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Integrating Knowledge Across Organizations: The Role of Social Capital

Mamata Bhandar, Pan Shan-Ling and Bernard C.Y. Tan
3, Science Dr. 2, Dept of Info. Systems, School of Computing, National University of Singapore, Singapore 117543
disbm@nus.edu.sg, {pansl, btan@comp.nus.edu.sg}

Goh Puay-Guan
Operations & Technology, SembCorp Logistics, 30 Hill St., #05-04, Singapore 179360, pggoh@yahoo.com

ABSTRACT

With inter-organizational collaborations in distinct forms (e.g. strategic alliances, joint ventures) being on the rise, knowledge management needs to extend beyond organizational boundaries. Specifically, when organizations engage in collaborative projects and the knowledge required for the project is present in different entities across the organizations, the challenge of knowledge management is in integrating knowledge bases across organizations [2]. Through an interpretive case study, this paper examines the role of social capital on knowledge integration in a four-member collaborative project. Findings suggest that the role of social capital varies from that of a motivator to an integrator and a facilitator.

INTRODUCTION

Knowledge has emerged as the most strategically significant resource of organizations [4] and knowledge intensive organizations require multiple forms of expertise [18] that may extend beyond organizational boundaries. To acquire them organizations are being stimulated to collaborate [14]. Collaborations and collaborative projects serve as a vehicle for the rapid assimilation of new and specialized knowledge into the organization.

To leverage the multiple knowledge bases for a collaborative project, knowledge has to be integrated across the collaborating organizations [18]. Knowledge integration is essential for organizational capability [3] and to improve the ability of the collective to compete [2]. The proliferation of this complex organizational form (collaborations) in the last decade and significance of knowledge integration in them, have enthused this study of knowledge integration across organizations.

The process is challenging as knowledge is often dispersed, differentiated and embedded [11], more so in inter-organizational collaborations where organizations are not only intrinsically different, possess diverse competencies [15] and conflicting interests. Time and again, the importance of social capital for knowledge integration [e.g. 4, 5] and inter-organizational relationships [e.g. 6, 7] has been emphasized, leading us to believe its potential significance in facilitating knowledge integration across organizations.

This study therefore investigates the role of social capital in integrating knowledge across organizations through an interpretive study of a collaborative 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 make an interesting case for this study.

CONCEPTUAL FOUNDATIONS

Knowledge integration is viewed as a mechanism of applying knowledge [3] or as the synthesis of disparate specialized knowledge into situation specific systemic knowledge [2]. Huang et.al [5] adopt a process view of knowledge integration and identify key knowledge integration processes. *This study furthers on the process perspective and conceptualizes knowledge integration as the process of combining, applying and assimilating disparate specialized knowledge.* In inter-organizational collaborative projects different types of knowledge embodied in the different entities across organizations, have to be integrated. This is achieved through continuous interaction between the organizational representatives within the project structure.

Knowledge integration is challenging considering it involves integrating cross-functional knowledge and of knowledge that is often dispersed, differentiated and embedded [11] in different entities. According to Grant [3] knowledge integration is most complex when wider span of knowledge is being integrated. The complexity is compounded by the fact that there could be conflicting interests between them.

Literature (e.g. [6]) suggests that conflicts between collaborating organizations can be reconciled by building social and inter-personal relationships between partners. Knowledge integration studies [e.g. 11] also indicate that social interaction within a project team allows relationships to foster enhancing the knowledge integration process. Social capital is the asset that resides in social relationships. It coordinates knowledge integration by developing cohesion within the structure, aligning stakeholder goals and effort and time needed for consensus [e.g. 5, 7]. Social capital can therefore be significant for integrating knowledge across organizations. The exact nature of influence and contingencies are yet to be comprehended.

Adler and Kwon [1] summarized extant literature on social capital illustrating that although several aspects and forms of social capital prevail one thing common is an underlying social structure that can emerge from market, hierarchical or social relations. Further for social capital to exist in a structure three sources need to be present: *opportunity, motivation and ability* (OMA).

- *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. Adler and Kwon [1] suggested that motivation comes from trust that members within the structure have on each other. In the context of collaborative project,

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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 [1, 8]. 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.

Based on this schema social capital for this study is defined as the resource created by the presence of OMA and that facilitates action towards the goal of the structure.

RESEARCH METHODOLOGY

Using the case research strategy [21] this study examines an inter-organizational collaborative project involving four organizations. Three sources of data were used to improve the data validity through "triangulation" [16]. 1)*Semi-structured, face-to-face Interviews* that lasted for 60 minutes on average, with representatives from each organization with different roles and at different hierarchies to obtain a variety of views and to verify facts provided by each 2) Project related documents including written reports, e-mails, and minutes of meetings 3) On-site observations of physical artifacts during site visits and plant tours of all the organizations.

Questions were open ended to allow participants to express their ideas. Interviews were tape-recorded in consideration of the reporting media [20] and then transcribed with the author's notes, observations and other information [20]. Key knowledge integration activities were identified and categorized into three phases: Planning and Negotiation; Design and Implementation; Post-implementation, based on their nature and chronological occurrence. Activities that contributed towards the process of knowledge integration as defined earlier were chosen as knowledge integration activities. Each phase was then analyzed for the presence/absence of OMA from each organization's perspective to identify the role of social capital.

THE CASE

Organizations Background

The project 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 were business partners for seven years now and had diverse backgrounds (table 1). The manufacturing firm was a major client for the two logistics service providers. The freight forwarder offered logistics services and the haulier provided the trucks and containers.

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 good working relationships is essential since you trust the other party with goods worth millions of dollars. 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 further speaks of their relationship.

The partners interacted extensively on a day-to-day basis, over telephones, through faxes and meetings. The 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. Although none of them indicated any issues in the logistics operations, the manufacturer had several internal inefficiencies ranging from inter-departmental miscommunications, documents getting lost, delivery delays etc., and so wished to streamline their processes. Their logistics manager gave an instance of the internal issues they faced:

Table 1. Organizations Background

Collaborative Partners	Background and Nature of Business	Use of IT Prior to the Project
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

"People were denying having received instructions and blamed that as a reason for delays and mistake which is common in warehouse communications".

The Collaborative Project

The project implementation 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.

Phase 1: Negotiations and Planning

ChemXlog first had to convince the service providers for the project. The task was difficult, given the service providers were cost conscious traditional firms with limited IT awareness. 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 limited IT awareness created a resistance to change exacerbated by the fact that the system entailed additional work processes and costs for them. They would be using the system only for this client and will follow the manual process for other clients. They also had to share the cost of the system. The freight forwarder's and Haulier's directors saw no benefits from the system. After three months of meetings, presentations, detailed feasibility studies, the service providers agreed and 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 to help SME's pay for such projects. To achieve the buy-in ChemXlog 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."

Phase 2: Design and Implementation

This phase lasted for six months and involved abundant inter-organizational interaction to design the GUI's and workflows for the system. The system was built through an iterative process of prototype refinement. Each organization wanted the transition from the current manual system to the online system to be as smooth as possible and tried to bargain for a GUI suiting them, thus resulting in conflicts. But the partners were cooperative and understanding of others' requirements

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which came from their long-term association and ties. A 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."

The logistics partners had no issues understanding the questions posed by ChemXlog laying out workflows to be built into the system. Each was dealing with their own domain knowledge for this activity. ChemXlog's background in logistics and IT ability helped, which was of course one reason they were chosen as the supply chain integrator. They were accredited to provide logistics IT solutions to organizations in the chemical hub and their parent company is a logistics giant in Singapore.

Phase 3: Post Implementation

After the system was implemented the director of the freight-forwarding firm was pleased and felt locked in a long-term relationship with the manufacturer. The manufacturer acknowledged the benefits of the system and was quick in adopting it. There were delays in the service providers updating the system and the 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 service providers complained of difficulty in logging in and also on the system being too slow. Despite the issues, they agreed the system was easy to use and that they would get used to it. Although the users experienced some difficulties with the system they did not reveal all the issues to the review committee set-up by the partners. The review committee comprised of core users and project managers from all three partners and it met once in two months to discuss progressive issues in the system. One user from the freight forwarder said,

"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."

DISCUSSION AND FINDINGS

The objective of this study was *to investigate the role of social capital on knowledge integration across organizations*. Adopting the view that social capital is a resource created by the presence of OMA and that facilitates action towards the goal of the structure this study identifies three key roles of social capital over the life cycle of a collaborative project.

Social Capital as a Motivator

In phase 1 *motivation* played a key role. If all three logistics partners had some *motivation* for the project, then the buy-in would have been easy. The manufacturer's *motivation* was strong since they needed the system and therefore were willing to acquire the necessary *ability* (resources) for the project. 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"*. The service providers' lack of *motivation* masked the value of prior ties. This illustrates that if *motivation* is strong, ties can be created and ability can be acquired. Social capital mainly plays the role of a *Motivator* in this phase. Huang et.al [5] identified 'buy-in' as one of the processes of knowledge integration and our study suggests that social capital in the form of motivation, influences that buy-in. Our findings are also supported by Putnam [13] who said that social capital can play a motivating role although he spoke of social capital in the form of trust and norms. This study has shown that motivation is enabled by more than just trust and norms.

Social Capital as an Integrator

Knowledge integration in this phase was smooth. All the organizations had the requisite *ability* for the activities of this phase in terms of domain knowledge and a shared understanding of each others' requirements instilled cooperation and compromises. It was also not too much effort on the service providers' to contribute their domain knowledge, unlike in the first phase where they had to understand software and technology. This comfort made them downplay *motivation* and the only motivator that was in play was trust in sharing their business information for the system implementation. So the strong presence of *ability* requisite for the activities in this phase in all the organizations positively influenced knowledge integration in this phase by aiding in integrating the diverse knowledge bases. Social capital in this case can be seen to play the role of an *Integrator*. Nahapiet and Ghoshal [8] suggested that when members share a common language they can understand each other's knowledge better and can create new knowledge. Our findings further that social capital in the form of participants' *ability* within a structure can also help integrate diverse knowledge in the structure.

Social Capital as a Facilitator

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 sued to it and were also very cooperative in not raising all issues in the review meetings except the important ones. 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* in this phase. Social capital was always known facilitate knowledge integration [e.g. 5, 9] but this study found that it facilitates certain activities during certain phases on a collaborative project. The implications are that presence of social capital does not ensure its value. Its value is contingent on the nature of activities.

CONCLUSION

This study extends the valuable concept of knowledge management beyond organizational boundaries and in doing so it has illustrated how social capital, influences knowledge integration in a collaboration by playing the role of a motivator, integrator and facilitator. It emphasizes a knowledge integration perspective to view knowledge intensive activities like collaborative projects, new product development and IS/IT projects, since they serve as means to combine, apply and assimilate knowledge. It examines the interaction between knowledge integration and social capital that many a literature has only indicated. Various processes of knowledge management have been studied in inter-organizational arrangements, but the concept of knowledge integration, although important was not addressed. The managerial implications of this empirical study are equally significant. It addresses the need for understanding a contemporary pervasive context (collaborations). Organizations, project managers and knowledge managers, engaging in collaborative projects need to be aware that social capital emerges in a structure (project, collaboration etc.) and it can be leveraged for the collaboration's goal. Awareness of the varying roles of social capital over the different phases can allow control of the influence of social capital on knowledge integration in the structure.

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