The Role of Corporate Social Capital in Business Innovation Networks

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Abstract

This paper looks at the role of corporate social capital (CSC) in business innovation. Two models are introduced; one for CSC which broadly incorporates traditional intellectual capital (IC) elements and corporate reputation and a second model for innovation, from a networking perspective. The innovation model, called "the three E's" identifies the critical central connector and broker roles within the three innovation sub-processes of Exploration, Engagement and Exploitation. The sub elements of CSC, being network centrality, absorptive capacity, human capital, internal capital and financial soundness are then assessed for their influence on the identified innovation roles. An analysis of the global information technology services sector is then used to illustrate the practical application of the analytical technique described.

Key Words

Corporate Social Capital, Innovation Networks, Intellectual Capital, Corporate Reputation, Social Networks, Social Network Analysis.

Biographical Note

Laurence Lock Lee

Laurence is partner and co-founder of Optimice Pty Ltd, an intellectual capital firm established to assist clients optimise their business relationship networks. He has recently submitted his PhD research from the University of Sydney, entitled "Corporate Social Capital and Firm Performance in the Global Information Technology Services Sector".

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1. Introduction

Corporate Social Capital (CSC) has been identified as social capital (SC) in the context of corporate or public sector organisations. Leenders & Gabbay (1999) raised the awareness of CSC, focusing on concepts, theories and the application of SC to business. CSC has been defined as "the set of resources, tangible or virtual, that accrue to a corporate player through the player's social relationships, facilitating the attainment of goals" (Leenders & Gabbay, 1999, p3). CSC is often associated with the network of inter-firm alliances or joint ventures. The business press coverage of such activity is escalating exponentially, with more than 70,000 articles reporting on alliances and joint ventures in 2005/6, a rate of close to 200 per day[1]. Around 20% of this activity is in the information technology (IT) sector. With most organisations claiming a multitude of alliances, markets can no longer be characterised by individual buyers and sellers. The macro view of markets now consists of a complex web of inter-organisational activity.

The alliance literature mostly focuses on 'the single deal'; however, the sheer growth in the number of alliances being formed will naturally lead to discussions of 'alliance networks', beyond simple partnerships (Dyer and Nobeoka, 2000, Gulati et al., 2000, Uzzi, 1997). A firm's ability to leverage its position or build its SC within a complex web of market actors is likely to have a significant influence on its overall performance. The CSC of the firm is not directly measurable in financial terms. As an intangible asset (IA) of the firm, it is argued that CSC can enhance the ability of the firm to leverage its CSC and intellectual capital (IC) to build its attractiveness to potential suppliers, alliance partners and customers. In a market that is becoming increasingly networked, business growth through innovation will most effectively be achieved through partnering, whether the firm is a small start-up venture or a large established corporation.

This paper is structured into five sections inclusive of this introduction. In the second section a model for CSC is drawn from the collective literature supporting SC and IC development. Section three introduces of a model for innovation from a network

[1] Factiva search on 'joint venture' activity for the year up to 1st August 2006.

perspective. The model, called “the three E’s” model of innovation is based on the three innovation sub-processes of Exploration, Engagement and Exploitation. Section four addresses the practical application of the CSC framework in examining the global information technology services sector for its innovation potential. Finally, section 5 provides a summary and discussion identifying potential limitations of the research and future research opportunities.

2. A Model for Corporate Social Capital

Polany’s (1944) economic theories and anthropological analysis note that ancient economies were ruled by social relations. Humans sought out material goods that would enhance their social standing. Polanyi believed that economies have only been controlled by markets in relatively recent times. This research introduces the prospect that markets may in fact be controlled by social relations. A second set of theories relates to SC, which incorporates theoretical concepts like Burt’s (1992) structural holes theory, Coleman’s (1990) social theory and Granovetter’s (1973) strength of weak ties theory. These theories consider SC as a network of social relationships. Inter-firm network theories, inclusive of social exchange theory (Blau, 1964, Cook, 1982) have been developed to explain a firm’s collaborative behaviour. A third set of theories relates to IC, including intangible capital theory (Sveiby and Risling, 1986), which articulates the components of intangible capital (i.e. human, internal/structural and external/relational capital).

An integrated model of CSC can be developed through five ‘building block’ layers as shown in Figure 1.

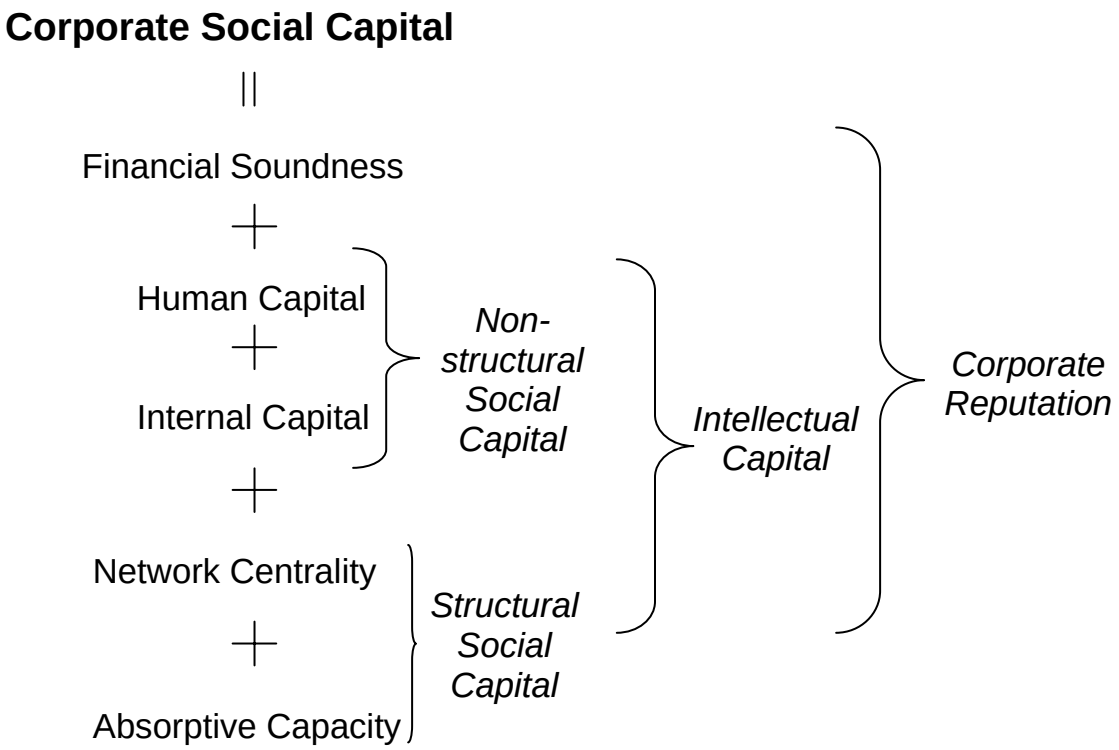

Figure 1 – Integrated Model for Corporate Social Capital

The above model builds a picture of CSC through integrating identified subsidiary elements. The intent is not to claim that the concepts of structural SC, non-structural/qualitative SC, IC and corporate reputation are simply component parts of CSC. Rather, the intent is to say that if one looks at the world through the lens of CSC, one might identify these contributing components. The terms on the left of the diagram – absorptive capacity, network centrality, internal capital, human capital and financial soundness – conceptually may not be additive, but for this research they are operationalised and therefore identified as distinctive variables. The bracketed terms on the right (e.g. intellectual capital, structural social capital etc.) are concepts that these variables could represent. They provide a link between concepts and how they are operationalised.

The study of SC as it relates to business and markets is still a relatively recent phenomenon, with the majority of the research being of a normative, rather than an

empirical nature (Leenders and Gabbay, 1999, Florin et al., 2003). The linkage between SC and IC performance has been largely neglected, but this could simply be attributed to the disparate disciplines from which these concepts have emerged, that is, sociology and accounting. The organisational theorists' approach to intangibles could identify SC with EC, though in many cases EC is defined more narrowly as relationships with customers and suppliers (Sveiby, 1997). SC and corporate reputation has found its way into the IC literature either as a proxy for EC or a more comprehensive intangible asset of the firm (De Castro et al., 2004, Marti, 2004, McElroy, 2002).

In this paper, SC has a broader interpretation which can be relevant at the individual, firm or market level. As such, it can be argued that CSC plays a role across all of the identified components of IC, as illustrated in Figure 2:

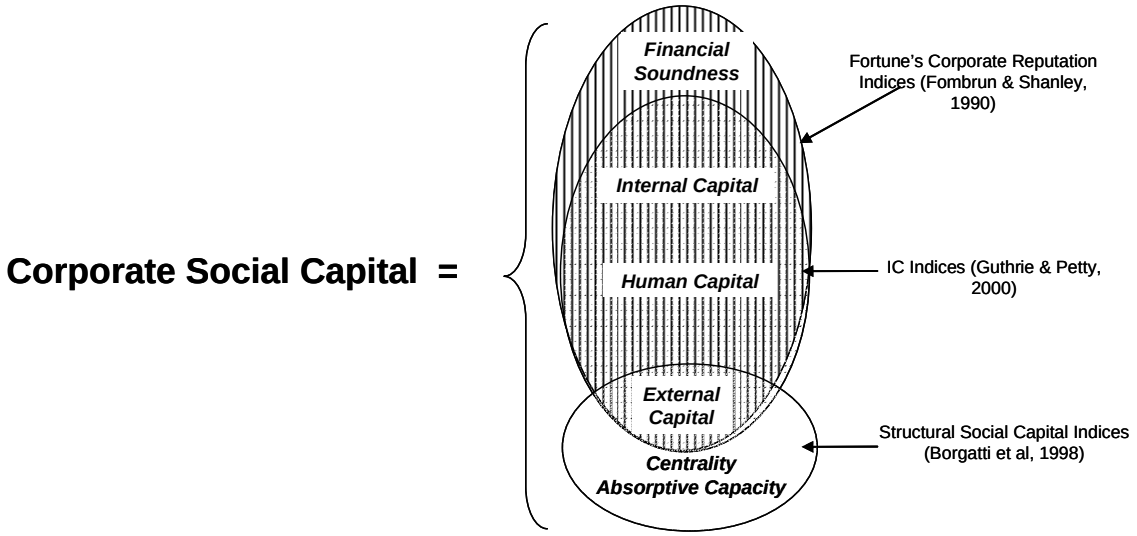

Figure 2 – Corporate Social Capital and Intellectual Capital

The above formulation of CSC incorporates the accepted formulation of IC made up of Human Capital (HC), internal capital (INC) and external capital (EC) (Guthrie and Petty, 2000). It also acknowledges the overlap between formulations of corporate reputation (Fombrun and Shanley, 1990) and an expanded formulation of EC to incorporate the structural aspects of relationships (Borgatti et al., 1998). In this research, a concept of CSC is formulated and built up as shown in Figure 1. The model shown in Figure 2

identifies an overlap between the structural aspect of SC and the EC component of the IC formulation. It identifies corporate reputation as equivalent to the IC concept, with the addition of financial soundness.

The commonality between IC elements and CSC include, for example, an individual's SN, a firm's alliance structures and stakeholder relationships, which are both CSC and IC elements and provide a tangible linkage between CSC and IC. Other IC elements like reputation, patents, skills and experience that may not be explicitly defined as part of CSC, do contribute to CSC by acting as 'attractors' for potential connections, and therefore CSC development. For example, a firm looking to develop an alliance arrangement will be attracted by elements like reputation, brand and the skills and experience of the staff in prospective organisations.

3. Corporate Social Capital and Business Innovation

Innovation is regularly associated with breakthrough technologies and hero worshipped inventors. However, as Andrew Hargadon (2003, p.12) points out, even Edison wasn't a lone inventor, but was involved in a web thick with ties to other people, ideas, and objects, that together made up his particular "invention", the electric light bulb. Innovation is as much social as it is technical. Identifying the role of CSC in business innovation is now conducted through looking independently at the identified sub-components of CSC in Figure 1.

Structural Social Capital

Firstly, the role of structural social capital represented by network centrality and absorptive capacity is addressed. Naturally occurring social networks show distinctive characteristics that are loosely described as the "small world effect". Essentially the effect shows clusters or cliques of highly connected individuals, some of who are more central than others. The connections or "ties" are described as either strong or weak, reflecting the differences between say, a strong friendship and a casual acquaintance. The

clusters or cliques are then often connected through individuals who share membership of two or more cliques. These individuals are called brokers or bridges and become the main conduit for information or knowledge flows between the clusters.

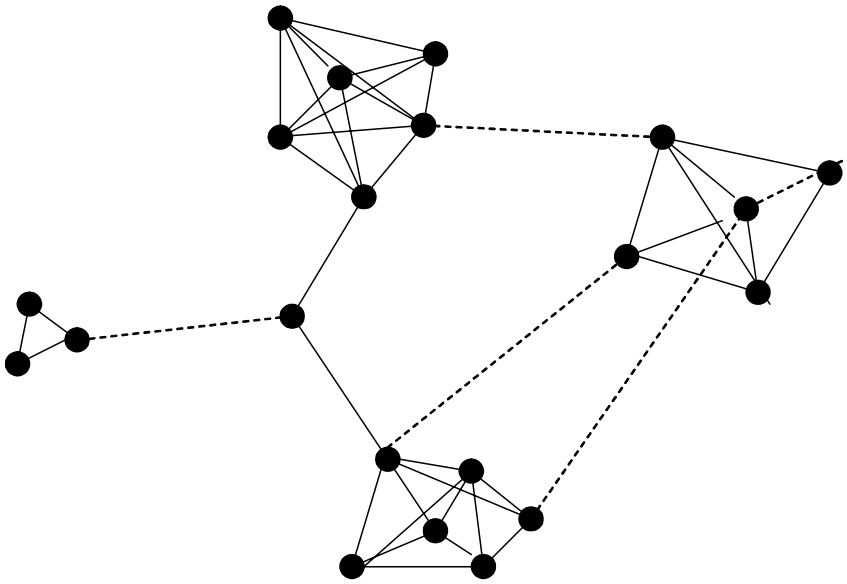

Figure 3 - Small World Effect

The figure above shows a typical small world effect with four clusters with a combination of weak (dotted) and strong (hard) ties connecting them. There exist two competing, yet complementary theories describing the so called social capital of networks. The theory of closure (Coleman, 1990) suggests that high social capital exists inside the tightly knit clusters where trustful relationships can be established through regular and frequent interaction, where the role of the "central connector" is key. Conversely, the theory of structural holes (Burt, 1992) suggests that maximum benefit lies in bridging the gaps between the clusters, called "structural holes", where the role of the "broker or bridge" is critical[2].

The "Three E's" Model of Innovation

[2] For example see the central node connecting three clusters in Figure 3.

In support of the argument for bridging structural holes, empirical research has shown that the probability of an individual having his or her idea accepted by management is inversely correlated with the density of ties that the individual has. That is, members of tight clusters have a very low probability of having an idea accepted by management and in fact have a low probability of even voicing a new idea. Conversely, less constrained individuals have a much higher probability of having their ideas positively reviewed by management (Burt, 2004). It is not enough however, for a broker to simply be in a position to identify a good idea. Brokers or bridges need to also have the influencing skills to firstly argue the merits of the ideas with his or her peers and then ultimately with management. Kelley and Caplan's (1993) study of star performers at AT&T's research laboratories identified the skills of initiative, networking, leadership, organisational savvy and show and tell capabilities were required to turn good ideas into successful innovations.

The second component of structural social capital is absorptive capacity. Absorptive capacity refers to a firm or individual's ability to absorb knowledge and capabilities from alliance activities. Tsai (2001) studied business units within a large petrochemical company and also a food manufacturing company. His research identified that the interaction between absorptive capacity and network position had a significant impact on innovation and business performance. In essence, Tsai (2001) found that absorptive capacity provided a complementary support to the network positioning illustrated in Figure 3.

Of course identifying promising ideas and successfully engaging management in their funding is only part of the journey. To be classed as a successful innovation, the ideas have to be productive in practice. New ideas do not come with tried and tested recipes. This is where the exploitation teams need to be effective in the sharing of the adaptations and improvisations commonly required to make something work in practice. The characteristics of exploitation teams are substantially different to exploration teams. Research by March (1991) indicated that a concentration on exploitation over exploration can have a short term beneficial effect on organisational learning, but in the long term is

destructive. He and Wong (2004) showed empirically that firms that could effectively balance the competing demands for exploration and exploitation achieved higher levels of innovation success. Conversely, most firms struggle with innovation precisely because they fail to effectively balance exploration and exploitation initiatives.

In summary, social network theory suggests that successful innovation is best achieved through careful management of the interaction or engagement between exploration and exploitation activities. Therefore one could characterise the innovation process from a networking perspective in terms of "Exploration, Engagement and Exploitation" (the three E's of innovation) as illustrated below:

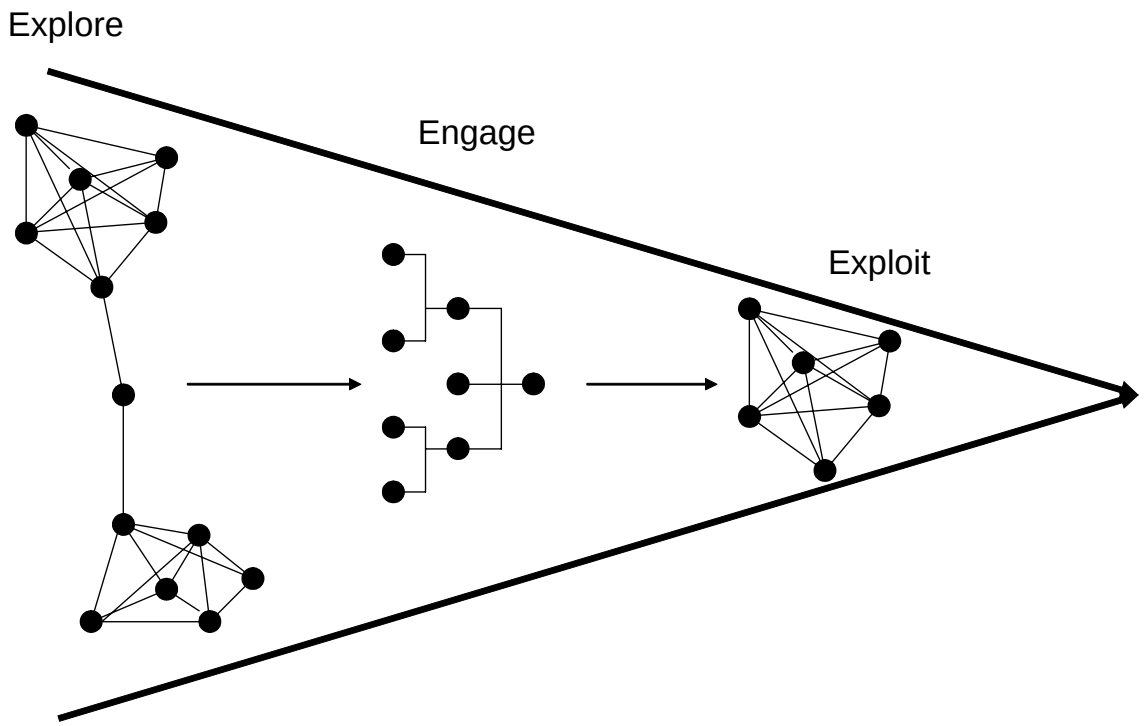

Figure 4 - The Three E's

The exploration process is seen as the environmental scan for new ideas, with the points of intersection between clusters or cliques representing separate disciplines or cultures, seen as the most fertile areas for exploration (Burt, 2004). The role of the broker or bridge between clusters is seen as critical to the exploration process. The engagement process is where the informality of the exploration process meets the formality of the management hierarchy, required to fund the progression of prospective ideas. The

success or otherwise of the engagement process will rely critically on the influencing skills of the brokers/bridges. Having survived the management filter, prospective ideas now need to be developed and implemented in practice. This exploitation process relies on close collaboration and co-operation of exploitation teams as ideas are implemented, adapted and fine tuned to meet the demands of a real world environment.

Non-structural Social Capital

The non-structural elements of CSC include the IC elements of human capital and internal capital. Dakhli and De Clercq (2004) find strong support for the relationship between human capital and innovation and partial support for the positive effect of trust and associational activity on innovation in their country level empirical studies. The role of human capital in business innovation has been partially addressed in the previous section. The differing roles identified in the 3 E's of innovation call for contrasting human capital competencies. In the exploration phase, the human capital competency required is one of open mindedness and an ability to seek out ideas and potential solutions from diverse and often non traditional sources. Both social and human capital have been found to contribute to the nascent entrepreneurs, especially in exploration activities (Davidsson and Honig, 2003).

The exploitation phase calls for human competencies centred on analytical and process orientation. Successful exploitation requires a narrow focus on project teams and tangible project outcomes. The critical engagement role between the exploration and exploitation phases again calls for specific human capital competencies. The engagement process requires a brokering capability. The ability to negotiate a path between actors in the exploration and exploitation worlds is a critical success factor for the broker. The human capital elements of initiative, networking, leadership and organisational savvy identified by Kelley and Caplan (1993) are core human capital competencies for the broker role. Personality pre-dispositions have also been found to influence the adoption of both brokering or central connector roles (Kalish and Robins, 2006) and therefore influence on innovation success. However, other research has indicated that this form of human capital

can be learnt by experienced managers who do not possess a psychological predisposition for the identified networking roles (Burt et al., 1998).

Internal capital includes patents, concepts, models, processes, information technology systems and the like that have been created and normally owned by the organisation (Sveiby, 1997). Many firms have developed their own internal processes for managing innovation, which would constitute a form of INC. For example, Eli Lilly, a leading pharmaceutical firm, incubated a start-up venture called InnoCentive, which grew to become an independent organisation offering a virtual research laboratory by brokering the services of some 90,000 research scientists and engineers to its client base (Springer, 2005). Such investments by large and financially sound firms can have a positive effect on innovation and firm performance. However, Dow Chemicals also found that their investments in patents supporting their innovation activities can often be misplaced and therefore resulting in the firm over-investing in the administrative expense of maintaining non strategic patents (Petrash, 1996). For smaller and less financially sound firms, while innovation is an important issue, investments in expensive INC can have a negative impact on the firm's overall performance (Lock Lee, 2007, forthcoming).

Financial Soundness

The final element of the CSC model is financial soundness. Financial soundness has shown to be the most consistent predictor of firm performance across the global information technology services sector (Lock Lee, 2007, forthcoming). Financial soundness is more regularly associated with larger established organisations. As such, it is the established, financial sound organisations that have the capability to fund innovation activities and whom will naturally attract attention, to invest in innovation opportunities, from all quarters. The connection between financial wealth in generating high social capital is well established (Lin, 1982). That is, financial wealth on its own can act as an effective attractor for potential alliance partners. The corporate reputation literature also indicates that financial performance tends to dominate an organisation's reputation to the extent that the effect would need to be excluded before studies on other

non financial performance attributes could be effectively undertaken (Brown and Perry, 1994). Therefore financial soundness is a strong contributor to an organisation's CSC.

The reliance on the larger, more established firms to fund innovation activities can be problematic. Larger, established firms have often achieved their secure financial positions through being good at exploitation. Their investment in INC is often focused on achieving early financial return from investments. Investments in extended exploration or longer term R&D activities can be counter cultural for many established firms. The conundrum is that smaller more exploratory firms are those less able to invest in such activities, while the more established firms that have the capability to invest in exploration activities are less likely to do so, despite the evidence that such investments can enhance share market performance (Lev and Sougiannis, 1999, Chauvin and Hirschey, 1993, Hand, 2001).

In summary this section has analysed the impact of CSC on business innovation by looking at the potential impact of each sub-element of CSC as defined in the model for CSC in Figure 1. Arguments have been made for how each element of CSC can influence successful innovation. Starting with the structural social capital aspects the roles of innovation broker and central connectors are seen as centrally important across the innovation process identified as the "three E's". Different types of human competencies were identified for the different structural roles identified. Investments in INC and financial soundness are seen as the province of the larger, more established firms. This is identified as somewhat problematic as it has been argued that those innovative firms are often the ones least able to afford investment in such activities and visa versa.

4. Applying the CSC framework to the Global Information Technology Sector

To illustrate the application of the CSC model framework to the investigation of innovation opportunities, the global information technology (IT) services sector is used. Over its relatively short history, the IT sector has been characterised by rapid innovation.

The peak of innovation activity in the sector was triggered by the emergence of the Internet, leading to the dotcom boom in the final stages of the 20th century. Some 155 publicly listed firms from this sector were analysed for their CSC during the period of 2001 to 2004. Content analysis techniques were used on business news reports from an electronic news aggregation service to measure absorptive capacity (operationalised as R&D activity), HC and INC (Lock Lee and Guthrie, 2007). A network representation of the IT market place was developed by identifying vendor alliance networks using the same content analysis techniques. Social network analysis (SNA) techniques were used to measure network centrality (Bonacich, 1987, Wasserman and Faust, 1994) and financial soundness was measured using Altman's Z-score, a financial measure of susceptibility to bankruptcy (Eidleman, 1995).

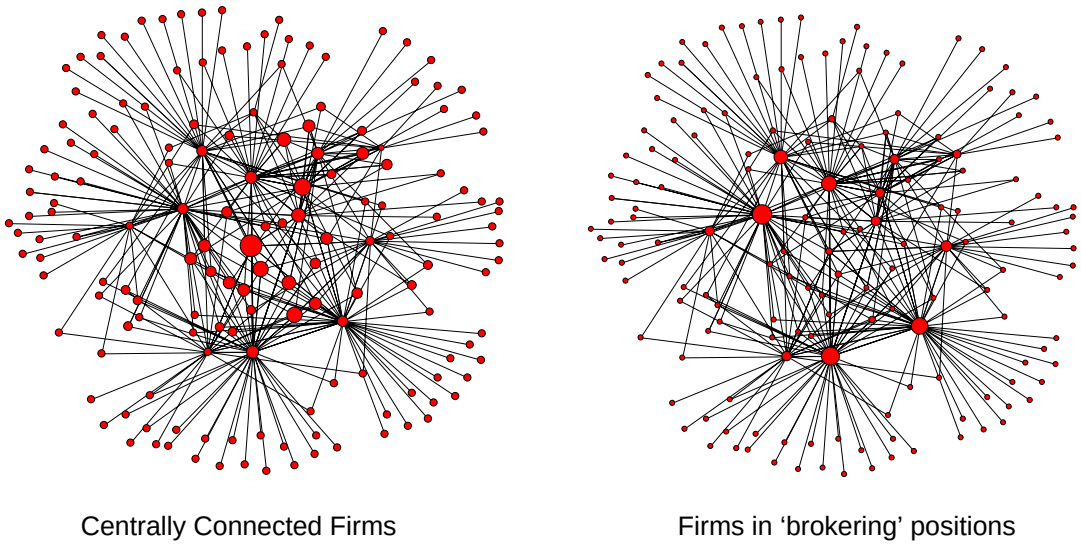

Figure 5 - Network Configuration of IT Vendors

Figure 5 shows the alliance network map for the selected IT vendor firms. On the left, those firms that are most centrally connected are indicated by the relative size of the nodes. On the right the relative size of the nodes reflect the brokering potential of the firms using a measure of betweenness, which indicates those firms that are best placed to reach and engage with disparate groups. Drawing from the three E's model of innovation, the centrally connected firms are best placed to exploit innovations potentially sourced from ideas throughout the network. However, it would require the assistance of the

broker firms to engage with them and the many sources of new and innovative ideas held within the disparate, often smaller firms found on the periphery of the network.

The above maps only deal with network centrality. The application of the full CSC model requires that measures of absorptive capacity, human capital, internal capital and financial soundness be used to further qualify the potential innovation roles that firms can play in the market place. Using a combination of content analysis of business reports and financial analyses from firms' traditional accounting reports, CSC indices can be established for each firm. How CSC is used to qualify a firm in terms of the important innovation roles of central connector and broker will differ. Lock Lee (2007, forthcoming) in his study of CSC and the global IT services sector found that the most important CSC attributes for small start-up firms was their ability to form alliances with more established and reputable firms, to retain distinctive human capital resources and to be able to sustain sound financial performance. For the more established centrally connected firms, the CSC attributes of absorptive capacity and human capital were the critical attributes. For potential broker firms they also had to retain good human capital resources and sustained financial performance on top of their preferential structural positioning in the alliance network.

In summary, SNA techniques can be used to characterise the market place in terms of networks. Once established, SNA centrality measures can be applied to identify those firms best placed to play the important central connector and broker roles in the innovation process. To further qualify a firm's ability to play these critical innovation roles, the other attributes of CSC being HC, INC and financial soundness need also to be addressed. When applied it is argued that the these additional CSC attributes also apply differentially to the different innovation roles of central connector, broker and also the firms on the periphery of the alliance network maps, who often act as a source of new ideas.

5. Summary and Discussion

The increased interdependency of firms in today's market places is a phenomenon driven by the growth in outsourcing of non core activities, globalisation and the technology platform provided by the Internet. The situation has lead to a plethora of new and innovative business models, substantially leveraging electronic commerce opportunities over the Internet. Inevitably as firms and organisations become increasingly reliant on partnerships and alliances to succeed, the question of relationships and their social underpinning comes to the fore. The IC research community has been largely focused on how firms and organisation can improve their performance through the careful management of their intangible assets. Reporting of IC has been a dominant research theme as well as research leading to an improved understanding of how IC components interact to create tangible outcomes. This paper has taken a position that concepts like CSC are too important to be simply categorised under the EC element of IC. It is argued that by using CSC as a dominant lens for viewing IC and corporate reputation, greater insights can be achieved in terms of operating in an increasingly networked market place.

A model of innovation from a networking perspective (the three E's) was introduced to illustrate how the impact of CSC could be assessed for its relative contribution to innovation across a market sector. The analysis identified the critical innovation roles of central connector and broker as well as locating those firms on the periphery of the innovation networks that are often the source of new ideas. It then went on to demonstrate how CSC could be applied to assess the potential that different firms in the global IT services market could contribute to innovation across the sector as a whole.

While this paper has been able to demonstrate how CSC can be effectively used to study innovation potential at a macro or market level, there are limitations when looking at innovation at the firm or personal level. The methods for measuring CSC were largely reliant on content analysing business reports. While the established firms usually have sufficient press coverage to generate a comprehensive CSC profile, smaller or newer firms often suffer from low media coverage and therefore a less reliable CSC assessment. The ability to content analyse self published company web sites mediates this to some extent, but suffers from the same issues as do IC analyses of company annual reports

(Goh and Lim, 2004, Guthrie and Petty, 2000, Guthrie et al., 2004), in that only positive IC reports are usually found.

In order to enable a more detailed assessment of how CSC influences innovation at a firm or individual level, further empirical research is needed. By substituting the content analysis methods with direct surveying or observation techniques in a case study environment, further insight could be gained into how successful brokers resolve the exploration, exploitation tension. It is anticipated that CSC attributes will play an important roles in successful innovation. To what degree the different sub-elements of CSC have on the different innovation roles at both the firm and individual level would be a profitable extension to the research presented here.

In summary, this paper has applied a broad CSC lens, which incorporates the traditional IC elements and the concept of corporate reputation, to its impact on business innovation. The “three E’s” model for innovation from a networking perspective was introduced to illustrate the links between CSC and business innovation. An analysis of the global IT services sector was used to illustrate its practical application. Finally, current limitations of the research presented were identified together with suggestions for potentially profitable extensions to this research.

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