THE CRITICAL COMPETENCES NEEDED FOR INNOVATIVE ORGANISATIONAL INTER-FIRM AND INTRA-FIRM INTEGRATION

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ABSTRACT
In today’s highly challenging business environment, an innovative and systemic approach is imperative to survival and growth. Organisational integration and technological integration, are often seen as a catalyst of change that could lead to significant improvements in organisations. The levels of improvement in inter and intra firm integration should arise from a detailed understanding and development of competences within and between organisations. Preliminary findings suggest that lack of trust across organisational cultures within the firms has a negative influence on the development of the capabilities to integrate and align technological innovations and hinders implementation and the effectiveness of the operations. Additionally, poor communication and conflict effects customer satisfaction. Firms need to transfer the competences that support cooperative integration, developed through interaction with supply chain partners, to their relationship arrangements with other supply chain partners, as these are key to ensuring low operational costs.

Keywords: Innovation Competences, Inter-Firm Integration, Intra-Firm Integration.

1. INTRODUCTION
Competences are described by Karnoe (1995) as a repertoire of experiences, skills and beliefs and by Drejer (2000) as a system of technology, human beings, organisational (formal) and cultural (informal) elements and the interactions of these elements. Teece, Pisano and Chuen (1997) refer to competences as interesting intangible assets that cannot be purchased from the market so they must be developed in-house. There are various conditions, including knowledge and attitudes that directly impact the development of innovation competencies. For instance, competences such building
trust, creating interdependencies and balancing power often facilitate integration and cooperation across companies within the supply chain (Ferrer, Storer, Santa and Hyland, 2008).

At the organisational level, competences developed in projects and multidisciplinary teams would seem more conducive to increase employees’ motivation as well as combine capacities which enable intra-firm integration of knowledge (Hyland, Davidson and Sloan, 2003). Similarly, Santa et al. (2008) highlight that the lack of alignment capabilities between the implementation of technological innovations and the effective operations of an organisation have a negative impact on the improvement of operational performance. This suggests that there must be senior management support for alignment capabilities, in order to effectively integrate intra-firm functions through the effective deployment of technological integration.

2. BACKGROUND

2.1 INTER-ORGANISATIONAL INTEGRATION

Globalised dynamic competition increasingly demands a linkage among suppliers, internal processes, and customer to ensure smooth inbound and outbound flow of information and goods/services. This suggests that there is a need for inter-firm integration of supply chain’s participants and the logistics activities (Stock et al., 1998). Inter-firm integration relates to the cooperation and collaboration with other supply chain members. Firms often need to diversify the relationships they engage in (Ballou 1999, Masella and Rangone 2000, Golisisc 2003) and establish collaborative relationships with some supply chain members and arm's length relationships with others. Although the market response to growing competition has for some years been an increasing trend towards integration, it has been asserted that not all supply chain relationships are either collaborative or cooperative {Duclos, 2003 #16; Lambert, 2000 #93}. As relationship management is a situational approach firms need to consider and clearly understand how they vary as one of the determinants for a portfolio of inter-firm relationship selection and management (Olsen and Ellram, 1997; Ferrer, Hyland, Bretherton and Soosay, 2006). Inter-firm relationship terms such as collaborative arrangements, partnerships, and alliances are too often used interchangeably by both academics and practitioners and establishing a practical definition is problematic.

The supply chain literature identifies four prominent types of inter-firm relationship. The first inter-firm relationship type concerns contractual work arrangements defined as arm’s-length relationships. This type of relationship can best be described as inter-organisational linkages characterised by dealings that are at “arm's-length” which involve spot transactions, often based on auctions or auction like arrangements. In arm’s-length relationships, detailed written contracts prevent the parties from operating and making decisions independently (Dore, 1992; Sako, 1992). Cooperation involves the coordination of similar or complementary activities carried out by organisations in business relationships, aiming at attaining enhanced joint results or individual results with expected reciprocity, as time progresses. The rationale behind cooperative efforts is based on arrangements to share resources, either tangible or intangible, as well as the pursuit of other business goals, through the redesign of processes and products (Cousin, 2002). Cooperative efforts differ from arm's-length
relationships in that they rely on higher levels of trust (Mentzer, DeWitt, Keebler, Min, Nix, Smith and Zacharia, 2001), moderated levels of power and are more long-term oriented. Partners in cooperative arrangements seek to lower transaction costs by sharing access to goods, manpower, services and information (Polenske, 2004), and research conducted in the manufacturing industry indicates operational information may be shared among many cooperative firms, because cooperation agreements are non-exclusive.

Collaboration is closer to the alliance end of a continuum proposed by several authors (Golicic et al., 2003; Rinehart et al., 2004). This type of relationship is viewed as a more durable relationship in which parties bring organisations into a new structure with full commitment to working more closely, with a shared mission, vision and trust. Such relationships require comprehensive planning, seamless linkages (Krause and Ellram, 1997), unified seeking of synergies and goals and well-structured communication channels operating at all levels. Information exchange plays an important role in improving supply chain collaboration (Lambert and Cooper, 2000). Risk sharing is greater in inter-firm collaborative relationships because each participant commits its resources and power can be unequal. Gain and risk sharing capabilities come from a willingness to share rewards and penalties across the firms involved. Alliances can be described as a structured mode of inter-organisational arrangement that involve exchange relationships between parties without necessarily having to create a new entity (Dickson and Weaver, 1997). Alliances are intended to be long-term, develop new resources or skills, and seek to enhance the competitive position of each partner. It has been asserted that the success or failure of a supply chain alliance is driven by commitment and trust between the parties (Whipple and Frankel, 2000). Trust must exist in an alliance since there is inter-dependency between the parties to mutually achieve goals which are a pre-requisite for their initial creation, as a partner may be a competitor or be involved in other alliances with a firm’s competitors.

2.2 INTRA-ORGANISATIONAL INTEGRATION

Intra-organisational integration is seen as a strategically approach for competitiveness by Teece, Pisano and Shuen (1997). For organisations to gain a competitive advantage requires both the exploitation of existing internal and external firm-specific capabilities and developing new ones Teece (1982). The notion of internal integration involves the co ordinations, collaboration and integration among functional areas inside the organisation. Integration can be defined as the capacity of organisations of combining and coordinating of separate parts or elements into a unified whole. Consequently, organisations that are not internally integrated have fragmented and uncoordinated activities, and often spread throughout various organisational functions. Thus, internal integration, means unifying functions and processes within the firm (Lambert and Stock 1993). Furthermore, Hyland, Davidson and Sloan (2003) indicated that for organisations contemplating innovation, managers need to consider their own competences and organisational capabilities, before contemplating radical or incremental innovation. Furthermore, Boer (2002) argues that continuous innovation is the ongoing interaction between operations. Thus, for organisations to be able to innovate they need to deploy internal capabilities such as internal integration.
2.3 CROSS FUNCTIONAL TEAMS

In an ever-changing environment, leaders spend time creating the culture to support innovation, knowledge exchange and collaboration with the aim to improve processes or services (Moss, 2000; Tidd, Bessant and Pavitt, 2001). In the quest to reach the improvement of processes or services, organisations implement technological innovations such as enterprise information systems to improve the performance and integration of their operations. In the implementation process of technological innovations, some organisations are increasingly using human resource factors such as cross-functional teams (Daily and Huang, 2001), because, cross-functional teams are often understood as the cooperation or collaboration of individuals drawn from various functional areas (Pinto, Pinto and Prescott, 1993). This cross-functional cooperation brings ideas, knowledge, expertise and innovation to the project. For instance, Tidd, et al (2001) stated that cross-functional teams have more to offer than individuals in terms of idea generation flexibility to solutions developed, and a mechanism for bridging boundaries to create innovative solutions within organisations. Likewise, a company with a strong culture of innovation, leverages relationships across boundaries and through the extended enterprise, and encourages people to reach further and faster to gain or spread knowledge (Robbins, 1997; Moss, 2000). Cross-functional teams provide a substantial range of ideas, learning and improvements that can be applied to the organisation (Boer, Caffyn, Corso, Coughlan, Gieskes, Magnusson, Pavesi and Ronchi, 2001). Thus, organisations need to use cross-functional teams in the implementation of innovative technologies, such as enterprise information systems, with the aim of bringing ideas, learning, knowledge, expertise and innovation into the project and to achieve inter-organisational integration. However, managers’ efforts to create complex networks to connect their people and partners globally and to empower employees for cross-functional teams to operate efficiently, could be seen as challenging if key factors to succeed are not appropriately defined.

Pitta and Franzak (1997) suggest that organisations involving external and internal cross-functional members create a boundary spanning team. Boundary spanning is tied closely with the management of technology, innovation, and strategic implementation to achieve organisational objectives. As stated by Schein (1996) different actors such as managers, engineers, and operators-users belong to different cultures, making it difficult to communicate with each other. Boundary spanning agents are viewed as communication stars (Tushman and Scanlan, 1981) and can effectively communicate widely within their work unit, across work units and outside their organisation. Kellog et al. (2006) argue that boundary spanning agents are able to act as translators, brokers or mediators. Cross-functional teams can reduce misunderstanding that arises in the different values found within functional areas if the cross-functional team members are able to develop a shared language and shared mental models. By doing this, actors from different functional areas can share information at all stages of the implementation of technological innovations such enterprise information systems, making it easier to identify problem areas early in the process and finding solutions that are shared by the team members in the same language.

In the process of sharing information in cross-functional teams, effective communication becomes an important issue. Communication in teams is seen as an interpersonal process of sending and receiving symbols with meaning attached to
them and is a critical component of group process (Wood, 2007). Communication in addition, is necessary to obtain and share information (Olson, Walker and Ruekert, 1995). There is however, a need for trust among members of the cross-functional teams before effective communication can be achieved. As suggested by Javernpaa and Leidner (1999), global virtual teams may experience a form of "swift" trust, but such trust appears to be very fragile and temporal. Thus, there is a need for a better understanding of trust and communication in the effective intra-firm integration before cross-functional teams can operate effectively.

2.4 Role of Technology in Intra and Inter-Organisational Integration

Boer (2002) maintains that the role of technologies in continuous innovations is fundamental as an enabler of integration among functions. In addition, Soosay et al (2007) argues that virtual integration refers to a temporary tightly coupled collaboration effort between independent entities that are linked by telecommunication technology. The concept of integration in IS/IT literature, is referenced as an act or a state that is found in discussions of applications, computer programs and modules, business processes, data, and technology (Singletary 2002). Enterprises information systems (EIS) are a clear example of inter-organisational integration as they integrate data and functions across the enterprise. EIS also allowed companies to automate procedures and support their daily activities and decision making processes (Santa, 2009). Bhatt (1995) proposed that integration for EIS is the extent various information systems are formally linked for sharing of consistent information within an enterprise. Singletary (2002) maintain that there is no clarity however, if this integration will bring value to the organisation or lead the organisation to gain a competitive advantage. While the merits and nature of integration is implicit in most EIS articles, the attributes and specific benefits are not tied directly to integration. Integration is a huge subject and includes applications, computer programs, processes, and data to name but a few examples (Singletary 2002). Some authors seem to think that full integration may not be possible (Singletary 2002; Markus 2001; Parr & Shanks 2000; Markus & Tanis, 1999; Alsene 1994). Markus and Tanis (1999) maintains that, integrated enterprise systems deserve serious research because of their great potential for financial, technical, managerial, human, and strategic benefits, costs, and risks. Thus, Internal integration in organisations could be achieved through effective implementation of technological innovations such as enterprise information systems, there is however some concerns in the effectiveness of these innovative technologies (Santa 2009). In addition, it is important to gain a better understanding of the internal competences that organisations need to develop to be able to have a positive influence on the inter-organisational integration among members of the supply chain.

2.5 Competences for Inter-Organisational Integration

A culture of continuous innovation requires organisations to focus on renewing managerial competencies congruent with the changing business environment (Teece, Pisano and Shuen, 1997) and on building the capabilities to reconfigure and transform their assets. This suggests that supply chain participants should identify specific sets of organisational capabilities to transform and reconfigure competencies (e.g., building trust, sharing, balancing power) for more cost efficient, flexible, quality and time-based operations.
2.5.1 **Sharing Competences**

Christopher (2005) proposed for supply chain organisations to be interdependent in order to compete and survive. This characteristic depends on the ability to manage and share resources, costs and risks with suppliers and customers (Lambert and Cooper, 2000). Sharing information concerns the degree to which proprietary information is communicated between supply chain partners. Some of the benefits encompass increased responsiveness, reduced lead-time, better forecasts, reduced bullwhip effect, lower supply chain costs and improved customer service (Lee, So and Tang, 2000). Organisations can share information on several levels including strategic, operational and tactical, depending on the type of relationships in which they are participating (Mentzer, Min and Zacharia, 2000; Huang, Lau and Mak, 2003). Strategic information is expected to be shared in more close long-term orientated relationships such as collaboration or partnerships (Hyland, Ferrer and Bretherton, 2005). This type of information assists businesses in making decisions about strategic issues such as supplier selection, product introduction and location of facility (Chopra and Meindl, 2001; Huang et al., 2003). Tactical information is usually shared in more cooperative work arrangements and helps firms in foreseeing demand. Tactical information includes operating costs, inventory costs and aggregate demand. Finally, sharing operational information encompasses communicating weekly production, delivery schedules and order replenishment (Chopra and Meindl, 2001) among supply chain member participating in cooperative or arm’s length types of relationships (Hyland, Ferrer and Bretherton, 2005). Furthermore, organisations enter into relationships such as collaboration and alliances to share coordination costs (Dyer and Singh, 1998; Gulati and Singh, 1998; Baum, Calabrese and Silverman, 2000) and resources. The rationale for establishing relationships involves finding ways to make the relationship efficient, to the extent to which coordinating the costs offset the benefits of the relationship.

2.5.2 **Trust Competences**

Effective supply chains rely on shared information and trust among partners and they are essential requirement for successful supply chain relationships. (La Londe, 2002) supports this by stating that issues of trust and risk can be considerably more significant in supply chain relationships, because supply chain relationships involve in many cases a higher level of interdependency between competitors. Trust can be best defined as to the extent to which a party fulfils an agreement, meets the expected professional obligations and can be viewed as not behaving opportunistically (Sako, 1992; Gulati and Singh, 1998). Although there has been some empirical research suggesting that there are unexpected high trust levels in early stages of interactions between the parties (McKnight, Cummings and Chervany, 1998), it is asserted that trust is a behavioural attitude that evolves over time (Shapiro, Sheppard and Cheraskin, 1992; Gulati, 1995).

The literature provides insights into three interconnected roles that trust plays in inter-organisational exchanges. First, trust is, in many cases, an effective means of allowing a firm to minimise the risks of opportunistic behaviour as it is expected that parties will forgo short-term individual gains in favour of the long-term interests of the inter-organisational exchange (Das and Teng, 1998). Secondly, trust can be a source of competitive advantage in inter-organisational relationships formed by parties that behave trustworthy and do not act against values, standards and principles of behaviour (Barney and Hansen, 1994). (Sako, 1998) found that high quality (source of
competitive advantage) can be consistently maintained in high-trust production systems. Thirdly, trust influences performance by reducing transaction costs, encouraging investment with future returns and motivating continuous improvement and learning (Sako, 1992).

2.5.3 **Power Balancing Competences**

Power can be described as the influence of one party over the other (French and Raven, 1959), they also suggest that there are aspects of control and coercion of the parties’ power which enable the participants to maintain order and authority but its abuse is a problem and needs to be limited. They identified five sources of power: reward power, coercive power, expert power, referent power, and legitimate power. Expert power refers to the ability of a party in a relationship to hold and control distinctive knowledge, information and skills that are valuable to the other party; whereas referent power concerns a party’s desire to be associated with another out of admiration (French and Raven, 1959). Whilst reward power refers to the ability of one party in the relationship to mediate rewards to the other party, coercive power concerns the ability to mediate punishment and take disciplinary measures. The notion of power imbalance is considered one of the greatest negative influences to maintaining long-term oriented relationships (Naudé and Buttle, 2000). Dapiran and Hogarth-Scott (2003) found that the presence of power does not always inhibit close relationships. They found that the existence of reward and coercive power in relationships leads to capitulation and desire to exit the relationship whereas referent and expert power leads to cooperation and trust building. It is not always feasible to maintain an ideal power balance in inter-firm relationships and weaker parties are happy to stay in the relationships to keep their business profitable or at least cash-flow positive (Gummesson, 1991). This suggests that organisations should not ignore the diversity of relationships (Bensaou, 1999; Hyland et al., 2005) which are not always initially influenced by trust but also depend on other factors such as power, sharing and dependency.

Upon the establishment of the relevant theories, this paper addresses the question: ‘Are the competences needed for innovative organisational inter-firm integration the same as intra-firm integration?

3. **Research Issues and Methodology**

Given the exploratory nature of this research, a combination of quantitative and qualitative two-stage, methodological approach has been used (Begley, 1996). This research is undertaken with an exploratory purpose as the impact of technological integration on the level of improvement in inter-firm and intra firm organisational integration, and the inter-firm relationships among supply chain participants have received little empirical research. According to Sekaran (2003) exploratory study is undertaken when there is a lack of understanding of the problem which leads to an unstructured problem design. Quantitative data was gathered through a self administered questionnaire. The questionnaire was administered to managers, engineers (technologist), and administrative and operational staff as, according to Orlikowski and Gash (1994), different actors in an organisation have different assumptions, expectations, knowledge and perceptions of technological innovation. Each survey item was measured on a 5-point Likert-like scale (1 indicating “strongly agree”, 5 “strongly disagree”). Of the 450 surveys distributed, 144 were returned (32%
response). In the process of constructing measures of key variables and refining the survey instrument, four pilot tests were developed that enabled the introduction of a number of revisions that were carried out to improve the survey instrument between the initial draft and the final instrument. The final questionnaire is divided into six sections. The first section is used to identify the background, the areas of responsibility and involvement of the respondent in the use of EIS applications. The second section is related to system effectiveness, the third section is related to operational effectiveness, the two next sections in the questionnaire are related to strategies and inter-organisational competences, and the last section asked questions related to the improvement of operational performance of the unit where the employee is working. Data has been analysed and tested using path analysis. The questions for each section were selected from previous studies mentioned in the DeLone and McLean (2003) ten-year update, as an appropriate empirical test and validation of the DeLone and McLean IS success model.

The second phase of this study comprised an in-depth case study of a triad exhibiting two types of relationships. Competences that support integration capabilities were identified in the first stage (quantitative) and are examined through the case study. Managers of the three case organisations, who were actively involved in managing the relationships, were interviewed to better understand competences developed when engaging in relationships. The sample was purposive and was selected in order to cover a range of possible viewpoints and all of the respondents clearly exhibited different types of relationships practices. It was not the intention that this represents the opinion of the entire firm. Respondents were asked a series of questions related to factors that influence innovation in supply chains and how inter-firm integration and other capabilities support supply chain innovation capacity. Open-ended questions were asked to allow managers to provide rich in-depth answers. The overarching research question for this study was used as a framework to guide the case study narrative. The recurring themes were derived from the road freight businesses managers’ reported statements on either the existence or absence of the competences and expected business outcomes from inter-firm relationships. Also, thematic analysis was used to contrast and compare the statements of the three key organisations involved in the management of inter-firm relationships.

4. RESULTS

4.1 RESULTS FROM THE SURVEY

Findings from the survey confirm that competences such as communication, trust and team work are important for integration among functional areas in an organisation. For example, for the question: *There is a high level of communication between employees in this organisation*, while 11% of respondents were neutral, 47% of respondents agreed that they have high levels of communications, and 41% agreed that they do not have high levels of communication. For the question: *There is a high level of trust between employees in this organisation*, 48% agreed that they have high levels of trust, 40% agreed that they do not have high levels of trust in the organisation. For the question: *Employees in this organisation believe that team work is essential to getting the work done efficiently*, 69% agreed that team work is essential to getting the work done efficiently and 23% answer the question as disagreed. Team work which need some competences such as balance power, sharing, communication and trust to be effective seems to be a very important component in
inter organisational integration. Also, it is important to note that competences such as communication and trust are relevant in the effectiveness of team work; nevertheless, there is a perception that these two competences are not totally well developed across organisations.

Although the recognised importance of working in teams to achieve inter-organisational integration, there are however, some indications that team-work is not that effective as it suppose to be. The answers for the question: Employees in this organisation believe it is difficult to work in cross-functional project teams, demonstrates that there is no total agreement in the perception of the effectiveness of cross-functional teams. 45% of the respondents agreed that it is difficult to work in cross-functional teams, were only 39% believed the contrary. This response indicates that there is an issue in the implantation or organisation of cross-functional teams.

4.2 Case Study

The case study examines inter-firm relationships between a large national freight service provider (Firm A) and two of its supply chain partners one supplier which is a regional truckload carrier (Firm B) and a customer which is a large retailer (Firm C). Firm A is a leading provider of business to business integrated freight transport services, which moves over two million tonnes annually and operates a network of more than twenty depots across Australia. Two interviews were conducted, independently, within the firm concerning inter-organisational business relationships. Interviewees consisted of a business manager who was responsible for the operation of the firm in a regional city, and a regional operations manager who was accountable for the business and logistics operations, in the north of Queensland. Firm B is a regional family owned and operated freight transport firm with over ten years in the trucking industry, delivering services across regional Queensland. The firm owns a fleet of over fifteen vehicles, it is focused on short-haul work, and specialises in the delivery of alcohol products. One interview was conducted with the business’ managing director, relating to the business relationship with Firm A. Firm C is an Australian liquor retailer which operates over two hundred retail liquor outlets across Australia. One interview was conducted with the regional distribution manager who is responsible for controlling the movement of goods in and out of the warehouse and negotiating as well as maintaining relationships between Firm C and its freight service providers.

4.3 Nature of Firm A, Firm B and Firm C’s Inter-firm Relationship

The inter-organisational relationship between Firm A and Firm B has been in operation for approximately three years, and was originally started by the large freight service provider. The regional trucking company (Firm B) is on a renewable one year contractual agreement for delivering liquor to business customers located across the central part of Queensland. The contract was awarded on a low-price basis and includes terms that lead to either penalties or termination if detailed performance criteria are not met by the regional trucking business (Firm B). Firm A considers the relationship a partnership, but Firm B does not refer to the working arrangement in the same way as the contract was not awarded based on anything apart from low price. Furthermore, Firm C sought the possibility of a business inter-firm relationship with Firm A early in 2003. The decision was made after the change of ownership in the retailer became driven by efficiency and service. Following lengthy negotiations and expressions of interest by the distribution and operations managers that the
partnership with Firm A was an operationally effective way to carry forward the functioning of the business, Firm C’s general management authorised the agreement.

4.3.1 TRUST AND POWER

In the course of each interview, firms were asked what makes a relationship work well. An important finding from the case analysis relates to the distinction participants made regarding the types of trust. In working arrangements participants may choose to trust or not to trust a partner based on different elements such as the demonstrated competency, willingness to go beyond what has been agreed or acting by the rules previously set. Interviewees from Firms C and A indicated that their relationships relied on credibility and participation in conducting business. These were especially evident when Firm C indicated that it did not write delivery orders directly to Firm A, but worked with Firm A in developing delivery schedules and replenishment plans. In regards to participation, Firm B indicated that it was exhibited when: “My business partner seems concerned about me, shows that my business, and more importantly my financial strength are important to them, and they consider our position in the chain by some sort of action”.

According to Firm B’s managing director, there were problems that could be prevented if Firm B would have been trusted and asked to participate in discussions when their partners were negotiating delivery terms. Firm A’s business manager and Firm B’s managing director perceived trust as credibility, and in this regard the latter went on to state: “There were times when the credibility was that low Firm B was reluctant to do business with Firm A because there were frequent unexpected changes after receiving the delivery schedules that needed to be discussed in depth before execution”.

Furthermore, Firm A’s regional operations manager indicated that the credibility Firm B had in Firm A, concerned the confidence of knowing that when they do the work, there is no need to go back and checking to make sure it is all done properly. The interviewees stated that gaining credibility was an evolving process so examining previous business relationship performance was a good indicator of the capability of their business’ partners. The importance and continuance of good business practice was a trust theme that was consistent across the interviews, Firm C’s regional distribution manager remarked that: “If records had shown that their partners were able to deliver a good reliable, cost-effective and timely service, this organisation had no reason to switch service providers but to continue the business relationships with the existing service provider”.

Overall, it was found that the working arrangement between Firm A and C, an upstream supply chain relationship, exhibited the competence trust dimension which is often seen in supply chain relationships. Nevertheless, the relationship between Firms A and B seemed to be distrusting and primarily based on rules in which even small changes required consulting the agreements and seeking the partner’s acceptance. Some concerns on legitimate power related elements were expressed by Firm B’s managing director as he believed that Firm A regarded Firm B as dispensable by not involving them in some critical operational decisions.
4.3.2 Sharing

The third competence that was identified, from the case study, related to sharing which was perceived by the participants as the regular exchange of information such as delivery schedules, cargo loading/unloading hours and delivery confirmation and the sharing of resources. The participants indicated that all firms were engaged in weekly communication and monthly meetings to exchange information. Firm B and Firm A met on a monthly basis to evaluate the report of key performance indicators. In the case of the working arrangement between Firm A and Firm C, the aim of the monthly meetings were to discuss the achievement of performance indicators, solve the problems faced during the month, and follow up the logistics initiatives they were undertaking.

One of the logistics initiatives involved the participation of Firm A in Firm C’s warehouse related activities which included picking, pallet preparation, containerisation, and truck loading/unloading. This initiative was aimed at working in a just-in-time like distribution environment which had prompted Firm C to give Firm A access to detailed operational information such as inventory costs and sales forecast. Although Firm B carries out Firm C’s warehouse activities on behalf of Firm A, the results of the interviews indicated that Firm B does not have access to this detailed tactical information. Nevertheless, Firm B is linked to Firm A through a web based communication system which enables sharing of some operational data and is enhanced and maintained by Firm A’s ERP system. In regards to information sharing between Firm A and Firm B, Firm A’s regional operations manager pointed out that: “This web based system had enabled Firm A to schedule distribution activities based on the deliveries confirmation Firm B sent, issue invoices and track items. The same communication channel is used by Firm A to send Firm B the weekly program of consolidated and detailed deliveries and by Firm B to send Firm A reports on returned products”.

It was also found that important resources were shared within the two work arrangements formed by Firm A and Firm B and by Firm A and Firm C. Firm B’s managing director commented that Firm A gave them the opportunity to minimise their ongoing operational costs by allowing them to buy some consumables such as petrol, tyres and engine oils at the price Firm A purchases them. This price is considerably lower than the price Firm B would be charged as Firm A has greater bargaining power, due to its size and national purchasing power. Likewise, the interviewees from Firm A and Firm B asserted that other resources were shared such as pallets, and shipping containers. Firm C also reported that warehouse and distribution centre space had been shared with Firm A to enable picking activities, pallet and container preparation. Furthermore, it was found that in order to facilitate the loading and unloading of trucks within the time allotted, Firm C and Firm B shared the cost of a leased forklift and driver.

5. Conclusion

In addressing the research aim, this research has demonstrated that for organisations involved in inter organisational integration, it is essential to have a better development of intra-organisational integration capabilities. The findings form the survey demonstrated the importance of cross-functional teams in organisations to have effective work achievements. There is however indications that members of the cross-
functional teams believed that working in teams is not easy as there is no agreement in the effectiveness of capabilities such as communication and trust among members of the cross-functional teams. It is important to highlight that the members of the team must have the same understanding of these goals, as different interpretations, different mental models and different meanings can jeopardize the effectiveness of the cross-functional team. Conversely, it is important to stress the role of the boundary spanning agents or conciliators, as they are the members of the cross-functional team in charge of translating and sorting the language of managers, engineers and operators or general users, so the information is meaningful to all members of the cross-functional team.

In terms of the intra-firm competences, this research also found that inter-firm relationships in the Australian freight transport industry were exhibiting different types of trust. Trucking firms’ relationships, regardless of the length of the relationship, exhibit contractual and goodwill trust competences which is partially contradicting the assertions made in prior research (Shapiro et al., 1992; Gulati, 1995; Child, 1998; Ballou, Gilbert and Mukherjee, 2000). This result might be a reflection of the dominance of owner-drivers, who are usually keen to take any spot contract to secure the cash flow that enables them to survive and cover their operating costs. It appears that less mature business relationships have not been unable to establish inter-organisational, competence based trust as they have not been working together long enough to demonstrate that they can deliver and meet the performance objectives (Johnston, McCutcheon, Stuart and Kerwood, 2004). The literature has two positions on the influence of power on inter-firm relationships. Some researchers claim that power imbalance has a negative influence on sustaining cooperative and collaborative, inter-firm relationships (Kumar, Scheer and Steenkamp, 1998; Gummesson, 1999; Naudé and Buttle, 2000) while others claim that imbalance of some types of power does not always result in detriment to the relationships (Maloni and Benton, 2000; Dapiran and Hogarth-Scott, 2003). The study yielded evidence of the detrimental, but often accepted, convenient, nature of legitimate power. This finding partially substantiates findings, from prior studies, such as Maloni (2000). The acceptance of imbalances in legitimate power can be explained by the perception of small businesses, accounting for seventy percent of the industry’s firms, that large firms have the authority within their supply chain due to their market dominance and greater bargaining power.

Finally, the finding suggests that although sharing competence is exhibited in, and related to inter-firm relationships. The nature of the extensive geography of Australia prompts the participants to sign agreements that enable them to share assets so they can have a cost-effective presence. This reinforces the findings on the interdependency in contractual arrangements, and ensures provision of the service in remote areas, for the large to mid-size freight transport operators, and in capital cities for the small regional operators. Likewise, this study’s results have demonstrated that participants involved in contractual relationships are more likely to share operational information, to monitor the achievement of performance objectives, while in cooperative arrangements, sharing tactical critical information contributes to increasing the firms’ responsiveness.

By shedding light on the complex phenomena of comparing inter and intra-firm innovation competences, this work provides useful insights both to academia and
managers in different industries. Transferring competencies form intra-firm integration to inter-firm integrations challenges firms in today’s dynamic business environment. The switch in mind-set, culture, and understanding of competences that characterise the different types of integration can be overwhelming. The demonstrated similarities, in how the sample firms relate to competences, could have implications for the integrations within service industry sectors. For example, in order to externally integrate, an industry member needs to have internal functions that have already worked and performed as expected for a certain period of time which are feature of competence trust and appears to be mostly exhibited when firms’ functions interact with each other. It could also be suggested that in order to shift to inter-firm integration, managers need to start building relational factors, within the firm, that characterise external integration such as communication and sharing information. Learning how to make transfer the competences and making the shifts, based on a good understanding of the relational factors and intended benefits from the internal integration, can have a positive impact on the effective inter-firm integration.

This study is limited by several issues. The most significant limitation of the research is the short duration of the study (12 weeks). Relationships are dynamic and change over time so it would certainly be of interest to extend the current study with a longitudinal approach with records at the company level, in order to distinguish between several other types of relationships and to evaluate which factors determine transitions among different types of relationships. An additional limitation of the study lies in the fact that a single country case study was conducted so care must be taken when extrapolating the results to other countries which do not have similar characteristics as Australia.

REFERENCES


