effect on entrepreneurship in the cluster compared with the economic firms based cluster.*

Firms located within a cluster could gain advantages for specialized inputs and employees because of the lower-cost access to specialized inputs such as components, machinery, business services, personnel, the flow of information and knowledge between units of the same firm, and the complementarities among firms whether in form of product or services. A cluster could make many inputs into public goods, that outside, would be costly, for example, firms could gain benefits, such as specialized infrastructure or advice from experts in local institutions at low cost. Clusters also provide indirect incentives and performance measurement by locating the firm in a closed place., Constant rival comparison will present the motivation (incentives) to the firms and with their performance having been measured.

> *Hypothesis 1b: Competitive advantage in the form of static productivity would have a positive effect on entrepreneurship inside the cluster.*

It is known that entrepreneurial activities are locally embedded and mutually affect entrepreneurs (Dilaver et al., 2014). In Uzzi and Gillespie's (2002) study, embeddedness could be illustrated in social daily life transactions in which people choose to have transactions with people they know well because of reliability and mutual understanding learned from prior experiences. Dayasindhu's (2002) research, embeddedness on Indian software industry, identified that the two types of embeddedness found in industrial cluster: relational embeddedness and structural embeddedness.

Thus, relational embeddedness could bring advantages for firms which could not be accomplished at the personal or firm level. Uzzi and Gillespie (2002) find that relational embeddedness brings the spillover into transactions between trading partners within the network. Rajneesh and Santangelo (2011) find that the relationship closeness between constituents (suppliers, customers, and other counterparts) improves the subsidiary's ability to absorb new knowledge from the environment.

> *Hypothesis 2a: Relational embeddedness would have a positive effect on entrepreneurship.*

The concept of structural embeddedness in a cluster could be demonstrated in both the cohesive internal linkage (closure) and in the external diverse linkage (range), while closure showing the transmission of fine-grained information and

action coordination, determine the novel information and knowledge and therefore nourish innovation in a cluster. A similar argument has been stated by Wei's et al. (2011) study on China's network configuration influencing R&D activities in Suzhou. The discovered that "the weak local embeddedness has technological, structural, spatial and institutional foundation, which limit the establishment of knowledge 'pipelines' with global innovation centers".

> ***Hypothesis 2b:*** *The level of structural embeddedness would have a positive effect on entrepreneurship in the cluster.*

Phelps (1992) states that the concept of external economies has been held central within geographical accounts of the spatial concentration of economic activity. The other argument, made by Krugman (1991), stated that the resulting demand effects within industrial agglomerations benefit the creation of new firms because proximate customers not only increase the likelihood of sales but also minimize transportation costs. The localization of specialized suppliers and the ease of transmission of knowledge and information flows have been considered the most relevant causes for the existence of "external economies" in a region. Firms want to locate in a central area where they are likely to find the specialized skilled workforce they need. Consequently, employees would move to areas where employers look for such specific skills, contributing to the self-reinforcement of this process. Moreover, customer firms and suppliers are enhanced by situating their companies in close proximity to one another. These gains are because of savings in transportation costs and because of backward and forward linkages that generate positive feedback. Finally, the process of clustering enables the firms to profit from a degree of knowledge diffusion.

> ***Hypothesis 3a:*** *Flexible resources (such as labor) in the industrial cluster would have a positive effect on entrepreneurship.*

Krugman (1991) states that the resulting demand effects, in the form of proximity to the customer within industrial agglomerations, benefit the creation of new firms because they increase the likelihood of sales and minimize transportation costs. Krugman (1991) argues the importance of industrial clusters in supporting entrepreneurship through demand effects, which is lowering transportation cost and increasing the likelihood of sales. By having a pool of demand, new venture creation would be attracted to locate their firms inside of the cluster. Figure 1 shows the research framework in this study.

> ***Hypotheses 3b:*** *The demand effect of the industrial cluster (lowering transportation costs and increasing the likelihood of sales) would have a positive effect on entrepreneurship.*
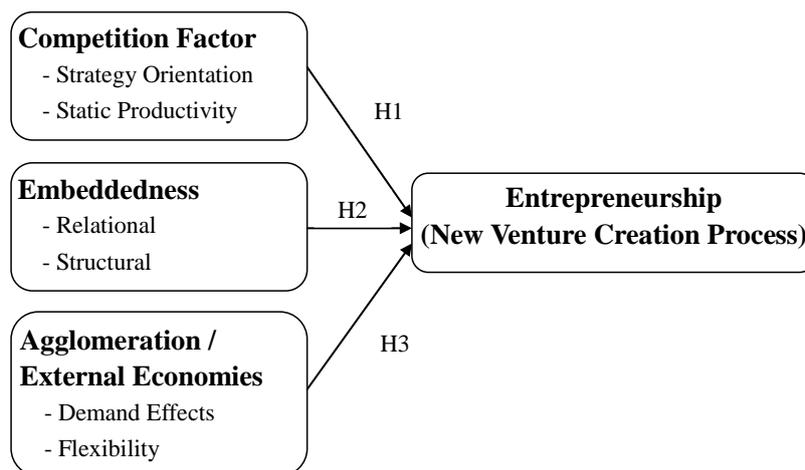
Figure 1: Research Framework

3. METHODOLOGY

This study takes a sample of the machinery cluster industry in Taichung City, Taiwan. In assessing hypotheses, a quantitative methodology was chosen, and a multiple regression analysis was used. The basis of the research purpose focuses on the relation between the independent variables (cluster factors) and the dependent variable (entrepreneurship in the cluster). Multiple regression analysis should provide results that would support or not support the argued hypothesis. Table 1 shows the model descriptions in this study.

Table 1: Model Description

Factors	Definition
Competition Factors	Competition in the industrial cluster affects new venture creation.
Strategy Orientation	The strategic action chosen by the firms in the cluster, either upscale or differentiated.
Static Productivity	The advantage gained by the firms in the cluster in the form of static productivity (access to specialized inputs and employees, access to information and knowledge, complementarities, access to institutions and public goods, incentives, and performance measurement).
Embeddedness	Dayasindhu (2002) argues that embeddedness is one of the key determinants of industry clusters.
Relational Embeddedness	The relation of two constituents (referred to as quality). This relational embeddedness would benefit entrepreneurship by supporting knowledge spillovers.
Structural Embeddedness	Structural embeddedness would refer to the range of the relations. Structural embeddedness supporting innovation through a diversified range of relation firms and access to novel knowledge.
Agglomeration Effect	The economic benefits gained by locating in close range.
Demand Effect	The demand effect of the industrial cluster (lowering transportation cost and increasing the likelihood of sales) would positively attract venture creation inside of the cluster.
Flexible Specialization	Flexible resources (labor) in the industrial cluster would converge in the cluster especially upon skills in accordance with the industry and support the new venture creation process to that the needs of skilled labor could easily be fulfilled.

4. RESULTS

In estimating the suggested hypothesis, the questionnaire method has been used in gathering data through distributing questionnaires to firms located in the Taichung area. 450 questionnaires had been distributed to random firms in the Taichung area with 142 respondents. The response rate is approximately 30% and is an acceptable number of questionnaires for data analysis. The questionnaire is created into two parts, the first part consists of general descriptive questions and cluster features, and the second part contains questions to assess the effect of suggested cluster features (competition, embeddedness, and externalities) on entrepreneurship. Personal descriptive questions were asked in the questionnaire such as, age, gender, educational degree, work experience, length of time of the firm's establishment, and position within the firm. Other questions were related to the cluster's main features that firms perceived to support the firm's establishment, for example, the presence or absence of specialized material suppliers, high demand of firm products, specialized skilled labor supply (university, education institution, etc.), and inter-firm collaboration intending new knowledge creation.

As shown in Table 2, the data could be considered as acceptable data since 50.6% are at the job position level included in firm decision-making. 40.1% had more than 10 years of work experience with only 2.0% had less than 2 years' experience. Most of the firms (61.2%) had more than 10 years of experience, only 1.3% were new entrants, and the others had 3 to 5 years and 6 to 10 years' experience.

Table 2: Data Description

Attribute		Frequency	%
Gender	Female	65	45.8
	Male	77	54.2
Age	26 – 35	44	31.0
	36 – 45	61	43.0
	46 – 55	37	26.1
Degree	High School	2	1.4
	Under Graduate	11	7.7
	Graduate	102	71.8
	Post Graduate	27	19.0
Position	Staff	68	47.9
	Manager	50	35.2
	Senior Manager	15	10.6
	CEO	9	6.3
Work Experience	1 – 2	2	1.4
	3 – 5	42	29.6
	6 – 1 0	40	28.2
	>10	58	40.8
Company Established Year	1 – 2	2	1.4
	3 – 5	12	8.5
	6 – 10	39	27.5
	> 10	89	62.7

From the data gathered from the questionnaire, three features – specialization in material suppliers for firm's product, inter-firm collaboration on new knowledge creation, and specialized labor supply through educational institution – was supported (more than 70% of the respondents agree that in the Taichung area they could perceive these features). However, the high demand for the firm's products from

inside the cluster was not supported (fewer than 50% of the respondents agree that this feature could be perceived inside the cluster). The result from all the questions is summarized into a table below. Table 3 shows the cluster features in this study.

Table 3:　Cluster Features

No.	Item	Mean	SD
	Strategy orientation	3.31	0.85
1.	The competition between firms has a positive effect on firm growth	4.05	0.64
2.	Firm is more willing to choose low price strategy than differentiated strategy in establishing a new firm.	2.17	0.78
3.	Differentiated competitions give benefits to firm with low price strategy.	2.44	1.04
4.	In the long term, low price strategy has negative effects on the industry.	4.12	0.92
	Competitive advantages	3.95	0.80
5.	Local government policy is positively affecting the firm establishment.	3.94	0.64
6.	Supporting infrastructure (access road, telecommunication line, etc.) which had been built is positively affecting the establishment of firm	4.00	0.75
7.	Local culture is positively affecting the firm establishment.	3.78	0.87
8.	Local labor productivity is positively affecting firm establishment.	4.05	0.99
9.	Land / construction cost is positively affecting the firm establishment.	4.00	0.76

The embeddedness factor shows the networking between industrial cluster components that will affect entrepreneurship when divided into relational and structural embeddedness. All questions in this study are made using the five-point Likert scale. The first five focused on the connection between relational embeddedness (the quality of firms' relation), and entrepreneurship and the last five questions focused on structural embeddedness' effect on entrepreneurship. Relational embeddedness had the overall mean score of 4.15 and a standard deviation of 0.75. Among the five elements of relational embeddedness the highest mean score (M = 4.33 and SD = 0.68) comes from the question of whether the quality of the firm's relations would create new opportunities for firms. The two lowest elements come from the questions about knowledge sharing (M = 4.05 and SD = 0.88) and capital investment (M = 4.05 and SD = 0.64). Structural embeddedness had an overall mean score of 4.07 and a standard deviation at 0.72. The two elements that had the highest score stem from the questions about firm's broader relationship benefitting the firm from the variety of knowledge gain (M = 4.22 and S = 0.65) and if the broader relationship will provide benefits due to opportunity awareness (M = 4.28 and SD = 0.57). The results of the embeddedness factor descriptive analysis are shown in Table 4.

Table 4: Descriptive Analysis of the Embeddedness Factor

No.	Item	Mean	SD
	Relational Embeddedness	4.15	0.75
1.	The quality of firm relations increases the firm's adaptation ability within the environment.	4.11	0.84
2	The quality of firm relations increases the willingness to get other firms to get involved in knowledge transfer.	4.05	0.88
3.	The quality of firm relations increases the possibility of bringing capital investment to the firm.	4.05	0.64
4.	The quality of firm relations will increase new opportunity creation.	4.33	0.68
	Structural Embeddedness	4.07	0.72

5.	The broader firm relations provide benefits for firm establishment.	3.89	0.68
6.	The broader firm relations are positively affecting new knowledge creation.	4.16	0.86
7.	The broader firm relations will increase the firm's variety of knowledge.	4.22	0.65
8.	The broader firm relations will increase opportunity awareness.	4.28	0.57
9.	The broader firm relations will reduce the resistance to entering the industry.	3.83	0.85

The descriptive analysis for the externalities factor depicts the effects of specialization and local demand on entrepreneurship. A five-point Likert scale was used to measure the effect of the externalities factor on entrepreneurship. As previously stated, the externalities factor is divided into specialization in the first six questions and demand effect on the last five questions. The mean score for specialization is 3.95 and the standard deviation is 0.81. Among the six elements of specialization the highest mean score (M = 4.38 and SD = 0.61) come from the question about whether specialized technology knowledge would lower the entry barrier and whether the specialized supporting industries (complementary industries) would help the innovation process (M = 4.16 and SD = 0.86). The lowest elements come from the questions about whether specialized institutions could give the specialized labor supply for firm (M = 3.22 and SD = 1.16) and if the convergence of specialized knowledge would bring knowledge spill over. The demand effects factor looks into whether the customer demand elements affect entrepreneurship inside the cluster with an overall mean score point of 3.85 and standard deviation of 1.07. The highest mean score comes from the question regarding the effect of local demand pressure on the firms innovation process (M = 4.16 and SD = 0.86). The lowest mean score comes from the question about having the customer in close proximity to the firm would gain benefits from an easier flow of information (M = 3.55 and SD = 1.15). The results of the externality factor descriptive analysis are shown in Table 5.

Table 5:   Descriptive Analysis of the Externalities Factor

No	Item	Mean	SD
	Specialization	3.95	0.81
1.	The specialized institution has a positive effect on the skilled labor supply.	3.22	1.16
2.	Specialized skilled labor is positively affecting knowledge transfer.	3.94	0.72
3.	Availability of specialized technology knowledge would lower the entry barrier.	4.38	0.61
4.	Availability of specialized supporting industries would lower the entry barrier	4.05	0.72
5.	Specialized supporting industries provide inputs for firms to innovate.	4.16	0.86
6.	Convergence of specialized knowledge had positive effects on knowledge spillovers.	3.89	0.96
	Demand Effects	3.85	1.07
7.	Customer proximity will lower the searching cost.	3.61	0.98
8.	Local customer demands stimulate the firms to innovate.	4.16	1.04
9.	The proximity of customers will lower the transportation cost.	4.11	1.18
10.	The proximity of customers will make the flow of information easier.	3.55	1.15

The results from the questionnaire regarding the entrepreneurship factors relating to the industrial cluster effects suggested respondents have a high correlation in entrepreneurship with respect to the firm's relation (relational embeddedness) with the mean of 4.22, the second highest point regarding to the locational advantages of the firm. Table 6 shows the descriptive analysis of the entrepreneurship factor in this study.

Table 6:   Descriptive Analysis of the Entrepreneurship Factor

No.	Item	Mean	SD
1.	It is more difficult for a firm to establish a firm in a low price competition environment.	3.78	0.88
2.	The quality of a firm's relationships benefits firm establishment.	4.22	0.73
3.	The proximity of the customers is good for firm establishment.	3.78	1.11

The framework model is created in AMOS 17.0 with the purpose of assessing the hypothesis. Before looking through the estimated numbers, several tests should been conducted to identify whether the created model is fit enough for the proposed theory, including chi-square test, RMSEA (Root Mean Square Error of Approximation), GFI (Goodness of Fit Index), AGFI (Adjusted Goodness of Fit Index), CFI (Comparative Fit Index), and NFI (Normed Fit Index).

The first fit test index is a chi-square test, and the fit number for a chi-square test is lower than 3.00. Additionally, the model shows the number 2.44, thus passing the chi-square test. Based on Bentler and Bonnet's (1980) NFI value for model fit, this value should be between 0.90 and 0.95. Thus, a value above 0.95 is assumed as a good model fit, and a value below 0.90 is a poor model fit. In the study the model shows the number of NFI is a little above the minimum requirement for NFI (0.91). RMSEA currently could be said to be the most popular measurement for model fit. MacCallum et al. (1996) categorize the model fit into three categories 0.01, 0.05, and 0.08. A number near 0.01 indicates an excellent fit, 0.05 is a good fit, and 0.08 is a moderate fit. For the RMSEA test, the model in the study shows 0.080, which shows that the model is a moderate fit. The CFI test for this model shows a number exceeding 0.9 (0.93) will show that the model passes the fit test for CFI. GFI and AGFI were affected by the number of samples; the acceptable numbers for a fit test in GFI and AGFI are both above 0.80. In this study, the GFI was barely greater than 0.808, and AGFI was slightly below the criteria requirement at 0.770. A summary of the model fit tests can be seen in Table 7.

Table 7: Research Model Fit Test

Goodness-of-fit measures	Recommended value	Model statistics
GFI (Goodness-of-Index)	≥ 0.80	0.808 *
RMSEA (Root Mean Square Error of Approximation)	≤ 0.1	0.080 *
NFI (Normalized Fit Index)	≥ 0.90	0.91 *
CFI (Comparative Fit Index)	≥ 0.90	0.93 *
Normed Chi-Square	≤ 3	

Confirmatory Factor Analysis (CFA) is commonly used to test whether measures of a construct are consistent with a researcher's understanding of the nature of the construct (factor). CFA tests whether the data could fit a hypothesized measurement model based on the theory. CFA itself is similar to EFA but not the same. EFA is conducted without knowing how many factors exist or which variables belong with which construct, but in CFA the researchers run the data using a defined pattern. This means with CFA, scholars need to identify the number of factors and which factor in each variable will load on. In other words, CFA specifies how measured variables logically and systematically represent the construct (the relationships which suggest how the variables could represent the latent construct). Figure 2 shows the CFA created in AMOS using the gathered data. This figure shows that all of the variables

are suitable in each factor (factor loading above 0.50). Below this study also runs a model fit test to determine whether the CFA model is suitable using the gathered data.
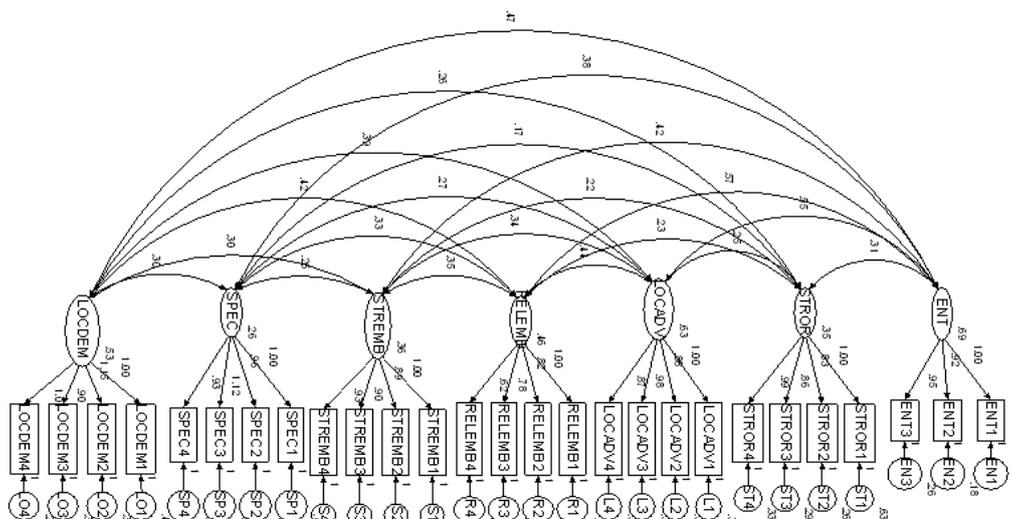

Figure 2: Confirmatory Factor Analysis

The reliability test was conducted to know the reliability of each variable. The Cronbach's Alpha construction is shown below in Table VIII. Table 8 shows that all of the question for the constructs were valid because Cronbach's Alpha value is higher than 0.7. Although there is no absolute standardization in determining the coefficient number with the most excellent reliability, Nunnally (1978) suggests reliability values should be over 0.7 to be considered reliable. Table 8 shows Cronbach's alpha values in this study.

Table 8: Cronbach's Alpha Values

Constructs	Cronbach's Alpha
Entrepreneurship	0.831
Strategy Orientation	0.738
Local Advantages	0.869
Structural Embeddedness	0.782
Relational Embeddedness	0.712
Specialization	0.789
Local Demand	0.856
Overall	0.940

As the model is significantly fit with the data and proposed theory, it is clear that the hypothesis argued is statistically supported. Applying this to the hypothesis being argued, Hypothesis 1a is partially supported as $\gamma = 0.20$ (P < 0.05). Hypothesis 1b related to the locational advantages is strongly supported as $\gamma = 0.31$ (P < 0.001). Figure 3 shows the AMOS Model in this study.
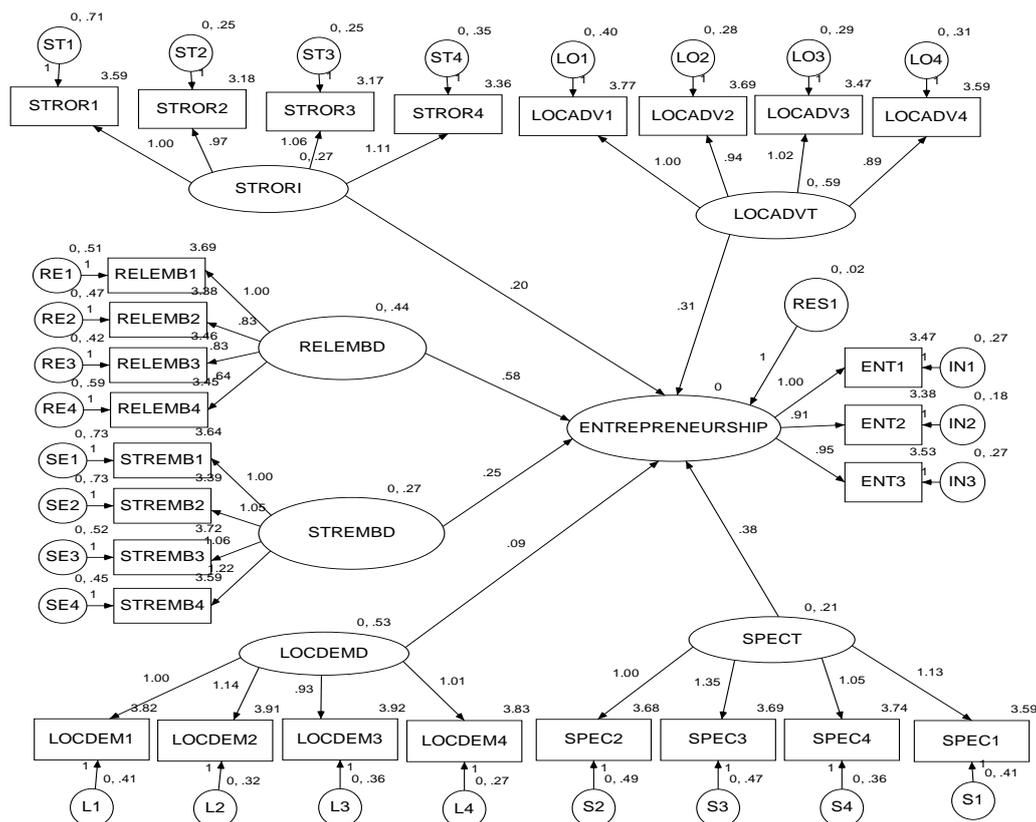
Figure 3: AMOS Model

Hypothesis 2a and 2b regarding embeddedness, relational embeddedness (H2a) is strongly supported with $\gamma = 0.58$ (P < 0.001), as for structural embeddedness (H2b) is partially supported with $\gamma = 0.25$ (P < 0.05). At the end of the hypothesis, look into the externalities factors, specialization and local demand. Hypothesis 3a (local demand effect on entrepreneurship) is not supported ($\gamma = 0.09$, P > 0.05) on the contrary, hypothesis 3b (specialization effect on entrepreneurship) is supported ($\gamma = 0.38$, P <0.05). The regression analysis result is more simply presented in Table 9.

Table 9: Regression Results

Hypothesis	Path Description	Path Coefficients	Supported
H1a	Strategy Orientation --> Entrepreneurship	0.20 (**)	YES
H1b	Local Advantages --> Entrepreneurship	0.31 (***)	YES
H2a	Relational Embeddedness --> Entrepreneurship	0.58 (***)	YES
H2b	Structural Embeddedness --> Entrepreneurship	0.25 (**)	YES
H3a	Local Demand --> Entrepreneurship	0.09	NO
H3b	Specialization --> Entrepreneurship	0.38 (***)	YES

5. CONCLUSIONS

The field of entrepreneurship has been more and more studied to focus on different subjects and theoretical frameworks (Davidsson and Wiklund, 2001). This study finds that the firms in the TMC industrial district disagree with the high demand for firm's products in the closed area occupied by the firm. The reason for this is that

the TMC market is not large enough, and most firms export their products to foreign markets. Brookfield and Liu (2001) state that Taiwan's machine tool industry distributes the products in a global market, such as the U.S., Europe, China and Southeast Asia. A similar reason for the unsupported hypothesis 3a ($\gamma = 0.122$, P > 0.05) shows that local demand has a positive effect on entrepreneurship. This study further finds that the most significant factor affecting entrepreneurship inside the cluster is the relational embeddedness of the firms inside the TMC. Based on the AMOS result with $\gamma = 0.721$ (P < 0.05), it shows that the relational embeddedness inside the cluster helps the firm establish an enterprise and sustain their business. This explains that relational embeddedness helps the new firm to close the gap between firms, assists the flow of information (which affects the creation and invention of new opportunity), and identifies social resources. Therefore, it is obvious that the quality of inter-firm relations supporting new venture creation, regarding the factors from relational embeddedness in the cluster result in new venture creation (entrepreneurship) and affect the adaptation ability of firms ($\gamma=0.681$) increases the possibility of capital investment to the firm ($\gamma=0.645$), the willingness to get other firms to become involved in knowledge transfer ($\gamma=0.627$) and new opportunities creation ($\gamma=0.483$). Although relational embeddedness helps the creation of firms ($\gamma = 0.237$, P < 0.05), structural embeddedness does not have as significant an impact on firm creation as relational embeddedness. Based on the importance of the relation (relational embeddedness), people usually consider having a "secret-trade" or information sharing with private partners rather than with public partners (structured embeddedness).

This study uses three factors (competition, embeddedness, and externalities) and finds that relational embeddedness plays an important factor for the firm's establishment in a cluster, and the other two factors contribute more to entrepreneurship. As the competition sub-factors that consist of firm strategy orientation and locational advantages, this study reveals that although the competitors in the same cluster would have an effect on strategic moves, no matter how/what strategy is chosen by the other competitors, the firm should differentiate themselves by focusing on the innovation rather than by competing on price. The advantages provided to the firms in the cluster would be perceived differently by different firms. An industrial cluster usually consists of many components (suppliers, customers, competitors and complement industries), and the relation (network) of the firm to the other components would play an important role. This study addresses whether firm relational embeddedness is the most important factor for entrepreneurship. By having the closed relation with the other components, the firm could gain the benefits such as lowering the deterrence when first establishing a firm and connect with other firms in knowledge sharing. Additionally, the manager should focus on deepening the quality of the relations within clusters (relationally) rather than having shallow broad relations (structurally).

From the previous studies of industrial clusters and entrepreneurship, many scholars believe that local demands have positive impacts on entrepreneurship. For the TMC, the local demands for the machinery industry are lower than foreign market demands since the TMC is an export-oriented industry. The specialization (in terms of labor skill, key material, etc.) is proved to significantly affect entrepreneurship inside the cluster, but the demand effect in the TMC was not proved to significantly affect entrepreneurship. The industrial cluster itself supposedly had its own characteristic

which would differentiate itself from the other clusters. The firm should consider what characteristic a cluster would have and use this advantage to help them build firms and think of a way to hinder the scarcity. Although the factors of competition and embeddedness are supported, the local demand sub-factor is not supported in this study; it shows that a different cluster would have the specialized characteristics differing one cluster from the others. For entrepreneurship, the creation of new venture innovation and knowledge sharing play important roles in the machinery clusters. Firms in the machinery industry should also differentiate themselves in a competitive condition, and by interrelating with other entities to support their information transfer and knowledge creation.

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