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# **Social Capital Links between Management Decision-making, Intellectual Capital and Market Performance**

**Laurence Lock Lee**, Computer Sciences Corporation and Macquarie Graduate School of Management

## **Abstract**

Over the past decade or so Intellectual Capital (IC) research has focussed on building understanding through reducing IC into its component parts. IC measures within IC statements have been designed to parallel traditional financially- based reporting. While these efforts have helped to build our understanding of IC, the adoption of IC reporting by mainstream business has not been forthcoming. The lack of standards and the plethora of available measures can work against their use in management decision-making. Social Capital (SC) is proposed as a unifying concept for IC and hence market performance. A review of the literature is used to build arguments in support of SC as a unifying concept. The representativeness of the core IC elements of human capital, internal/structural capital and external capital in SC is shown. An additional argument for SC is its intuitiveness and the ability for executives to naturally 'sense' SC performance. A tentative SC measurement approach is proposed based on mining relationship information from corporate and publicly available information. A relationship mining approach makes SC monitoring in corporate environments feasible, and minimises the need for continuous and intrusive staff surveys. Examples of sociograms derived from relationship mining are provided to illustrate the approach.

## **Introduction**

The traditional line of enquiry for using intellectual capital (IC) and intangible assets (IA) influence on market performance, is to use IC statements to communicate the firm's value proposition to market actors. Since Skandia published its first IC statement in 1995, it is fair to say that the practice has not captured the imagination of mainstream management. The inability to effectively communicate the content and value story through the IC statements is seen as a key barrier to progress (Johanson, 2003). Attempts to simplify IC elements into single indices or a smaller suite of elements have suffered similar ambivalence from market actors. While efforts to introduce and standardise IC compliance reporting are admirable and necessary, history with conventional financial reporting standards has shown that the pace of adoption could stretch generations before a sufficient critical mass of reporting is achieved. In the meantime, we need other mechanisms to assist executives to leverage intangible values.

The literature to date has focussed on reducing the IC concepts into more discrete component parts for more detailed analysis and improved understanding. Little attention has been paid to synthesis of these component measures into unifying concepts that can practically aid in management decision-making. This paper steps back from a focus on IC statements and looks at using social capital (SC) as a unifying construct to assist executive managers both manage and report on intangibles. SC has its historical roots in public welfare, but more recently is gaining the attention of the corporate sector (Cohen, D. and L. Prusak, 2001). SC has been shown to be interrelated with IC and organisational performance (Nahapiet, J. and S. Ghoshal, 1998).

SC measurement schemes, using social network methods, can arguably provide executive management with simpler metrics for supporting management decision-making and lucid value creation story lines for communicating with market actors. Social network measures applied to markets can provide an indication of those organisations that are preferentially placed in the network of suppliers, customers, partnership and alliances that comprise a marketplace. Traditional social capital measures derived for public welfare applications (Stone, 2001, World Bank, 2003) can be adapted to measure relationship values at the inter and intra-firm level. As an alternative line of enquiry, SC may provide the missing link between intangibles and market performance.

The following sections will cover:

- a) A review of current SC measurement schemes and how they might be applied in a corporate context.
- b) A brief literature review that develops the linkages between SC and Market performance through IC and management decision-making.
- c) Preliminary measurement propositions, illustrated by examples.

### **Social capital as a unifying management concept**

Social capital can be defined as *'The stock of active connections among people: the trust, mutual understanding and shared values and behaviours that bind the members of human networks and communities and make co-operative action possible'* (Cohen and Prusak, 2001, p4). Social Capital as a concept has its roots in the field of sociology, being largely applied to describe organisational effects developed through socially derived connections in the broader communities, societies and cultures (Baker, 2001; Nahapiet and Ghoshal, 1998).

Traditionally, the context of SC for private sector firms is seen as their contributions (usually financial) to the communities within which they operate. While often seen as corporate philanthropy, claims have been made that such good corporate citizenship can contribute to improved business performance (Allee, 2000; Roman, Hayibor and Agle, 1999).

The traditional view of social capital, as described above, is 'industrial era' thinking. Many commentators have argued that we are currently transitioning from the industrial era to a knowledge era (Drucker, 1993; Savage, 1996), where the traditional factors of production of land, labour and capital are being replaced by the creation of value through knowledge. In the knowledge era, firms are becoming embedded within a complex web of interconnections that span markets, governments and communities. In this world, the concept of social capital can take on a whole new dimension for the 'firm'.

The following table identifies common themes for SC as identified by the Australian Bureau of Statistics discussion paper on measuring Social Capital (ABS, 2000), and a potential corporate interpretation:

**Table 1 Common themes for Social Capital**

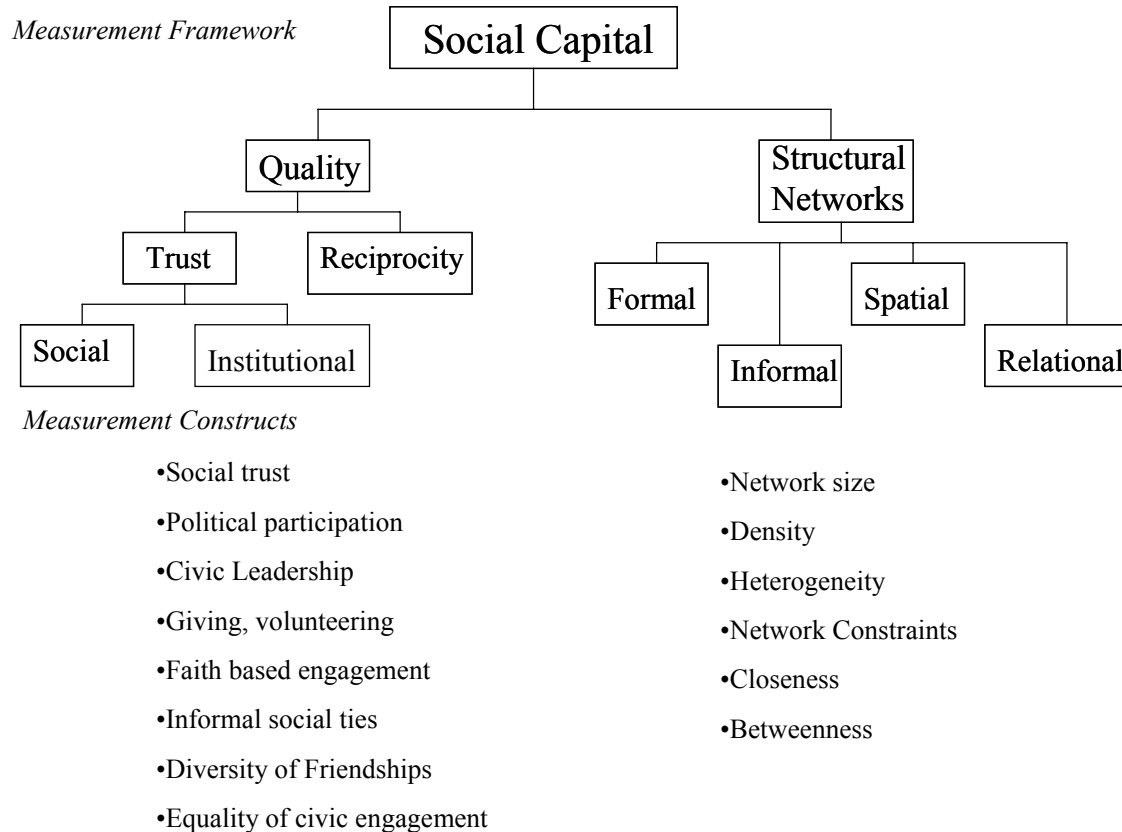
<b>Current Societal Context</b>	<b>Possible Corporate Context</b>
Social Networks and Support Structures	Communities of Practice, Industry bodies
Empowerment and Community Participation	Membership of Communities of Practice or Industry bodies
Civic and Political Involvement	'Bottom up' initiatives; Industrial body initiatives.
Trust in People and Social Institutions	Trust in Management. Trust in Community leadership
Tolerance of Diversity	Cross functional teams, cross industry initiatives
Altruism and Philanthropy	Investment in local communities, environment etc.

The increasing importance of intangibles was initially identified by Sveiby in his work on 'Company Knowhow' (Sveiby, and Risling, 1986). Since this time a plethora of literature has been published in support of new methods for measuring and managing intangibles (Sveiby, 1997; Edvinson and Malone, 1997; Lev, 2001a; Johanson et al, 1999). From Sveiby's Intangible Asset Monitor (Sveiby, 1997) and Kaplan and Norton's Balanced Scorecard (Kaplan and Norton, 1996), increasingly sophisticated scorecards have been built (Wall and Doerflinger, 1999; Liebowitz and Suen, 2000; Mouritson et al, 2000). Intangible Capital has been decomposed into intellectual capital, structural capital, human capital, customer capital, innovation capital, external capital, stakeholder capital, knowledge capital. Many of these concepts are interdependent and difficult to measure and operationalise. As an adjunct to the traditional balance sheet or profit and loss statement, they may eventually become useful analytical tools.

The literature to date has been focussed on expanding the concept of intangibles into ever increasing sub-components. Little research has addressed the need to now reduce this suite to the smaller set of heuristics that managers will need to manage intangibles on a day-to-day basis.

The proposition is that SC is a leading driver and source of managerial heuristics for creating increased intangible asset value, subsuming a majority of other intangible concepts. An organisation exhibiting excellent social capital would be seen as one where internal departments are heavily interconnected, sharing a common vision and language. The firm would also exhibit similar traits externally, easily forming profitable alliances and partnerships to improve its overall market performance. Human interaction is a fundamental premise for building social capital. It has also been argued that the human dimension accounts for at least half of all IC value to an organisation (O'Donnell and Berkery, 2003).

The following schematic summarises various SC measurement schemes (Stone, 2001; ABS, 2000; Borgatti, Jones and Everett, 1998; World Bank, 2003):



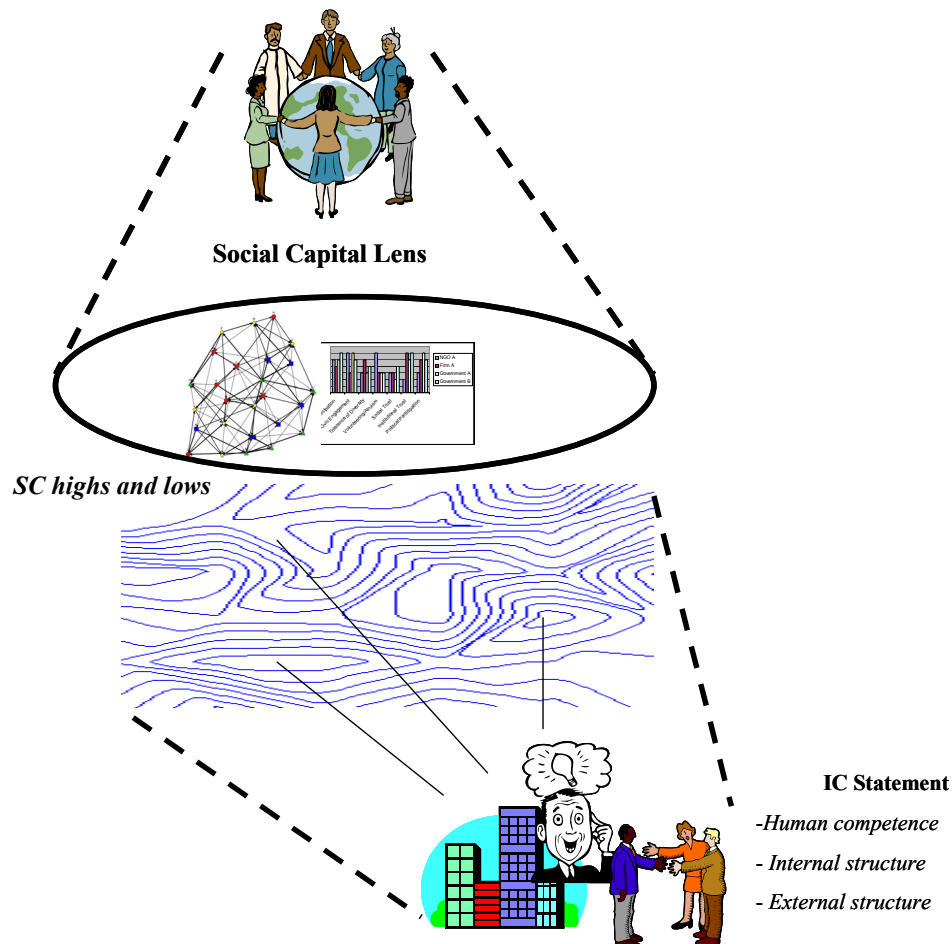
**Figure 1– Social Capital Measurement Schemes**

SC measures have two dimensions, quality and structural. The quality of social relations can be divided into social trust, which is personal, and institutional trust, which works at an organisational level. Reciprocity refers to ‘in-kind’ exchanges that are not necessarily economically based, typically ‘returned favours’. Measurement constructs form the basis of SC survey instruments, where typically respondents are asked to rate these dimensions along a qualitative scale. The constructs provided are just a sample typical of those used in an SC quality survey.

The structural network measures are based on measuring connections. Survey respondents are typically asked whom they connect or interact with (i.e. nominate their ‘ties’). Often the relative strength of a tie e.g. strong, moderate, weak is also collected. A social network map (sociogram) can be generated from the data collected to assist with visualising the nature of connections. Statistical calculations on the number and nature of ties can then provide measures like network size, density, heterogeneity. Using demographic information collected about the respondents, the networks can be studied at the individual or aggregate (firm, organisation or national) level. These measures in turn can be used to infer dimensions like degree of formality, spatiality, relationships.

More recently, network maps are being drawn from information mined from electronic sources e.g. discussion groups, e-mail, Internet (Lock Lee, 2003, Bontis, 2003, Tyler, J., D. Wilkinson, et al., 2002), which obviates the need to rely on expensive and intrusive survey methods. SC measures will need to be a combination of survey and electronic content analysis methods in order to achieve an acceptable level of objectivity and reliability.

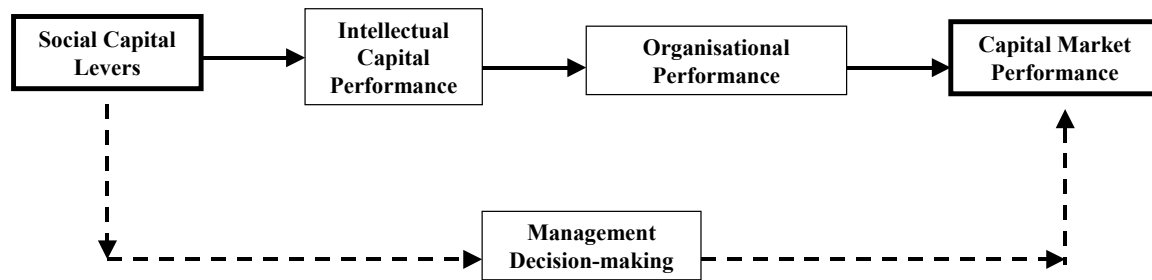
Collectively, the structural and quality measures provide a snapshot of SC (and potentially IC) of the population under study. The SC report would have two parts, covering the quality and structural dimensions. The quality part of the survey would ask respondents to provide a rating for questions reflecting support for dimensions like collaboration, inter-business unit trust, quality of alliance partnerships etc. The survey data would be processed to provide a picture of the state of SC (and therefore IC) for the population under study. In effect SC is a lens through which IC is viewed, as illustrated below:



**Figure 2 – Social Capital Lens**

## Social capital and market performance

In this section a brief literature review is provided to illustrate the potential connection between Social Capital and Capital Market Performance (MP). The principal research proposition is that SC can, through informing executive management decision-making, have a direct impact on share market valuations. This proposition is unique to the extent that no literature could be identified that specifically addresses this proposition fully. Therefore, the intention is to build support for this proposition through critically reviewing the literature which indirectly supports the influence of SC on MP through its influence on firstly IC / IA, then organisational performance (OP) and finally MP.



**Figure 3 – Framework for SC to MP Review**

Identifying how this proposition can be tested is outside the scope of this review, but for completeness, the following mechanism is offered:

- Capital market performance has previously been defined as total shareholder return and is readily measurable using publicly available information for listed companies.
- Intangible Asset Performance could be measured using the proxy of market to book ratios.
- Good organisational performance can be problematical, as in the literature this often refers to any outcome that the authors feel is beneficial to the organization. It could however be represented by a common suite of balanced scorecard or intangible asset monitor measures.
- The impact of SC interventions could therefore potentially be tested through its impact on market to book ratios and balanced scorecard metrics. These measures could in turn be tested against total shareholder return.

The attention to the importance of intangible assets has grown in concert with the growing gap between market valuations and book valuations. The phenomena began in the early 1980s and by the 1990s the trend was entrenched. The dot-com crash provided a sobering lesson on the fragility of intangibles driven share prices. The intangible balance sheet was a plausible response to the phenomena (Sveiby, 1997). IC statements were largely inspired by the need to find an alternative accounting mechanism (Lev, 2001a) for intangibles. Many flavours of IC reporting have subsequently been created using a plethora of metrics for intangible elements (Bontis, N., Dragonetti, et al., 1999). More recently, researchers have recognised that numerical indicators are not sufficient for communicating the value proposition around intangibles and have introduced narrative techniques as an adjunct to the numbers (Moritsen et al, 2002). The use of SC elements can be seen as another diversion or adjunct to numerical measures.

The following table summarises selected critical literature that address each of the links in the influence chain from SC to MP:

**Table 2 – Literature focus by research element**

Author	SC	IC/IA	OP	MP
Nahapiet and Ghoshal, 1998	X	X	X	
McElroy, 2002	X	X	X	
Hazleton and Kennan, 2000	X		X	
Pearce and David, 1983	X		X	
Burt, 2000 <sup>e</sup>	X		X	
Gargiulo and Rus, 2002 <sup>e</sup>	X		X	X
Rowley, T., D. Behrens, et al. (2000).	X		X	
Allee, 2000	X	X		
Low, 2000 <sup>e</sup>		X	X	X
Hurwitz et al, 2002 <sup>e</sup>		X	X	X
Holland, 2003		X	X	X
Mouritson, 2002		X	X	
Johanson, 2003		X		X
Wurzburg, 1998		X		X
Bosworth and Wharton, 2000 <sup>e</sup>		X		X
Mouritson, 2003		X		X
Edvinsson, 2000		X		
Simon, 2001			X	X

<sup>e</sup> = Papers that have an empirical research component.

Table 2 identifies the research elements addressed by the literature selected for review. This selection is somewhat representative of the literature at large. There are numerous publications linking SC to OP, a few relating SC to IC and no literature attempting to link SC directly to MP as yet. The IC literature has concentrated on the linkages between IC/IA and OP but also demonstrates a healthy fascination with the impact of IC/IA on MP. The latter has largely been driven by the phenomenon of rapidly increasing market to book ratios over the past two decades. Overall, the literature reflects the immaturity of the field, with a majority of papers proposing new theories or propositions based on academic argument. Empirical research papers are largely limited to quantitative studies of publicly available financial or market metrics and quantitative studies using social network analysis.

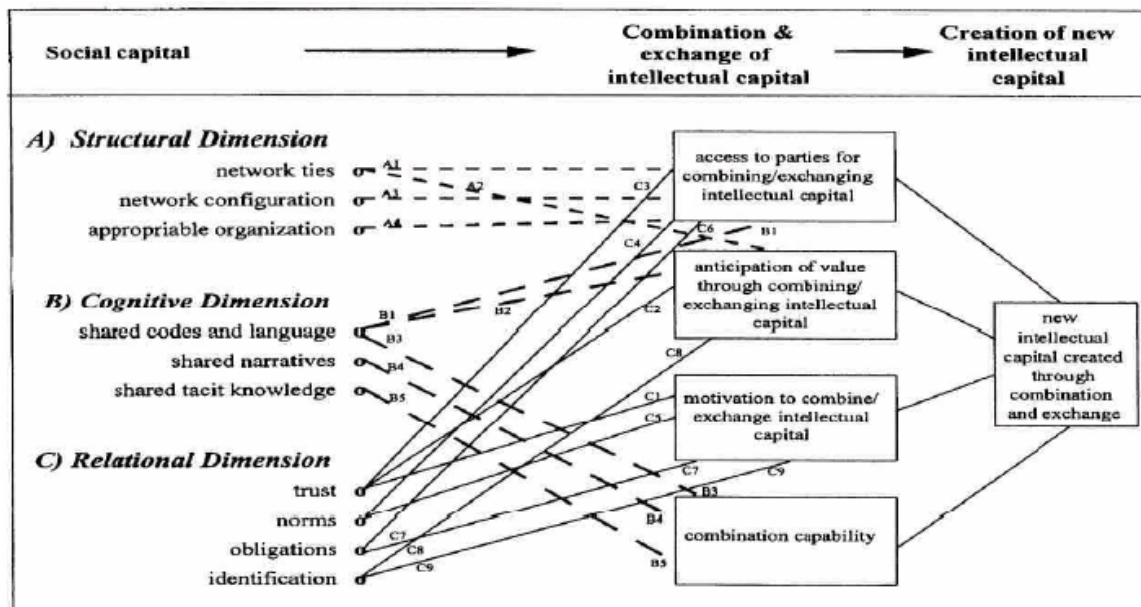
### **Relating social capital to intellectual capital**

Both SC and IC are new disciplines, with the bulk of the literature being developed over the past decade or so. The SC and IC research themes had developed independently until the late 1990s, when Nahapiet and Ghoshal published their seminal work on ‘Social Capital, Intellectual Capital, and the Organizational Advantage’ (Nahapiet and Ghoshal, 1998). In this work they proposed that a firm’s capability to create SC provides a conducive environment for IC creation. They posit that firms are better placed than markets to create social capital with consequential organisational advantages.

The ability of firms, as social communities, to specialise in creating and sharing knowledge was seen as offering a contrasting ‘theory of the firm’ to the traditional transaction cost theory. The ‘theory of the firm’ discussion relates to what should be kept inside the organisation and what should be left to the market. The authors draw in the work of Nobel Laureate, Herbert Simon, who agrees that efficiency of communications, rather than transactions, should be the determinant. Simon also acknowledges the important role that

social and behavioural dimensions play in efficient communications and hence organisational performance (Simon, 2001).

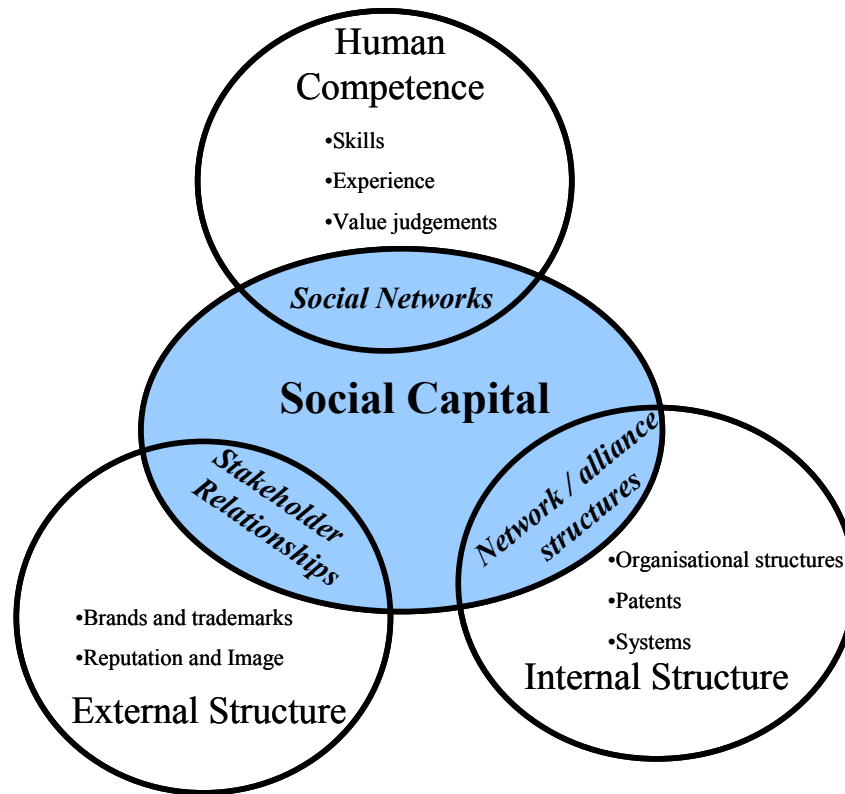
The following model summarises the argument that the Nahapiet and Ghoshal follow for linking social capital to the creation of new intellectual capital. IC creation is seen as being created through the combination and exchange of knowledge. SC provides the mechanism that maximises knowledge combination and exchange.



**Figure 4 –SC/IC model** (Nahapiet and Ghoshal, 1998, p251)

One can see from this model that their characterisation of IC is more related to general knowledge management concepts than the particular characterisations of IC that have emerged from Scandinavia and Sveiby's work on intangible assets (Sveiby, 1997). Interestingly enough, their decomposition of SC into structural, cognitive and relational dimensions, in building their arguments, is not dissimilar to Sveiby's decomposition of IC into Human, Internal and External capital dimensions used to build an argument for IC impacts on organisational performance.

An alternative construct linking SC to the traditional IC elements is provided below:



**Figure 5 – Social Capital and IC**

Figure 5 demonstrates the relationship between IC, as it is traditionally characterised, and SC. Some elements of IC are commonly defined as part of SC e.g. an individual's social network, a firm's alliance structures. Stakeholder relationships are both SC and IC elements and provide a tangible linkage between SC and IC. Other IC elements like reputation, patents, skills and experience, that may not be explicitly defined as part of SC, do contribute to SC by acting as 'attractors' for potential connections, and therefore SC development. For example, a firm looking to develop an alliance arrangement with another firm will be attracted by elements like reputation, brand and the skills and experience of the staff in these prospective organisations. One could therefore argue that an organisation achieves excellent SC by collectively maximising its external, internal and human capital.

McElroy (2002) has since argued that the traditional IC constructs have been remiss in not specifically including social capital within its constructs. He provides an alternative scheme by using the IC construct developed by Edvinsson (Edvinsson and Malone, 1997) to illustrate where SC fits. McElroy coins the term 'Social Innovation Capital' to promote an argument that organisational advantage is the result of innovation, and that innovation is socially constructed.

Allee (2002) has similarly criticised the current traditional treatments of IC for their limited focus on the commercial enterprise and their disregard for environmental and social responsibilities. Allee goes on to redefine 'value' in macro-economic terms, adding social citizenship and environmental health into an expanded IC framework.

Nahapiet, Ghoshal, Allee and McElroy have presented quite different arguments for the linkages between SC and IC, largely using normative arguments supported through the literature.

## Relating social capital to operational performance

While there is a substantial suite of literature on SC as it relates to public welfare, the proportion of SC literature related to the commercial sector is more limited. It is perhaps the literature around the structural elements of SC, as it pertains to private sector organizations, that have attracted most attention. Burt (2000) has been one of the early commentators on social networks as it pertains to corporate performance. Recognised for his work on 'structural holes' and the organisational advantage in bridging them, Burt reports on several research studies providing strong evidence on the positive impacts of social networks on organizational performance. The largely quantitative studies have drawn correlations between social network performance and personal performance, promotions and compensation received. At the organisational level, Burt identifies examples of advantage gained from spanning structural holes, but concedes that closed networks (Coleman, 1990) become important when looking to pursue the advantage created through spanning the more open, exploratory networks.

Rowley, Behrens and Krackhardt (Rowley et al, 2000) have pursued the different utility of open and closed networks in their analysis of the steel and semi-conductor industries. Using comprehensive quantitative techniques, they were able to confirm that for fast changing industries (e.g. the semi-conductor industry, characterised by exploration for the next opportunity, open networks are beneficial). Their networks show a preponderance of weak ties developed through partnerships and alliances. Alternatively, the firms in this industry operating within closed networks, with many strong and redundant ties, perform poorly. The situation was reversed when the mature and slow changing steel industry was studied. In this industry it is in the exploitation of best practices, more so than their discovery, where the advantage lies. Closed networks were seen as most beneficial for exploitation applications.

Pearce and David (1983) have looked at the impact of organisational design on social network structures and consequent impacts on firm performance. They provide a Design-Performance model which contrasts mechanistic and organic organisational designs and the social network structural properties that they generate e.g. coalitions, isolates, stars, reciprocity. They then generate a set of 18 hypotheses reflecting the performance impact of say high reciprocity verses low reciprocity. The testing of the hypotheses had been left to later study. Being an early paper for the area it was able to set the scene for the next two decades of testing of the types of hypotheses provided here.

Hazelton and Kennan (2000) put the case for SC and organisational advantage around the improved communication afforded to organisations with strong SC. Reduced transaction costs, through less need to check transactions, improved productivity, efficiency, quality and customer satisfaction are amongst the other benefits attributed to SC. The paper compiles evidence drawn from the studies of others and therefore is somewhat short of compelling evidence for the claims. Nevertheless, it does summarise the general sentiment around what is seen as the organisational advantages of good SC.

Gargiulo and Rus (2002) provide an example of the field research that has emanated from the early academic research. The authors conducted quantitative studies on a representative set of Slovenian firms in the 1990s who experienced a sudden increase in market uncertainty which threatened their survival. They were able to demonstrate that those organisations with a cohesive management team and strong external networks were able to better survive the market shock than those whose networks were more fragmented or insular.

One attractive feature of SC research, especially the structural aspects, is the quantitative formulations available through the science of social networks. Many algorithmic formulations of social network characteristics have been designed and tested over the past twenty years (Wasserman and Faust, 1994). Such formulations lend themselves well to quantitative study and the opportunity to conduct a broader range of field and case study research. In contrast we see a paucity of field and case study research in the IC field, with most studies needing to rely on either literature-based or more qualitative research techniques. The exception is the suite of quantitative studies attempting to link intangible asset performance to stock market values, which is covered in the next section.

### **Relating intangible asset/intellectual capital performance to market performance**

The ability to predict stock market movements in this age of intangibles is motivation enough for many researchers to attempt to devise the 'ultimate intangible performance index'. Lev's study of intangibles (Lev, 2001a) and Hurwitz's report on his intangible performance index measure (Hurwitz et al., 2002) both use this index in their studies in relating management practices to intangible performance. Lev and Gu were able to demonstrate an ability to identify under- and over-valued companies from a sample of 2,000 companies from the period of 1982 to 1999 (Lev, 2001b).

Low (2000) developed a value creation index, which statistically correlated a number of intangible attributes like innovation, quality, customer relations, management capabilities with actual market movements. An interesting finding from this work was that with some elements, the actual correlations did not coincide with analyst perceptions that had been derived from previous survey data. The inference in this case was that analysts' actions are not necessarily what they might perceive and communicate via surveys.

Strassmen (2000) builds on Lev's work to create a Knowledge Capital Index. Stern Stewart & Co's EVA could also be considered as an index correlated to market performances. Bosworth and Wharton have studied the correlations between intangible asset performances and market valuations of 146 public companies in the UK between 1990 and 1994. In contrast to the previous authors they found that traditional intangible asset performance measures were not able to explain market performance variations and that firm specific factors were having a greater impact (Bosworth and Wharton, 2000). All of the above authors present compelling arguments for the attractiveness of their different indices in being able to track or predict market performances.

A number of authors have offered academic or qualitative research arguments around the use of IC information by analysts and fund managers working with the capital markets. Ulf Johanson offers five reasons why capital market actors are ambivalent about IC indicators (Johanson, 2003). He argues the most significant factor is the mentality of capital market actors as a group. Johanson's nomination of the fixation on financial numbers, the aggressive, competitive nature and closed social systems describing the world of the capital market actor, leaves little room for the inner reflections required in analysing an IC statement.

Looking at Johanson's arguments from a SC viewpoint, one could posit that capital market actors are part of a strong 'closed network' (Coleman, 1990) whereas IC statement providers are looking for the reader to explore the implications of the data and information contained within them (i.e. an 'open network'). Mouritson et al in their report on the use of IC statements by Danish firms (Mouritson et al., 2002) argues for the numeric indices of IC statements to be accompanied by 'knowledge narratives' for communicating the value to the

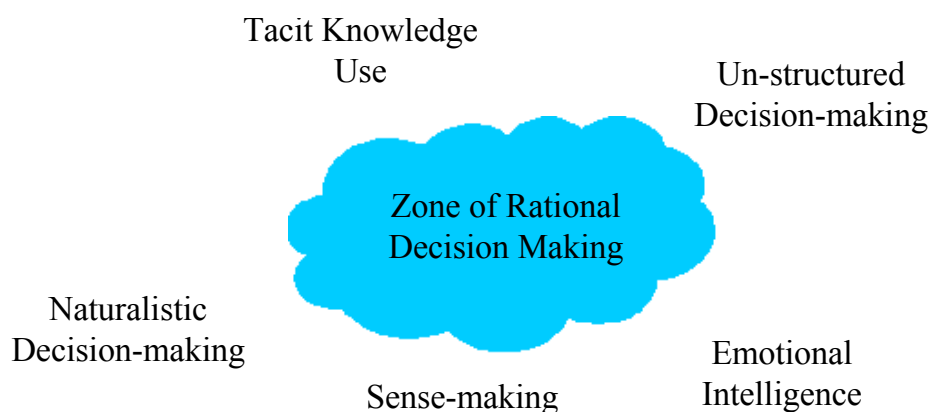
market actors. Gaining agreement on standardisation of IC statement elements in itself is not a given. Wurzburg argues that the private sector is not capable of the level of co-operation required to achieve a standard IC statement and that governments have a role in guiding the reporting of IC information that might allow investors to make better informed decisions (Wurzburg, 1998).

In a later publication, Mouritson argues that the IC standard reporting movement would contribute to the disentanglement of IC concepts from other potentially confounding business concepts while the narrative would contribute to communicating the knowledge creation story, he calls entanglement (Mouritson, 2003). The rationale would be that the value story might traverse the network of capital market actors, supported by the standard metrics and hence impacting market valuations. Johanson however argues that the numbers aren't seen as trustworthy by the capital market actors. The gap between the networks described by Johanson is what Burt would refer to as a 'structural hole' (Burt, 1992). Therefore what is required, are market actors who are 'boundary spanners' and as such, would generate organisational advantage for themselves or their employers. Whether Mouritson's knowledge narrative approach is sufficient to recruit the required boundary spanners remains to be seen.

Having market actors understand the 'knowledge value story' appears to be key. Holland is particularly interested in the impact on the market of the inconsistent interpretation of IC information by market actors (Holland, 2003). In recent years we have seen unprecedented swings in market prices that one could hypothesise is largely due to this effect. Holland adds further insight into the world of financial analysts and fund managers, postulating that their own knowledge intensive value creation chains are badly fractured. From an SC viewpoint, one might suggest that the capital market actor networks are only tight and closed from a behavioural viewpoint. From a knowledge sharing viewpoint Holland is suggesting that the industry is far from a closed network, but more like a highly fragmented network. The competitiveness in the industry, is in fact reinforcing the knowledge silos.

### SC Impacts on Management Decision Making

Ultimately it's the decisions than executive management make that have the most direct impact on a company's market performance. Operational level decision-making is largely related to sustaining a consistent level of performance. It is however the strategic level decision-making that is likely to impact longer-term market performance. Decision-making in response to unforeseen events e.g. natural disasters, could also impact on short term market performance. The decision-making literature is particularly focussed on how managers make decisions under uncertain conditions.



**Figure 6 – Decision-making and 'Bounded Rationality'**

Simon (1979) framed the concept of 'bounded rationality', identifying the existence of limits to which rational decision-making is practiced by managers. Nelson and Winter (1982) write of 'routine' in decision-making as a distinctive package of economic capabilities for the firm. Schroeder and Benbasat (1975) have demonstrated how information utility in support of decision-making falls off as environmental complexity increases. The more recent literature addresses the area of decision-making that falls clearly outside the rational decision-making zone shown in Figure 6. Naturalistic decision-making refers to in studies of observed human behaviour of decision-makers (Lipshitz, Klein et al, 2001). Sense-making identifies a decision-making process where a stimulus or action is made to create data to 'sense' the environment within which a decision is to be taken (Weick, 1988). Emotional Intelligence (Bourey and Miller, 2001) refers to one's capacity to understand, value and wisely manage emotions in relationship to self and others. Tacit knowledge used in decision-making relates to that knowledge that has not, or cannot be made explicit, but is tacitly held within the mind of the decision-maker. Polanyi (1967, p4) states this simply as 'we know more than we can tell'.

While the above concepts taken from the decision-making literature are far from complete, it could be considered representative as it relates to management decision-making in corporate environments. If we look at each of these concepts we can see the potential role that SC might play. In complex environments it would be rare to see decisions taken individually i.e. independent of a social context. Emotional Intelligence and Sense-making explicitly talk about building to decisions through interactions or inputs from others. Tacit knowledge usage and naturalistic decision-making research is focussed on individual cognitive processes. Both concepts explore how individual decision-makers draw from their inherent experiences to inform their decision-making. Where SC relates to these concepts is when expertise needs to be transferred. Tacit knowledge or naturalistic decision-making capabilities cannot be transferred through explicit or codification methods. It is only through human-to-human interaction that such a transfer can be achieved.

In summary, the argument has been made that the types of management decision-making that might have the most impact on a company's market performance, will fall outside the zone where rational choice methods can be utilised. SC, it is argued, plays an important role when the complexity of the environment moves decision-making beyond the rational decision-making zone.

## **Preliminary measurement methods and examples**

The proposition has been presented that executives can be bamboozled by the plethora of intangibles-related measures commonly found in IC statements. I have proposed that SC represents a synthesis or reification of IC elements that executives can more easily operationalise in their decision-making. Characteristically, SC in terms of how well staff relate or collaborate with each other, is something that can easily be sensed by external observers, in the same way that one can quickly identify a sense of community within a neighbourhood. SC measurement however can be problematical, with most methods to date relying on qualitative survey techniques. Reliance on repeated survey methods becomes difficult in the corporate environment, where anything more frequent than on an annual basis becomes impractical.

In this section a tentative approach to measurement of SC in a corporate environment is offered. A key element of the proposed approach is the use of information mining to discover relationship patterns from electronic communication data. For example, e-mail traffic, discussion forums, electronic directories, instant messaging logs, privacy issues notwithstanding, can provide a rich source of data for relationship mapping (Bontis et al, 2003, Tyler et al., 2002). Commercial products are now becoming available for mining relationships from corporate data, typically in support of sales and support functions<sup>1</sup>. Relationship mining provides a facility for monitoring SC patterns on a day-to-day basis if required, without the need for intrusive staff surveys. While early indications are that electronically derived relationship maps are characteristically similar to survey method results (Lock Lee, 2003), survey data will still be required to periodically authenticate or qualify the derived relationship patterns. These surveys however can be limited to areas where the electronically derived relationship maps prove contentious.

The following suggestions have been constructed from bringing together elements of consulting and research projects conducted over a number of years. It is preliminary in that it is not complete and at this stage is simply a suggested way forward, illustrated by examples of partial solutions. It also draws from network measures of social capital drawn from the literature (Borgatti et al, 1998). The following sections look at the concept of SC at three levels:

- a) the market place
- b) the firm
- c) the individual

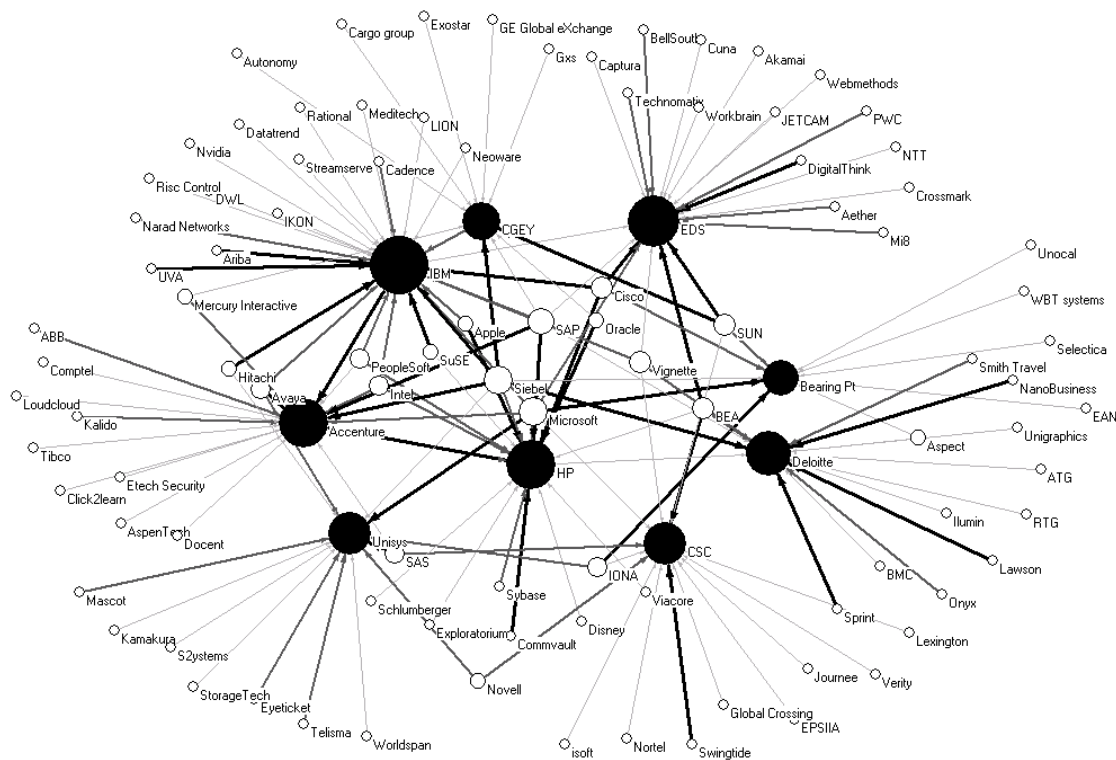
### **Identify your company's SC in your market place**

This step is looking to measure your company's SC within its marketplace. Ideally this would measure relationship patterns that show your company's and your key competitor's relationships with suppliers, customers and alliance partners. SC metrics could then be used to identify how you might compare with your competitors in terms of network centrality e.g. how well are you placed to benefit from information and knowledge traversing the network of market players.

The relationship map below is a visual representation of the IT services market. The map shows the major IT services providers and their suppliers and alliance partners. Customers aren't shown on this map. The map was derived by mining alliance information from the Internet and should be considered a starting point only. The black bubbles are the key players in the IT services market. The relative size of the node represents the number of connections identified. The thickness of the lines represent a relationship strength based on the number of times a connection is mentioned.

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<sup>1</sup> For an example see Visible Path (<http://www.visiblepath.com/>) or Contact Network ([www.contactnetworkcorp.com/](http://www.contactnetworkcorp.com/))



**Figure 7 – IT Services Market**

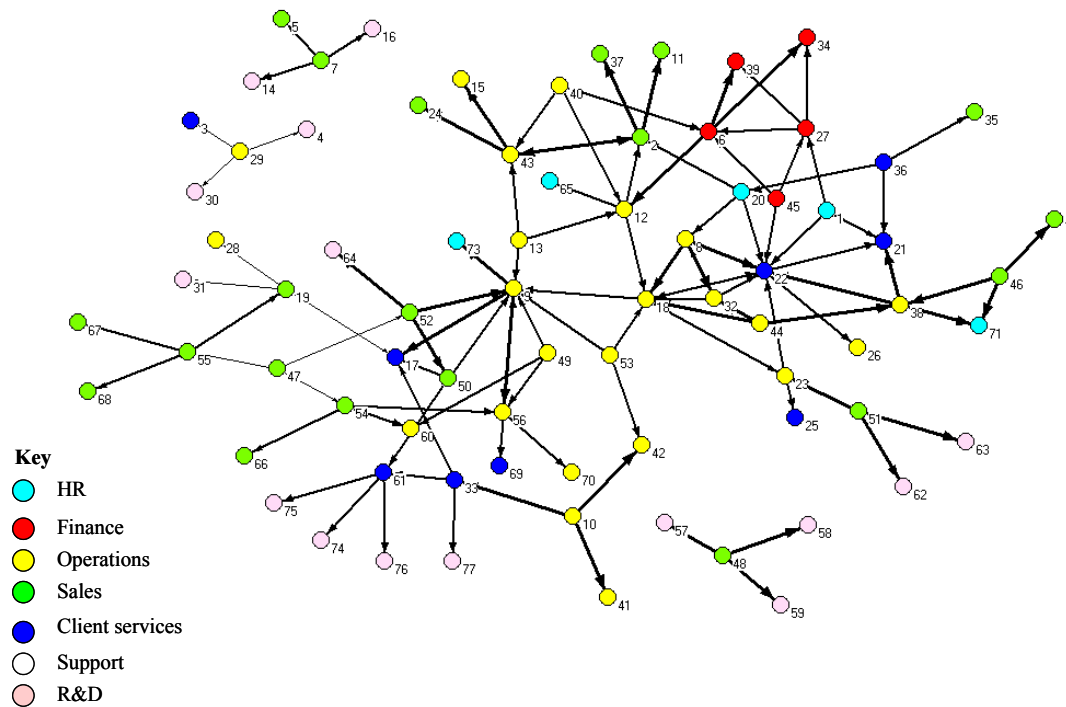
One can see from the map that IBM has the most number of connections. However, in analysing the network for those companies with most reach across the network, and therefore most likely to benefit from information and knowledge traversing the network, Accenture, Deloitte and EDS are identified as having the most reach across the network<sup>2</sup>. This would indicate that while IBM has the most connections, its connections may be more connected to each other, than across the network, hence limiting IBM's reach. Reach is a measure of centrality within the network, a core concept for SC. If your firm is highly centrally positioned within the market place, then one could infer that it is best placed to benefit from the information and knowledge flows across the network. It should be noted however, that Social Network Analysis measures need to be used with care when the full network has not been represented.

The network above only represents the market from the viewpoint of the major players. The quality of relationships has only been determined indirectly using content analysis techniques. Since it is not feasible to present a complete network (where all players are assessed), one needs to be comfortable that the representation is robust by using complementary methods of analysis like reviewing the results with market analysts, interviewing executives from the key players, targeted surveys to authenticate or dispute the identified relationships. These additional techniques are required to achieve a more accurate assessment of the quality of the key relationships.

<sup>2</sup> Calculation made using Borgatti's Key Player algorithm ([www.analytictech.com/keyplayer.htm](http://www.analytictech.com/keyplayer.htm))

## Identify Your Internal SC

As with external SC, internal SC can be derived from a combination of survey and information mining methods. The following figure illustrates a typical social network analysis looking at how well the different divisions within the firm interact.



**Figure 8 – Internal Social Capital**

Unlike the external SC measures the nodes in this case are individuals within the company. Borgatti et al., (1998) identify SNA measures appropriate for measuring SC depending on whether one is focussed on individuals or groups. How the individuals relate or form groups, both formal and informal, and how these groups interrelate, constitute internal SC. A company's organisational chart is a representation of the formal organisation. The sociograms, when categorised according to formal departments, can identify relationships within and between departments. It can also identify how well the management structure is performing by assessing how well positioned managers are in the network. The quality of internal SC could then be assessed by how well the actual network maps to the formal organisational design e.g. are the linkages between R&D, Sales and Operations flowing as designed, or are the HR and Finance functions adequately relating to the main lines of business?

Sociograms can also be categorised according to other attributes e.g. work disciplines like engineering, accounting, project management etc. These categories may be formally recognised as part of a matrix organisation or could be left to informal communities of practice to manage. Either way, the sociograms can help visualise the relative strengths of these disciplines. The importance of these informal groups will be dependent on the company

(e.g. one would expect a building and construction company to have a strong and thriving project management discipline, a bank would expect to have a strong finance discipline).

Ideally high internal SC would see highly cohesive groups with multiple connections and high redundancy. Tightly connected groups infer high levels of knowledge sharing and collaboration. Individual groups can be assessed using SNA measures like network densities. Key individual brokers linking the different groups can then be identified. High SC would see the key operating groups being strongly bridged by multiple brokers.

Tsai and Ghoshal (1998) used the social network measure of ‘betweenness’ to quantify levels of social interaction. Their research identifies social interaction and trustworthiness as the key SC factors impacting product innovation. Additionally, these groups need to have strong bridges to other groups to enable cross-functional performance and to guard against dysfunctional information silos forming. Burt (1997) identifies these bridging roles as spanning structural holes within an organisation’s networks and being critical to identifying the most rewarding business opportunities.

### **Individual Social Capital**

SC measured at the market and intra-firm level is essentially aggregations of individual social interactions. Individuals can assess their personal SC using the Nahapiet and Ghoshal (1998) formulation of SC into structural, relational and cognitive dimensions.

#### *Structural Dimension*

- How expansive is your network of business connections (number of ties)?
- How are you positioned within your organisation’s networks?
- Do you have many peers i.e. member of a closed community?
- Do you effectively span multiple areas?
- Do you have a few very close connections, or a large number of weaker connections?

From a structural perspective, an individual with a large number of ties, spanning multiple departments or disciplines is better placed structurally to generate business advantage both for themselves and their organisations.

#### *Relational Dimension*

- Do you consider yourself a trusted partner to most of your connections?
- How trustful are you of your own connections?
- How committed are you to ‘returning favours’? (Reciprocity)
- Would you sacrifice a business relationship to meet a financial target?
- How open are you in your business dealings? Do you accept criticism easily? Do you welcome diverse opinions from your connections?
- Do you identify easily with the groups that your work with?

The relationship dimension measures how open and honest you might be with your business connections, how well you identify with them, and ultimately the level of trust in the relationships you have.

### *Cognitive Dimension*

- Do you participate in developing a 'shared language' with your business connections?
- Do you regularly share stories and anecdotes from and between your business connections?
- Do you regularly persevere in dialogue with your connections to the point where shared understandings and visions are achieved?

The cognitive dimension measures how engaged you are with your business connections, in developing and sharing a common understanding of issues or opportunities that you share.

High levels of individual or personal SC have been shown to be correlated with personal career benefits such as better jobs, higher incomes and earlier promotions (Granovetter, 1995; Meyerson, 1994; Lin & Dumin, 1986; Burt, 1992). Individuals with high SC benefit from leveraging the strength of their overall network of connections over and above their own competence or human capital. Human capital can refer to individual capability, whereas SC generates the opportunities to apply it (Burt, 1997).

SC is one of the few business metrics that has meaning at the levels of the individual, the firm and the marketplace. Research to date supports the proposition that high levels of SC at the individual level, propagates to the levels of the firm and the marketplace. However, more empirical work is required to finally connect high levels of SC with market performance, as measured by traditional financial measures.

## **Summary**

This paper has taken some tentative steps towards the use SC as a unifying concept for synthesising the plethora of intangible asset decompositions that have been conducted by IC researchers over the past decade or more. The need to reconstruct a unifying concept has been driven by a lack of progress in generating a standardised IC statement adopted across the general business community. What company executives now need is a reification of IC statement concepts into a single concept that will help them to effectively assess their intangible asset and market performance.

Initially the concept of SC has been recast for use in the corporate sector. SC has been traditionally applied to public welfare applications like community welfare, public health or fighting poverty in third world countries. In recasting SC in the corporate context, some measurement challenges become evident. The ability to make use of survey instruments is hard to sustain in the corporate environment. However, many of the SC characteristics and tools can be effectively mapped across to a corporate context with only modest modification.

Linking SC to market performance is also breaking new ground. A review of the literature identified linkages between SC and IC/IA and SC and Operating Performance. The research linking IC/IA and market performance was also reviewed. From this review of the literature the proposition that SC impacts market performance through IC/IA is offered. A simplified model of the relationship between SC and the core components of IC i.e. Internal/Structural

Capital, Human Capital and External Capital is then provided through this synthesis of the literature.

An exploration into measurement schemes was conducted. The use of relationship mining from both corporate and publicly available information is offered as a means for providing an SC monitoring capability that does not rely on intrusive survey techniques. Examples are provided for assessing SC at three levels; the marketplace, the firm and the individual. Finally the argument that high levels of SC will propagate to the level of the firm and the marketplace is put forward. What is left to do is the empirical work to ultimately connect high SC with exceptional market performance.

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