

Does Network Cohesion Impede Diversification in The Conglomerate? Evidence from Taiwanese Business Group

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Abstract

This study extends research on the business group's network cohesion, diversification strategy, and group's family presence in the inner circle by examining the relationship between group cohesion and diversification and the interaction effect of group's family presence in the inner circle. In doing so, it addresses the different theoretical perspective in observing business group's diversification strategy from past researches. We use clustering and centralization as variables to test for the construct of network cohesion. As argument made by the scholar, the power of cohesion is both a blessing and a curse. The two variables measurement can be appropriate proxies for interpreting the construct of network cohesion. We tested the research model with data on the 78 business groups, covering 5,267 affiliated firms, representing 16 industries in Taiwan. The empirical results demonstrate that group clustering is positively related to product diversification. The interaction effect of family presence in the inner circle shows significant and negative. Further, we find out the relationship of group centralization to diversification shows no support, we propose the contingency factors existing in the centralized actors. The result leads to the fact that further research in the group centralization is necessary.

Keywords: Network Cohesion, Diversification, Business Group, Family Presence, Network perspective.

Introduction

In developed economies, most institutions are well developed, which grow up by replicating their business model to search for scale or scope economy. These types of businesses do not grow out of a search for financial diversification, but instead grow out of the ability to set up new business ventures across a variety of industries quickly and at a low cost (Guillen, 2000). It was known as the conglomerates in developed economies. On the contrary, in emerging economies, institutions are often underdeveloped, which lead to institutional voids and increase the costs of doing business for all firms. To overcome the pitfalls of institutional voids and reduce the costs of doing business in these countries, several legally independent firms which operate in multiple sectors links to each other through persistent formal (e.g., ownership sharing) or informal (e.g., family) ties. This type of institution has been defined as a "business group" (Granovetter, 1995; Khanna, & Rivkin, 2001; Ramaswamy, Li, & Pettit, 2012).

This unique type of organizational form has significant economic impact on East Asian and emerging economies, such as Taiwan, Korea, and India (Granovetter, 1995). For instance, in 2008, China Credit

Information Service (CCIS) Annual Survey reported that the large business groups have contributed substantially to the gross national product (GNP) in Taiwan. The data describes the global sales of the top 300 Taiwanese business groups was up to NT\$ 18.3 trillion in 2008, the amount is far more than NT\$12.2 trillion in 2006. Comparing to the national business operation income of NT\$ 34.6 trillion in 2008, the global sales of the top 300 business groups accounts for 52.83 percent of the national business operation income in Taiwan. Business groups dominate Taiwan's economy. Due to the significant economy impact, the effect of business group has been studied extensively in recent years.

Business groups in Taiwan have several features. These features construct the unique business network structure. For example, the affiliated firms of Taiwanese business group depends either on formal ties such as cross-sharing equity, or on informal ties such as family connections and friendships among the firm's leaders (Chang, Chung, & Mahmood, 2006). The ties are embedded in traditional social structures that provide shared norms and morality for within-group coordination and transactions (Granovetter, 2005). Embedded norms and morality construct group's persistent ties and build up mutual trust. Because of the persistent ties and mutual trust, group members usually coordinate strategies, behavior, and resources. With mutual trust, group members can reduce transaction costs and facilitate within group's resources transfer. More cohesive ties can facilitate group members to access resources or information more efficiently. However, less cohesive ties with sparse network may help group members gain diversified resources. This cohesiveness has a significant impact on each group member's resource access. In addition, because of the Chinese patrimonial concept of authority and inheritance rules, some business groups dominated by within-group family members may perform differently in strategic decisions.

There are a variety of market failures in emerging markets (Khanna, & Palepu, 2000). For example, securities regulations are generally weak, and their enforcement is erratic. Financial markets are characterized by a lack of adequate disclosure and weak corporate governance. Intermediaries such as financial analysts, mutual funds, investment bankers, and a financial press are either absent or not fully involved. Business groups could gain competitive advantages by performing a product diversification strategy that fills "institutional voids" in emerging markets (Khanna, & Palepu, 1997, 2000). The large diversified business group can act as an intermediary between individual entrepreneurs and imperfect markets (Khanna, & Palepu, 2000). As such, groups could use their broad scope to smooth out income flows thereby ensuring access to internal finance in which external finance is even more costly than it is in advanced economies.

Since product diversification strategy could gain competitive advantages for the groups, the antecedents of the strategy need to be explored. Past research has been focused more on examining product/ industrial diversification strategy from a resource-based view or market failure perspective (Chang, & Hong, 2000; Li, Ramaswamy, & Pettit, 2006). There is little research that addresses group diversification strategy from a network perspective. According to resource-based theory, a firm's competitive advantage is based on the possession of tangible and intangible resources, which are difficult or costly for other firms to obtain. In order to sustain a firm's competitive advantage these resources must be valuable, rare, inimitable, and non-substitutable (Barney, 1991). Firms strive to build up their own capabilities to possess competitive advantages. Most firms have only niche businesses as their competitive advantages to gain profit. Thus, the major contribution of resource-based theory explains that a firms' profitability differences cannot be attributed to differences in industry conditions (Peteraf, 1993), but the considerable resource heterogeneity existing among various shareholder categories. How to gain the common (or complementary) resources from other affiliated firms are key factors for running a successful business.

As with the aforementioned "institutional voids" characterized by the emerging market, business group members play an intermediary role to fill the gap of market incompleteness. Resource exchange activities are performed between group members. The business group is formed by a set of legally independent firms (Granovetter, 2005), which indicates every group member is an autonomous entity. The organizational form of a business group is different from the multinational companies in that most subsidiaries are dominated by the company's headquarters. The market or hierarchic governance modes cannot sufficiently interpret the social ties of resource exchanges within group members. We propose a network perspective to

fill the gaps of previous research, by presenting a network cohesion constructed to interpret the within-group tie relations and investigate the relationship of group cohesion and product diversification strategy. Moreover, business groups in Taiwan are characterized by family ownership and control, and strategic decision making is centered at the group level (Chung, & Luo, 2008). The control of all types of decisions remains in the hands of the owners and of those in the leaders' group. The leader structure at the group level consists of a set of executives who chair the boards of multiple affiliated firms, and many of these executives are family members of the founder (Hamilton, & Kao, 1990). The family presence in the decision-making group could dominate the diversification strategy. We also present the variables of family presence in the inner circle as an interaction to examine the consequences.

The aim of this paper is to answer the following questions:

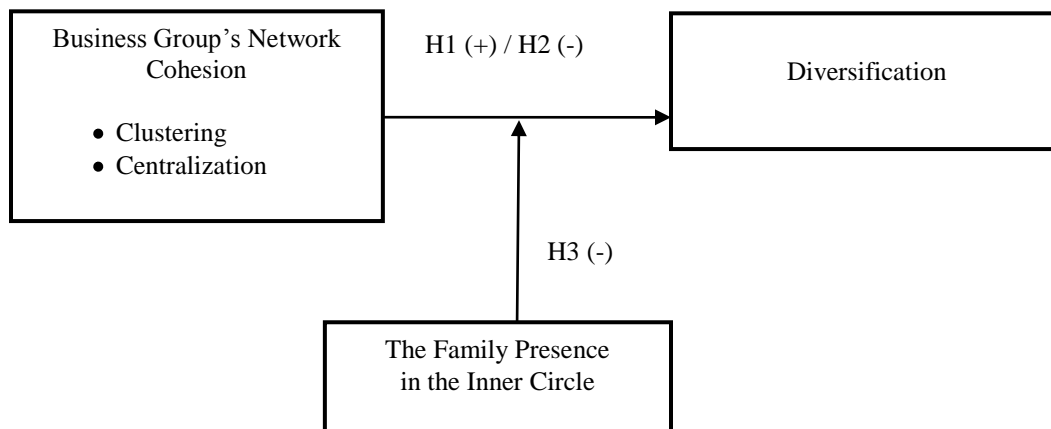
1. What is the relationship between the within-group network cohesion and the group's diversification strategy? Does the whole group cohesion impede the business group's diversification strategy?
2. What would be the interaction effect of the family presence in the inner circle of business group?

Theoretical Background and Hypotheses

With the standard reasons for diversification of the firm such as growth, risk aversion, and heightening of the entry barrier (Chang, & Choi, 1988), resources-based and market failure theory have proposed the most theoretical bases while studying diversification of business group in emerging market (Guillen, 2000; Yiu, Bruton, & Lu, 2005; Khanna, Palepu, & Sinha, 2005). The main argument of resource-based perspective is that firms create business groups and allows them to access and maintain the domestic and foreign resources, and can repeatedly enter new industries (Guillen, 2000). It gives the logic of resource-based perspective in diversification. In addition, the theory proposes and encourages those who possess the competitive capabilities to diversify across industries rather than in one industry. The other approach of the market failure focuses entirely on factor markets to the exclusion of product markets that the business group as a special organizational form competes against the other types of producers (Li et al., 2006; Ramaswamy et al., 2012). The network perspective that we employ in this study provides interesting insights of network related antecedents in relation to group diversification strategy, which is rarely been addressed in prior studies.

In this paper, we use network cohesion as a construct to study what would be the relationship between group member's dyadic relationship and diversification strategy. Furthermore, family presence in the top leadership of business group is institutionalized in Taiwan (Redding, 1990). In addition to family ownership, family executives play the essential role in coordination and control the whole group (Hamilton, & Biggart, 1988; Hamilton, & Kao, 1990). We use family presence in the top leadership as the moderating effect in our study to find out the consequences. Our research conceptual framework is as figure 1.

Figure 1. Conceptual Framework



Network Cohesion and Diversification

The area diversification and product diversification are the two critical determinants of the MNE's success (Stopford, & Wells, 1972). Nevertheless diversification is an essential business expanding strategy, as noted by Hitt, Hoskisson, & Kim (1997), coordination between independent business units in different industry and geographic regions is necessary to exploit the potential economic of scope of internal resources. Firm experience increasing transaction costs with greater diversification if lack of coordination. The cross-industry required costs could be greater than the benefits derived from resources sharing if the connectivity is low.

Thus, the more connected in the dyadic relationship, the easier it would be for the partners to coordinate their exchange activities (Holm, Eriksson, & Johanson, 1996). Even so, the dense connectivity could lead to strong tie. The strong ties are embedded in tight homophilous clusters, but weak ties connect to diversity (Granovetter, 1973). Therefore, dense connectivity indicates the information or resources shared by members would be more likely to be homogeneous. We propose the question which is "is it good for the group cohesiveness to diversify?"

The construct of cohesion, as noted by Moody and White (2003), is mostly defined by an intuitive core that rests on how well a group is "held together". However, cohesion is defined as a "field of forces that act on members to remain in the group" (Festinger, Schachter, & Back, 1950) or "the resistance of a group to disruptive forces" (Gross, & Martin, 1952) by the previous scholars. Therefore, as with "structure", the power of "cohesion" is both a blessing and a curse (Moody, & White, 2003). Although we might all agree that cohesive groups should represent "connectedness" (O'Reilly, & Robert, 1977). Leff (1978, p.663) refers to business group as "a group of companies that does business in different markets under a common administrative or financial control" and are "linked by relations of interpersonal trust on the basis of a similar personal ethnic or commercial background". The more relationship connections (i.e. ties) between group members, the more information flow facilitates between firms (Granovetter, 1985; Burt, 1992). The facilitating information flows help leverage resources across group affiliates that are closely related to each other (Ghemawat, & Khanna, 1998).

Group clustering indicates one essential measurement for network cohesion. The measurement represents the extent to which firms are directly connected to a focal firm and are also directly connected to each other. The more connected of firms indicate more resources sharing and coordination (Granovetter, 1985; Burt, 1992), which may facilitate group members to leverage resources. And the facilitated resources leverage across group affiliates may be beneficial to the development of the economy of scope for the group. Thus, we hypothesize as follows.

Hypothesis 1. The within group clustering is positively related to the group's diversification strategy.

Group centralization is another essential measurement of cohesion. As noted by Scott (2000), the concept centralization describes the extent to which this cohesion is organized around particular focal actors. We thus use the measurement to look at the disparities between the centrality scores of the most central firm and those of all other firms (Freeman, 1979).

The measurement can be operationalized as the ratio of the actual sum of differences to the maximum possible sum of differences (Wasserman, & Faust, 1994). Network centralization implies a high position in a status hierarchy; like subunit membership, it implies different degrees of access to and control over valued resources (Burt, 1982). Highly centralized networks may be organized into a manner of hub-and-spoke pattern (Barabasi, 2002). The more centralized of a group, the more group resources would be dominated by some particular focal actors, which may attenuate resources leverage across group affiliates. Then, we hypothesize as follows.

Hypothesis 2: The within group centralization is negatively related to the group's diversification strategy.

Interaction Effect of the Family Presence in the Inner Circle

Hamilton (1997) and Hamilton and Kao (1990) argued that unrelated diversification in Taiwanese groups is the direct result of personal connections and exchanges. Hamilton and Kao proposed this phenomenon “opportunistic diversification” and the example is as follows.

‘The rationale for starting these factories differed from case to case, but always revolved around the personal decisions of the owner. In one instance, an old friend asked one of the owners to help him out by investing money in the firm. Later the friend asked him to buy the firm. Opportunistic diversification seems to be the rule.’ (Hamilton & Kao, 1990:143-144).

A special characteristic of Taiwanese business group is the leaders’ group, which is formed by a set of leaders occupying commanding positions in member firms and performs the projects of planning and development of the entire group. Thus, the leaders of business group play an essential role in the diversification decision. Hamilton and Kao (1990) use the term “inner circle” to refer to this set of decision-making leaders. As the aforementioned, Redding noted family presence in the top leadership of business groups is institutionalized in Taiwan. The majority of inner-circle members are family members of the key leader (Chung, 2003). The other members will include such as previous classmates, previous coworkers, or professional experts (Chung, & Luo, 2008). The variation in managerial structure results in different agency costs.

The differences in ownership, management and control of business groups result in different agency costs because of the discrepancy in objectives among those leaders (Cuervo-Cazurra, 2006). As traditionally discussed in agency theory, problems arise because of managers seeking to fulfill their utmost benefits rather than those of shareholders (Fama, & Jensen, 1983). Managers may follow a strategy of “empire building” to increase power and derive private benefits from diversification that exceeds their private costs (Dastidar, 2009). The family-owned business groups do not suffer agency problems of separation of ownership and control as the other types of business groups (Cuervo-Cazurra, 2006). The majority of family presence in the decision-making group results in less agency problem because family members are more trustworthy. In addition, for a few hundred years, Chinese people have treated family business as a part of the family assets which out to be maintained with the family and inherited by male decedents (Chung, 2003). Because of the pressure to hand in the business generation to generation, the business expanding strategy would be inclined to risk averse. Then, we hypothesize the family presence in the inner circle as the moderating effect as follows.

Hypothesis 3: The higher ratio of family presence in the inner circle will negatively affect the relationship between business group’s network cohesion and diversification strategy.

Methods

Research Setting and Data

The data were collected from the directory of Business Groups in Taiwan (BGT), compiled by the China Credit Information Service (CCIS) Taipei, an affiliate of the U.S.-based Standard & Poor’s. The directory collects information on the top 300 business groups (in terms of total assets) with core firms registered in Taiwan. CCIS defines a business as “a coherent business organization including several independent firms.” The firms incorporated into the group have to meet one of the objective criteria to be considered affiliated members, including holding over 50 percent of the shareholders, holding inter-locking directorships of over 33% of shareholders, and holding over 50 percent of the auditors the same as the focal firm.

The BGT directory is recognized as the most comprehensive source for business groups in Taiwan and has been used in previous studies (Khanna, & Rivkin, 2001; Luo, & Chung, 2005). It reveals each group members’ shareholding percentages from the holistic group’s organizational structure. The data shows the dyadic relationship from the percentage of shareholding between firms. In this study, we considered the

percentage of shareholding as a more appropriate indicator to measure group members' dyadic relationships since equity shareholding creates a situation of "mutual exchange of hostages" (Williamson, 1983). The equity shareholding could facilitate resource sharing between firms. Our data samples include business groups reported in the directory of 2008 inclusively. The final samples consisted of 78 business groups, covering 5,267 affiliated firms. Sixteen industries have been included to ensure heterogeneity. We coded the data of these firms with equity shareholding as having a connection in between.

The information of core leaders in the decision-making group was also collected from the directory. Those who are in the decision-making group were considered as the members in the inner circle. For each member, the directory provides a brief biographical description. In our study, we identified the family members from these brief biographical descriptions in the directory.

Primary Measures

Dependent Variable: Diversification

The product/industrial diversification measure is an entropy measure based on Jacquemin and Berry (1979) and Palepu (1985). It has been reported to generate estimates of product diversification similar to those based on Rumelt's (1974) subjective categorization methods and to verify construct validity (Hoskisson, Hitt, Johnson, & Moesel, 1993). The entropy measure of product/industrial diversification (PD) is defined as:

$$PD = \sum_i [P_i \times \ln (1/P_i)]$$

Where P_i is the sales percentage attributed to industry segment i , and $\ln(1/P_i)$ is the natural logarithm of the inverse of its sales percentage. The measure was considered by both the number of industry segments that the business group operates and the proportion of total sales each industry segment represents. We use the four-digit SIC codes based on the source from Directorate-General of Budget, Accounting and Statistics, Executive Yuan, R.O.C.(Taiwan) to classify the type of industry.

Independent Variables

Clustering. In this study, we use the clustering coefficient (C) as a measurement for group cohesiveness, which indicates the degree of clustering and represents the extent to which firms are directly connected to a focal firm and are also directly connected to each other (Watts, 1999; Scott, 2000). C is calculated by determining how many firms that are tied to a focal firm are also tied to each other and subsequently dividing this number by the number of possible ties in the set. Specifically, if an actor v has k_v direct neighbors, then the neighborhood defines a subgraph in which $k_v (k_v - 1)/2$ ties exist. For example, if focal firm A is connected to 6 other affiliated firms by one ownership linkage, and 4 of the affiliated firms are also directly connected to each other, then C_i for focal firm A would be 6 (the number of pairwise ties between the 4 affiliated firms) divided by 15 (the number of possible ties among all 6 affiliated firms in focal firm A 's set) or 0.4. The clustering coefficient of a network is the average C_i for all the firms in the network. The greater number of group clustering, the more cohesive is of the group.

Centralization. Centralization refers to the overall cohesion or integration of the network (Scott, 2000). It indicates the extent to which the cohesion is organized around some particular focal firms. In this study, we use the measurement proposed by Freeman (1979), which is to look at the disparities between the centrality scores of the most central firm and those of all other firms. The measurement can be expressed as how tightly the group is organized around its most focal firm. Group centralization can thus be operationalized as the ratio of the actual sum of differences to the maximum possible sum of differences. The general centralization index is computed as follows (Wasserman, & Faust, 1994).

$$C_A = \frac{\sum_{i=1}^n [C_A(n^*) - C_A(n_i)]}{\max \sum_{i=1}^n [C_A(n^*) - C_A(n_i)]}$$

Where $C_A(n_i)$ is an actor centrality index,

$C_A(n^*)$ is the largest value of the particular index that occurs across the g actors in the network,

g is the number of actors in a group.

Thus, $\sum_{i=1}^g [C_A(n^*) - C_A(n_i)]$ is the sum of the differences between the largest value and the other observed values,

$\max \sum_{i=1}^g [C_A(n^*) - C_A(n_i)]$ is the theoretical maximum possible sum of differences in actor centrality.

Family presence in the inner circle. The family presence in the inner circle was measured by the percentage of family members in the decision-making group (Chung, & Luo, 2000). We calculated the percentage of family presence in the inner circle as *number of family members/ number of the decision-making group*.

Control Variables

From past research, we concluded that some contextual factors may influence the hypothesized relationships. We controlled for business group age and group size (logarithm of total assets, number of affiliated firms). Group age is considered an important measure of organizational inertia (Hannan, & Freeman, 1977). The older the business group, the more likely diversification was lower. We use the founding year attributed to the focal company to calculate group age. We also controlled for *industry effects* by encompassing industry dummy variables such as IND1= Logistics and transportation related, IND2=Manufacturing related, and IND3= High technology related. The residual industrial sector was represented by the service related industry.

Analytical Techniques

Our hypotheses concern the relationships between network cohesion, within the business group, and the group's diversification. We estimate how the business group's managerial structure could affect the relationships because of the high involvement of family members. Because of the construct of network cohesion attributed to the social network domain, we implemented the UCINET (Borgatti, Everett, & Freeman, 2002) social network analytical technique to perform the cohesion variables of group clustering and centralization.

The procedures that we performed were as follows:

First, we performed the data calculation. Except for the direct investment percentage of shareholding equity of affiliated firms A to B, we computed the indirect investment percentage of shareholding of affiliated firms A to C through B by hand-calculating owing to the shortage of electronic data. Second, we performed data transformation. To generate these network variables, we transformed all the direct and indirect shareholding percentage into network data language. By using the social network analytical technique, the values of clustering and centralization will be calculated for each business group in our data sample.

The structure of our data for this study was cross-sectional. The hypotheses were tested with OLS regression in two models. Model 1 assesses the influence of group clustering and group centralization on diversification. Model 2 adds the interaction variable, the family presence in the inner circle, to Model 1. In each model, the control variables were entered into the regression analysis.

Results

To estimate the relationship in network cohesion and diversification of business group, the study includes estimating specification in Table 1 and presents the findings in Table 2. Table 1 shows descriptive statistics and the correlation matrix of all the variables in the study, and Table 2 provides Model results of the OLS regression analyses based on our sample. As Table 1 shows, the correlations of clustering and diversification and of centralization and diversification are both significant.

The empirical results demonstrate the bivariate relationship between group clustering and group diversification is positively correlated; however, the bivariate relationship between group centralization and group diversification is negatively correlated. The following result in the correlation of family presence relating to diversification is not significant.

As Table 2 illustrates, the baseline model includes all control variables. The main effects of Hypothesis 1 and 2 are demonstrated in Model 1, and the interaction effects of Hypothesis 3 are demonstrated in Model 2. Hypothesis 1 predicts within-group clustering would positively relate to group's diversification, and the result is supported ($\beta=0.19$, $p<0.05$). On the contrary, Hypothesis 2 predicts group centralization would negatively relate to group's industrial diversification. The result indicates not significantly in Model 1. Although the result of Hypothesis 2 is not supported in Model 1, the negative coefficient shows network centralization is still a valuable variable to diversification.

In Model 2, the inclusion of the interaction in the relationship of clustering and family presence is negatively significant ($\beta= -2.47$, $p < 0.1$); however, the interaction in the relationship of centralization and family presence is not significant. In addition, the main effect of the relationship between family presence and group diversification is significantly supported ($\beta=2.63$, $p < 0.05$). The finding indicates the family presence in the inner circle plays an important role in the relationship of business group's cohesion and diversification. The negative interaction effect of family presence illustrates the more involvement of family members in a group, the relationship between group clustering and diversification would be attenuated. The result indicates the family member may be more prone to be risk averse.

Table 1. Descriptive Statistics for Dependent and Independent Variables

Variable	Mean	S.D.	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
(1) Diversification	1.22	0.64	1.00									
(2) Clustering	0.83	0.20	0.34** (0.00)	1.00								
(3) Centralization	0.51	0.21	- 0.38** (0.00)	- 0.23* (0.04)	1.00							
(4) Family ratio	0.73	0.31	-0.08 (0.50)	-0.22 (0.05)	0.23* (0.04)	1.00						
(5) Total assets (ln)	11.71	1.01	0.37** (0.00)	0.23* (0.04)	- 0.43** (0.00)	- 0.31** (0.01)	1.00					
(6) No of affiliates	67.53	64.56	0.59** (0.00)	0.27* (0.02)	- 0.37** (0.00)	- 0.40** (0.00)	0.57** (0.00)	1.00				
(7) Group age	31.63	15.74	0.54** (0.00)	0.12 (0.3)	-0.25* (0.03)	0.07 (0.56)	0.26* (0.02)	0.25* (0.03)	1.00			
(8) IND 1	0.10	0.31	-0.08 (0.49)	0.07 (0.57)	0.00 (0.99)	0.05 (0.65)	0.07 (0.53)	0.03 (0.82)	0.27* (0.02)	1.00		
(9) IND 2	0.40	0.49	0.36** (0.00)	0.08 (0.5)	-0.27* (0.02)	0.00 (0.99)	0.05 (0.68)	0.02 (0.83)	0.47** (0.00)	-0.28* (0.01)	1.00	
(10) IND 3	0.47	0.50	- 0.31** (0.01)	-0.12 (0.28)	0.26* (0.02)	-0.08 (0.51)	-0.06 (0.60)	-0.02 (0.87)	0.64** (0.00)	- 0.32** (0.00)	- 0.77** (0.00)	1.00

N=78 groups, * $p < 0.05$; ** $P < 0.01$; p value in parentheses; two-tailed tests

Table 2. Results of Regression Analyses

Dependent variable: Group industrial diversification

Model	Baseline	Model 1	Model 2
Hypotheses		H1, H2	H3
Clustering		0.19** (0.02)	1.80* (0.05)
Centralization		-0.08 (0.35)	0.14 (0.52)
Family ratio		0.16* (0.07)	2.63** (0.04)
Clustering*Family ratio			-2.47* (0.08)
Centralization*Family ratio			-0.39 (0.22)
Total assets (ln)	-0.01 (0.91)	-0.03 (0.73)	-0.03 (0.72)
No of affiliates	0.51*** (0.00)	0.51*** (0.00)	0.43*** (0.00)
Group age	0.40*** (0.00)	0.37*** (0.00)	0.39*** (0.00)
IND 1	-0.24 (0.16)	-0.20 (0.23)	-0.18 (0.26)
IND 2	0.00 (0.98)	0.07 (0.76)	0.08 (0.74)
IND 3	-0.12 (0.63)	-0.02 (0.95)	0.01 (0.96)
Model <i>F</i> statistics	15.49***	12.19***	10.69***
<i>R</i> ²	0.57	0.62	0.64
Adjusted <i>R</i> ²	0.53	0.57	0.58

* $p < 0.1$; ** $P < 0.05$; *** $p < 0.01$; p value in parentheses ; two-tailed tests

Discussion

The aim of this study is to investigate whether network cohesion impeding diversification, and to test interaction effect of the involvement of family presence, whether negatively relating to the relationship in network cohesion and group diversification. In this study, the empirical results show the positive relationship between group clustering and group diversification was supported, whereas the negative relationship between group centralization and group diversification was not supported in Model 1. It is worth noting that the negative relationship between group centralization and group diversification in Model 1 turns out to be positive in Model 2 with the interaction effect, which draws some interesting issues to be discussed more, although the result is not significant. When the group has high centralization, it indicates the central actors must be the most active in the sense that they have the most ties to other actors in the network (Wasserman, & Faust, 1994). Therefore, the roles of those actors are essential while involving in various resource sharing strategy. The various resources sharing strategy could affect diversification strategy. This argument could possibly interpret the centralization variable not significant in Model 1. In addition, we investigate how family presence would have the interaction effect in the relationship of network cohesion and diversification by proposing agency theory. We found evidence by the significant empirical results. Since the negative interaction effect of family presence, the business group's diversification strategy would be likely to be risk averse. Thus, some second-generation key leaders that are prone to be risk takers (Chung, & Luo, 2008) may reduce family presence to pursue for diversified groups.

Conclusion

What consequences bring into business group through network cohesion has rarely been discussed in past studies. In this study, we propose that the business group's network cohesion have relationship to diversification strategy. However, as noted by Moody and White (2003), the power of "cohesion" is both a blessing and a curse. The results represent that group clustering is positively related to group diversification from our empirical evidence. Since the higher clustering of a group may have better connection across affiliate firms, these firms would have better coordination and be easily to share resources such as information or technologies within each other. Once these resources acquired for use in producing one product, are also available for use in producing another products without additional costs. Therefore, the group cohesiveness in clustering could be good to the business group in product/ industrial diversification owing to benefits generated from economy of scale and economy of scope (Bartlett, Ghoshal, & Beamish, 2010). On the other hand, the group centralization could result in vague relations with group diversification from the results of our empirical evidence. Since the group centralization indicates the extent to which the cohesion is organized around some particular focal firms, those particular firms would hold more resources and power, which may dominate resources and play essential roles or positions. As the aforementioned, this could be a curse from the other perspective of network cohesiveness because the resource and power are controlled by some specific actors. This is another interesting issue that deserves further research.

In our study, we estimate the family presence in the inner circle, the interaction effect, could negatively affect the relationship between group cohesion and diversification by performing agency theory. We verify our argument from the empirical evidence. Family-dominated business group has less agency problem (Cuervo-Cazurra, 2006) and the tendency to be risk averse. With the proprietary asset to exchange internally, the family-dominated business groups may gain the benefits from the scale economy and reduce transaction cost from market failure.

From empirical evidence, the results show that the group cohesiveness have either positive or negative effect in the group diversification strategy. The managerial implications of our study can be induced to business group affiliates should remain evenly tie relationships to each other. The clustering form of social relations would benefit the affiliates more from resource leveraging across group members, than the centralizing form of social relations would lead to resources controlled by some particular firms.

In conclusion, although we only conduct cross-section data sample in our study, this study enhances our understanding of the antecedents of group diversification strategy in emerging market from different theoretical perspective by performing network cohesion analysis and help business group practitioners to understand that family presence in the leadership group play an essential interaction effect in the diversification strategy. We might incorporate longitudinal data for further researches.

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