THE EFFECTS OF BUSINESS GROUP CONTROL ADVANTAGES AND AFFILIATE LEVEL ADVANTAGES ON AFFILIATE PERFORMANCE☆

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Abstract

This study views the network of control in a corporate business group as its source of competitive advantages. These control advantages are distributed among the business group affiliates and eventually influence their performance. This paper examines this by providing a reconceptualization of both the nature of business group and affiliate level advantages using the data of the top 20 Philippine corporate groups. The study found out that the group level control advantage affects the affiliate performance more than their individual level advantages. This result confirms the capability of business groups to influence and control their group internal market. This also implies that the business group affiliates have not yet developed significant capabilities which are independent to that of their business group.

Keywords: Corporate Groups, Business Group Advantages, Affiliate Level Advantages, Business Group Affiliation, Director Interlocks, Network Analysis

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1 Introduction

The empirical thrust in the existing business group literature has been centered around confirming if business group affiliation enables firms to perform better than their non-business group counterparts with the assumption that affiliation to business groups *(here also abbreviated as BG or BGs)* confer advantages, especially in developing or emerging economies (Carney et al., 2011; Khanna, 2000; Khanna and Palepu, 2000). In other words, the objective is to explain whether the business group affiliation is more efficient than non-business group affiliation thereby alluding to the concept of business group advantages in the outcome perspective. However, this traditional approach offers a rather limited explanation in our understanding on the question of *how* and *when* is actually the nature of the competitive advantages of business groups, let alone its performance and characteristics, without comparing them to non-business groups or standalone firms. The conventional belief is that the business group advantages are easily endowed as long as the firm is affiliated with the business group.

This paper argues that business group affiliation does not necessarily guarantee the premium of business group advantages as affiliation and advantages are not the same thing. The business group affiliation provides legitimacy of an affiliate belonging to a business group but may not function towards the operationalization and creation of business group advantages. This is because the business group advantages are not always endowed but also built by the affiliates owing to their specific operational circumstances and individual firm-level capabilities (Mahmood et al., 2011). In other words, there is an interplay between the advantages that are found at the group level and those that are derived from the affiliate level (Birkinshaw and Hood, 1998). Therefore, the previous literature fails to recognize the extent to which the individual affiliates operationalize the business group advantages by discounting the contribution and heterogeneity of the affiliates within the business group (Choo et al., 2009).

This paper contributes to the above discussion by incorporating transaction cost economics, resource-based view and social network, and reconsiders the value of the prevailing assumptions between the relationship of business group advantages and affiliate performance. This paper also holds that the analysis of the advantages of business groups is only valid if the nature of these advantages is known and justly measured empirically, especially when comparing to non-business group firms. Thus far this has not been fully reconciled in the existing literature (Carney, 2008; Delios and Ma, 2010). Hence, the previous studies which compare BGs to non-BGs remain problematic at this point.

In addressing the issues above the succeeding sections are organized as follows. It begins with a review on the theoretical underpinnings of business groups and their competitive advantages, dubbed here as the business group advantages or *BGAs*. This is followed by a conceptual framework and hypotheses which explains the performance at the affiliate level, not through their mere affiliation with the business group but by the extent to which they explore and exploit the business group advantages of their business group according to their network position. The framework points to the role and heterogeneity of the affiliates in combining the advantages that are specific to the group and those individual strengths or the affiliate level advantages which eventually lead to the variation in their individual affiliate level performance. This is examined using the case of the top 20 business groups from the Philippines. Lastly, the later sections provide the discussion and theoretical implications of the study. Their applications are related to the context of diversified business groups in developing or emerging economies.

2 Theory and hypotheses

2.1 The nature of business group advantages

The dynamics of the advantage of the business group structure are different from that of the typical single firm or standalone firms. These are both in cognitive and functional dimensions (Dyer and Singh, 1998; Lavie, 2006; Prahalad and Bettis, 1986). Historically, these advantages stem from the response to specific country characteristics, such as market imperfections, and the managerial capabilities of the affiliate firms. They epitomize the capabilities to control or manage multiple portfolios or a *group internal market* within a complex environment such as the emerging economies (Chang and Choi, 1988; Rugman, 1981). They are a summation of knowledge that has been internalized, owned and controlled by the business group over time (Chang and Hong, 2000; Demsetz, 1988; Dierickx and Cool, 1989). The resulting structure of business group advantages are found and distributed among the affiliates in the business group (Heugens and Zyglidopoulos, 2008). As the sources of advantages, such as knowledge and experience, are controlled as a group, business group advantages accrue exclusively to business group affiliated firms (Chang and Hong, 2000).

Within the literature, there are three generic components when describing the control structure of business group advantages. These advantages are: Firstly, reduced *transactions costs* through the group internal capital, labor, internal buying and selling and market information search. The business group advantages on transaction costs clearly explain the incentive of reducing the risks and costs for searching or developing information and advantages in the external market (Hennart, 1982; Li et al., 2006; Williamson, 1973). The business group structure provides an array of internal resources which an affiliate can exploit. For example, internal group capital is a very good source of capitalization for affiliates during investments, including foreign investments, and expansion (Gonenc et al., 2007). In the developing and emerging economies, capital market functioning is not only inefficient but oftentimes missing. Secondly, transferable *group managerial skills and experience* in product and geographical diversification, contacts and intermediation capabilities, and state relations. The business group advantage on group managerial skills and experience provides a combination of context specific and transferable skills among BG affiliates (Kock and Guillén, 2001; Tan and Meyer, 2010). Amsden and Hikino (1994)argue that the repeated industry-entry patterns of business groups are realized because of their 'contact capabilities' with the state and foreign multinationals, followed by 'project execution capabilities'. According to them, these project execution capabilities refer "to the skills required to establish or expand operating and other corporate facilities, including undertaking pre-investment feasibility studies, project management, project engineering, procurement, construction and startup operations". These capabilities are generic to business groups and not industry-specific. They are difficult to trade because they are embodied in the organisation's owners, managers, and routines (Amit and Schoemaker, 1993; Penrose, 1959). Thirdly, *economies of scale and scope* such as allocation and co-development of resources in the area such as in R&D/technology and marketing and distribution, group brand and reputation. These are the generic advantages of multi-unit organizations such as the business groups, which can use leverage in their multiple portfolio operations (Chandler, 1990; Colpan and Hikino, 2010).

2.2 The affiliate level advantages

The concept of business group control advantage explains the kinds of advantages which are found at the group level but it does not explain all the potential advantages that are found at the individual affiliate level. Some research on interorganisational networks have identified that individual nodes have very specific qualities compared to the entire network (Ahuja et al., 2012; Jones et al., 1997). These specific qualities, such as capabilities, directly affect the performance of the focal affiliates (Mahmood et al., 2011). Hence, with regards to advantages, what individual business groups affiliates have are both the subset of the BGAs and affiliate level advantages *(here also abbreviated as ALAs)*. Both, or their interactions, explain the outcome, such as performance of business group affiliates and eventually the whole business group. By building on

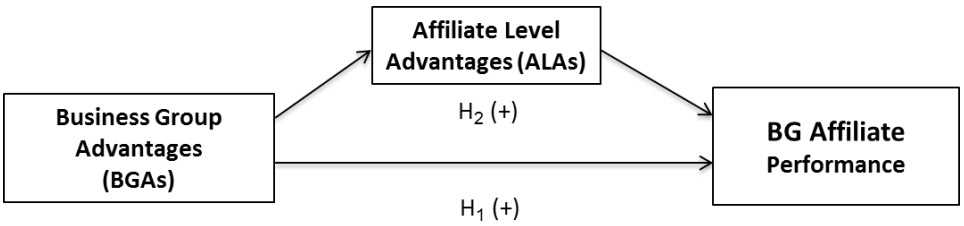
BGAs, affiliate firms can develop specific advantages independently. These advantages are unique resources, capabilities and strengths specific to an affiliate firm. This BGAs and ALAs bundle is a function of the recombination capabilities by the individual affiliates (Teece et al., 1997; Verbeke, 2009). This bundle defines the overall advantage of each individual affiliate as well as the heterogeneity of the affiliates within a business group. The variance among the advantages of the affiliates occurs due to the level and extent of BGA operationalization by each affiliate where some affiliates operationalize or depend on BGAs greater than others. The reason is that each affiliate has specific objectives, roles, operational scope and performance. Hence, the affiliates can use the business group structure to complement the missing and potential advantages.

2.3 The performance of business groups and their affiliates

The performance of business groups is one of the most important issues in the literature (Colpan et al., 2010). It includes the different levels of analyses particularly at the macro and micro levels. At the macro level, business group performance is examined based on its role in the economic development and value adding activities in the economy (Khanna and Yafeh, 2007; Sargent and Ghaddar, 2001). These are apparent in the development of human resources, industrial technology and production of the most valuable goods in the economy. On the other hand, the micro level BG performance as an enterprise whether an affiliate or the group aggregate level remains a puzzling topic to many researchers (Buysschaert et al., 2008; Khanna and Rivkin, 2001; Singh et al., 2007). Thus far, the comparison between the financial performance of business groups to non-business groups provide an inconclusive result. The real issue, perhaps, is not about the comparative value of the performance of business groups against other firms but understanding what is actually driving the performance of business groups internally.

In this paper, the analysis is set at the BG *affiliate level* rather than at the group level as depicted in Figure 1. The rationale behind this approach are as follows. The nature of the performance of a business group, or the group-level performance, is too complex to measure (Carney et al., 2011). In general the financial performance of business groups, such as in the accounting related performance, the direct measure is the total performance of all the affiliates in the group. However, the problem here is that most of the affiliates declare and produce individual financial statements. Hence, the consolidation of these can be a challenge not mentioning that some of the issues such as profit allocation, transparency and pyramiding mechanisms employed by some business groups (Faccio et al., 2010; Mevorach, 2009). Therefore, looking at the performance at the affiliate level is more practical. After all, the source of group performance are the individual affiliates so understanding affiliate performance affords us to see group performance indirectly.

Figure 1. The hypothesized effects of BGA and ALA on the performance of business group affiliates



2.4 Business group advantages and performance

The explanatory variables on the performance of business group affiliates have not been fully established in the literature. The empirical approach has been to compare the performance of BG affiliates to standalone firms without correctly specifying the terms of reference. The traditional way is to use a dummy variable, such as 1 or 0, to differentiate BGs to non-BGs with reference to performance, see for example Khanna and Palepu, (2000); Khanna and Rivkin, (2001); Gaur and Kumar, (2009). Another is the macro-level explanation, particularly the political economy (Guillén, 2000; Khanna and Palepu, 1999), which explores the advantages of business groups between the macro environment and the group level. This undermines the group and affiliate level interaction or the role of the advantages originating from affiliate level. That is, business group affiliates are assumed to inherit identical advantages coming from the business group. Therefore, all business group affiliates are expected to embody the advantages of the business group regardless of their individual affiliate-specific differences. Apparently, this is not always the case (Dyer and Singh, 1998; Lavie, 2006). The problem of the preceding approaches is that they underestimate the potential complexities of the effects of group-specific factors, such as the dynamics of the group resources and capabilities, on the performance of the business group affiliates. It is not about business group affiliation alone but the extent to which BG

affiliates are endowed and positioned within the scope of the business group advantages. Thus, this paper hypothesizes that the performance of business group affiliates can be best explained by capturing relevant factors such as the business group control advantages.

H1. The stronger are the business group control advantages of the business group the higher the performance of their affiliates.

2.5 The mediating role of affiliate level advantages

In addition to resolving the complexities of the effects of the business groups to the affiliates, and to their performance, the issue of affiliate heterogeneity within the business group has not been taken into consideration by previous studies (Choo et al., 2009; Mahmood et al., 2011). Thus far, the traditional analysis of the effects of the business group to their affiliates assumes a single focus, that is only at the group level. There are two problems in the unidirectional conceptualization. First, the business group advantages are assumed to be transferred easily to any affiliate as long as they are affiliated to the business group, hence the traditional concept of 'BG affiliation' or empirically, the "1, 0 flaw". Second, the affiliate firms are assumed to exclusively embody the business group advantages and overlook their individual development of advantages which would arise from the interaction of their specific operational circumstances and firm-level capabilities. In short, the affiliates can bring new advantages to the group and in turn make the BGAs dynamic. As discussed above, business group affiliates also possess different kinds and types of advantages which do not necessarily represent that of the business group (Granovetter, 2005; Zaheer and McEvily, 1999). Therefore, the advantages of business groups should be conceptualized at two levels, i.e. at the group and the affiliate levels, and both affect the affiliate performance.

H2. The affiliate level advantages mediate the positive relationship between business group advantages and the performance of the business group affiliate firms.

3 Methodology

3.1 Research design

There are three different units of analysis in a business group: the subsidiary (domestic or foreign), the affiliate firm (can be a division), and the group (all firms). This paper focuses its analysis at the affiliate firm level and its interaction with the group level. The paper has adopted a quantitative analysis using various secondary data. The objective is to provide a specific explanation of the business group's affiliate level performance by using business group control advantages and affiliate level advantages as the explanatory variables. To do this, the main observations were only consisted of BG affiliated firms in one country's setting that is the Philippines. The reasons for this are the following. Firstly, the BGA and ALA are new conceptual propositions, hence, it is rational to apply them exclusively to BG affiliated firms. Secondly, the existing literature compares BGs to non-BGs but failed to recognise the important variations within the BG population itself, such as BGAs and ALAs, thus making the BG and standalone comparisons invalid. And thirdly, using one country study provides greater control in terms of understanding the heterogeneity among the advantages of both business groups and their affiliates in a common location. As to the choice of country, the Philippines is home to many business groups and extensive analyses about them are scarce. In fact, Sullivan and Unite (2001) pointed out that the thirteen largest domestic Philippine BGs controlled 392 companies from 18 different industries in 1993. Their study also found that out of 196 publicly listed companies in 1997, seventy-five firms were fully controlled by business groups in addition to thirty-eight others with significant ownership. In addition, the majority of the Philippine BGs fit with the type and characteristics of business groups that are being targeted by this study: (1) non-state owned; (2) diversified (related and unrelated); and (3) have a common controller (such as family or kinship related). These types of business groups are geared towards developing their unique business group advantages without depending upon a strong state intervention such as those business groups from China.

3.2 Data measurement and process

This study processed various secondary data in three phases. These include literature analysis and data preparation, business group sample confirmation and measurement of group and affiliate network measures. In the first phase, the study collected and reviewed research articles, including books, on business groups from different sources. The purpose of which was to build the theoretical grounding of the study as well as to establish an initial list of business groups from previous studies. Specifically, this stage provided an initial list of business groups particularly from the Philippines. The second phase involved two stages: these were the confirmation of the business group list and business group affiliation analysis. To carry out this phase the study utilized a combined data from two primary databases namely OneSource and OSIRIS. OneSource was used to obtain a list of 839 Philippine companies including the names and positions of 5714 board of directors (which also include the highest executive positions such as CEO or COO). On the other hand, OSIRIS was used to confirm the consistency of the data, specially the financial sections, for the period of 2010-2012. Also, the data

was cleaned from name duplicates, particularly the complete name of the board of directors.

Using the combined database, the first stage in the second phase was to purposely identify the firms which were included in the initial list of Philippine business groups. This was to make sure that there are references and validity in the selection of the final business group sample for the study. Next, the study conducted an affiliation analysis using both the data of the companies and their board of directors (Borgatti and Halgin, 2011; Carrington et al., 2005). The objective of this analysis was to identify the firms which were tied up with other firms byhaving the same board of directors; that is, director interlocks. This was done through social network analysis (SNA) techniques using UCINET and NetDraw softwares (Borgatti et al., 2002). The inclusion of firms in a group was decided based on the strength of the common ties among them and from the secondary data, such as annual reports, which provided the names of other affiliate firms and capital cross-shareholdings within the business group. Therefore, the selection of business group sample in this study was done through a combination of subjective and objective analyses. This process is definitely reliable as compared to previous studies. Lastly, the third phase moved from confirmation to measurement of the business group network characteristics using the UCINET program. This study utilizes these group network measures to represent the structure of group and affiliate level advantages on human resources, particularly with regard to managerial skills and experience, and power distribution. Therefore, the analysis was done at two levels, one at the business group level and one at the affiliate level respectively.

3.3 Variables

3.3.1 Measure for affiliate performance

In this paper the dependent variable is the business group affiliate performance by return on sales (ROS), averaged for the years 2010 - 2012. The ROS is one of the accepted accounting based measures of firm performance. The choice of ROS over other performance measures is crucial as some of these measures may not be affiliate specific but group specific. An example of this is return on assets (ROA), which is highly contingent on the overall assets and control by the group rather than by the individual affiliate.

3.3.2 Measure for business group control advantages

One of the explanatory variables of this study is a group level measure to represent BGA, particularly the *centralization* of the business group. The business group centralization measures how a certain group advantage is controlled or endowed by the group within an affiliate. Hence, it is a valid measure of business group advantages. However, for the overall descriptive analysis of the sample groups, this study presented all the five important group network level measures that are commonly used in the literature (Borgatti and Halgin, 2011; Mahmood et al., 2011). The first three are descriptive measures and are sample dependent, which means that their values are influenced by the composition in the group such as the number of firms (or nodes), directors (or actors) and incidence (or event). The last two are the comparative measures of a business group network. They are the basic measures which compare the characteristics of a certain networks to others.

The first of the five measures is the diameter, which is the size of a network in geodesic sense, the bigger the network the higher the values. The next one is the average tie, which is measured by adding all the actual ties in the group divided by all the ties that are present (or edges). In the context of this study, the value for this measure reflects the average number of incidence that the same board of directors occupies sit in certain affiliates at the same time. Next is the average degree which is the measure of the average number of ties (in and out connections) or relationships which flow on each affiliate (or node) in the network. This is the average amount of information or power that is found in each affiliate. The fourth one is density which is measured by adding all the actual ties divided by the expected ties. The value of one represents a fully connected group network while zero is the opposite. It is the measure of cohesion and integration in the group. Finally, centralization is the measure of the degree to which the group revolves around a single or few affiliates (or nodes), the higher the value the more centralised the group network.

3.3.3 Measure for affiliate level advantages

The other explanatory variable in this study is the affiliate *centrality* which is an affiliate level measure to proxy for ALA. The centrality defines the importance of the position of a certain affiliate on a particular ALA, such as in financial and human resources, within the group. This measure is also common in previous studies (Chung, 2006). Also, for the purpose of descriptive analysis, this study conducted all the centrality measures of each affiliate across the groups. This was done by examining the four basic network measures on the centrality of an actor, in this case the affiliate, in a certain network (Borgatti and Halgin, 2011). The measures reflect the centrality of a certain position of an actor within a contextual network, that is resources. Firstly is degree centrality, which measures how central is the affiliate in the group network with regard to power and information; the higher the number the higher the connection of an affiliate to the rest of the group. Secondly, there is a 2-step reach or closeness to others, which ascertains the reach of an affiliate to

every other affiliate in two steps or less. Thirdly, an eigenvector which measures how connected is a certain affiliate to other well-connected affiliates. Fourthly and lastly, betweenness centrality, measures the location of a certain affiliate in the brokerage and flow of information, and influence within the group's network.

4 Results

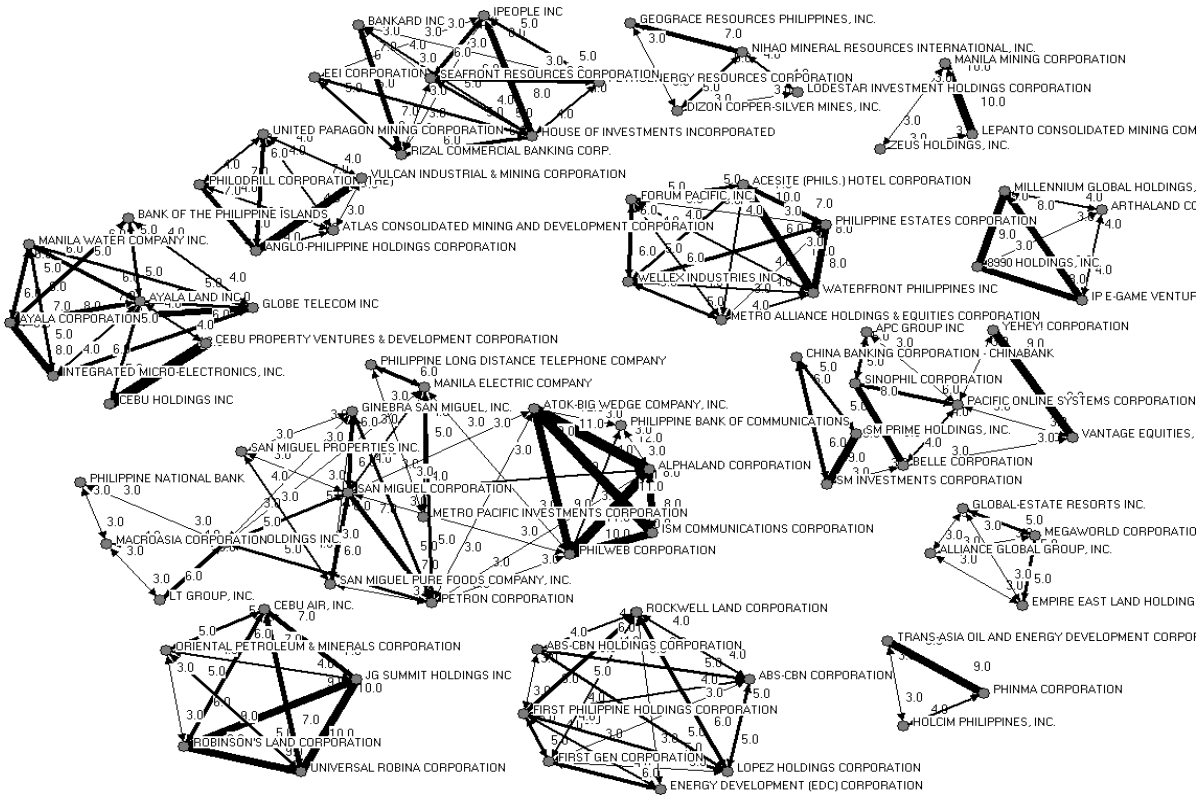
4.1 Descriptive network analysis

Through the social network analysis, the study was able to confirm the top 20 business groups with a total of 257 affiliate firms and 2754 directors from the original data (see Table 1). The top 20 business groups are basically chosen based on their prominence in the network mapping analysis in NetDraw (see Figure 2), followed by in depth analysis of their annual reports and other sources such as websites. The network measures for the group are listed in Table 2a and Table 2b, whilst the affiliate ones in Table 3.

Table 1. Combined data from OneSource and Osiris

	Business Group firms/Affiliates	**Non-Business group firms**	**Total**
No. of Firms	257	582	839
No. of Board of Directors	2754	2960	5714

Figure 2. Network map of the top Philippine business groups and their affiliates



4.1.1 Group level

The details and network measures of the top 20 business groups are shown in Table 2a and Table 2b below. The group size of the business groups varies from 4 to 33. About twelve (or 60%) of them have less than 10 affiliates. There are three of them with more than 10 affiliates, while there are four with 20 and one with more than 30 affiliates respectively. With regard to diameter the values are influenced by the size of the business group. Half or fifty percent (50%) of the group have a diameter of 1, particularly those with less than 10 affiliates, and the rest have 3, 2 and 5 respectively. The affiliate which is the biggest and highest in diameter and seems to be an outlier is the AYALA Business Group. This group is also the oldest business group in the Philippines which started operations in the late 19th century.

Table 2a. Group network measures of the top 20 Philippine business groups

No.	Group Name	Age	Group Size (257 Affiliates)	Diameter	Average Tie	Average Degree (per node)	Density	Centrali-zation
1	**ABOITIZ GROUP**	92	22	3	1.16	10.18	0.48	12.98
2	**ALLIANCE GLOBAL GROUP**	19	6	1	3.33	5	1	16
3	**ALSONS GROUP**	57	4	1	3.67	3	1	14.81
4	**APC GROUP**	19	7	1	3.43	6	1	18.33
5	**AYALA GROUP**	178	33	5	0.47	7.27	0.23	4.42
6	**CONCEPCION GROUP**	50	6	1	2.73	5	1	25.14
7	**DMCI GROUP**	58	5	1	4.3	4	1	20.14
8	**FILINVEST GROUP**	57	4	1	3.3	3	1	24.37
9	**JG SUMMIT GROUP**	55	15	3	1.98	9.47	0.68	21.48
10	**LOPEZ GROUP**	84	25	2	1.43	14.16	0.59	13.21
11	**LT GROUP**	75	6	1	1.6	5	1	12
12	**METROBANK GROUP**	6	10	3	0.96	4	0.44	25.68
13	**METRO PACIFIC GROUP**	50	16	2	1.38	11.62	0.77	7.25
14	**ONGPIN GROUP**	5	5	1	6.8	4	1	19.32
15	**PHINMA GROUP**	55	8	3	1.82	4.25	0.61	22.96
16	**RAMOS GROUP**	77	9	1	2.86	8	1	12.28
17	**SAN MIGUEL GROUP**	122	25	3	0.95	15.31	0.56	10.2
18	**SM GROUP**	54	19	3	0.99	6.84	0.38	17.64
19	**WELLEX GROUP**	42	8	1	6.04	7	1	13.58
20	**YUCHENGCO GROUP**	56	24	3	1.49	13.75	0.63	15.27
	AVERAGE	**60.55**	**12.85**	**2**	**2.53**	**7.34**	**0.77**	**16.35**

Table 2b. Descriptive statistics of the network measures for the top 20 Philippine business groups

Group Network Measures	Total Sample	Range	Minimum	Maximum	Mean	Std. Deviation
Group Size	20	29.00	4.00	33.00	12.85	8.84
Diameter	20	4.00	1.00	5.00	2.00	1.17
Average Tie	20	6.33	.47	6.80	2.53	1.71
Average Degree	20	12.31	3.00	15.31	7.34	3.85
Density	20	.77	.23	1.00	.77	.26
Centralization	20	12.26	4.42	25.68	16.35	5.88

On the other hand, the average tie for the AYALA group is the lowest among the sample at .47 or less than 1 tie for all 33 affiliates. This is expected as the bigger the group (by number of affiliates) the higher the need to distribute more people in all the affiliates as board members or top executives. This problem may create "holes" in the group network. Average tie means the average "thickness" of the overall relationship within the group which is shared by all affiliates such as in information. Half of the other business groups have an average tie of about 1 to 2. This means that fifty percent (50%) of the business groups in the sample have one to two boards of directors who sit at each affiliate firm at the same time. The other seven business groups have an average tie of more than 2 but less than 5, while the last two groups have 6 ties. These results reflect the differences of the volume of people, information and power that flow within the business groups.

As regards average degree there are nine business groups with an average degree value of 3 to 5 degrees. This means that on average each affiliate of the nine business groups gives and receives 3 to 5 connections within their business group. The others, six of them have 6 to 10 degrees while the last five have more than 10 degrees. These results suggest that

the affiliates in each business group are very much connected with one another since the higher the number of degrees the highly connected the affiliates.

As to density, half of the sample has a full measure of 1, which means that fifty percent (50%) of the business groups in the sample have a one hundred percent (100%) connection among their affiliates. These business groups are connected by at least one tie and do not contain any "hole" in the network, that is a star network. However, all of these groups have less than 10 affiliates, which in the context of human resource deployment is easy to achieve. The others with more than 10 affiliates have a density ranging from .23 or twenty-three percent (23%) to .77 or seventy-seven percent (77%) showing some holes that exist within the network or containing some affiliates which are not connected with other affiliates. This means that there are broken points in the network which may prevent the flow of information, such as sharing of experiences, to and from other affiliates.

Finally, the measures of centralization for all the business groups in the sample range from 4.42 to 25.68. Of that, only six groups have a centralization measure of above 20 or twenty percent (20%). High value means that the business group is highly centralized and the information and power are concentrated in one or few affiliates. In general, the maximum value of 25.68 or twenty-six percent (26%) centralisation is not very high, which means that most of the business groups in the sample are moderately centralized.

4.1.2 Affiliate level

The network measures of the 257 affiliates are presented in Table 3 by their average value in reference to their role in the business group. On average the affiliates in the sample display a high level of degree centrality. The average value for this is .62 or sixty-two percent (62%) which means that most of the affiliates enjoy central position as regards to information and power in their business group. In terms of 2-Step reach or closeness, the affiliates score for this is .95 or ninety-five (95%) which means that most of the affiliates can reach other affiliates within two steps or less. This means easy access for affiliates when seeking information such as on managerial experiences of other affiliates. The next one is eigenvector of the affiliates which has an average value of .35 or thirty-five percent (35%). This is expected to be low for all given high degree centrality and closeness. This means that many affiliates are not especially well connected to others, as most of them are well connected to one another in their group. Lastly, betweenness has the lowest average value of .02 or two percent (2%) which means most of the affiliates in the group does not have the role as go-between or brokers. Again this is expected as the degree centrality and closeness values are high for most of the affiliates. This simply means that most of the information is not difficult to access within the business group. On the other hand, the range and standard deviation (SD) of the network measures among the affiliates show considerable variation. This reflects the heterogeneity of the affiliates across different business groups.

Table 3. Descriptive statistics of the network measures for the 257 Philippine business group affiliates

Affiliate Network Measures	Total Sample	Range	Minimum	Maximum	Mean	Std. Deviation
Degree	257	.97	.03	1.00	.6239	.33096
Closeness	257	.94	.06	1.00	.9520	.11319
Eigenvector	257	.73	.00	.73	.3502	.18281
Betweenness	257	.46	.00	.46	.0231	.06176

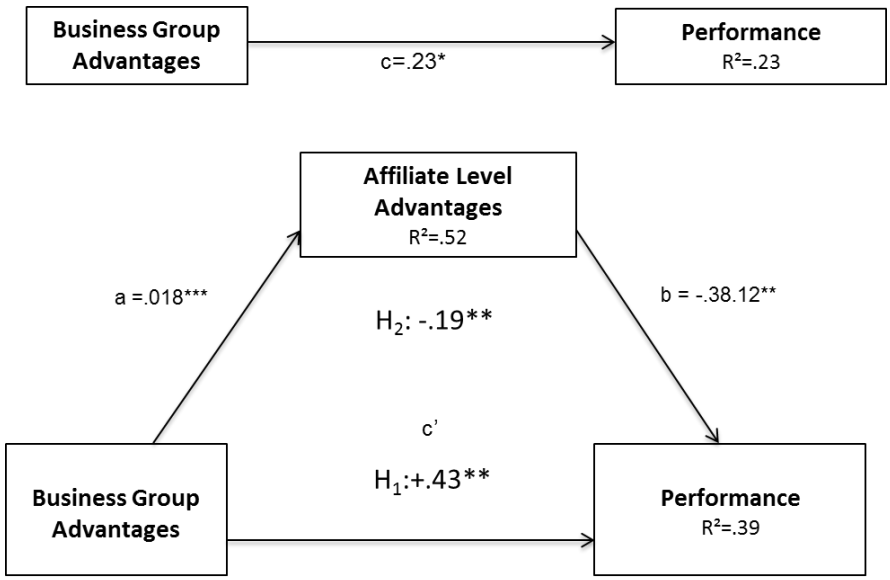
4.2 Mediation analysis

This study performed a simple mediation analysis using the Baron and Kenny (1986) causal-steps approach. In addition, a bootstrapped confidence interval for the *ab* indirect effect was obtained using procedures described by Preacher and Hayes (2004). The initial explanatory variable was BGA (centralization); measured in percentage, the outcome variable was affiliate performance (return on sales-ROS, in USD Mil.); and the proposed mediating variable was ALA (degree centrality), measured in percentage. This is depicted in Figure 3, which shows the path diagram that corresponds to the mediation hypothesis. Preliminary data screening suggested that there were no serious violations of assumptions of normality or linearity. All coefficients reported here are unstandardized, unless otherwise noted; a = .05 two-tailed is the criterion for statistical significance.

The total effect of BGA on affiliate performance was significant, c = .23, t= 2.06, p < .04; each 1-percent increase in BGA in centralization predicted approximately a .23 increase in affiliate's ROS performance in USD Mil. Hence, H1 is supported. The BGA was significantly predictive of the hypothesized mediating variable, ALA; a = .018 (unstandardized), t = 5.41, p = .000. When controlling for BGA, ALA was significantly predictive of performance, b = -

38.12 (unstandardized), t= -2.96, p = .004. The estimated direct effect of BGA on performance, controlling for ALA, was c' = .43, t = 3.40, p < .001. Performance was predicted from BGA and ALA, with adjusted R^2 = .15 and F (2, 75) = 6.747, p < .002.

Figure 3. Mediation analysis on the effects of BGA and ALA on the performance of business group affiliates



**p<.05, **p<.01, ***p<.001*

The indirect effect, *ab*, was -.19. This was judged to be statistically significant using the SPSS script (PROCESS) for the Indirect procedure (Preacher and Hayes, 2004), bootstrapping was performed; 1,000 samples were requested; a bias-corrected and accelerated confidence interval (CI) was created for *ab*. For this 95% CI, the lower limit was -.3742 and the upper limit was -.0669. In this case, both the *a* and *b* coefficients were statistically significant, the bootstrap test for the *ab* product was significant, and the bootstrapped CI for *ab* did not include zero. By all these criteria, the indirect effect of BGA on performance through ALA was statistically significant. Thus, supporting H2.The direct path from BGA to performance (c') was also statistically significant; therefore, the effects of BGA on performance were only partly mediated, negatively, by ALA. The upper diagram in Figure 3 shows the path coefficients for this mediation analysis; the lower diagram shows the corresponding standardized path coefficients (with unstandardized *ab* coefficients).

Comparison of the coefficients for the direct versus indirect paths (c' = .43 versus *ab* = -.19) suggests that a relatively small part of the effect of BGA on performance is mediated by ALA. The negative coefficient also suggests that both the explanatory variables are cancelling out each other's effects on performance. There may be other mediating variables through which BGA might influence performance, particularly some other types of ALA.

5 Discussions and conclusion

The literature on business groups which argues that business group affiliate firms are advantageous as compared to non –business groups or standalone firms in emerging economies provides an inconclusive result (Carney et al., 2011; Khanna and Palepu, 2000). This paper argued that this inconclusive result is due to the lack of theoretical explanation about the context of the advantages of business groups, as also cited in the works of Delios and Ma, (2010), p. 737 and Mahmood et al., (2011). As such, there is a gap on determining the parameters of comparison, not to mention the absence of the rationale behind the comparison at the onset. This paper addressed this issue through the following. It has provided the theoretical and operational explanations of the control advantages that are unique to business groups in emerging economies (Gonenc et al., 2007). Over and beyond the previous studies, this paper has not only presented the theoretical framework of the business group advantage at the group and affiliated level, but also demonstrated, although limited, on how to analyze its structure by using the social network analysis approach. In particular, this study measured the structure of BGAs, at the group and the affiliate levels, on information and control by analysing the interlocking directorates within the board of directors and top executives of the top 20 business groups from the Philippines. These executives and directors hold seats in all the affiliates of the business groups. Therefore, this paper has analyzed the overall business

group advantages of the sampled business groups which cover all the affiliates with both domestic and international operations. The BGAs, then, are applicable in both the domestic and international contexts. The descriptive results of the study also support the concept of group advantages at the affiliate level. This is based on the significant variation within the network measures of the sample affiliates. This variation clearly reflects the heterogeneity among the affiliates which is in this context being argued as the specific advantages at the affiliate level. Finally, the results of the mediation analysis support the hypotheses of the study that the performance of the affiliates is significantly influenced by both BGAs and ALAs and not their mere affiliation with the business group.

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