10. INTERNATIONALIZATION STRATEGY AND FIRM PERFORMANCE: ESTIMATION OF CORPORATE STRATEGY EFFECT BASED ON BIG DATA OF CHINESE IT COMPANIES IN A COMPLEX NETWORK[1]

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Abstract

With the development of the Chinese IT industry, a number of Chinese IT companies have enhanced their involvement in the global market. The research of internationalization strategy, firm attributes, product attributes and firm performance in a complex network can be helpful to further reveal the effect of an internationalization strategy on firm performance. Dynamic cluster analysis is performed to analyze the relationship between internationalization strategy and firm performance based on big data concerning interactions with firm attributes and product attributes. The complex network of internationalization strategy, firm attributes, product attributes and firm performance is analyzed in a 2-mode network. The relationship of internationalization strategy and firm performance, concerning the effects of firm attributes, are further tested by a path model, and the effect of an internationalization strategy on firm performance is further estimated. This research finds that an internationalization strategy has a positive relationship with firm performance, and an indirect positive effect

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through financial leverage. Also, the integral function of internationalization strategy on firm performance in the complex network is generally on an ascending trend. This research can be helpful to policy makers and global managers of the Chinese IT companies in their future corporate decisions.

1. Introduction

With the deregulation of foreign investment in China, the Chinese companies are encouraged to co-operate with foreign companies in the global market and aim both to import foreign technology and also to strengthen managerial practices to attain a higher level of economic development (Child & Rodrigues, 2005). The open door policy aims to shift the Chinese economy from a traditional import substitution economy to an export promotion economy, and also motivates the Chinese companies to be involved in the global competition, while the centrally planned economy is transformed into a market-oriented economy. This is helpful for the Chinese companies to overcome the operational redundancies and technological obsolescence. The Chinese companies have enhanced their international involvement by increased trade and service, as a manufacturing center of the world market.

The reform of the market-oriented economy in China is concerned with the direction of market power and the relationship between demand and supply in the global market. Thus, the Chinese companies are concerned with the increase in market size in the global competition and with increasing the export of their products (Lo & Chan, 1998). The Chinese companies can take advantages of the large demand on the global market, from consumption, investment, export and intermediate uses (Liu, 1998), as well as a comparatively lower labor cost in the international competition (Guisan, 2004). In co-operation and competition with foreign companies, the Chinese companies have improved their management and technical skills for international competition (Lall & Albaladejo, 2004). Lower entry barriers and a more relaxed regulation of the FDI have allowed the Chinese companies to reform through Sino-foreign joint ventures with foreign companies, and the success of the Chinese open economy has also furthered the internationalization of the Chinese companies (Taylor, 2002). The Chinese government has encouraged a number of Chinese companies to expand their global market through specialized foreign trade corporations, with the objective of enlarging exports and securing supplies of raw materials, and further acquiring advanced technology and R&D capabilities through their internationalization strategy (Child & Rodrigues, 2005).

The Chinese IT companies are important players in the reform of the Chinese economy, and the development of a global IT product market motivated the accelerated expansion of the Chinese IT companies (Huang, 2007). With the deregulation of foreign investment in China and the relaxation of import restrictions, the Chinese IT companies have been challenged by fierce competition with competitive international brands. The open policy

of China has increased the competition between the Chinese companies and foreign investors. The increased competition has forced Chinese IT companies to enhance their international involvement by seeking a larger share of the global product market and attaining a high level of technological development (Du *et al*., 2008). The relationship between an internationalization strategy and firm performance is important to the global managers of Chinese IT companies, and the effect of internationalization strategies on the Chinese companies is worthy of study. Furthermore, the effect of an internationalization strategy on firm performance of Chinese IT companies is also related to functions of firm level attributes as well as product attributes. Therefore, the research of relationship between an internationalization strategy and firm performance based on a complex network can further reveal the underlining effect of an internationalization strategy on the performance of the Chinese IT companies while it functions together with firm attributes and product attributes.

2. Literature Review

2.1. Internationalization Strategy and Firm Performance of the Chinese IT Companies

An internationalization strategy has positive effects on firm performance by converting unique abilities to advantages abroad, achieving economy of scale and global assets, and improving brand awareness in the global product market. Hitt *et al*. (1997) found that internationalization could have a positive relationship to the performance of companies. Firms with unique internal capabilities will apply the firm resources and advantages in international markets to increase profitability by achieving economies of scale, rationalizing production, making investments over broad market bases, and achieving greater organizational learning. Tallman & Li (1996) also pointed out that international companies can arbitrage across factor markets and leverage their market power to both reduce input costs and control the output markets. Through the internationalization of Chinese companies, active transfer of management knowledge has taken place (Tsang, 2002). As knowledge is incorporated into the production function through technology transfer, the company experiences higher growth rates (Grossman & Helpman, 1991). Dastidar (2009) pointed out that internationalization of companies increases the firm value with the access to international markets and the achievement of special assets. Kim (2010) found the internationalization of companies could increase their global brand value. Das (2014) also pointed out that the cross-border trade can enhance the technological development by learning effect. Chen (2005) pointed out that the Chinese IT companies can better perform in international competition by learning international management skills, improving ownership advantages of core technology, building of global brand equity, and optimization of resource allocations. Xie and Liu (2011) pointed out that the Chinese IT companies have gradually achieved competitive advantages through the scale of economy, better access to resources and assets, increasing revenues, as well as improved management skills.

In addition, an internationalization strategy can also have a negative effect on firm performance by increasing transaction costs due to cross border operations, managerial

complexity, international inexperience, lowering competitive advantages due to resource immobility and limitations in cross-border product markets. Barney (1991) suggested that the resources of firms which create competitive advantages should be valuable resources. The fixed assets such as infrastructure, and the intangible assets such as technological know-how, are important for the IT companies in their development (Bharadwaj, 2000). Tseng, al (2007) pointed out that resources that are related to technological and marketing knowledge are significantly related to the international growth of companies. Firm resources could be imperfectly imitable. There may not be a substitute for firm resources that offer the same advantages to an organization and these resources might not be equivalent in the cross-border product market. Williamson (1999) pointed out that resources may be imperfectly mobile because the transactions costs associated with their transfer are very high. Immobile and imperfectly mobile resources are non-tradable and remain bounded to the firm. Although the Chinese international companies have benefited from internationalization at home by cooperating with global players who have transferred technological and organizational skills, allowing the emerging market enterprises to undertake outward internationalization in some unconventional ways, the global success of the Chinese international companies is still highly dependent on their performance at home and their home base to serve as the manufacturing center for their worldwide operations (Luo & Tung, 2007). Internationalization strategies that have associated administrative complexities can make transaction costs grow quickly so as to soon overwhelm the potential economies of scale or scope offered by the strategy. Fang (2005) also pointed out that the internationalization of Chinese IT companies needs to solve problems with market risks that are increased by cross border competition, international trade disputes, property risks that are increased by monopolization of the global intellectual property market, as well as brand risks due to international inexperience of global product market, and cultural risks due to limited awareness of local customer needs.

2.2. Functions of Firm Attributes of Chinese IT Companies

Barney (1991) suggested that the resources of firms which create competitive advantage should be valuable resources. Firm attributes can become valuable resources when they exploit opportunities or neutralize threats in a firm's environment. The resources should also be rare. As long as the firm has valuable resources that have not been found by a large number of competitors, these resources have the potential of generating a competitive advantage. Furthermore, firm resources could be imperfectly imitable. There may not be substitute firm resources that offer the same advantages to an organization and these resources might not be equivalent in the implementation of the strategies (Barney, 1991). Therefore, firm attributes can have important effect on firm performance of Chinese IT companies while it functions together with the internationalization strategy.

(1). *Firm Size*. Li and Wong (2003) set firm size as ln(total asset) and pointed out that firm size has influences on the performance of the Chinese companies. Shinkle and Kriauciunas (2010) also found that firm size of international companies, which is measured by the ln(Total Asset), has a positive relationship with the export growth in the transnational economies.

(2). *Firm Leverage.* Qian *et al.* (2008) pointed out that firm leverage could be measured by debt/equity ratio and influences the firm performance. The financial leverage can reflect the influence of debt owners and shareholders to the performance of firms and it will increase the uncertainties. Buckley *et al.* (2007) pointed out that capital advantages due to soft budge control was an important determinant to the Chinese companies in global competition.

(3). *Ownership concentration.* Additionally, the concentration of ownership in the firms is also a control variable. The concentration of ownership is measured by the portion of top ten shareholders to the total share. The ownership structures of firms from the emerging markets are shaped by the local competitions. Bhaumik *et al.* (2010) found that firms with concentrated ownership are less involved in the global competition. The concentration of ownership is measured by the portion of top ten shareholders to the total share. Lin (2013) and Vintila *et al.* (2014) also pointed out that ownership had an important effect on firm performance.

2.3. Product Attribute and Firm Performance of the Chinese IT Companies

The product markets of Chinese IT companies are scattered and dispersed, with a large number of companies involved in lower value added production. The product market is limited in core technologies and intra-industry co-operations. Yang and Feng (2002) studied the Chinese IT companies in the Dongguan area, and found out that the majority of Chinese IT companies are dependent on the production of complementary IT products, with lower level of value added activities, but the proportions of consumption electronic products and computer products are increasing. Huang (2006) also pointed out that OEM is still a major mode of the Chinese IT companies in the international competition, especially for small and medium sized companies in the South-Eastern coastal provinces. Peng *et al.* (2007) further pointed out that most of the Chinese IT companies were still in favor of purchasing their core technologies from foreign companies, especially the small and medium companies which were more likely to take a business strategy in the product market for cost saving in R&D investment. Therefore, the Chinese IT companies lack co-operative ventures with domestic partners, and the product market is loosened and dispersed. Consequently, the product attributes of the Chinese IT companies can also have important effect on firm performance while they function together with an internationalization strategy.

3. Research Method

3.1. Data Collection

The research aims to find the impact of an internationalization strategy on firm performance while it functions together with firm attributes such as firm size, firm leverage, ownership concentration, and product attributes. The internationalization is measured by the foreign to total sales ratio (Bodnar & Weintrop, 1997, and Kim, 2010). The performance is measured by the sales of the Chinese IT companies (Qian *et al.*, 2008). The firms' stock price is an extra indicator of their financial performance. Firm size is measured by ln(total asset) (Li and Wong, 2003), and firm leverage is measured by ratio of debt to equity (Qian *et al.*, 2008). The ownership concentration is measured

by the shares held by the top ten shareholders (Bhaumik *et al.*, 2010). The data sources are obtained from Annual Reports 2002-2011 of Listed Chinese IT companies in Wind Database, with missing values excluded, and the sample size of corporate data is 316, including Zhongxing, Yongyou, Greatwall, and TCL, etc. The data is transformed by the logarithm for finding relationships of different variables (Hair, 2010).

3.2. Dynamic Cluster Analysis based on Big Data of Chinese IT Companies

Based on the corporate data of listed IT companies, this research analyzes the complex network of an internationalization strategy and firm performance of the Chinese IT companies, incorporating its interactions with firm attributes and product attributes. The product attributes include the products and services that the Chinese IT companies offer, referring to computers, software, Internet services, electronic component, online business support, and telecommunication, etc. Dynamic cluster analysis is performed to identify different groups of Chinese IT companies based on quantitative and qualitative corporate data.

Traditionally, the distances of companies in a dynamic cluster analysis is measured by the Euclidean distance, which is:

$$d_{ij} = \sqrt{\sum_{k=1}^{p} (x_{ik} - x_{jk})^2}$$

However, this kind of measurement does not evaluate the distances concerning the differences of their structured data, such as quantitative attributes, and unstructured data such as qualitative attributes. In this research, the relationship between the internationalization strategy and firm performance in the complex network of Chinese IT companies is analyzed on the basis of big data sources, including both structured data and unstructured data. The Euclidean distance is used to measure the distances of Chinese IT companies based on their internationalization strategy, firm performance and firm attributes, which are structured data sources. And binary distance is:

$$d_{ij} = \frac{n\{C_j(a,b) \neq x | C_i(a,b) = x\}}{m\{C_j(a,b) = x | C_i(a,b) = x\} + n\{C_j(a,b) \neq x | C_i(a,b) = x\}}$$

It is used to measure distances of Chinese IT companies based on their product attributes and time variables, which are unstructured data sources. Dummy variables are used for unstructured data of the product attributes and time periods. If the specific product attribute is included in the sample Chinese IT company, it equals to 1, and otherwise it equals to 0. If the corporate data fits the specific time period, it equals to 1, and otherwise it equals to 0. Furthermore, the binary distance is measured by the ratio of cases that both two sample companies do not fit the same conditions to total cases that two sample companies fit the same conditions or not. $C_i(a,b)$ represents the case that sample company i fits the b_{th} specific case in a_{th} variable, referring to product attributes or time periods. x represent the result of conditions. If the sample company i offers b_{th} specific product, such as computer, in a_{th} variable, such as product attribute, x

equals to 1. n{C$_j$(a,b)≠x|C$_i$(a,b)=x} represents the number of cases that sample company i and sample company j do not fit the same conditions, and m{C$_j$(a,b)=x|C$_i$(a,b)=x} represents the number of cases that both sample company i and sample company j fit the same condition.

A combined distance, $d_{ij} = \sqrt{d^2_{Euclidean(ij)} + d^2_{binary(ij)}}$, is used for these two kinds of data sources that are scaled, so that structured and unstructured data based on big data sources of Chinese IT companies are applied together in dynamic cluster analysis. In addition, the average Silhouette coefficient value is used as performance criteria to identify the number of clusters in the complex network of Chinese companies Silhouette coefficient value for each observation is measured by:

$$S(i) = \frac{b(i) - a(i)}{\max\{a(i), b(i)\}}$$

The b(i) is the average distance between company i and all other companies in the closest neighboring cluster, a(i) is the average distance between company i and all other companies in its own cluster (Kaufman and Rousseeuw, 1990). The average Silhouette coefficient of sample companies is used to support the decision of cluster number. The reasonable decision for the number of clusters in the analysis can be identified by the large increase in Silhouette coefficient. The dynamic cluster analysis of Chinese IT companies is performed by the R3.1.0 program.

3.3. Analysis of Complex Network of Chinese IT Companies

Furthermore, a network analysis is performed to further reveal the interactions within this complex network based on corporate data of sample Chinese IT companies. The 2-mode network of complete company nodes is developed in a complex network based on binary corporate data transferred by the threshold of median value. The 2-mode network identifies and visualizes the connections between nodes of samples companies and nodes attributes, such as firm attributes and product attributes, and the relationships of variables can be further revealed in the network.

The 2-mode network of sample companies in 2011 is further developed, and the closeness centrality of company nodes is revealed. Freeman (1979) developed the closeness centrality of sample companies by the inverse proportion of distance between node i and other nodes to the total distance:

$$C(i) = [\frac{\sum_{i=1}^{n} d(j, i)}{n - 1}]^{-1}$$

C$_{(i)}$ represents the closeness centrality of sample node i and d$_{(j,i)}$ represents the distance between node j and node i. The closeness centrality represents the inverse ratio of summed distance between node i and other nodes to the minimum possible connections from node i to other nodes. Borgatti and Everett (1997) further developed the closeness centrality of nodes in the 2-mode network based on the distance from one node to other nodes and the attributes. The complex network analysis of Chinese IT companies is

performed by UCINET 6 program, and the Kernel density estimate of closeness centrality is further performed by Stata 12.0 program.

3.4. Estimation of Internationalization Strategy Effect on Firm Performance

Finally, the relationship of internationalization strategy and firm performance, concerning the effects of firm attributes, are tested by a path model based on data sources of Chinese IT companies from 2002~2011. The path model is a non-parametric model that finds the causal relationship of variables, and the goodness of fit index (GFI) represents the fitness of the model. The path model is performed by AMOS 17.0 to further reveal the relationships between internationalization strategy, firm attributes and firm performance of Chinese IT companies. And the integral function of internationalization and firm attributes on firm performance, based on relationships disclosed in path model, is further estimated by Simulink of Matlab R2010a program.

4. Results

Table 1 shows that the average internationalization level of Chinese IT companies is 0.33. The average sales value is 6.46 billion RMB and the average stock price is 47.48 RMB/share. The average firm size is 9.35 and the ownership concentration level is 59.26%. The average firm leverage is 0.9. Figure 1 shows the Silhouette coefficient in dynamic cluster analysis, and it is found that the first maximum of the Silhouette coefficient when the companies are divided to eight clusters. Thus it is optimal that companies are divided into eight clusters in dynamic cluster analysis.

Table 2 shows the mean level internationalization strategy, firm performance, firm attributes and product attributes of eight different company clusters in dynamic cluster analysis based on scaled data sources. It is found that companies in Cluster 4 have the highest level of average firm performance, with the highest level of internationalization strategy, highest level of firm size and financial leverage, and the lowest level of ownership concentration. These companies can outperform in the global product market due to adequate resources and strong financial leveraging power and be involved in higher level of value added. In addition, companies in Cluster 2 have a higher level of average firm performance as well as a higher level of internationalization strategy. These companies are also high in firm size as well as firm leverage. Companies in Cluster 7 also have a higher level of firm performance, with a higher level of firm leverage and a lower level of ownership concentration, although they have a lower level of internationalization strategy. Companies in Cluster 5 also have a higher level of firm performance, with a higher level of internationalization strategy. On the other hand, companies in Cluster 6 have a lower level of average firm performance, with a lower level of internationalization strategy, the lowest level of firm size and financial leverage, and the highest level of ownership concentration. Companies in Cluster 8 also have a lower level of firm performance, with the lowest level of internationalization strategy, a lower level of firm size and financial leverage. These companies can be involved in a higher level of competition and a lower level of margins, and prefer to be primarily dependent on their home market. Companies in Cluster 3 have the lowest level of firm performance, with a lower level of firm size. Companies in Cluster 1 have a lower level

of firm performance, with a lower level of firm size and financial leverage, although they have a higher level of internationalization strategy.

Figure 2 shows the 2-mode network of internationalization strategy, firm performance, firm attributes and product attributes based on complete sample company nodes, with all values transformed into binary data sources. The round spots are nodes of sample companies, and the square spots are the attributes of companies, including firm attributes, products attributes, the internationalization level of companies, firm performance, and the time periods. The ties represent the connections between nodes and nodes attributes, and the relationships of different variables can be visualized in the network. It is further revealed that higher level of internationalization strategy is close to higher level of firm performance, and also close to higher level of firm size and firm leverage, but also close to a lower level of ownership concentration. Vice-versa, lower level of internationalization strategy is close to lower level of firm performance, lower level of firm size and firm leverage, and higher level of ownership concentration. The stock price is found to have no relationship with internationalization strategy and firm attributes. It is further found that the average closeness centrality of Chinese IT companies in 2-mode network of 2011 is 1.3, which is low, and limited Chinese IT companies have been involved in product lines with a close distance. The Kernel density estimate of the closeness centrality is shown in Figure 3, and further reveals that the product market of the Chinese IT companies is scattered and dispersed.

Table 3 shows the result of a path model that further tests the relationship of internationalization strategy, firm performance and firm attributes. It is found that the goodness of fit index (GFI) in the path model is 0.997, adjusted goodness of fit index (AGFI) is 0.951, comparative fitness index (CFI) is 0.998, and non-normed fitness index (NNFI) is 0.997, which are all above 0.9. Therefore, the path model is reasonable. Figure 4 shows the relationships of internationalization strategy, firm performance and firm attributes. It is found that an internationalization strategy has a positive effect on the sales performance of the Chinese IT companies. An internationalization strategy also has an indirect positive effect on the performance of the Chinese IT companies through the mediate effect of financial leverage. Although the mediate effect of firm size and ownership concentration was not found to be significant in the relationship between internationalization strategy and performance of the Chinese IT companies, there is an indirect positive relationship between financial leverage and firm performance through the mediate effect of firm size and an indirect negative relationship through the mediate effect of ownership concentration. Figure 5 shows the integral effect of internationalization on firm performance, based on the causal relationships of an internationalization strategy, firm attributes, and firm performance revealed by path model. The integral function of internationalization strategy on firm performance is simulated based on the direct effect of internationalization strategy and the indirect effect of internationalization strategy through the influences on firm level factors, which are identified by path model. It is found that the effect of an internationalization strategy on firm performance can have variances accountable to the relationships of an internationalization strategy, firm attributes and firm performance. Nevertheless, the integral function of an internationalization strategy on firm performance shows a generally ascending trend.

5. Conclusion

With the development of the Chinese IT industry, a number of Chinese IT companies have initiated an internationalization strategy. The research finds that an internationalization strategy has a direct positive impact on the performance of Chinese IT companies. Meanwhile, the internationalization also has an indirect positive impact on the performance of Chinese IT companies through the mediate effect of financial leverage. The Chinese IT companies with an internationalization strategy are experienced in market development and R&D activities. With a greater amount of technological know-how, IT companies are more willing to undertake risk in the development of new product markets.

Furthermore, financial leverage is found to have a positive effect on firm size and a negative effect on ownership concentration. In an international expansion, the Chinese IT companies with a higher level of involvement in the development of new product market will experience a higher growth rate, which is helpful to achieve both the economy of scale and a larger firm size with increased firm assets and resources. As companies will also be deregulated with a lower level of ownership concentration, more managerial conflicts will need to be controlled. Although no significant relationship between internationalization and firm size or ownership concentration of Chinese IT companies was found, an internationalization strategy was found to have an indirect positive impact on firm size through the mediate effect of firm leverage, and also an indirect negative impact on ownership concentration.

An internationalization strategy has both a direct positive impact on firm performance of Chinese IT companies and an indirect positive impact on the performance through financial leverage. An internationalization strategy also has an indirect positive effect on firm size and an indirect negative effect on ownership concentration of the Chinese IT companies. As it was pointed out by Xue and Zhou (2007), while the Chinese companies initially enhance their international involvement, both managerial cost and operational cost can consistently increase due to the higher level of global competition and market differences. The Chinese IT companies may not have developed a wide range of core-competitive advantages during their international involvement across different markets. Therefore, firm performance is low when the internationalization strategy is also at a lower level, with limited core-competitive advantages developed from their product market. The Chinese IT companies may find it difficult to benefit from current business while they are further involved in global companies. As an internationalization strategy is enhanced to a higher level, they may choose to shift the core business, so that they can better adapt to the global market, survive in the global competition, or develop a new profit-making business in the global market. Therefore, the integral function of internationalization strategy on firm performance shows a generally ascending trend.

Descriptive Analysis of the Chinese IT Companies

	Mean	St. Devi.	Max	Min	Sale	Intl	Owner	Size	Lev
Sale	6.46E+09	2.11E+10	2.16E+11	1.21E+08	1				
Intl	0.33	0.28	0.99	0.00	0.01	1			
Ownership	59.26	14.65	100.00	17.86	-0.06	0.06	1		
Firm Size	9.35	0.54	11.66	8.40	0.71	-0.02	-0.24	1	
Leverage	0.90	1.01	10.32	0.04	0.22	0.14	-0.27	0.37	1
N	316	316	316	316					

Table 2

Cluster Means of the Chinese IT Companies by Dynamic Cluster Analysis

Cluster	Sale	Intl	Ownership	Firm Size	Leverage	Stock
1	-0.18	0.38	-0.25	-0.26	0.19	-0.13
2	1.59	0.33	0.01	1.61	0.72	0.51
3	-0.76	0.41	-0.89	-0.29	0.50	-0.91
4	2.34	0.58	-1.47	2.17	1.48	-1.97
5	0.05	0.42	0.25	-0.13	0.29	-0.68
6	-0.60	-0.48	0.58	-0.51	-0.76	0.18
7	0.84	-1.28	-2.25	0.48	1.02	0.80
8	-0.50	-1.51	-0.13	-0.33	-0.04	-0.23

Table 3

Summary of Path Model

Model	χ^2/df	GFI	AGFI	CFI	NFI
Model Index	2.582	0.997	0.951	0.998	0.997
			Estimate	S.E.	C.R.
LnLever	<---	LnIntl	0.128***	0.037	3.460
Firm Size	<---	LnLever	0.607***	0.062	9.840
LnOwner	<---	LnLever	-0.093***	0.016	-5.848
LnOwner	<---	LnIntl	0.010	0.011	0.921
Firm Size	<---	LnIntl	0.003	0.041	0.081
LnSale	<---	Firm Size	1.003***	0.027	37.443
LnSale	<---	LnLever	0.265***	0.035	7.585
LnSale	<---	LnIntl	0.056***	0.020	2.856
LnSale	<---	LnOwner	0.258*	0.104	2.479
***P<0.005, **P<0.01,*P<0.05					

Figure 1

Silhouette Coefficient in Dynamic Cluster Analysis

Figure 2

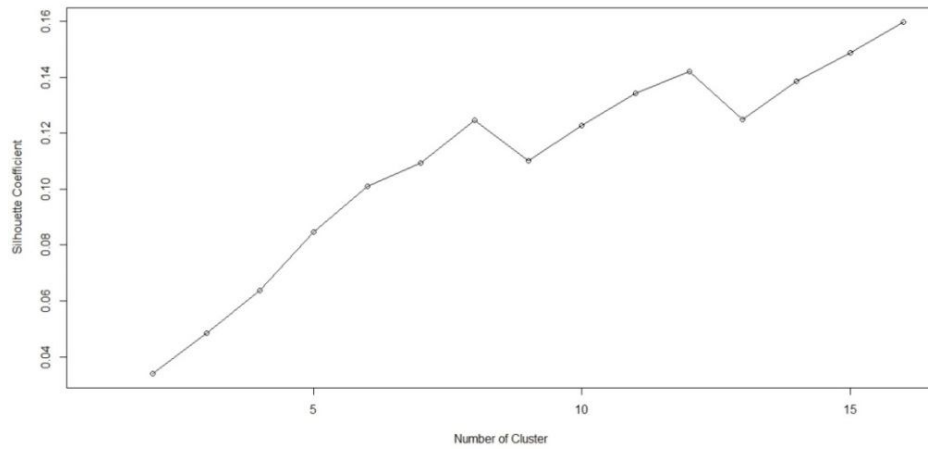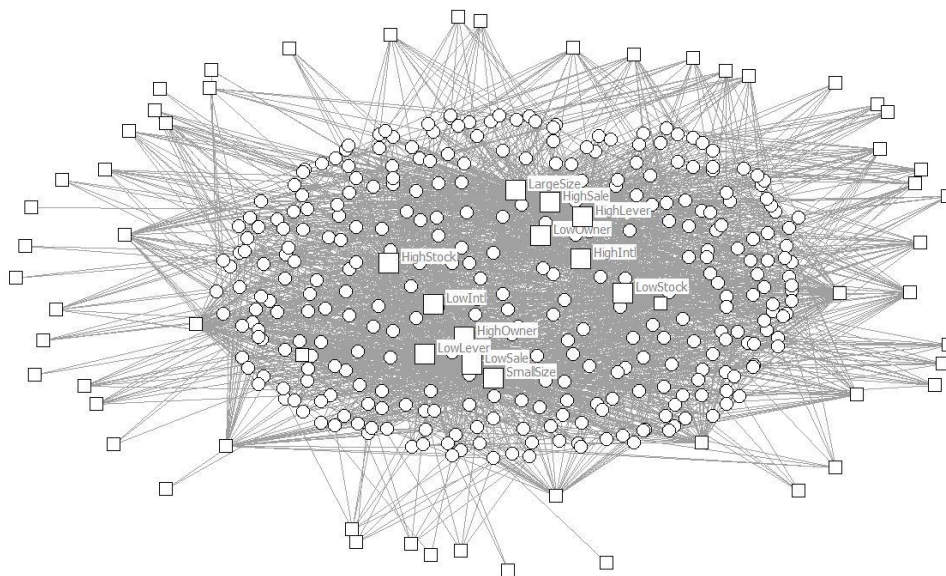**Complex Network of Chinese IT Companies**

Figure 3
Kernel Density of Closeness Centrality for Chinese IT Companies in 2-Mode Network of 2011
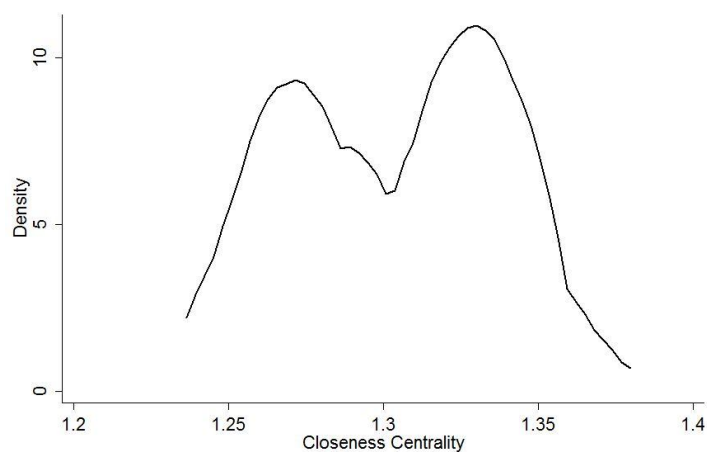

Figure 4
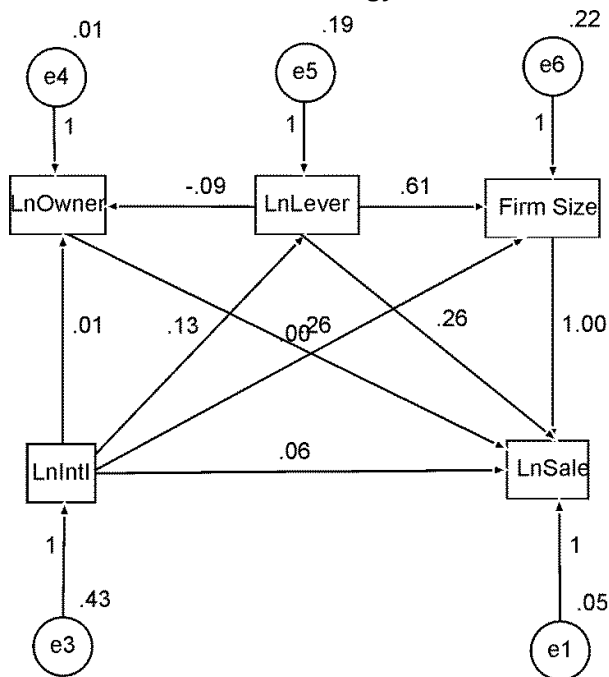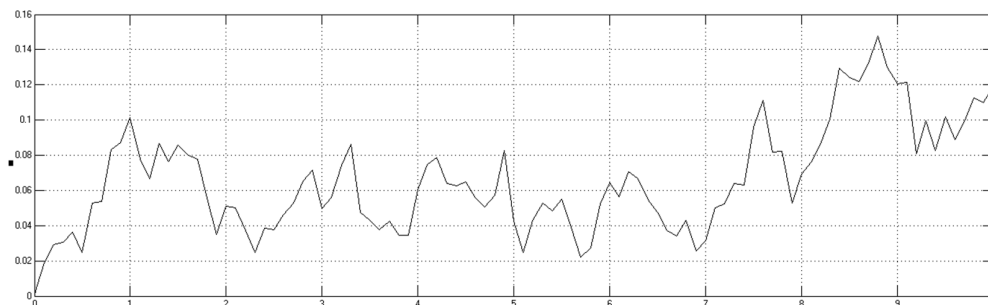**Path Model of Internationalization Strategy Effect on Firm Performance**

Figure 5
Simulation of Internationalization Strategy Effect on Firm Performance in Complex Network of Chinese IT Companies

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