

# ROLES OF SOCIAL CAPITAL IN COLLABORATIVE IS PROJECTS

Bhandar, Mamata, National University of Singapore, 3 Science Drive 2, Singapore 117543, [mamata@comp.nus.edu.sg](mailto:mamata@comp.nus.edu.sg)

Pan, Shan-Ling, National University of Singapore, 3 Science Drive 2, Singapore 117543, [pansl@comp.nus.edu.sg](mailto:pansl@comp.nus.edu.sg)

Tan, C.Y. Bernard, National University of Singapore, 3 Science Drive 2, Singapore 117543, [btan@comp.nus.edu.sg](mailto:btan@comp.nus.edu.sg)

Goh, Puay-Guan, Manager, Operations and Technology , Sembcorp Logistics, 30 Hill Street, #05-04 Singapore 179360, [pggoh@yahoo.com](mailto:pggoh@yahoo.com)

## Abstract

*IS projects have been extensively studied, yet continue to be riddled with problems. The concern is aggravated in collaborative IS projects since they involve dual challenges of managing inter-organizational relationships and of integrating diverse knowledge bases across organizations that may possess distinct strategic goals and conflicting interests. Prior research has indicated that social capital, a resource based on social relationships, positively influences inter-organizational relationships and knowledge integration. The aim of this study is therefore to identify the roles through which social capital can be leveraged to manage collaborative IS projects, viewing them from an inter-organizational and knowledge integration perspective. Using the case-research strategy and an interpretive approach, a four-organization (three clients and one IT service provider) collaborative IS project is studied. The three clients were business partners for seven years when they embarked on the collaborative project. The study finds that social capital can be leveraged as a Motivator, Integrator and Facilitator; during the various stages of a collaborative IS project. In doing so, the study informs IS projects through two new perspectives (knowledge integration and inter-organizational relationships) and by leveraging a resource that inherently emerges in a structure (e.g. collaborative project) due to the opportunity, motivation and ability (OMA) of participating organizations.*

*Key words: Collaborative IS projects, Knowledge integration, Social capital, Inter-organizational relationships*

## 1 INTRODUCTION

IS projects have been extensively studied due to their importance, prevalence and complexity. Despite the attention, IS projects continue to be failures and problem ridden processes. A survey by the Standish group in 1998 reveals that 74% projects are either delayed, over budget or failed to meet expectations. Added to these challenges is the fact that most IS projects today involve at least two organizations. The simplest arrangement may involve one client and one IT service provider, but more complex arrangements could involve multiple clients and multiple IT service providers. These multi-organizational IS projects are referred to as collaborative IS projects considering that the organizations collaborate for the project for a specified time. Collaborative IS projects can also incorporate those IS projects embarked on by collaborating partners.

Apart from the challenges inherent in IS projects (scope creep, team issues, budget overruns, escalation), collaborative IS projects involve two other key challenges of managing inter-organizational dynamics and of integrating disparate knowledge across organizational boundaries. Indeed, managing the process through which knowledge for the projects is acquired, shared and integrated between the organizations involved is a crucial task (Walz, Elam & Curtis 1993) considering knowledge is often dispersed, differentiated and embedded in different entities (Tsoukas 1996, Pan et.al 2001) across the collaborating organizations. Additionally, in inter-organizational collaborations, organizations may differ in physical characteristics (operations, business and size), social traits (culture and priorities), may possess diverse competencies (Pisano, 1994) and conflicting interests. Considering these challenges the focus of this study is to investigate how inter-organizational and knowledge integration challenges can be managed in prevalent collaborative IS projects?

Time and again, the importance of social capital, a resource based on social relationships that inherently exists in structures (Adler and Kwon 2001, Walker et al 1997) for knowledge integration (e.g. Huang et. al 2001, Pan et.al 2001) and inter-organizational relationships (e.g. Liebeskind et. al 1996, Kale et. al 2000) has been emphasized, leading us to believe its potential significance in influencing collaborative IS projects. Based on this contention this study elicits the *roles through which social capital can be leveraged to manage collaborative IS projects, viewing them from an Inter-organizational and Knowledge integration perspective*. The objective of the study is accomplished through an interpretive study of a collaborative IS project embarked upon by three organizations that were logistics partners for seven years through an IT supply chain integrator. The extreme diverse profiles of the collaborating organizations and the potential social capital among them owing to their long-term association, makes this an interesting case for this study. The case analysis allows us to explicate three roles (Motivator, Integrator, Facilitator) through which social capital can be leveraged during various stages of a collaborative IS project lifecycle. It also allows us to identify the contingencies of the social capital influence.

## 2 THEORETICAL FOUNDATION AND REVIEW

The conceptual foundations for this study stem from literature on knowledge integration, inter-organizational networks and social capital. Knowledge integration has been viewed as a mechanism of applying knowledge (Grant 1996) or as the synthesis of disparate specialized knowledge into situation specific systemic knowledge (Alavi and Tiwana 2002). Huang et.al (2001) adopt a process view of knowledge integration and identify key knowledge integration processes (Boundary penetration, paradigm expansion and organizational memory reconfiguring). This study furthers on the process perspective and conceptualizes *knowledge integration as the process of combining, applying and assimilating disparate specialized knowledge*. For instance in collaborative IS projects, knowledge across organizations has to be combined, applied to develop and implement the system, and the system needs to be assimilated by the affected organizations, in terms of changed work processes or reconfiguring organizational memory(Huang et.al, 2001). In collaborative IS projects knowledge

integration extends beyond organizational boundaries and is achieved through continuous interaction between the organizational representatives (e.g. meetings, discussions) within the project structure (e.g. procedures, guidelines, project deliverables). The process requires getting the buy-in of all collaborating organizations and penetration of their boundaries (Haung et.al 2001) to acquire necessary knowledge for the project. The process is challenging since it involves the integration of cross-functional knowledge (e.g. process knowledge and software knowledge for software implementation) and of knowledge that is often dispersed, differentiated and embedded (Pan et.al 2001, Tsoukas 1996) in different entities. Grant (1996) supports that integrating cross-functional knowledge is most complex, since a wider span of knowledge are being integrated.

The process is also plagued by the fact that organizational representatives may constantly be trying to balance their own organization's interests with that of the collaboration's goals which might make them guarded in participating in the knowledge integration process. There may also be conflicting interests between them. For instance in a client-IT service provider relationship, the client may try to squeeze in more and more requirements and the IT service provider may try to charge for every small modification. Such conflicts, although healthy from each organization's perspective, may stifle the process of knowledge integration. How then can the dual challenges of managing inter-organizational relationships and knowledge integration be addressed in collaborative IS projects? The possible solution seems to be social capital since many a prior literature indicate the positive influences of social capital on inter-organizational networks (Liebeskind et.al 1996, Kale et.al 2000, Walker et.al 1997) and knowledge integration (Pan et.al 2001, Huang et.al 2001). Definitions of social capital abound but it can best understood in the current context as the asset that resides in social relationships (Walker et.al 1997) and that emerges or exists in social structures (like projects, hierarchies) through interaction between members (Adler and Kwon 2001). Social capital can help resolve conflicts between collaborating organizations and can enhance the knowledge integration process by developing cohesion within the structure, aligning stakeholders to the collectives' goal and reducing the time and effort associated with developing an agreement in the network (Coleman 1988, Huang et.al 2001, Pan et.al 2001).

Based on the above stated works, social capital can be potentially beneficial for managing collaborative IS projects as a resource that emerges in the project structure through the extensive interaction of organizational representatives. If a naturally occurring resource can be beneficially leveraged for collaborative IS projects, it will indeed be a valuable contribution to research and practice. With this motivation, this study explicates the various roles through which social capital can be leveraged in collaborative IS projects and the contingencies of its effect.

Adler and Kwon (2002) summarized extant literature on social capital illustrating that although there are several aspects and forms of social capital one thing common is an underlying social structure that can emerge from market relations, hierarchical relations or social relations. Further for social capital to exist in a structure three sources need to be present: *opportunity, motivation and ability* (OMA). Based on the OMA schema social capital for this study is defined as *the resource that emerges in a structure due to the presence of OMA of participating members that facilitates action towards the goal of the structure*. The OMA schema was chosen for this study because it brings out the inter-organizational dynamics in the context of collaborative IS projects as discussed below.

*Opportunity* reflects the accessibility for social capital transactions. For e.g. If A does a favour for B because he is a close friend, their friendship/ties has served as an *opportunity* for the social capital transaction. Apart from the ties, *opportunity* is also provided by the structure that can be an organization, a network, a community or a collaborative project. *Motivation* reflects the enticements to participate in a social capital transaction or to help recipients even in the absence of immediate or certain returns. *Motivation* comes from trust that members within the structure have on each other Adler and Kwon (2002). In the context of collaborative project, perception of benefits and perception of effort also act as motivators. *Ability* construes the competencies and resources that members possess to be able to contribute to the social capital. It comes from shared jargon and shared beliefs which make comprehending and exchange knowledge easier (Adler and Kwon 2002, Nahapiet and Ghoshal

1998). In the current context, *ability* also construes the human and monetary resources that each organization has for the project and also their capability in understanding and assimilating the technology involved.

This OMA framework will be used to analyse a four-member collaborative IS project with the intention of explicating roles of social capital over the lifecycle of the project. The following paragraph discusses the research methodology is followed by description of the case. The various through which social capital can be leveraged, as drawn from the analysis are then discussed with their implications and future research opportunities.

### 3 RESEARCH METHODOLOGY

Using the case research strategy (Yin 1994) this study examines an inter-organizational collaborative project involving four organizations. Four sources of data, collected over a period of six months, were used for this study.

(1)Semi-structured, face-to-face Interviews were the primary source of data. They lasted for 60 minutes on average, with representatives from each organization, holding different roles and at different hierarchies, within the project team to obtain a variety of views, as well as to verify facts provided by each with the partnering organizations (details in table 1). Questions asked were open ended to provide ample scope for participants to express their ideas. Interviews were tape-recorded with the participants' permission in consideration of the reporting media and the taped interviews were transcribed as soon as possible with the author's notes, observations and other information, to enrich the interviews (Walsham 1995a).

Organization	Interviewees(Corresponding number of interviews)
ChemXlog	General manager(3), Account manager(2), Business development manager(3), IT manager(1)
Manufacturer	Logistics manager(Project manager for this project)(1), Shipping manager(1),Shipping supervisor(1), Warehouse manager(1) ,Warehouse supervisor(1)
Freight forwarder	Director (1) ,Operations officer(1)
Haulier	Director(1), Operations supervisors(2)

Table 1: Interviewee details

(2)Documents related to the project were collected and used as secondary evidence. They included written reports, newspaper articles, trade study reports, e-mails, minutes of meetings, project related documents and communications. (3)On-site observations were made during site visits and plant tours of all the organizations. Physical artifacts such as office equipment, computers and the interaction patterns amongst the employees of various levels in their social settings were noted. (4)The general manager and account manager from the IT service provider acted as key informants (Glesne 1995 pg.56) for this study. Their views of the relationships between the logistics partners served as a source of data, helped understand the background of the interviewees prior to the interviews, assisted in opening doors to the rest of the organizations, arranged our interviews with them, and also provided most of the relevant documents for the study.

The study adopts the interpretivist paradigm, which argues that access to reality is contingent upon social attributes such as language, shared meanings and artifacts (Orlikowski & Baroudi 1991, Walsham, 1995a, 1995b, Klein & Myers 1999). As Klein & Myers (1999, p.69) note, interpretive research "attempts to understand phenomena through the meanings people assign to them". For data analysis, the transcribed interviews were coded chronologically and then with a pattern/theme. This followed several iterations since each new transcription may provide a theme more appropriate than

the previous. Finally key knowledge integration activities were identified and based on their nature and chronological occurrence was categorized into three phases: Planning and Negotiation; Design and Implementation; Post-implementation. Activities that contributed towards the process of knowledge integration as defined earlier were chosen as knowledge integration activities. Each phase was then analyzed using the OMA schema to elicit the key roles of social capital. The multiple data collection methods followed enhances the validity of the findings, and also serve the important methodological requirement of multiple interpretations (Klein & Myers 1999).

## 4 THE CASE

The project in case involved the design and implementation of a web-based collaborative supply chain platform by a supply chain solutions provider, ChemXlog Pte Ltd, for a three-partner logistics community to carry out their logistics activities (e.g. Order management, shipment tracking, and document exchange). The logistics partners had been business partners for seven years now.

### 4.1 Background of the organizations

The background of each of the four organizations involved in the project was diverse (table 2). The manufacturing firm was a major client for the two logistics service providers (the freight forwarder and haulier). The freight forwarder provided logistics services and the haulier provided the trucks and containers.

<b>Collaborative Partners</b>	<b>Background and Nature of Business</b>	<b>Use of IT Prior to the Project</b>
Supply-Chain integrator (ChemXlog Pte Ltd.)	Small IT firm that develops and implements collaborative logistics solutions for private communities. The parent company is a major logistics company.	High
Manufacturer	One of the manufacturing facilities of a Japanese MNC. It employs 150 people and is a major client for the two logistics service providers	High. Use legacy systems and had experience with a JDEdwards system
Freight-Forwarder	A small firm, incorporated in 1995 with annual turnover of S\$1.5m. Coordinate with haulier for servicing clients logistics activities	Minimal. Accounting package and e-mailing
Haulier	A small firm, founded in 1987, and annual turnover of \$6m. Owns a fleet of trucks and containers that are coordinated manually	Minimal. Only for word processing and e-mailing

*Table 2: Organizations background*

### 4.2 Project Background

Prior to the project, all the logistics partners had good working relationships with each other. The Haulier's director maintained that in the logistics business having good working relationships is a must since you trust the other party with goods worth millions of dollars. Further attestation to their relationship is the fact that the manufacturer's shipment is executed by a company called Central Express and they go through the freight forwarder only because they treasure goodwill with the freight forwarder.

The partners interacted extensively on a day-to-day basis, over telephones, through faxes and meetings. Their typical interaction would be: manufacturer calls up the freight forwarder with delivery details, who then books vessels, arranges pickup and delivery of goods for them and request the haulier for trucks and containers. The haulier faxes truck and container details and coordinates with the manufacturer for pick-up of goods. The extensive communications, paperwork and manual processes resulted in several inefficiencies for the manufacturer ranging from inter-departmental miscommunications, documents getting lost, delivery delays etc., and so they wished to streamline their processes. Quoting their logistics manager on some issues they faced: *“people were denying having received instructions and blamed that as a reason for delays and mistake which is common in warehouse communications”*. To streamline their logistics processes they decided to adopt a collaborative platform through which they conduct business with their logistics partners.

### 4.3 The Collaborative Project

The implementation of the collaborative platform spanned over a year and for clarity of data presentation and analysis, is categorized into three phases: Negotiations and Planning, Design and Implementation and Post implementation.

#### 4.3.1 *Phase 1: Negotiations and planning*

To implement the collaborative platform the manufacturing firm chose ChemXlog whose primary task before the actual implementation, was to get the buy-in of the service providers for the project. The task was not easy considering the service providers were cost conscious traditional firms with limited IT awareness. The manufacturer’s shipping manager revealed that the haulier had only 1 email address for the whole company, and the freight-forwarder’s director was quick to confess, *“Computers stuff? I’m not good at that”*. Their resistance was also because they did not perceive any benefits from the system. Further the system entailed additional work processes and costs for them because they would be using the system only for this client and will continue their manual process for other clients. The manufacturer also required them to share the cost of the system implementation. All these factors made them reluctant towards the project. After three months of meetings, presentations, detailed feasibility studies, value assessments done by ChemXlog, the service providers agreed. They confided that they acceded to the system with the hope of long-term business from the manufacturer. ChemXlog also got them the grant from the Singapore government that helps SME’s pay for such projects. To get their buy-in ChemXlog also tried to build good relationships with them. Their account manager said: *“For marketing purposes, the first few meetings, we don’t just talk about business. We want to make them comfortable and build relationships with them.”*

#### 4.3.2 *Phase 2: Design and Implementation*

After the buy-in, the partners assigned representatives for the project team. The representatives were to communicate requirements to ChemXlog and coordinate with them to design GUI’s and workflows in system. This phase lasted for about six months and the implementation was through an iterative process of prototype refining and requirement gathering. After ChemXlog showed them the prototype the partners would state their workflows, what information they needed to see on each screen, what fields they need for inputting information etc. The workflows were designed to mirror their manual processes, including screens that were made to look like the actual documents used in the manual processes. This phase saw no major issues and the diverse knowledge backgrounds did not seem to affect the implementation process. ChemXlog was familiar with logistics processes and understanding the partners’ requirements was not very difficult.

The few issues in this phase arose mainly because each organization expected the transition from the current manual system to the online system to be as smooth as possible and so tried to bargain for a GUI suiting them. This led to conflicts but at the same time their long-term association allowed them

to be considerate of the partners' requirements. One user from the freight forwarder's very understandingly quoted, "*some may want to see more information and some may think the lesser I see, the lesser problems*". Issues of trust had to be considered for this phase since it involved sharing business information. Although ChemXlog's parent company could be a competitor for the logistics service providers they expressed faith in ChemXlog. The manufacturer has signed an NDA with ChemXlog while the service providers had not. ChemXlog played the major lead role in managing all project related activities, including coordinating meetings and logistics for the meetings.

#### 4.3.3 Phase 3: Post Implementation

The project was launched a year after its inception. The manufacturer acknowledged the benefits of the system and took necessary steps to adopt it. They merged two departments as a result of the system and trained even their fork-lift drivers to use the system.

The service providers' directors were pleased with the system and said they felt locked in a long-term relationship with the manufacturer. Nevertheless there were some issues in their adoption of the system. There were delays in their updating the system and the manufacturer's warehouse manager had to remind them to update the system, but at the same time was understanding "*they are hauliers and don't just do our business and not all their customers use this system, its just us. So updating the system is out of their normal business procedures*".

The users at the service providers' had difficulty logging in to the system and also complained of the system being too slow. Despite the issues, they said the system was easy to use and that they would get used to it. Even the haulier's director said: "*It's a matter of getting used to it after a while. The updating is quite simple*".

The logistics partners set-up a review committee to address progressive issues in the system and to discuss further developments of the project. The users could share their issues with the system to the review committee. Although the users experienced some difficulties with the system they did not reveal all the issues to the review committee saying "*we did mention some issues about the system being slow etc., that would be important for all. As for the other changes, we didn't raise them, since everybody seems fine with the arrangement now. We do not want to disrupt them*". Their attitude reveals a focus on collective actions.

The data presented in the above paragraphs describes the background and prior relationships of the four organizations that embarked on a collaborative project. The different phases describe the key activities of the phase, the major issues and the behaviour of each of the organizations. The three phases are analysed using the OMA framework to elicit three key roles of social capital during the project lifecycle.

## 5 DISCUSSION

This study views collaborative IS projects from an inter-organizational and knowledge integration perspective and explicates three roles: Motivator, Integrator, Facilitator; through which social capital can be leveraged in collaborative IS projects. The OMA analysis of the case with key evidence is summarized in table 3.

### 5.1 The motivating role of social capital during the initial stages of a collaborative IS project

The first finding of this study is that social capital during the initial phase of the project should be leveraged as a Motivator. In the case; in phase 1 the key activity was to get the buy-in of the three logistics partners for which each of them had to have significant *motivation* from the project. The manufacturer's *motivation* was strong since they needed the system to reduce inefficiencies in their logistic processes and were therefore willing to acquire the necessary *ability* (resources) for the project. The service providers lacked *motivation* since they perceived no benefits from the system and

would incur extra costs. The lack of *motivation* masked the value of prior ties and it took a long time to convince them. Their only *motivation* was the hope of long-term business from the manufacturer if they accede to the system. ChemXlog had no prior ties with the logistics partners but had a strong *motivation* (to sell the solution). To overcome the limitation they had in terms of ties, they spent time building relationships with the logistics partners as is reflected by their sales manager, *the first few meetings, besides talking about business we spent time trying to build a rapport with them*". They also used their *ability* to prepare value assessments for each of the partners to motivate them for the project. The facts illustrate that if *motivation* is strong, *opportunity* can be created and *ability* can be acquired and that in the initial phase wherein "buy-in" (Haung et.al, 2001) of organizations has to be acquired for knowledge integration, *motivation (M)* is key. Social capital at this stage should therefore be leveraged as a motivator and the other sources of social capital should be used to enhance organizational *motivation*.

Researchers have talked about the motivating role of social capital in the form of trust and norms (Putnam 1993) and in influencing knowledge activities like knowledge creation, knowledge exchange, knowledge assimilation (Nahapiet and Ghoshal 1998, Yli-Renko et.al 2001). But this study finds that the motivating role in the context of collaborative IS projects is significant during the initial phase to acquire the buy-in of the collaborating organizations. Further, most studies indicate that the motivating role of social capital is based on trust, norms and obligations between members. Through the OMA framework this study could consider the largely disregarded influence of practical motivating factors like potential benefits, potential effort etc. that effect social behaviour of organizations. The implication of this finding is that at the initial stage of the project it is important to identify motivators for each participating organizations and plan project activities or social activities to enhance the motivators. Further research however is needed to examine what kind of activities and steps can be taken to motivate organizations and which one of the collaborating organization should undertake the responsibility of coordinating collective tasks. Research should also examine the interaction between OMA, so that *opportunity (O)* and *ability (A)* can be leveraged to enhance organizational *motivation (M)* at initial stages of the project.

## 5.2 The integrating role of social capital during the design and implementation stages of a collaborative IS project

The second finding suggests that social capital during the design and development activities of a collaborative IS project should be leveraged as an integrator. Following the buy-in, the case project activities involved integrating knowledge bases of the organizations through the organizational representatives. Based on the case it is seen that this phase was pretty smooth compared to the initial phase. The main factor was that all the organizational representatives had the requisite *ability* for the activities of this phase in terms of domain knowledge which was essential for this phase. *Opportunity* in terms of prior ties provided a shared understanding of each others' requirements which instilled a sense of cooperation between them. This is seen by the fact that although each of them wanted a GUI best suiting their organization they were understanding of the others' requirements and were willing to compromise. Activities of this stage did not incur much effort on part of the partners and their comfort with their domain knowledge as required for this phase, unlike in the first phase where they had to understand software and technology, made them downplay their lack of *motivation* in phase 1. The only motivator that was in play was trust in sharing their business information for the system implementation, which was present, as indicated in the case. The presence of requisite *abilities* for the activities in this phase, aided in integrating the diverse knowledge bases. Social capital for design and implementation phases should therefore be leveraged to play the role of an integrator and *opportunity (O)* and *motivation (M)* should be used to enhance the *abilities (A)* of the participating members to influence integration.

Social capital in the form of cognitive abilities influences knowledge activities through shared codes and languages between members (Nahapiet and Ghoshal 1998) and also the *ability* of exchange

partners for various knowledge activities like identifying, exchanging and assimilating knowledge (Renko et.al. 2001). This study demonstrates that social capital acts an integrator of knowledge across organizations due to the dominance of the *ability* source of social capital enabled by not only shared language, shared understanding, but also basic resources and competencies as needed for the project. Secondly, the integrator role of social capital is significant during the stage of the collaborative project that involves system design or implementation. The implications of this finding are that in this stage of the project, social or project activities should cater to developing a shared understanding of issues between members and in developing skills that affect the *ability* requisite for this phase. Future research is needed to assess the role of individual team members' OMA and the influence of organizational factors on their activities in the team.

### 5.3 The facilitating role of social capital during post-implementation stages of a collaborative IS project

The third finding of this study suggests that during the later phases of a collaborative IS project social capital should be leveraged to facilitate collective actions towards the project. The facilitating effect is apparent in the incidents in phase 3(post implementation). The slackness of service providers in using the system was overshadowed by the tolerance and understanding shown by the manufacturer in this regard. Although they had strong *motivation* to get the service providers' to use the system they would call them up and remind them to update the system and acknowledged that it would take time for them to get used to the system. Even the service providers, although had issues in using the system, agreed they would get used to it and were also very cooperative in not raising all issues in the review meetings except the important ones that would have implications for all. This phase saw a focus on collective actions with increased tolerance and cooperation both enabled by the *opportunity* source of social capital. Their ties facilitated the collective actions in this phase and the lack of *motivation* and *ability* (in the service providers) was tolerated. Social capital therefore played the role of a facilitator of collective actions in this phase enabled by the ties between the organizations. But what has to be noted is that the role of social capital as a facilitator is not significantly dominant throughout the project. This can be said based on the fact that the negotiations in phase 1 to convince service providers took so long despite their prior relationships.

Although prior studies indicated that social capital facilitates knowledge integration (e.g. Huang et.al 2001) and collective action (Coleman, 1988, Leana and Van Buren 1999) the significance of this finding is that it facilitates certain activities during certain phases on a collaborative project, considering that the facilitating effect was not effective during the initial phase of the project. The implication of this finding is that social capital towards the later stages should be leveraged for collective actions towards the project, like; building an identity towards the project, ensure progressive work on the system, facilitate users to adapt to the system. Research is needed to examine what steps can be taken to leverage the facilitative effect of social capital and how OMA can be used to enhance the facilitative effect.

### 5.4 The contingent effect of Social capital

This study also highlights the contingencies of the various roles of social capital in collaborative IS projects. Prior to the project it can be said there was social capital between the logistics partners (first paragraph, section 5). But strangely that social capital does not seem to have influenced the IS project initially (phase 1). Although they were partners for seven years it took three months of intense negotiations to get the buy-in of the service providers for the project. This was basically because the collaborative system did not fit into the strategic goal of the service providers. Prior to the project the partnership ensured regular business for them and it was in alignment with their business strategy (long-term business). When the idea of a collaborative system was raised, the goal of the system (to reduce inefficiencies in logistics processes for the manufacturer) was not synchronous with the service providers' goals since they did not perceive benefits of the system.

Most studies indicate that pre-existing social capital positively influences action of partners (e.g. Kumar & Worm, 2003) and knowledge activities (Pan et.al 2001, Yli-Renko et.al 2001). Reciprocal expectations regarding goodwill and trustworthiness of partners influence knowledge creation (Nahapiet and Ghoshal 1998). However, the OMA analysis in this study suggests that existence of social capital does not always ensure a positive influence. This finding asserts empirical support to the concept of 'task contingency' suggested by Adler and Kwon's (2002). Task contingency indicates that appropriation of the value of social capital depends on the goal of a task being synchronous with the goal of participating members. Koka and Prescott (2002) validate the contingency effect of social capital based on the information needs of the exchange partners. Although, such a contingency may not be witnessed in typical client-IT vendor relation, since the client would have chosen the IT vendor and motivation of the project engagement is mutual, other contingencies of social capital effect may exist and need to be explored. Future research should explore the interaction between nature of task and social capital so that social capital's contingencies can be understood in different contexts.

## **6 CONCLUSIONS**

In investigating the influence of social capital on collaborative IS projects, this study has made significant contributions to theory and practice. Particularly to the extant literature on IS projects, the findings of this study offer new insights adopting an inter-organizational and knowledge integration lens. The interaction between Knowledge integration and social capital has always been only indicated and through this empirical study the exact nature of that interaction in the form of three roles of social capital in the context of collaborative IS project are established. The varying roles demonstrate the dynamic nature of social capital which entails distinct management strategies. Lastly this study extends the latest developments in the social capital literature to a contemporary pervasive context of collaborative IS projects through the formulation of an OMA schema. The conceptualization of social capital adopted in this study, based on the OMA schema, contributes to the understanding of organizational actions in collaborative IS projects. The schema also allows validation of the contingency effect of social capital in the context of collaborative IS projects.

The challenge of managing IS projects is acknowledged by researchers and practitioners alike. The findings of this study enable better management strategies for collaborative IS projects. The recognition of three concepts: Knowledge integration, inter-organizational relationships and social capital at play and the associated challenges and benefits afford managers and organizations involved in collaborative IS projects better understanding of the dynamics at play. The varying roles imply a focus on distinct areas for the ensuring cooperative behaviour in the projects. Further this study has served to extend the valuable and well-acknowledged concept of knowledge management beyond organizational boundaries.

This study is being extended to other IS projects (multiple case studies) involving different combinations of clients and vendors and in different industries. The intention is also to examine the interaction of the roles of social capital on specific knowledge integration characteristics. Future research needs to investigate, in-depth, the varying roles of social capital in distinct contexts, distinct events so as to identify contingencies of social capital's influence. The OMA schema can be applied to various other contexts and activities (e.g. virtual teams, knowledge transfer, outsourcing projects etc.) thus serving to extend the valuable concept of social capital. If social capital emerges and inheres in social structures leveraging it for the goals of the structure is truly beneficial. Given the trend towards outsourcing IT/IS projects considering the effect of social capital in these structural arrangements may be insightful to outsourcing projects. There is need to investigate how these findings can be made sense of in projects that do not follow a traditional life cycle and follow a parallel development or implementation process.

## References

- Adler, P. S. and Kwon, S.W. (2002). Social Capital: Prospects for a New Concept. *Academy of Management Review*. 27(1), 17-40.
- Alavi, M. and Tiwana, A. (2002). Knowledge Integration in Virtual Teams: The Potential Role of KMS. *Journal of the American Society for Information Science and Technology*. 53(12), 1029–1037.
- Carlile, P.R., Rebentisch, E.S. (2003). Into the Black Box: The Knowledge Transformation Cycle. *Management Science*, 49(9), 1180-1195
- Coleman, J. (1988). Social Capital in the creation of Human capital. *American Journal of Sociology*. 94, 95-120.
- Grant, R. (1996). Prospering in dynamically-competitive environments: Organizational capacity as Knowledge Integration. *Organization Science*. 7(4), 375–387.
- Huang J. C., Newell S. and Pan S.L. (2001). The Process of Global Knowledge Integration: A Case Study of a Multinational Investment Bank's Y2K program. *European Journal of Information Systems*. 10(3), 161-174.
- Kale, P., Singh, H. and Perlmutter, H. (2000). Learning and protection of proprietary assets in Strategic Alliances: Building Relational Capital. *Strategic Management Journal*. 21(3), 217-237.
- Klein, H. K. and Myers, M. D. (1999). A set of principles for conducting and evaluating interpretive field studies in information systems. *MIS Quarterly*. 23(1), 67-94.
- Koka, B. R. and Prescott, J.E. (2002). Strategic alliances as social Capital: A multidimensional View. *Strategic Management Journal*, 23(9), 795-816
- Kumar, R. and Worm, V. (2003). Social Capital and the dynamics of business negotiations between the northern Europeans and the Chinese. *International Marketing review*, 20(3), 262-285
- Leana, C. R. and H. J. Van Buren, (1999), Organizational social capital and employment practices, *Academy of Management Review*, Vol. 24, No. 3, pp. 538-555
- Liebesskind, J. P., Amalya, L.O., Lynne, Z. and Brewer, M. (1996). Social Networks, Learning and Flexibility: Sourcing Scientific Knowledge among New Biotechnology Organizations. *Organization Science*. 7(4), 428-443.
- Nahapiet, J. and Ghoshal, S. (1998). Social Capital, Intellectual Capital, and the Organizational Advantage. *Academy of Management Review*. 23(2), 242-266.
- Pan, S-L., Newell, S., Huang, J. C. and Cheung, A. W. K. (2001). Knowledge Integration as a Key Problem in an ERP Implementation. *Twenty-second International Conference on Information Systems*, New Orleans, USA, 321- 328.
- Pisano, P.G. (1994). Knowledge Integration and the Locus of Learning: An empirical analysis of process development. *Strategic Management Journal*. 15(Special issue-Competitive Organizational Behavior), 85-100.
- Putnam, R. D. (1993). *Making democracy Work: Civic traditions in modern Italy*. Princeton: Princeton University press.
- Tsoukas, H. (1996). The firm as a distributed knowledge system: a constructionist approach. *Strategic Management Journal*, 17 (Winter, Special Issue), 11-25
- Walker, G., Kogut, B. and Shan, W. (1997). Social capital, Structural holes and the formation of an Industry network. *Organization Science*. 8(2), 109-126.
- Walsham, G. (1995a), Interpretive case studies in IS research: Nature and Method. *European Journal of Information systems*. 4(2), 74-81.
- Walsham, G. (1995b). The emergence of interpretivism in IS research. *Information Systems Research*, 6(4), 376-394.
- Walz, D., Elam, J. and Curtis, B., 1993. Inside a Software design team: knowledge acquisition, sharing and integration. *Communications of the ACM*, 36(10), 63-77
- Yin, R.K. , 1994. *Case Study Research: Design and Methods*. Second edition. Sage, Beverley Hills.
- Yli-Renko, H., Autio, E. and Sapienza, J.H. (2001). Social Capital, Knowledge Acquisition, and knowledge exploitation in Young Technology based firms. *Strategic Management Journal*, 22(6), 587-613

Phase	Knowledge integration activities	Absence/Presence of OMA	Effect on knowledge integration and Main role of social capital	Evidence(key quotes)
Prior to the project	<ul style="list-style-type: none"> <li>• Business interaction</li> </ul>	<ul style="list-style-type: none"> <li>• All three partners had sufficient OMA</li> <li>• Partnership provided the <i>opportunity</i></li> <li>• Need for business provided the <i>motivation</i></li> <li>• All had <i>ability</i> to provide the requisite service, reflected by 7 years of partnership</li> </ul>	<ul style="list-style-type: none"> <li>• Good working relationships and seven years of partnership</li> </ul>	<ul style="list-style-type: none"> <li>• “<i>Actually the manufacturer’s shipment is executed by a company called Central Express. The freight forwarder is only playing the middleman. The manufacturer refuse to go to Central Express direct because they treasure goodwill with the freight forwarder</i>”</li> <li>• “<i>We had good working relationships</i> “</li> </ul>
Phase 1	<ul style="list-style-type: none"> <li>• Achieving ‘buy-in’</li> <li>• Cost negotiations</li> <li>• Project planning</li> </ul>	<ul style="list-style-type: none"> <li>• ChemXlog had strong <i>motivation</i>(business) so created ties</li> <li>• Manufacturer had strong <i>motivation</i> (needed system to reduce inefficiencies)and <i>ability</i>(resources)</li> <li>• Service providers had no <i>motivation</i> (did not need the system and incurred extra costs)and <i>ability</i>( IT savvy resources, infrastructure, money)</li> </ul>	<ul style="list-style-type: none"> <li>• Increased time taken to get buy-in of service providers despite prior relationships</li> <li>• MOTIVATOR</li> </ul>	<ul style="list-style-type: none"> <li>• “<i>people were denying having received instructions and blamed that as a reason for delays and mistake which is common in warehouse communications</i>”.</li> <li>• “<i>I don’t see any benefits from the system; in fact, it is additional work for us, our only motivation was that it was the request of our major client</i>”.</li> </ul>
Phase 2	<ul style="list-style-type: none"> <li>• Requirements gathering</li> <li>• System design and implementation</li> </ul>	<ul style="list-style-type: none"> <li>• ChemXlog had strong <i>ability</i>(logistics domain knowledge and IT knowledge)</li> <li>• All three partners were strong in their own domain knowledge hence had <i>ability</i></li> <li>• Their long term association made them aware and understanding of the others’ requirements (<i>ability</i>).</li> </ul>	<ul style="list-style-type: none"> <li>• Smooth progress of phase</li> <li>• Reached consensus on GUI’s and workflows easily</li> <li>• INTEGRATOR</li> </ul>	<ul style="list-style-type: none"> <li>• “<i>Some may want to see more information and some may think the lesser I see, the lesser problems</i>”.</li> </ul>
Phase 3	<ul style="list-style-type: none"> <li>• System usage and review</li> <li>• Reconfiguration of work practices</li> </ul>	<ul style="list-style-type: none"> <li>• Manufacturer had <i>motivation</i> (needed system) and <i>ability</i> (to handle change and reconfigure work practices). Were very tolerant and understanding with service providers’ slackness owing to the <i>ties</i>.</li> <li>• Service providers lacked <i>ability</i>(to handle change) and <i>motivation</i>(more effort) so were slack in adopting system but said they would get used to system and were cooperative by not raising all issues and disrupting the community, showed consideration for <i>ties</i>.</li> <li>• Review committee shows <i>cooperation</i> towards collaboration</li> </ul>	<ul style="list-style-type: none"> <li>• Issues in adopting system by service providers</li> <li>• Tolerant and understating behaviour of manufacturers towards service providers’ slackness</li> <li>• Service providers cooperative by not raising all issue in system to review committee and by participating in review committee to discuss project progress and updates.</li> <li>• FACILITATOR</li> </ul>	<ul style="list-style-type: none"> <li>• “<i>They are hauliers and don’t just do our business and not all their customers use this system, its just us. So updating the system is out of their normal business procedures</i>”.</li> <li>• “<i>We did mention some issues about the system being slow etc., as for the other changes, we didn’t raise them, since everybody seems fine with the arrangement now. We do not want to disrupt them</i>”.</li> </ul>

Table 3: OMA analysis summary