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Cliques Role in Organizational Reputational Influence: A Social Network Analysis

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Abstract

Empirical support for the assumption that cliques are major determinants of reputational influence derives largely from the frequent finding that organizations which claimed that their cliques' connections are influential had an increased likelihood of becoming influential themselves. It is suggested that the strong and consistent connection in cliques is at least partially responsible for the reputational influence factors. It is argued that social network analysis is an appropriate method for studying the use of influence development in the context of networked organizations. The results of the statistical network analysis reveal interesting findings in terms of prominent structural forms and the impact of involvement or embeddedness in the formal network. Consequently, this tells us that firms' embeddedness in a centralized network structure which is based on formal ties harms the firms' level of reputational influence.

Keywords

Supply network, Organizational behavior, Social network analysis.

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Introduction

In an inter-organizational network structure, the formal authority has relatively little role in determining the selection of actions (Marlow, 2004). In a network underpinned by multiple decision points, most actions and changes are driven by the nuance of influence (Yi, Shen, Lu, Chan, & Chung, 2016). The reputation for great influence is a valuable commodity in a network of diverse network members (Johanson & Mattsson, 2015). Because of its value, network and organizational behavior scholars have long sought to capture the essence underpinning the development of influence among network members and its impacts on network members' performance.

One of the particular concerns of the scholars and environmentally-conscious managers alike relates to the understanding of the distribution of influence in inter-organizational network structure. Because network members, embedded in a network, have neither formal power nor formal authority, they rely largely on their level of influence for the attainment of their goals (van de Kaa, de Vries, van den Ende, & Management, 2015). As a result, the sharing of information about which network members are more influential often takes place. Studies by social network scholars have insisted regarding the emergence of the more influential network members as a result of information sharing consensus (Epskamp et al., 2018; van de Kaa et al., 2015). As a result of the findings of these seminal studies, scholars have attempted to model the influential level of network members as a single quantity (Akaka, Vargo, & Schau, 2015). According to this school of thought, the degree of influence that a network member may possess would depend on the stability of the network members as well as its position in the network structure.

In a network structure, it is common to find network members who are known as influential (or at the core) and those who are considered to be irrelevant (or on the periphery) (Rombach, Porter, Fowler, & Mucha, 2017; Zhang, Martin, & Newman, 2015). However, it has been found that the reputation for influence in a network is diverse and fragmented throughout the different levels of network structure. What this entails is that a network member may be considered to be influential in one sub-network structure, but has a weaker level of influence in another. Is it possible to consider this variation in the

network structure? Can the variation degree of the network members' influence be assessed?

In this research, we argue that the embeddedness of network members in clique's structure is an important explanation for the differences in the level of influence. Network members evaluate and involve in the selection of actions through their relations and communication for information, referral activities, as well as contractual obligations (Matinheikki, Artto, Peltokorpi, & Rajala, 2016). As network members are involved or embedded in information sharing, referral activities and contractual obligations, its multiple roles and the resulting performance will be visible to the other members of the network (Karoui, Dudezert, & Leidner, 2015). The evaluation and judgment of the network member's performance are shared among the network members, resulting in the network members' reputation in the network structure (Kwahk & Park, 2016). As a result, evaluating the different ways that a network member may be connected or disconnected in a network structure may help account for how network members evaluate and observe other network members' degree of influence.

This research is based on a network survey interview with the directors of organizations in a maritime industry who are aspired environmentally-conscious manufacturers and suppliers for the production of Rigid Hull Inflatable Boat (RHIB) in East of Malaysia. This research models the influence in the network structure of the production network structure as a function of sub-network structures (information sharing cliques) using the Social Network Analysis (SNA) approach. The findings of this study suggest that a high level of influence in a network and the sub-networks would depend on the type of relations and the pattern of clique embeddedness in the organizations within the network and sub-network structures. This research concludes by explaining the impact of the research findings on the industry and by suggesting future research directions on the network embeddedness and network dynamics.

Literature Review

1. The Nature of Network Embeddedness

Within a network structure, the network members seek inputs to

determine which member of the network exerts influence over others in network decision makings. However, network complexity often sends mix signals, creating uncertainty upon which network member exerts influence within the network structure.

The first source of complexity in the network comes from the high number of network members embedded in the network structure (Arena, Uhl-Bien, & Strategy, 2016; Bozarth, Warsing, Flynn, & Flynn, 2009; Moore, Payne, Autry, Griffis, & Management, 2018). It is argued that as the number of network members increases, the number of ties also increases. Bozarth et al. (2009) also confirmed that a large number of network members increases network complexity. The author found that as the number of network members increases, so will the operational requirements of the network relations. Thus, even if a member of the network is to have detailed information about a set of network members in the network he is embedded in, he would experience uncertainties about the degree of influence because of the sheer number of network members operating in the network.

The second dimension that introduces complexity is the diversity of attributes of the embedded network members (Choi & Krause, 2006). Diversity of attributes of the embedded network members can be the results of individual capacity, size, geographical location, resource, leadership culture and operations (Cho, Kim, Mor Barak, & Review, 2017; Holck, 2018; Lu, Chen, Huang, & Chien, 2015). Decisions and actions made in a network structure may not only be the results of good network relations but also the diverse attributes of the network members. Thus, even if a network member may seem to exert influence over a decision or action within the network structure, it is difficult to ascertain that it is the fundamental reason why such particular actions were taken.

The third dimension of complexity that creates uncertainty is the fragmented yet extensive inter-network members relationship (Hui, Xiaolin, Progress, & Policy, 2016; Lu, Chen, Huang, & Chien, 2015). It is common to find suppliers that supply parts to a given manufacturer but at the same time are also responsible for the supply of materials to another manufacturer (Carter, Rogers, & Choi, 2015). What makes this extensive network relations complex is that. many of these relations exist beyond the awareness or knowledge of the manufacturers (Kim,

Chen, & Linderman, 2015). Manufacturers would welcome such fragmentation if it promotes better coordination for the network. However, more often than not, the leakages of information may also occur. Therefore, inter-network member relations in the network are an important aspect of the network complexity.

What makes the third factor of complexity unique is that the current literature has been looking into the phenomena from the perspective of the formal type of relations in the network structure. However, there are other forms of relations (in this study, we address these forms of relations as sub-networks) which contribute to the overall complexity. The reason is that a network that is formed through legally-bound contractual relations will eventually introduces a sub-network structure such as a web of informal social exchanges (Borgatti & Li, 2009; Granovetter, 1985). The focus on formal relations over informal relations may create uncertainty due to the lack of information. Furthermore, the existence of informal relations can be an indication that some actions and decisions may take place behind the scenes. Such situations make it hard to ascertain which network member is exerting influence extensively and which one is not.

Environmentally-conscious manufacturers and suppliers embedded in a network want to remove all forms of uncertainty regarding who is more influential in a network structure (Farrell, 2016).

In such condition, organizations rely on this social capital to facilitate and protect their interests against unintended acts from other network members (Klein, Mahoney, McGahan, & Pitelis, 2019). For example, the opportunist action by an organization amid dealings with different organizations may result in the opportunistic organization picking up awful notoriety as news on its corrupt actions leak. This action will be certainly imparted to different other organizations that are legitimately or by implication associated with the exploited organization. Therefore, the terrible notoriety of the organization may cost it to lose potential customers, as its guarantees and goals are presently seen with less trustworthiness by others. In this specific situation, influence works as the administration instrument in the embedded relationship.

The reputation as an influential actor is critical for the environmentally-conscious manufacturers and suppliers. The

reputation as an influential actor frequently converts into economic payoff as social capital appears out of the relation between firms (Lee, Tuselmann, Jayawarna, & Rouse, 2019; Moore et al., 2018; Polyviou, Croxton, & Knemeyer, 2019; Wegner, Faccin, & Dolci, 2018). Understanding who is firmly embedded in the network - that is deemed as more influential than the others - firms may increase direct access to economic resources or adjust themselves to firms that give the resources (Arena et al., 2016; Moore et al., 2018; L. H. Osman, Yazid, & Palil, 2018; Wegner et al., 2018). In an attempt to remove uncertainty concerning influence, network members continually share and seek information about who is influential (Kim & Chai, 2017). Much of this seeking and sharing activities occur in a network as well as in the sub-network setting. The reputation for influence will emerge from these seeking and sharing activities. Other network members will use the shared reputation information as the guide in making decisions about which network member is more influential.

Because the reputation for influence spreads voluntarily in network structure, some network members embedded in a network already become known as being more influential than others (Kwahk & Park, 2016). For example, the Green Peace, EcoKnights and Grameen Bank are widely known to be influential sustainability proponents even by other organizations or individuals who are not a close observer of sustainability. Nevertheless, there are the members of a network who build their influence in a much smaller and close-knit of a network of relations. In a social network setting, the continuum of influence development from one end of close-knit relations to another of a universally known reputation is a commonly observed outcome of network embeddedness. Hence, is it fair to make claims that one network member is truly influential because it portrays possession of a high level of network reputation for influence while another network member is not because its degree of reputation for influence is low? The main concern is that, at times, reputation can be a misleading judgment of network embeddedness (Kim & Chai, 2017; Osman, 2015). This is because an influential network member in a network structure can sometimes be easily identified, but at times, these influential network members may also be undetected (Farrell, 2016; Yi et al., 2016). Thus, at a minimum, there is loose connectivity

between what is reputed as influential and the actual influence. As long as the loose connectivity persists, the members of a network will continue to make an inconclusive judgment about influence, based on the noise of reputation. This gap between the reputation for influence and the actual influence of the embedded network members presents itself as a worthy subject of investigation.

2. A Theory of Network Cliques and Influence

A clique is a subset of a network in which the actors are more closely and intensely tied to one another than they are to other members of the network (Cousins, Handfield, Lawson, & Petersen, 2006; Galaskiewicz, 2011; Galaskiewicz, Bielefeld, & Myron, 2006; Krause, Handfield, & Tyler, 2007; McGrath Jr & Sparks, 2005). In this investigation, we argue that a clique is seen as a sub-network of relations over the formal network of relations in which the organizations are embedded. Its sub-network would incorporate relations, for example, kinship, unselfish connections, advance trust, fine-grained data exchange, and joint critical thinking action between cooperating organizations.

The principle debate of this research is that a network member embedded in a network values cliques in a sub-network as a key tool to remove the uncertainty of influence. Two premises form the basis of this debate. First, network members use cliques as guides to remove uncertainty in their decision on which network member is more influential. This is because cliques' members are more likely to pay attention to information obtained from the connected network members rather than the disconnected one. Thus, the sub-network members are more likely to think of their cliques (directly and indirectly connected network members) as influential as the isolated ones (disconnected network members).

Second, cliques create overlapping connections that provide visibility of other network members' actions. In network relationship, it is the embeddedness of association's synergistic exercises (joint application, joint program, proficient gatherings, and regular customers) in expert connections among office staff that brings about trust between network members. For instance, the field staff who work with customers build up trust-based casual organizations with other network

members in their joint endeavors to beat bureaucratic deterrents to acquire the assets required in an ineffectively sorted out framework and to access required administration for their customers in an inadequately incorporated framework (Marsden, 1990). Relatedly, in a legally binding relationship, network members could improve collaboration inside the network by requiring contractual understandings among members (Nayak, Bhatnagar, & Budhwar, 2018; Yunan, Well, Osman, Yazid, & Ariffin, 2017). The authors contend that the foundation of a contractually-determined corporate structure will improve the straightforwardness of members' inspirations to each one of those influenced and help lessen uncertainty in the relationship. As a result, network members are more likely to assume a network member with whom they are connected in cliques to be more influential than the one with whom they have one or no relation at all. In this research, we argue that cliques are important in determining the way that network members view influence.

Under normal network relations, long term commitment between firms or associations is manufactured to guarantee future responsibilities and participation (Cousins et al., 2006). Instances of this formal network coordination incorporated between firm relations include contract ties and joint programs (Poppo & Zenger, 2002). An essential norm for the network coordination between firm connections is the presence of various levels of cliques to deal with the administration of the network. Through the progressive or top-down methodology, e.g. administration advantages, organization and control are acknowledged (Nahapiet & Ghoshal, 1998; W. Powell, Koput, & Smith-Doerr, 1996; Powell, Koput, Smith-Doerr, & Owen-Smith, 1999). Researchers have likewise centered on the controls that the network embeddedness may pose upon the prospective network member. However, some of the seminal studies that convincingly reported this relationship demonstrated that a clique member that is inserted between two others in the network structure can get control-advantage from its key basic position (Burt, 2004). This happens in the network when different network members need to be involved with a central network member. For instance, this is common in a supply network structure where various network members need to be in an authoritative association with the central network members for

the supply of well-known materials. Relatedly, a clique member could be fundamentally situated between two diverse network members with clashing requests. In either case, the clique member may use the capability of its auxiliary position and present profits by that. As power manufacturers, certain clique members may accept the role of the controller, and so, make greater influence over the network structure. In this article, we posit that clique members are less uncertain about the activities of the network, giving them a better estimate of the influence level of a given network member.

3. Clique as Alternative Explanation

To determine the impact of network embeddedness in shaping the influence level of a network member, it is also important to account for an alternative reason for how network members foresee influence. In this article, we argue that an important alternative explanation is network cliques. A clique is a subset of a network in which the actors are more closely and intensely tied to one another than they are to other members of the network (Galaskiewicz, 2011; Schell, Hiepler, & Moog, 2018; Yan, Zhang, & Guan, 2019). Network members who have more connections with different network members might be in better positions. Since they have numerous ties, they may have multiple approaches to fulfill needs, and henceforth are less subject to different people. Since they have numerous ties, they may approach and have the capacity to approach a greater amount of the assets of the system. Because of the numerous ties, they regularly become the middle man in trades among others, and can benefit from these positions (Batt & Purchase, 2004; Farmer & Rodkin, 1996; Freeman, 1979; Ibarra, 1993; Romo & Schwartz, 1995; Simsek, Lubatkin, & Floyd, 2003). Thus, an exceptionally basic, yet frequently compelling proportion of a network member influence potential comes from their cliques.

In network, if a network member receives numerous ties, she is regularly said to be prominent. That is, numerous network members try to make connections to her, and this may demonstrate her level of importance. Network members who have unusually high clique overlap can trade with numerous others, or make numerous others mindful of their perspectives. Network members who show ties to

numerous cliques are frequently said to be highly influential. Thus, this study will test the hypothesis that as a network member becomes connected to more sub-networks or cliques within that network structure, the other members of that network would perceive that network member as influential. Thus, it is likely that the network members' reputation influence increases as the strength of the clique member ties with the other network members increases.

Research Method

The focus of this research is on the embeddedness of the cliques members in a network structure. As some studies have indicated, standard analysis and investigation are not good measures for the estimation of relations (Wasserman & Faust, 1994). This is because typical measurable examination repudiates the presence of connections between firms in a network through its supposition of autonomy of perception. Be that as it may, the more explicit Social Network Analysis (SNA) centers on the relations between firms as well as the relations and ramifications of the connections. Thus, in this study, the researcher embraces the SNA methodology for network data collection as well as the investigation and presentation of the findings. In network research, all the network members who are situated inside the naturally-occurring boundaries are incorporated for examination. Therefore network studies don't utilize samples in the conventional sense; rather, they try to incorporate all the network members in some population or populations (Hanneman & Riddle, 2005).

Because of the abovementioned condition, the research sample for this investigation comprises of all the organizations working in the upstream supply network of APMMHQ-1 identifying with the sustainable production and supply of parts and materials for the creation of Rigid Hull Inflatable Boat (RHIB) to the APMMHQ-1. In APMMHQ-1sustainabale production network, the RHIB is a little, quick field that got the most noteworthy interest from the market. Due to its intense interest and high use, there is a requirement for activities towards the formation of a manageable structure and the creation of the RHIB. In this manner, the upstream supply network for the RHIB

item is a standout amongst the most dynamic network of firms in the APMMHQ-1 huge network.

The initial step of inter-organizational network investigation is to decide the number of network members in the examination to be overviewed. In particular, there are two units which are of interest to this study: the organizations that embedded the APMMHQ-1 upstream supply network for the item RHIB, and the ties or connection between them. The sampling frames for the organizations and the connections between them are nested. In network studies, the method used to sample relations is part of the survey instrument.

As referenced, in network study, deciding the limits of a network is of utmost significance (Hanneman & Riddle, 2005). In this study, to recognize and characterize the objective population inside the APMMHQ-1 network for RHIB, we have combined the realist and the nominalist approaches. The realist approach provides the limit determination technique which is based on the argument that the cutoff point is one which is experienced by all or a larger part of the actors in the network (Knoke & Kuklinski, 1982).

Such limits incorporate connection, fellowship or directorships. Laumann, Marsden, and Prensky (1989) depicted this as the vantage purposes of the network members. The nominalist boundary specification strategy is based on the researchers' perceptions and constructs concerning their theoretical interests. This includes searching out those network members who are of interest and finding out the degree of connections between the network members within the network structure (Knoke & Kuklinski, 1982). In the nominalist approach, the researcher draws the cutoff point by building up a reasonable network to fill the researchers' analytical purpose. Practically speaking, under the nominalist system, the network examiner will decide the qualities characterizing the participants of the network. Utilizing these attributes, the researcher will choose the related network members and after that continue to investigate the association between the recognized network members.

Out of the 37 firms contacted for the study, 36 firms returned the interviews. This yielded a response rate of 97.3 percent Broad follow-up systems added to the high level of response. Albeit a few system specialists such as Marsden (1990) supported the gathering of network

information from the entire system population, Borgatti and Molina (2003) expressed that a response level higher than 90 percent is adequate for the incorporation of respondents into the examination.

Results and Discussions

Using the network analysis program i.e. UCINET and the spring embedding algorithm, the following results were obtained regarding cliques and influence in network structure. Figure 1 shows the dendrogram of the cliques that exist in the network. It is the visual description of the connectivity of the network members through their respective cliques. Data in Table 1 supports the visual description by grouping the network members into its cliques. Overall, the data analysis shows that there are 23 maximal complete cliques in an RHIB production network. The largest cliques were composed of 7 out of the 23 network members. The largest cliques are clique number 12, 13, and 14. All of the other smaller cliques share some overlap with some part of the largest cliques.

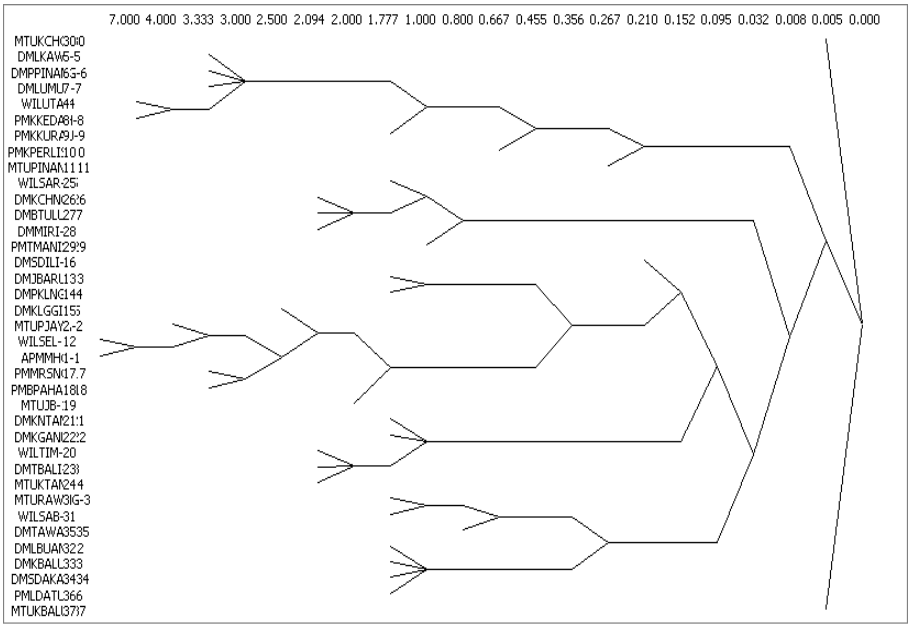

Fig. 1. Dendogram of cliques in the RHIB network

Table 1. Number of cliques and cliques' member in the RHIB network

1: APMMHQ-1 MTUPJAYA-2 WILSEL-12 PMMRSNG-17 PMBPAHAT-18 MTUJB-19
2: APMMHQ-1 MTUPJAYA-2 WILSEL-12 WILTIM-20
3: APMMHQ-1 MTUPJAYA-2 WILUTA-4 PMKKEDAH-8
4: APMMHQ-1 MTUPJAYA-2 WILTIM-20 DMTBALI-23 MTUKTAN-24
5: APMMHQ-1 MTUPJAYA-2 DMKCHNG-26
6: APMMHQ-1 MTUPJAYA-2 WILTIM-20 WILSAB-31
7: APMMHQ-1 MTURAWNG-3 DMLKAWI-5
8: APMMHQ-1 MTURAWNG-3 WILSEL-12
9: APMMHQ-1 MTURAWNG-3 MTUKTAN-24
10: APMMHQ-1 MTURAWNG-3 DMKCHNG-26
11: APMMHQ-1 MTURAWNG-3 WILSAB-31
12: APMMHQ-1 WILUTA-4 DMLKAWI-5 DMPPINANG-6 DMLUMUT-7 PMKKEDAH-8 PMKKURAU-9
13: APMMHQ-1 WILUTA-4 DMLKAWI-5 DMPPINANG-6 DMLUMUT-7 PMKKEDAH-8 PMKPERLIS-10
14: APMMHQ-1 WILUTA-4 DMLKAWI-5 DMPPINANG-6 DMLUMUT-7 PMKKEDAH-8 MTUPINANG-11
15: APMMHQ-1 WILSEL-12 DMJBARU-13 DMKLGGI-15 PMMRSNG-17 PMBPAHAT-18
16: APMMHQ-1 WILSEL-12 DMJBARU-13 DMPKLNG-14 DMKLGGI-15
17: APMMHQ-1 WILSEL-12 DMJBARU-13 DMSDILI-16
18: APMMHQ-1 WILSEL-12 DMKLGGI-15 PMMRSNG-17 PMBPAHAT-18 MTUJB-19
19: APMMHQ-1 WILTIM-20 DMKNTAN-21 DMKGANU-22 DMTBALI-23 MTUKTAN-24
20: APMMHQ-1 WILSAR-25 DMKCHNG-26 DMBTULU-27 DMMIRI-28
21: APMMHQ-1 DMKCHNG-26 DMBTULU-27 DMMIRI-28 PMTMANIS-29
22: APMMHQ-1 WILSAB-31 DMLBUAN-32 DMKBALU-33 DMSDAKAN-34 PMLDATU-36
23: APMMHQ-1 WILSAB-31 DMTAWAU-35

Table 2 shows how "adjacent" each actor (row) is to each clique (column). Actor APMMHQ-1, for example, is adjacent to all of the members of the RHIB network. On the other hand, two network members i.e. MTUKCHG30 and MTUKBALU37 are not adjacent to any of the network members.

Table 2. Actor-by-actor clique co-membership matrix

	CLIQUE NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
NETWORK MEMBER		-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
APMMHQ-1		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
MTUPJAYA-2		1	1	1	1	1	1	0.333	0.667	0.667	0.667	0.667	0.429	0.429	0.429	0.667	0.4	0.5	0.833	0.667	0.4	0.4	0.333	0.667
MTURAWNG-3		0.333	0.5	0.25	0.4	0.667	0.5	1	1	1	1	1	0.286	0.286	0.286	0.333	0.4	0.5	0.333	0.333	0.4	0.4	0.333	0.667
WILUTA-4		0.333	0.5	1	0.4	0.667	0.5	0.667	0.333	0.333	0.333	0.333	1	1	1	0.167	0.2	0.25	0.167	0.167	0.2	0.2	0.167	0.333
DMLKAWI-5		0.167	0.25	0.75	0.2	0.333	0.25	1	0.667	0.667	0.667	0.667	1	1	1	0.167	0.2	0.25	0.167	0.167	0.2	0.2	0.167	0.333
DMPPINANG-6		0.167	0.25	0.75	0.2	0.333	0.25	0.667	0.333	0.333	0.333	0.333	1	1	1	0.167	0.2	0.25	0.167	0.167	0.2	0.2	0.167	0.333
DMLUMUT-7		0.167	0.25	0.75	0.2	0.333	0.25	0.667	0.333	0.333	0.333	0.333	1	1	1	0.167	0.2	0.25	0.167	0.167	0.2	0.2	0.167	0.333
PMKKEDAH-8		0.333	0.5	1	0.4	0.667	0.5	0.667	0.333	0.333	0.333	0.333	1	1	1	0.167	0.2	0.25	0.167	0.167	0.2	0.2	0.167	0.333
PMKKURAU-9		0.167	0.25	0.75	0.2	0.333	0.25	0.667	0.333	0.333	0.333	0.333	1	0.857	0.857	0.167	0.2	0.25	0.167	0.167	0.2	0.2	0.167	0.333
PMKPERLIS-10		0.167	0.25	0.75	0.2	0.333	0.25	0.667	0.333	0.333	0.333	0.333	0.857	1	0.857	0.167	0.2	0.25	0.167	0.167	0.2	0.2	0.167	0.333
MTUPINANG-11		0.167	0.25	0.75	0.2	0.333	0.25	0.667	0.333	0.333	0.333	0.333	0.857	0.857	1	0.167	0.2	0.25	0.167	0.167	0.2	0.2	0.167	0.333
WILSEL-12		1	1	0.5	0.6	0.667	0.75	0.667	1	0.667	0.667	0.667	0.143	0.143	0.143	1	1	1	1	0.333	0.2	0.2	0.167	0.333
DMJBARU-13		0.667	0.5	0.25	0.2	0.333	0.25	0.333	0.667	0.333	0.333	0.333	0.143	0.143	0.143	1	1	1	0.833	0.167	0.2	0.2	0.167	0.333
DMPKLNG-14		0.333	0.5	0.25	0.2	0.333	0.25	0.333	0.667	0.333	0.333	0.333	0.143	0.143	0.143	0.667	1	0.75	0.5	0.167	0.2	0.2	0.167	0.333
DMKLGGI-15		0.833	0.5	0.25	0.2	0.333	0.25	0.333	0.667	0.333	0.333	0.333	0.143	0.143	0.143	1	1	0.75	1	0.167	0.2	0.2	0.167	0.333
DMSDILI-16		0.333	0.5	0.25	0.2	0.333	0.25	0.333	0.667	0.333	0.333	0.333	0.143	0.143	0.143	0.5	0.6	1	0.333	0.167	0.2	0.2	0.167	0.333
PMMRSNG-17		1	0.75	0.5	0.4	0.667	0.5	0.333	0.667	0.333	0.333	0.333	0.143	0.143	0.143	1	0.8	0.75	1	0.167	0.2	0.2	0.167	0.333
PMBPAHAT-18		1	0.75	0.5	0.4	0.667	0.5	0.333	0.667	0.333	0.333	0.333	0.143	0.143	0.143	1	0.8	0.75	1	0.167	0.2	0.2	0.167	0.333
MTUJB-19		1	0.75	0.5	0.4	0.667	0.5	0.333	0.667	0.333	0.333	0.333	0.143	0.143	0.143	0.833	0.6	0.5	1	0.167	0.2	0.2	0.167	0.333
WILTIM-20		0.5	1	0.5	1	0.667	1	0.333	0.667	0.667	0.333	0.667	0.143	0.143	0.143	0.333	0.4	0.5	0.333	1	0.2	0.2	0.333	0.667
DMKNTAN-21		0.167	0.5	0.25	0.8	0.333	0.5	0.333	0.333	0.667	0.333	0.333	0.143	0.143	0.143	0.167	0.2	0.25	0.167	1	0.2	0.2	0.167	0.333
DMKGANU-22		0.167	0.5	0.25	0.8	0.333	0.5	0.333	0.333	0.667	0.333	0.333	0.143	0.143	0.143	0.167	0.2	0.25	0.167	1	0.2	0.2	0.167	0.333
DMTBALI-23		0.333	0.75	0.5	1	0.667	0.75	0.333	0.333	0.667	0.333	0.333	0.143	0.143	0.143	0.167	0.2	0.25	0.167	1	0.2	0.2	0.167	0.333
MTUKTAN-24		0.333	0.75	0.5	1	0.667	0.75	0.667	0.667	1	0.667	0.667	0.143	0.143	0.143	0.167	0.2	0.25	0.167	1	0.2	0.2	0.167	0.333
WILSAR-25		0.167	0.25	0.25	0.2	0.667	0.25	0.333	0.333	0.333	0.667	0.333	0.143	0.143	0.143	0.167	0.2	0.25	0.167	0.167	1	0.8	0.167	0.333
DMKCHNG-26		0.333	0.5	0.5	0.4	1	0.5	0.667	0.667	0.667	1	0.667	0.143	0.143	0.143	0.167	0.2	0.25	0.167	0.167	1	1	0.167	0.333
DMBTULU-27		0.167	0.25	0.25	0.2	0.667	0.25	0.333	0.333	0.333	0.667	0.333	0.143	0.143	0.143	0.167	0.2	0.25	0.167	0.167	1	1	0.167	0.333
DMMIRI-28		0.167	0.25	0.25	0.2	0.667	0.25	0.333	0.333	0.333	0.667	0.333	0.143	0.143	0.143	0.167	0.2	0.25	0.167	0.167	1	1	0.167	0.333
PMTMANIS-29		0.167	0.25	0.25	0.2	0.667	0.25	0.333	0.333	0.333	0.667	0.333	0.143	0.143	0.143	0.167	0.2	0.25	0.167	0.167	0.8	1	0.167	0.333
MTUKCHG-30		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WILSAB-31		0.333	0.75	0.5	0.6	0.667	1	0.667	0.667	0.667	0.667	1	0.143	0.143	0.143	0.167	0.2	0.25	0.167	0.333	0.2	0.2	1	1
DMLBUAN-32		0.167	0.25	0.25	0.2	0.333	0.5	0.333	0.333	0.333	0.333	0.667	0.143	0.143	0.143	0.167	0.2	0.25	0.167	0.167	0.2	0.2	1	0.667
DMKBALU-33		0.167	0.25	0.25	0.2	0.333	0.5	0.333	0.333	0.333	0.333	0.667	0.143	0.143	0.143	0.167	0.2	0.25	0.167	0.167	0.2	0.2	1	0.667
DMSDAKAN-34		0.167	0.25	0.25	0.2	0.333	0.5	0.333	0.333	0.333	0.333	0.667	0.143	0.143	0.143	0.167	0.2	0.25	0.167	0.167	0.2	0.2	1	0.667
DMTAWAU-35		0.167	0.25	0.25	0.2	0.333	0.5	0.333	0.333	0.333	0.333	0.667	0.143	0.143	0.143	0.167	0.2	0.25	0.167	0.167	0.2	0.2	0.333	1
PMLDATU-36		0.167	0.25	0.25	0.2	0.333	0.5	0.333	0.333	0.333	0.333	0.667	0.143	0.143	0.143	0.167	0.2	0.25	0.167	0.167	0.2	0.2	1	0.667
MTUKBALU-37		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

One organization that is present in all 23 cliques and is connected to all organizations in all the 23 cliques is the APMMHQ1. This shows that APMMHQ1 is considered important by the entire RHIB network. No other organization in the RHIB network possesses such influence compared to APMMHQ1. The second most connected clique member is the MTUPJAYA2. MTUPJAYA2 is connected to all members of 5 different cliques, namely cliques 7, 8, 9, 10 and 11. MTUPAYA2 is also connected with other 18 cliques even though not to all the clique members.

We are also interested in the extent to which these sub-structures overlap, and which actors are most "central" and most "isolated" from the cliques. We can examine these questions by looking at "co-membership" in as presented in Table 3. The first panel here shows how many cliques are there in which each pair of actors are both members. It is immediately apparent that MTUKCHG30 and MTUKBALU37 are the complete isolates, and that APMMHQ1 is the only organization that overlaps with almost all other actors in at least one clique. We see that APMMHQ1 is "closest" in the sense of sharing membership in 23 cliques.

Table 3. Clique participation scores: property of clique members that each node is adjacent to

	NETWORK	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
	MEMBER	AP	MT	MT	WI	DM	DM	DM	PM	PM	PM	MT	WI	DM	DM	DM	DM	PM	PM	MT	WI	DM	DM	DM	MT	WI	DM	DM	DM	PM	MT	WI	DM	DM	DM	DM	PM	MT
1	APMMHQ-1	23	6	5	4	4	3	3	4	1	1	1	7	3	1	3	1	3	3	2	4	1	1	2	3	1	4	2	2	1	0	4	1	1	1	1	1	0
2	MTUPJAYA-2	6	6	0	1	0	0	0	1	0	0	0	2	0	0	0	0	1	1	1	3	0	0	1	1	0	1	0	0	0	0	1	0	0	0	0	0	0
3	MTURAWNG-3	5	0	5	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1	0	0	0	0	0	0
4	WILUTA-4	4	1	0	4	3	3	3	4	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	DMLKAWI-5	4	0	1	3	4	3	3	3	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	DMPPINANG-6	3	0	0	3	3	3	3	3	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	DMLUMUT-7	3	0	0	3	3	3	3	3	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8	PMKKEDAH-8	4	1	0	4	3	3	3	4	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9	PMKKURAU-9	1	0	0	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10	PMKPERLIS-10	1	0	0	1	1	1	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11	MTUPINANG-11	1	0	0	1	1	1	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12	WILSEL-12	7	2	1	0	0	0	0	0	0	0	0	7	3	1	3	1	3	3	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13	DMJBARU-13	3	0	0	0	0	0	0	0	0	0	0	3	3	1	2	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14	DMPKLNG-14	1	0	0	0	0	0	0	0	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15	DMKLGGI-15	3	0	0	0	0	0	0	0	0	0	0	3	2	1	3	0	2	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16	DMSDILI-16	1	0	0	0	0	0	0	0	0	0	0	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17	PMMRSNG-17	3	1	0	0	0	0	0	0	0	0	0	3	1	0	2	0	3	3	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18	PMBPAHAT-18	3	1	0	0	0	0	0	0	0	0	0	3	1	0	2	0	3	3	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19	MTUJB-19	2	1	0	0	0	0	0	0	0	0	0	2	0	0	1	0	2	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20	WILTIM-20	4	3	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	4	1	1	2	2	0	0	0	0	0	0	1	0	0	0	0	0	0
21	DMKNTAN-21	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0
22	DMKGANU-22	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0
23	DMTBALI-23	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	1	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0
24	MTUKTAN-24	3	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	1	2	3	0	0	0	0	0	0	0	0	0	0	0	0	0
25	WILSAR-25	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0	0
26	DMKCHNG-26	4	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	4	2	2	1	0	0	0	0	0	0	0	0
27	DMBTULU-27	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	2	2	1	0	0	0	0	0	0	0	0
28	DMMIRI-28	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	2	2	1	0	0	0	0	0	0	0	0
29	PMTMANIS-29	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0
30	MTUKCHG-30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
31	WILSAB-31	4	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	4	1	1	1	1	1	0
32	DMLBUAN-32	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	0	1	0
33	DMKBALU-33	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	0	1	0
34	DMSDAKAN-34	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	0	1	0
35	DMTAWAU-35	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0
36	PMLDATU-36	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	0	1	0
37	MTUKBALU-37	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

We can take this kind of analysis one step further by using single linkage agglomerative cluster analysis to create a "joining sequence" based on the number of clique memberships actors have in common. This is shown in the second part of Table 4. We see that actors MTUPJAYA22 and APMMHQ1 are "joined" first because they share 7 clique memberships in common.

Table 4. Hierarchical clustering of overlap matrix

NETWORK			D					P	M					P									P												D		M
MEMBER	M		M			P	P	M	T		D	D		M	D	D	D	D	M			P	M		D	D		D	M	M		D	D	D	M	P	T
	T	D	P	D		M	M	K	U	W	M	M	D	T	M	M	M	M	T	W		M	B		M	M	W	M	T	T	W	M	M	M	S	M	U
	U	M	P	M	W	K	K	P	P	I	K	B	M	M	S	J	P	K	U	I	A	M	P	M	K	K	I	T	U	U	I	T	L	K	D	L	K
	K	L	I	L	I	K	K	E	I	L	C	T	M	A	D	B	K	L	P	L	P	R	A	T	N	G	L	B	K	R	L	A	B	B	A	D	B
	C	K	N	U	L	E	U	R	N	S	H	U	I	N	I	A	L	G	J	S	M	S	H	U	T	A	T	A	T	A	S	W	U	A	K	A	A
	H	A	A	M	U	D	R	L	A	A	N	L	R	I	L	R	N	G	A	E	M	N	A	J	A	N	I	L	A	W	A	A	A	L	A	T	L
	G	W	N	U	T	A	A	I	N	R	G	U	I	S	I	U	G	I	Y	L	H	G	T	B	N	U	M	I	N	N	B	U	N	U	N	U	U
	-	I	G	T	A	H	U	S	G	-	-	-	-	-	-	-	-	-	A	-	Q	-	-	-	-	-	-	-	-	G	-	-	-	-	-	-	-
	3	-	-	-	-	-	-	-	-	2	2	2	2	2	1	1	1	1	-	1	-	1	1	1	2	2	2	2	2	-	3	3	3	3	3	3	3
	0	5	6	7	4	8	9	1	1	5	6	7	8	9	6	3	4	5	2	2	1	7	8	9	1	2	0	3	4	3	1	5	2	3	4	6	7
	3							1	1	2	2	2	2	2	1	1	1	1		1		1	1	1	2	2	2	2	2		3	3	3	3	3	3	3
CLIQUE LEVEL	0	5	6	7	4	8	9	0	1	5	6	7	8	9	6	3	4	5	2	2	1	7	8	9	1	2	0	3	4	3	1	5	2	3	4	6	7
-----	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	X	XX	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
4	.	.	.	.	X	XX	.	.	.	.	.	.	.	.	.	.	.	.	.	X	XX	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
3.333	.	.	.	.	X	XX	.	.	.	.	.	.	.	.	.	.	.	.	X	XX	XX	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
3	.	X	XX	XX	XX	XX	.	.	.	.	.	.	.	.	.	.	.	.	X	XX	XX	X	XX	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2.5	.	X	XX	XX	XX	XX	.	.	.	.	.	.	.	.	.	.	.	.	X	XX	XX	XX	XX	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2.094	.	X	XX	XX	XX	XX	.	.	.	.	.	.	.	.	.	.	.	X	XX	XX	XX	XX	XX	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2	.	X	XX	XX	XX	XX	.	.	.	.	X	XX	XX	.	.	.	.	X	XX	XX	XX	XX	XX	.	.	.	X	XX	XX	.	.	.	.	.	.	.	.
1.777	.	X	XX	XX	XX	XX	.	.	.	.	X	XX	XX	.	.	.	.	X	XX	XX	XX	XX	XX	XX	.	.	X	XX	XX	.	.	.	.	.	.	.	.
1	.	X	XX	XX	XX	XX	XX	.	.	X	XX	XX	XX	.	.	X	XX	X	XX	XX	XX	XX	XX	XX	X	XX	XX	XX	XX	X	XX	.	X	XX	XX	XX	.
0.8	.	X	XX	XX	XX	XX	XX	.	.	X	XX	XX	XX	XX	.	X	XX	X	XX	XX	XX	XX	XX	XX	X	XX	XX	XX	XX	X	XX	.	X	XX	XX	XX	.
0.667	.	X	XX	XX	XX	XX	XX	.	.	X	XX	XX	XX	XX	.	X	XX	X	XX	XX	XX	XX	XX	XX	X	XX	XX	XX	XX	X	XX	XX	X	XX	XX	XX	.
0.455	.	X	XX	XX	XX	XX	XX	XX	.	X	XX	XX	XX	XX	.	X	XX	X	XX	XX	XX	XX	XX	XX	X	XX	XX	XX	XX	X	XX	XX	X	XX	XX	XX	.
0.356	.	X	XX	XX	XX	XX	XX	XX	.	X	XX	XX	XX	XX	.	X	XX	XX	XX	XX	XX	XX	XX	XX	X	XX	XX	XX	XX	X	XX	XX	X	XX	XX	XX	.
0.267	.	X	XX	XX	XX	XX	XX	XX	.	X	XX	XX	XX	XX	.	X	XX	XX	XX	XX	XX	XX	XX	XX	X	XX	XX	XX	XX	X	XX	XX	XX	XX	XX	XX	.
0.21	.	X	XX	XX	XX	XX	XX	XX	XX	X	XX	XX	XX	XX	.	X	XX	XX	XX	XX	XX	XX	XX	XX	X	XX	XX	XX	XX	X	XX	XX	XX	XX	XX	XX	.
0.152	.	X	XX	XX	XX	XX	XX	XX	XX	X	XX	XX	XX	XX	X	XX	XX	XX	XX	XX	XX	XX	XX	XX	X	XX	XX	XX	XX	X	XX	XX	XX	XX	XX	XX	.
0.095	.	X	XX	XX	XX	XX	XX	XX	XX	X	XX	XX	XX	XX	X	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	X	XX	XX	XX	XX	XX	XX	.
0.032	.	X	XX	XX	XX	XX	XX	XX	XX	X	XX	XX	XX	XX	X	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	.
0.008	.	X	XX	XX	XX	XX	XX	XX	XX	X	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	.
0.005	.	X	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	.
0	X	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX

This study draws attention to firms' embeddedness or involvement in the various types of relationships in network and sub-networks and the underlying impacts of this embeddedness. More specifically, the researcher examined the relationship between a firm's levels of embeddedness based on its network and sub-network (clique) participation in the network and the firms' associated level of influence.

Discussion

The principal discussion of this research is that network members are embedded in multiple networks and that this multiplicity creates overlapping connections that provide visibility of other network members' actions which impact the influence reputation of a network member.

Consequently, these findings mean the existence of low-key yet highly influential network members in the network structure. This is because even though network and sub-network are different, it is essentially an overlapping network structure which creates different characteristics of organizations when attending to the matter of the network. Different characteristics of evaluation in the network and sub-network resulted in a different classification of network members. This is indicated by the different scores of clique participation of network members. Consequently, if an organization is evaluated as being low in the influential level in a network structure, one cannot claim the same evaluation result in a sub-network or clique.

Thus, the managerial contribution of this research lies in the good management of network relationship. Combining the results of the network statistical results and network structural measures indicates that different network structures (based on the degree of clique participation) create different powerful network members. What this means is that in any network relation, a heterogeneous network structure exists which consists of both formal and informal forms. It begins with the formal structure and eventually creates its sub-network of informal relations.

The existence of heterogeneous networks provides a new perspective in terms of the management of networking and inter-firm relationship management. The heterogeneous structure may not be all bad. This study found that, despite the differences in the structure, the heterogeneous structure (formal and informal) is beneficial as it brings a synergy of arm-length control and laissez-faire to the management of network relationship. The formal structure brings about close-monitoring and heightens coordination and visibility, while the informal structure creates trust and responsiveness.

Thus for the efficient management of network, this research proposes a hybrid networking arrangement which combines arm-

length control and laissez-faire techniques. This research suggests a mixture of formal and informal coordination mechanisms in business arrangements in the context of supply networks. The hybrid form can be a new addition to the mode or form of organization in the context of inter-organizational network relations.

Theoretically, the outcomes of Social Network Analysis found in the exploratory network investigation concerning the relationship of firm embeddedness and the convention or familiarity of the tie coordination component demonstrate an alternate position contrasted with the customary perspective of embeddedness theory. As the researcher mentioned in an earlier section of the article, the common viewpoint toward the influence reputation in network relies on the structural positions of network members' embeddedness (Uzzi, 1997). And yet, this study found that the degree of influence is also related to the type of sub-network relations and the intensity of the connections.

The difference with the common viewpoint toward embeddedness makes one wonder on how these divergences can be illustrated. The clarification that the researcher gives here concentrates on the exceptional type of the organizations and the elements of the network and sub-network structure. Utilizing exploratory network investigation, the researcher previously built up the network of two system ties, namely network and sub-network. This gives a general picture of the network embeddedness structure. It is critical to note that in this investigation, in light of prior discoveries (Cousins et al., 2006), the two network ties are seen on a continuum of tie collaborations (formal versus informal relations). The discovery of the basic proportions of embeddedness in the network, (for example, clique participation) bolstered and generated for each research question of the study.

Moreover, based on the analysis of the participation index of the two network cliques, the organizational levels of embeddedness in the network and the sub-networks differ. A low level of embeddedness or involvement in the network is detected. On the other hand, the organizational level of embeddedness or involvement was found to be significantly high in the sub-network through the analysis of clique clustering index. This finding also indicates that in the context of network relations, what exists on paper does not represent what exists

in the real situation. An integrated form of relations coincides in the network. What this means is that while the formal relations may blind some main actors of the network about what the real network structure may look like, the existence of sub-networks creates new parameters for determining who is who in the network structure. This is because influence not only is developed in the formal network structure but also is shared and evaluated in the informal network structure. The existence of an integrated form of relations coincides with Uzzi (1997) who argued that an integrated structure of embedded ties (informal relations) and arms-length (formal relations) is the optimal form of structure. In addition to that, it was also posited that in the supply network, both informal and formal relations exist that ensure the efficient and effective management of the supply network (Cousins et al., 2006). Thus, to answer the hypothesis regarding the level of organizational involvement in the network structure in the different forms of network ties, this research found that organizations are more involved when the connections are based on informal or voluntary forms of relationships.

Our findings are related to earlier works. For instance, Granovetter (1992) posited that all network members' economic actions are embedded in the layers of social relations. Furthermore, Uzzi (1997) confirmed this as the author confirmed that in the network of contacts in the garment industry, organizations still rely on social exchanges before making any economic actions. Similar to these authors, this research found that the organizations involved in the sustainable production of the RHIB are not only connected through their formal contractual relations but also via the informal sub-networks that may exist beyond the knowledge of certain organizations that are embedded in the formal network structure. The results of the network analysis reveal some interesting findings and contribute partially to the conclusion of this study. The researcher found interesting points in terms of prominent structural forms and the impact of involvement or embeddedness in the formal setting of a supply network. The analysis revealed that firms' embeddedness based on cliques' overlap in the network had significant effects on the level of influence. Consequently, this tells us that the embeddedness of firms in a

centralized network structure which is based on formal contract ties harms the firms' perceived level of trustability.

Conclusion

In conclusion, while addressing the research question of this study, the researcher found that in inter-organizational network relations, an organization's level of influence is dependent upon the type of network relations it is embedded or involved in. Moreover, the network analysis indicated that the level of influence matters differently in the structure of the formal and informal networks. The implication of these discoveries is critical to the theory of embeddedness and to the management of the network.

In the first place, this study adds to the theory of network embeddedness by affirming the fact that the sub-network exist and have an impact upon the general network management. Through the use of exploratory network analysis, the network embeddedness of firms in the network was identified in order to sort the ties or firm connections under study.

Furthermore, in a progressively formal type of firms' connections, the organizations are less involved in the network structure. All the more significantly, because the meaning of embeddedness identifies with the level of involvement of firms in the network relationship, this research recommends organizations to be less active inside the network of formal binds in contrast to the informal firm relations. This may provide grounds for judicious resource management for the potential form of network commitment. Figuring out which association is progressively influential over another will help streamline the resources which are put into the network and to keep up great network connections.

In sum, this research isn't without its constraints. There are in particular some limitations that need further empirical and exploratory undertaking. What this study recommends is a network investigation that breaks down at least two networks simultaneously and examines their effect on the firm management. Technically, network analysis refers to this type of network as the bipartite or the tripartite network that has two or three relations in one network respectively. The firms' embeddedness in or contribution to the bipartite or tripartite network

may need an increasingly extensive examination of the impact upon the performance of those embedded in the network structure. This research is not without its limitations. First, the scope of this study only focuses on the maritime industry. More works which focus on other industries may reveal new interesting findings. Further, it would also be valuable to regard the dynamics of firms' relationships; for instance, to see how firms' relationships are linked to one another through time as industries, technology, and other factors evolve. Because inter-organizational relationships are dynamic rather than static, nature and form are expected to change over time. The ability to see which conditions would result in different outcomes would provide significant implications for the management of the firms' relationships and inter-organizational relationships in general as well as to the general theory of embeddedness in explaining the implications of firm embeddedness and relational capital outcomes in particular.

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