

# THE ROLE AND POSITION OF INFORMATION TECHNOLOGY IN STRATEGIC BUYER-SUPPLIER RELATIONSHIPS

Competitive Paper

## Abstract

One driver for the emergence of a network society comprises the exponential rise of the ubiquity and reach of information technology (IT) that enables effective value co-creation between organizations. Despite the importance of IT in inter-organizational relationships, the major part of the extant research has presented one sided and partial approaches to the topic. For this reason, the current article adopts a holistic qualitative case study approach in aiming to define how IT posits to the various elements of the strategic buyer-supplier relationship. This study provides a conceptual and empirical based analysis, defines the role and position of IT regarding the defined three layers of a relationship, and discusses the implications for theory and practice. The study prepare the ground for further qualitative and quantitative research in order to enhance a holistic understanding of IT in relation to the various structures and processes in organizational and inter-organizational contexts.

**Keywords:** inter-organizational information systems, information technology, business relationships, business networks, qualitative case study

# **The role and position of information technology in strategic buyer-supplier relationships**

## **1. INTRODUCTION**

The business operating environment has become increasingly complex over recent decades. Instead of single transactions, most inter-organizational exchanges are enacted within inter-organizational relationships, nets and networks (e.g., Coviello et al., 2002; Möller & Rajala, 2007; Powell, 1990). Companies are embedded in these complex and dynamic constellations that steer resource integration and value creation activities, and thus have a fundamental impact on various levels of society as a whole (e.g., Castells, 1996). Drivers for the emergence of a network society comprise the exponential rise of the ubiquity and reach of information technology, and networks that enable the efficient and effective communication between organizations (van Dijk, 2012). Information technology (IT) has facilitated the managerial focus on core competences (see Prahalad & Hamel, 1990) and increased the share of customization and knowledge intensity in produced solutions (Tuli, Kohli, & Bharadwaj, 2007). As companies move towards increasingly networked forms of operation, information technology and related systems are an imperative in order to manage these networks (Kärkkäinen et al., 2007).

IT can be defined as “all forms of technology utilized to create, capture, manipulate, communicate, exchange, present, and use information in its various forms” (Martin et al 1999) and categorized into internal and shared IT (Ryssel et al 2004). Shared IT refers to systems that are operated, maintained, or used together in an inter-organizational setting (McLaren et al., 2002). Shared IT comprises a large topic area within the literature on inter-organizational relationships and networks. It has been shown that, in the area of purchasing and supply chain management, information systems contribute to information availability, visibility, and management; efficient transaction management and execution; decision making and planning; cooperation and collaboration ( Auramo et al., 2005; Lancioni, Smith, & Schau, 2003; Simchi-Levi et al., 2003; Laseter & Stasior, 1998). However, the extant research has primarily concentrated on the benefits of inter-organizational information and information sharing technologies or on assessing the impact of specific technologies on supply chain efficiency (see Kärkkäinen et al 2007). Less is known regarding the questions of how and for what purposes companies actually use IT in an inter-organizational setting, and how IT posits to other elements of the relationships and supply networks (see Ryssel & Ritter 2004; Boyd et al 2004; Campo et al 2010; Jap & Mohr 2002). In other words, a major part of the prior research considers information systems as separate entities, not as components intertwined with the structures and value creation processes of a relationship (cf. Salo 2006; Carr and Smeltzer, 2002). Thus, our understanding of the role and position of IT in the context of buyer-supplier relationships is limited.

The purpose of this study is to posit IT with regard to the structures and processes of a strategic buyer-supplier relationship in order to define its role and position. IT is seen as an entity comprising processual and structural elements that are linked to the respective organizations and their mutual buyer-supplier relationship (see McLaren et al. 2002; Lancioni, Smith, & Schau, 2003; Ryssel & Ritter, 2004). The theoretical approach of the study draws on the interaction and network approach (see Håkansson, Ford, Gadde, Snehota, & Waluszewski 2009; Håkansson & Snehota 1995; Håkansson, 1982; Campbell, 1985), which provides tools for a balanced consideration between the structural context of relationships and networks and the processual elements that take place within them, and comprises a solid theoretical backbone for the study. The methodological approach in the study is qualitative case research methodology. We focus on two IT enabled strategic buyer-supplier relationships that have different value creation goals: innovation and added value oriented relationship and on the other hand operational efficiency oriented relationship (cf. Möller & Rajala 2007). As a result, IT is posited with regarding the elements of the relationships, and how it may support their management is demonstrated.

The structure of this paper is as follows. The next section describes the theoretical background of the study, followed by the methodology and case analysis sections. These provide a basis for the discussion and conclusions in the final section of the paper.

## 2. THEORETICAL FRAMEWORK

The following framework, depicted in Appendix 1, provides the conceptual landscape within which to study the role and position of IT in buyer-supplier relationships. The framework depicts both the *buyer* and *supplier organizations* as open systems (see Thompson 1967) that are mutually linked through a *business relationship* and further connected to their *upstream* and *downstream markets*, all of these being wrapped up by a *general business context* of far reaching business networks and macro-environmental forces (Andersson, Håkansson, & Johansson, 1994; Håkansson 1982). At the heart of the framework a business relationship is presented as a multilevel entity linking the buyer and supplier organizations at the levels of exchange, adaptation and coordination, relationship infrastructure, and relationship goals. These levels of the relationship link to the corresponding levels of the buyer and supplier organizations – value creation, management process, organization structure, and organization goals – and altogether comprise three layers – *action layer*, *structural layer*, and *management layer*. These layers are a continuum in which the actions and structures of the parties are integrated.

### 2.1. The structural and action layers of a relationship

The lower part of the framework presents the *structural* and *action layers* of a business relationship. An explicit assumption in the model is that both the supplier and buyer organizations are in interaction with other actors located in the general business context (arrows A and B). In other words some of the supplier's output flows to actors other than the focal buyer, and some of the inputs of the buyer come from sources other than the focal supplier. In this sense the *action layer* in a focal relationship comprises dyadic *business exchange*, which reflects those aspects of *organizational value creation* activities that are activated in the focal relationship. The *structural layer* comprises the *relationship infrastructure*, which reflects those areas of the *organization structures* of the parties that are activated in the focal relationship.

At the core of the supplier and buyer organizations are their value creation processes, which refer to all acts, events, and activities in which the organization converts different inputs into outputs. These activities fundamentally legitimize the existence of an organization. The organization structure refers to the competencies and resources upon which the value creation process of both organizations draws. Regarding value creation, the supplier's processes integrate with those of the buyer through an exchange process. Business exchange comprises the flow of interlinked acts, actions, and episodes that are related to the exchange of products, compensation, and associated information flows (see e.g., Halinen 1997; Håkansson 1982).

Corresponding to the organization structure, the framework presents the relationship infrastructure that comprises social and technical bonds. Social bonds refer to the emotional-cognitive structures affected by history, as well as expectations of the relationship with regard to atmosphere, trust, and commitment (Håkansson & Ford, 2002; Halinen, 1997). Technical bonds, in turn, include activity links and resource ties (Håkansson & Snehota, 1995), which may be technological (information systems), procedural (predetermined communication practices), or legal arrangements (contracts). Together, social and technical bonds provide a context and structure that steers the business

exchange between the parties. Conversely, this also works in the opposite direction as the business exchange may either strengthen or weaken the social bonds and, similarly, influence the adaptation and coordination activities that affect the technical bonds (see Möller, 1994). However, the business exchange and the technical and social settings reflect each other, and the fit between them evolves over time (cf. Halinen, Salmi & Havila, 1999; Hellgren, Melin & Pettersson, 1993).

## **2.2 Management layer – balancing between the structural and action layers**

Organizational value creation is guided by organizational goals and management process. First, the management process widely refers to the different types of capability that enable the organizational resources and competencies to be employed in the value creation process, and, second, to the aims of improving the mutual fit between the organization's goals, organization structure, and value creation. In this context, the management process encompasses different capabilities; for example, production and production development capabilities (see Carillo & Franza, 2006) that refers to the ability to put the current resources into use and dynamic capabilities (see e.g., Ambrosini, Bowman & Collier 2009) that refer to the abilities to implement changes in the current value creation process or make fundamental changes regarding the organization structure and value creation process, not only to improve the fit between the intra-organizational layers of value creation, organization structure, and the organization's goals but also, more widely, to improve the fit between the organization and its general business context.

Adaptation (changes in the elements of a business relationship that relate to the exchange process) and coordination (division of labor between the actors) refer to relationship level management activities (see Håkansson & Snehota, 1995). Adaptation and coordination aim to enhance consistency within the focal relationship and improve its value co-creation potential. On the one hand, *organizational goals* steer the adaptation and coordination activities in terms of what the organization aims to achieve regarding the relationship and, on the other hand, how the individual goals of the buyer and the supplier constitute the mutual goals set to guide the relationship's direction.

In contrast to intra-organizational management activities, a single actor's potential to influence adaptation and coordination activities is more restricted. Together with their expected outcomes, adaptation and coordination activities are also influenced by the other party in the focal relationship. For example, there may be conflicting interests in terms of coordination concerning activities that are allocated to the buyer and supplier, how the supplier should be compensated, and the extent to which the buyer expects the supplier to invest in the relationship. Just as a social setting evolves through the subjective perceptions of the actors, the effect of the adaptation and coordination activities is dependent upon how the other party perceives and interprets them over a period of time, and the kind of outcomes that are expected (cf. Bourdieu, 1977; Giddens, 1984). The direct impact on the action and structural layers may thus be limited in the short term (cf. Halinen, Salmi & Havila, 1999; Hellgren, Melin & Pettersson, 1993).

The interplay between the relationship infrastructure and the exchange process defines the outcomes of the relationship (Möller & Wilson 1995). It is proposed that the better the social and technical settings support the business exchange, the better the outcomes are likely to be. The reverse also applies as better outcomes lead to a stronger social setting and, perhaps, the involved parties' greater willingness to develop and strengthen the technical settings in order to maintain or improve performance.

To summarize, the framework depicted in Appendix 1 views the buyer and supplier organizations as interdependent activity units whose very existence lies within the value creation activities they

perform. The value creation activities are shaped by the management process reflecting the focal organization's structure and goals. The relationship between the organizations enables integration of the value creation activities into value co-creation through the business exchange. This inter-organizational value co-creation is affected by the intra-organizational structures, goals, management processes, and value creation processes of both organizations as well as business relationship adaptation and coordination, relationship infrastructure, and relationship goals.

### **3. METHODS**

#### **3.1. The case study approach and case selection**

As a research strategy, case study fits especially with the aim of providing contextual understanding on a phenomena embedded into its context (see e.g., Yin 2009; Eisenhardt & Graebner 2007), similar to the situation in this study. Instead of isolated viewpoints, variables, scales, or dimensions this study aims at a more comprehensive understanding of the role and position of IT within the buyer-seller dyad (See Patton 1980, 40). In this sense, the study represents a *theory generating case research strategy* (e.g., Eisenhardt 1989; Eisenhardt & Graebner 2007).

During case selection a purposeful sampling procedure was followed, whereby each case is considered as a particular and unique opportunity to identify new features of the research phenomenon in order to facilitate the aim of understanding (Eisenhardt & Graebner 2007). Thus, the focus is not so much on the cases themselves as on the opportunity to exploit them to serve more abstract theorizing purposes (See Patton 1980, 100). In this study, sampling was based on maximum variation with reference to the type of business exchange due to the aim of revealing elements and features of the phenomenon (Eisenhardt & Graebner 2007) that are related to business exchange, the primary element of business relationships (see e.g., Håkansson & Snehota 1995).

The focus of the empirical study is on the role and position of IT and related systems in two strategic buyer-seller dyads representing, on one hand, the hotel, restaurant, and catering industry (HoReCa), and manufacturing industry on the other. LogisticsCo is specialized in the supply of daily consumer goods, customer service, and logistics services within HoReCa where FoodCo is their major customer. LogisticsCo and FoodCo engage in a strategic relationship where LogisticsCo is responsible for planning, organizing, and managing the physical flow of goods from the original producers to FoodCo's sales units i.e. restaurants. Together these companies form dyad "Alpha". Dyad "Beta" consists of PlanCo, ManufCo and their mutual strategic relationship. PlanCo is a provider of engineering services and technical product information solutions to global industrial equipment manufacturers. Their key customer, ManufCo is one of the global leaders in the elevator and escalator industry.

Alpha comprises a highly voluminous business exchange. The purchase frequency in this relationship is extremely high, but the products to be supplied are very simple in nature (see Håkansson & Gadde 1997). In contrast, Beta represents a relationship in which the business exchange concerns highly complex and tailored solutions (see Håkansson & Gadde 1997) requiring specific skills, knowledge, and domain specific expertise. The purchase frequency of these solutions is low; rather, they are developed in close cooperation between ManufCo and PlanCo over long periods of time and eventually implemented within ManufCo's production process. These two cases provide a polarized setting that enables the study of the deployment of IT and theorization on its role and position within these dyads.

#### **3.2. The research implementation, data gathering and analyzes**

The study was implemented through dyadic, longitudinal data gathering and a parallel data analyzing process. The data pertained to a period of two and half years, from 2010 to 2012, thereby offering an extensive real-time longitudinal empirical account of the phenomenon (Kimberly, 1976; Miller and Friesen, 1982). Both interviews, observations and data from secondary data sources comprise the research data.

First, the researchers had data (interventionist observations, mutual hands-on development, workshops, and management group meetings) from an ongoing interventionist research project ESCO – “Efficient Sourcing Competencies” – run by them and their university and in which the focal buyer companies participated during 2010–2012. The explicit aim of the ESCO project was to improve the sourcing competencies of the participating companies. Deployment of IT in the relationship between the buyer and supplier companies was one of the core themes of the project. In conjunction with the research project, the authors conducted interviews in various other companies and organized several workshops with industrial and academic participants in which managers from the participating companies were put to work on different tasks.

On the basis of their knowledge and contacts regarding the ESCO project the researchers had an opportunity to screen carefully the potential case companies suitable to the research purpose of defining the role and position of IT within the buyer-supplier relationship. First, the data were collected by means of personal, semi-structured interviews (Hesse-Biber & Leavy, 2006) in six focal companies with a total of 14 key informants. These data gathering served the case selection but also provided data that was analyzed to contextualize and further understanding of the research phenomenon. From these six companies, two – FoodCo and ManufCo – were further selected by purposeful sampling to represent buyer companies in this study.

After being selected as case companies, an additional 7 interviews took place in FoodCo and ManufCo. The key informants in FoodCo were the Vice President Procurement, the Sourcing Manager, and the Sourcing Development Manager. Key informants in ManufCo were the Vice President Technology, the R&D Sourcing Specialist, the Category Manager, and the R&D Director. All of these persons were interviewed once. The interviewees were asked to nominate one supplier company from their supply base as a representative of their strategic supplier relationships where they deployed IT in some form. Consequently, FoodCo informants nominated LogisticsCo, where researchers conducted four interviews, consisting of the Managing Director, Sourcing Manager, Chain Customer Manager, and Solution Manager. ManufCo informants nominated PlanCo, where a Key Account Manager and a Department Manager were interviewed. Hence, after the 14 interviews in the case selection phase, the researchers conducted 13 specific interviews in Alpha and Beta in total.

Informants in the buyer and supplier companies were identified by the snowballing technique (Moriarty & Bateson 1982) where the first interviewee was asked to name persons from their own organization who were closely involved in the respective buyer-supplier relationship, and would thus be able to contribute to the research. The use of an interview guide ensured that all the interviews covered the main elements of the theoretical framework (see Appendix 1: Structural layer – relationship infrastructure, organization structures; Action layer – business exchange; value creation processes; Management layer – adaptation and coordination, management processes, organizations’ goals, relationship goals; and the surrounding business network). These theory driven themes and topics were supplemented with the informants’ free descriptions as dialogue developed between the interviewer and the interviewee. All the interviews were recorded before being transcribed into written form.

The authors' specific status as Project Researchers allowed broad access to secondary data at the companies (see Glueck & Willis, 1979). In addition, the informants provided the researchers with written documents including process and job descriptions, company and function specific presentations, as well as organization and key performance indicator charts. This material formed an important source of secondary data that the researchers used to complement the interviews. In addition, the project provided an opportunity for observation and numerous informal discussions with the focal companies, which contributed towards a comprehensive understanding of the research phenomenon.

The analysis of the interview data was conducted by thoroughly reading each transcript with the aim of gaining meaningful insights and an overall understanding of the phenomenon. Thereafter, the data were analyzed vis-à-vis the research framework. In this phase the empirical data were coded according to the framework components (Miles & Huberman 1994). The role of secondary data, including formal and informal documents created during companies' participation in the ESCO project, was to support the creation of a comprehensive understanding of the research phenomenon. The formal data comprised regular progress reports that the focal companies were required to complete every six months during the project, reporting on the progress of their specific efforts to improve efficiency as defined in the project goals. The informal data comprised company presentations and observation of discussions in the project workshops, where information and knowledge was freely distributed among project participants. However, the secondary data were not analyzed as systematically as the interview data; rather, they were regarded as a complementary data set, enabling the researchers to understand the nature of the focal companies' businesses and their operating environments, including interactions with their suppliers to posit IT into this landscape.

#### **4. RESULTS: THE ROLE AND POSITION OF INFORMATION TECHNOLOGY IN CASES ALPHA AND BETA**

##### **4.1. Relationship Alpha**

Case Alpha comprises the relationship between FoodCo and LogisticsCo. FoodCo is a major player in the field of catering services in the Nordic countries and Baltics. Customers include companies, public and private institutions, daycare centers, schools and educational institutions, and homes for the elderly. In Finland, the company operates through 680 points of sale comprising e.g. lunch and student restaurants; 360 000 meals are produced daily. In 2011, turnover in Finland amounted to 256 million euros and the personnel totaled 3700.

LogisticsCo is specialized in the supply of daily consumer goods, customer service, and logistics within hotels, restaurants, and the catering industry. The main customers comprise hotels and restaurants, staff restaurants, institutional kitchens in the public sector, and gas and service stations. There are over 450 suppliers operating through in LogisticsCo's logistics network, offering over 23 000 products. The logistics network covers the whole of Finland, comprising one central inventory and logistics center complemented by several regional terminals. In 2011, turnover amounted to approximately 340 million euros with a personnel of 205.

Currently, LogisticsCo and FoodCo are engaged in a close and strategic relationship. LogisticsCo is responsible for planning, organizing, and managing the physical flow of goods from original producers (e.g., beef, poultry, and various other kinds of food supplier) to FoodCo's sales units. FoodCo transmits over 2 million purchase order (PO) lines to LogisticsCo annually. The operating environment of Alpha is highly dynamic and complex with an extremely short lead time to market; goods need to be delivered to FoodCo's multiple sales units within 48 hours of receiving each PO.

Fresh goods are processed within 24–48 hours of delivery, which makes information exchange on product availability and delivery schedule critical. For this reason, the Alpha relationship is geared towards high supply chain execution and operational efficiency.

With regard to technical systems, FoodCo's in house resource planning system is connected to LogisticsCo sales extranet and Enterprise Resource Planning (ERP) system, which enables automated transmission of POs between the companies. Furthermore, LogisticsCo's system relates price, delivery, and availability information back to the PO. Accepted POs are transmitted from LogisticsCo's ERP to original producers via system-to-system links or automated facsimiles. After goods are dispatched, suppliers i.e. original producers send delivery notifications and invoices electronically to LogisticsCo, which then transmits invoices to FoodCo in electronic format. The entire process has been transformed to operate digitally: *"Orders are transmitted electronically, invoices are transmitted electronically, and delivery messaging is automated ... all of these pipelines are digital."* (Application Manager, LogisticsCo). IT plays a pivotal role manifesting itself within the action, structural, and management layers of the relationship, as discussed in the following sections.

#### ***4.1.1. Information technology with reference to the action and structural layers of the relationship***

The structural layer of the Alpha relationship comprises FoodCo and LogisticsCo organization structures and the relationship infrastructure, where technical and social bonds form the main dimensions (Håkansson & Snehota, 1995). The structural layer supports and guides the action layer that respectively comprise the value creation activities in both organizations and their mutual exchange. Regarding technical bonds, the companies have intentionally built technological and procedural elements (see Möller, 1994) into the relationship over the years: *"We are very open with each other and share a trusting relationship. We try to develop things together in the right direction."* (Sourcing Manager, FoodCo). For example, collaboration and communication procedures in the relationship take several organized forms, connecting different organization levels and functions: *"Every interface needs a specific form of collaboration."* (Managing Director, LogisticsCo). Currently, IT forms a broad platform that enables the existence of different types of technological and procedural elements that steer the action layer, comprising value creation at both companies and their mutual exchange.

Regarding buyer value creation activities, at its most operational level IT enabled shared systems expedite the purchasing process and produce time savings. The change has been dramatic: *"Using the web ... placing orders is a revolution compared with the old practice of having to place orders by telephone. The new way of working frees up a lot of time at our end ... our people are now able to better plan how they spend their time in the kitchen."* (Vice President Procurement, FoodCo). Thus, IT enabled relationship infrastructure has facilitated process efficiency and improved time management at the buyer end as today, nearly 100% of daily transactions (PO lines, delivery notes, invoices) are transmitted within Alpha electronically.

Additional to an efficient ordering process, the IT enabled operating model allows FoodCo to steer the purchasing behavior of its sales units. As the available product range is "built in" through purchase item selection in the system, there is less room for noncompliant purchasing: *"Systems are a central means to support compliance concerning ordering from agreed suppliers and an agreed product range."* (Vice President Procurement, FoodCo). Compliance to an agreed product range is vital, since raw materials go through extensive testing before being accepted into the product range. System-to-system order automation enables checking of purchase items against the agreed product range; in case of a mismatch the order is automatically corrected which reduces the potential for errors. LogisticsCo is able to customize their extranet according to the customer's product range thus ensuring, that sales units only see the agreed product range in the system. Another change in

purchasing behavior relates to the size of the purchase order lines. After LogisticsCo introduced a new pricing model, in which the logistics cost element was separated from the actual purchase price, the size of the purchase order line (by weight) has been steadily growing as a result. The idea behind the new pricing model was that LogisticsCo customers can impact on logistics costs by improving their purchasing efficiency, which has enhanced the value creation processes at FoodCo. *“The bonus here is that when our customers change their buying behavior they are simultaneously changing to a more efficient way of working ... instead of ordering one bottle of this and one bottle of that, meaning that they have to go through multiple tasks, they can now concentrate their purchases within a product area and do it on monthly basis, so they are saving a great amount of time ... so the whole value chain becomes far more efficient.”* (Managing Director, LogisticsCo)

The impact of these changes has been similarly observed in LogisticsCo: *“If we didn’t have our Internet Sales Application in place, I would need to have at least 150 people in phone sales”* (Managing Director, LogisticsCo). Hence, system-to-system integration has freed up resources previously allocated to customer service. In other words, the digital interface has replaced human labor in the relationship infrastructure. In addition, these changes have also made the process more efficient for LogisticsCo and generated a rise in aggregated volumes.

In supporting the continuous flow of exchange at the operational level, the shared system serves as a channel through which to react to fluctuations that disturb the daily flow. As an example, LogisticsCo Chain Customer Managers act as links between original producers and FoodCo, especially in terms of availability information: *“In case of a shortage we have to figure out quickly what the original purchase item could be replaced with ... we then put it on the system so that the customer can see it online.”* (Chain Customer Manager, LogisticsCo) In this sense, an essential part of daily communication is enabled by IT.

At a more strategic level, IT provides the platform for a centralized operating model. In the model, LogisticsCo has an integrator, or middleman, role providing one interface towards the suppliers in FoodCo supply base. This means that FoodCo does not have to build multiple links to connect digitally with their suppliers: *“If we didn’t exist, FoodCo would have needed to build connections to hundreds of suppliers. Now that we have built the connection [to the suppliers] everybody can use it. It is like the open code of Linux; we have built it so that our customers can operate in meaningful way.”* (Managing Director, LogisticsCo). The model enables centralized deliveries, price negotiations, and improved control of process related costs at the customer end. Mutual benefits include longer planning time as well as the ability to work with an efficient product range, which is purchased and managed by FoodCo but logistically operated by LogisticsCo. For LogisticsCo, the integrator role provides a competitive advantage as the new centralized operating model and, especially, the IT infrastructure developed and maintained by LogisticsCo can be regarded as pivotal in the differentiation process towards becoming a key supplier for FoodCo.

IT enabled operational excellence is linked to the strong social bonds in the relationship. There has been continuity within the relationship as, on both sides, there have been no personnel changes during the past 10–15 years; there are *“people with a similar, development oriented mindset on both sides.”* (Sourcing Manager, FoodCo). Partly the trust and commitment developed between the parties has created favorable circumstances encouraging further development projects related to IT in the relationship: *“They never point a finger at you ... or ask why you are doing it this way ... the starting point is always what they can do better to improve the whole pipeline.”* (Sourcing Manager, LogisticsCo). Conversely, the IT enabled system and operational excellence attained have further strengthened the social bonds based on mutual trust and strong commitment: *“We are deeply embedded in each other’s businesses and understand each other better all the time.”* (Chain Customer Manager, LogisticsCo); *“If you switch suppliers, it will take ten years to develop this kind*

*of relationship* (Managing Director, LogisticsCo); *“It would be a difficult and a slow, a very slow road to change the service provider. Building connections, if we think about IT connections only, takes time; but also because of all the other forms of collaboration, it would be extremely difficult to switch suppliers.”* (Sourcing Manager, FoodCo)

To conclude, at the action and structural level, integrated IT systems have enabled operational excellence through reliable and swift execution of purchase orders and deliveries and imposed changes in the value creation processes and organization structures of both the buyer and the supplier. The following section discusses the management layer of the relationship.

#### ***4.1.2. Information technology with reference to the management layer of the relationship***

The management layer of the relationship comprises the intra-organizational management processes at FoodCo and LogisticsCo, as well as the management activities of adaptation and coordination. The goals of the parties in the relationship and the relationship goals steer management actions; consequently, the relationship goals are implemented into practice through them (cf. Håkansson & Snehota, 1995). Within Alpha, the daily interaction is very much operational in nature. However, there is a large amount of strategic input behind the seemingly simple processes. At the strategic level the relationship greatly reflects the business goals of the parties involved in the relationship, and forms an entity in which these individual goals merge to form mutually shared relationship goals.

In the Alpha relationship, the possession of IT systems is supplier dominant. The supplier has made an intentional effort to differentiate itself from the other suppliers and became a key partner for the buyer. LogisticsCo was willing to differentiate itself as a key service provider for the Food Service industry through an emphasis on large customer chains. The supplier’s goal to improve its competitive positioning drove the development of the shared IT systems. The IT enabled supply chain capability, and related operational excellence, seemed to have the potential to help the buyer improve its previously manual purchasing process and support the core value creation process: *“The solutions suggested by LogisticsCo included methods to improve our process efficiency ... they will not impact on price directly but are more associated with the way we work ... this is how we ended up developing automated purchase ordering and increasing control of the whole chain.”* (Vice President Purchasing, FoodCo). Consequently, the evolving IT system was in line with the goals of the parties, and the relationship focus has been on developing an integrated IT enabled operating model that incorporates the key players within the supply chain.

Regarding the relationship, however, the implementation of the new model was risky for both companies. The risk to the buyer was an increased dependence on the supplier, and the related lock-in position that could prove dangerous if the supplier aimed to dominate the relationship. For the supplier, the investment into the shared IT system was primarily a relationship specific investment; LogisticsCo invested heavily in programming work in order to enable system integration with FoodCo’s in house ERP systems: *“It was not stated in any contract that we needed to perform programming work worth thousands of euros in order to make the customer’s system work.”* (Managing Director, LogisticsCo) This effort could lead to the supplier being in lock-in position or to wasted effort had the buyer exploited this position.

The deep interpersonal trust between the companies was an important prerequisite for the parties to engage in these development activities in a reciprocal manner. The social bonds within the relationship were further strengthened by the development activities and reciprocal orientation of both parties; also the fact that neither chose to exploit the potential power for their own benefit reinforced the relationship. Moreover, the other elements in the technical bonds, in addition to the

system itself, have also strengthened. For example, whereas previously there was one Key Customer Manager at LogisticsCo taking care of FoodCo's account, there are now two persons dedicated to this task. Hence both parties have dedicated resources, as well as created procedures and practices, to support the action layer.

A recent major IT related adaptation by LogisticsCo has been the development of the customer extranet as well as the supplier portal, which is an online extranet service allowing FoodCo and its suppliers to view performance data, thus further strengthening communication through technical bonds within the relationship and the wider network. FoodCo and LogisticsCo have jointly developed a set of KPIs and reporting formats, i.e. reciprocal adaptation, which are recorded and stored in the supplier portal. This portal enables detailed reporting of supplier performance data that can be used by FoodCo to manage its suppliers efficiently. The data on non-availability are especially critical; prior to the integrated operating model, these data were not stored anywhere: *"In phone sales times, if the sales person told you that this product is not available, where was this non-availability recorded? It was not recorded anywhere."* (Vice President Purchasing, FoodCo) In addition to providing statistics and follow-up data on supplier performance for FoodCo, LogisticsCo also undertakes follow-up and availability checks for several product groups, as these processes are not yet IT enabled.

Similarly, FoodCo has recently implemented a forecasting process for their restaurant units. Accordingly, units plan their menus for the forthcoming weeks; these plans enable demand for supplies, in terms of volumes, to be determined. The forecast data are then input into the in house resource planning system, from where it is transmitted electronically to LogisticsCo on a weekly basis. These forecast data are available to original suppliers through the supplier portal. FoodCo regards the forecasting process as helping their suppliers to plan their production volumes and LogisticsCo to make improved logistics planning. However, efficient transfer of forecast data is of lesser importance than the quality of the data. Thus, FoodCo is aiming to further train its sales units in making good quality forecasts.

These examples of recent adaptations reflect that, in its current form, the relationship can be considered as symmetric. Both companies have equally invested their time and resources into making continuous adaptations within the relationship; they have also helped each other to co-create value in the relationship regarding their own goals, as well as the mutual goals: *"FoodCo can express their expectations concerning IT development at the strategy level and, even though the IT related initiatives are substantial, we will implement them."* (Managing Director, LogisticsCo.); *"We are both so important to each other that both of us want to make this relationship as good as possible, so we don't have to think every day about needing to find a new partner."* (Managing Director, LogisticsCo)

The adaptations made go hand in hand with the coordination activities. The IT enabled operating model has enabled FoodCo to give more responsibility to its suppliers. For example, the supplier portal allows suppliers access to forecast data as well as performance reports. Previously FoodCo monitored the performance of the original suppliers, which tied up resources: *"Before having the supplier portal we needed to put more effort into the follow-up of supplier performance. Now we can tell our suppliers that KPI information is available in the portal, to look it up, and let us know if there are exceptions. If there are exceptions, we need an explanation."* (Vice President Purchasing, FoodCo.) Consequently, FoodCo has been able to advocate "exception management" by pushing responsibility for performance measurement and related follow-up upstream, involving original producers in the process of data retrieval and interpretation. For FoodCo, the IT enabled operating model has thus enabled division of tasks in a new way.

In sum, within Alpha, the companies have intentionally developed a joint supply chain capability that relies upon IT enabled integrated systems and processes. The efficiency requirement for Alpha stems from the extremely high frequency of purchase orders, which is further reinforced by a short lead time to market and special demands for the supply chain in terms of item availability and delivery temperature. As a result, the companies have a relationship geared towards operational efficiency, which primarily manifests itself as swift execution of purchase orders and deliveries. The creation of technical bonds, spanning the organizational boundaries integrating the two companies, plays an integral role in the relationship development. However, to leverage the relationship, the functionality has been extended outside the focal relationship to also include the original producers through technical bonds provided by LogisticsCo. Continuous management activities have been performed to co-ordinate the activities and responsibilities between the actors, to build new features, and to adapt existing features in the structural layer of the relationship for an improved fit with the action layer.

## 4.2. Relationship Beta

Case Beta comprises the relationship between ManufCo and PlanCo. ManufCo is a global player in the elevator and escalator industry. The product range comprises elevators and escalators, automatic doors, and solutions for modernization and maintenance. Key customers include builders, building owners, facility managers, and developers. The company operates from more than 1000 offices globally, and has eight global production units and seven global R&D centers. The technology unit in ManufCo is responsible for research, development, product lifecycle management, and the development of new technologies relating to, for example, motors or steering systems in their end products. In addition to having a major role in developing various components, the unit is in charge of patenting, design, and global product ownership.

PlanCo is the biggest service provider in the field of engineering services in Finland, with a clientele in global industrial equipment manufacturing. Its services cover technical and plant engineering, product information solutions, and enhancing the efficiency of engineering processes. PlanCo is a strategic supplier to the ManufCo technology unit, supplying various different engineering and planning related services for ManufCo's R&D projects. In addition ManufCo has outsourced certain lifecycle management responsibilities to PlanCo.

The Beta relationship is geared towards innovation and new knowledge. PlanCo's domain expertise is employed in various different ManufCo R&D projects and is targeted at commercializable solutions and knowledge. The companies share a joint history as the predecessor of PlanCo and ManufCo co-founded a company to which ManufCo outsourced a part of their R&D operations. The companies have a relationship to an extent where "*PlanCo operates as an extension of ManufCo's planning department.*" (Department Manager, PlanCo). When referring to PlanCo, ManufCo uses the term "subcontractor" rather than supplier. The ManufCo technology unit regards subcontracting and partnering as an important way of operating as "*partners have a major role in our operations and we create long term projects and commitments with them.*" (Vice President Technology, ManufCo). Furthermore, using subcontractors relates to improved flexibility: "*In subcontracting we are looking for flexibility and we are trying to purchase services that are not necessarily a core competence.*" (R&D Director, ManufCo).

IT plays a role in the relationship between the companies in two different areas. First, an integrated system-to-system connection is in place enabling the electronic transmission of purchase orders. The work order i.e. task assignment is transmitted electronically from the ManufCo project portfolio management tool to PlanCo; after approval, PlanCo transmits order files back to ManufCo's R&D department in electronic format. As a result of the system based purchasing process, order data are

stored in the ManufCo project portfolio where it can be used to monitor progress. Second, IT plays a more substantial role in the relationship in terms of integrating the value creation processes of the parties within the context of actual service delivery. ManufCo expects their subcontractors to use ManufCo's in house information systems and development tools to deliver the output, which can comprise certain types of planning work in the form of drawings, calculations, or models. Accordingly, the shared planning and engineering systems are critical tools in the relationship, which if not functioning, would prevent PlanCo from completing the assigned tasks. The role of IT in the Beta relationship is discussed through the action, structural, and management layers of the relationship in the following sections.

#### ***4.2.1. Information technology with reference to the action and structural layers of the relationship***

Regarding the technical bonds, the development of an IT enabled relationship infrastructure has not been intentional; rather, the IT elements have evolved over the years to support the value creation of both parties and the business exchange. Business exchange within Beta comprises complex and tailored engineering solutions, the main product being exchanged is expertise; for instance, knowledge in the domain of technical planning. The operating environment of Beta is project based, i.e. goal oriented, and temporary, with multiple actors involved in the projects (c.f. Möller et al 2005). Purchasing requirements are not standard as each R&D project is unique. The purchase of external resources usually takes place within the concept stage in ManufCo's R&D process; stages prior to this, i.e. idea generation, are typically managed in house by ManufCo. The need for external resources may relate to an improvement in an existing end product in, for example, the form of a new electrical appliance providing enhanced functionality, or to a concept prototype. Projects can last for years, although the typical duration for a subcontractor's task assignment is three months. Within Beta, IT supports the action layer of the relationship in terms of offering a uniform platform for PlanCo to deliver its knowledge-intensive output, and supporting the electronic exchange of documents during the PO process.

From ManufCo's value creation perspective, information technology enables the deployment of a uniform purchasing process within the R&D department. The R&D managers are required to raise POs via the project portfolio tool, which allows the placing of orders with contracted suppliers only. The tool thus enables enforcement of compliance. In addition, the project management system also operates as a reporting tool to monitor project progress, budgets and forecasts. At the strategic level, PlanCo would not be able to deliver their services without the ManufCo systems, the shared planning tools integrating the suppliers' value creation process to that of the buyer. In other words, the shared systems facilitate the codification of the knowledge and expertise of PlanCo, which forms the core of the service being exchanged.

The companies are interlinked in their ways of working and employ various social bonds at different levels of interaction. Integration is physical as well as virtual, with a lot of PlanCo employees actually working in ManufCo premises during task assignments, having their own ManufCo email accounts and access rights to ManufCo's intranet: "*A large part of our personnel working on our ManufCo assignments are actually working in the ManufCo network and have their own ManufCo email accounts ... in this sense we are quite deeply embedded within the ManufCo environment.*" (Key Account Manager, PlanCo). IT thus supports the social bonds by also enabling virtual bonding between actors.

#### ***4.2.2. Information technology with reference to the management layer of the relationship***

Within Beta, the daily interaction takes place in projects where operational issues and responsibilities are coordinated and managed face-to-face. The more strategic dimension of the collaboration within Beta centers on competences as "*Competence is the main criterion [in supplier selection] ... looking for the right kind of competence.*" (R&D Sourcing Specialist, ManufCo) Collaboration in terms of

competencies extends beyond daily interaction in that future competence needs and related development is a central issue reflecting the goals of both companies. In regular steering group meetings, the status of competencies and related development needs are discussed and, by identifying both obsolete and forthcoming needs, ManufCo attempts to ensure that PlanCo develops their competence base in the right way: *“We can anticipate the kind of competence needs we have and PlanCo can then develop their competencies in the same direction to match our needs. Consequently we can then trust that, when we need their services, they will have the right kind of competencies.”* (Vice President Technology, ManufCo.) As such, competence development may be highly dependent on IT as current shared systems require expertise from PlanCo personnel to be able to operate within the ManufCo environment. Therefore, potential changes within the IT domain may create new competence needs for ManufCo and can thus be a point to consider vis-à-vis the current supply base.

The Beta relationship can be considered as asymmetrical. Even if companies are integrated at the purchase process level with electronic exchange of work order documents, PlanCo has been making the most adaptation by learning ManufCo’s systems and using them in service delivery: *“PlanCo has to a large extent integrated themselves to our processes.”* (Vice President Technology, ManufCo). In executing the planning work, PlanCo uses programs and systems i.e. engineering and calculation tools defined and owned by ManufCo. PlanCo also has access to the ManufCo intranet and digital documentation database, i.e. “Electronic Documentation Management System”, and is thus familiar with ManufCo’s documentation architecture, required structure, documentation processes and required language. In this sense, the service delivery process is to a large extent defined by ManufCo, with the expectation that their systems will be used and that PlanCo resources have the necessary knowledge and capability to perform the task within the client system environment. If PlanCo recruits new employees, this specific knowledge needs to be transferred to them in case they will be involved in ManufCo projects. In this sense, ManufCo takes a major lead in managing the relationship whereas PlanCo is primarily an external resource that has a role in the value creation activities, but not in the managerial domain within the relationship.

A recent adaptation by PlanCo is a substantial investment into competence management and reporting, as the company has invested in an in house HR system to manage personnel in terms of competencies, domains of expertise, and knowledge. The system brings transparency in terms of competencies and enables identification of the right personnel with the correct knowledge and expertise for customer projects: *“It is challenging for us to know here, in house, all the kinds of competencies we have. We have been putting effort into this issue for some time.”* (Department Manager, PlanCo).

In addition to the new HR system, PlanCo intends to invest in a new email system that enables instant messaging, live meetings, and calendar sharing with clients that use the same system. This is seen as an improvement to daily communication as PlanCo’s clients are globally dispersed: *“Live meetings and sharing information online, having virtual meetings online, these systems support our work and make it more efficient.”* (Department Manager, PlanCo.) ManufCo is considering taking up the same email system; this reciprocal adaptation would enable deeper integration between the companies in terms of enhanced online communication and information sharing.

From PlanCo’s perspective, adaptation towards the ManufCo systems is a contradictory issue. Due to the joint history of the companies, PlanCo personnel have specialized knowledge and skills relating to ManufCo’s business, which is regarded as a competitive advantage: *“In terms of our shared history, we have a unique and close relationship and know that PlanCo has expertise and knowledge related especially to our line of technology.”* (Vice President Technology, ManufCo): *“With our long history, there is already a lot of knowledge about products and processes, and this helps in the*

*collaboration with ManufCo. If an entirely new player were to enter the market, it would take a long time before they could acquire this sort of knowledge.*"(Key Customer Manager, PlanCo).

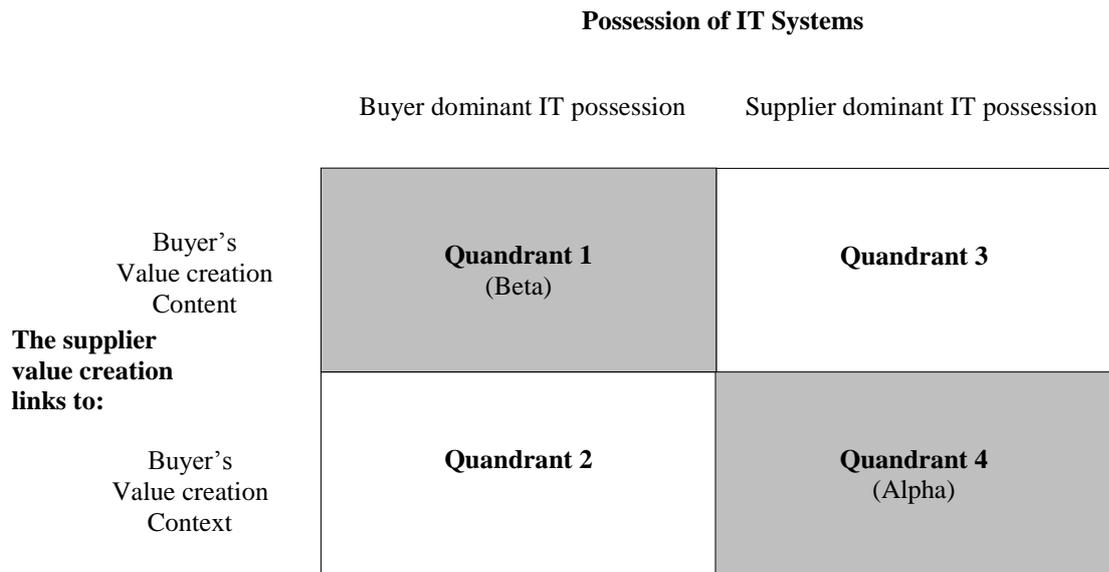
However, the high degree of adaptation may restrict the role of PlanCo in providing hourly based input instead of more comprehensive services. ManufCo is placing new requirements on their subcontractors in terms of production knowledge as well as innovativeness in general: *"We would prefer that suppliers are not just in standby mode, waiting for some ManufCo project manager to tell them that they should do it this way."* (Vice President Technology, ManufCo.) ManufCo would like PlanCo to adopt a greater role in the relationship and, especially, to develop the manufacturing capabilities to build prototypes, which are necessary as there is a difference between planned solutions *"as seen on the computer screen"* and the solution in practice: *"The link is missing, you have the plan and then what is, in fact, the reality ... what looks fine on the computer screen, is not necessarily a working solution in practice."* ManufCo also believes that it should be able to evaluate the quality of subcontracted work sooner, preferably early in the process: *"If the technical solution isn't working, then we have to start all over again ... we should be able to verify sooner that the solution is good and works in a way that we can build upon."* (R&D manager, ManufCo)

However also PlanCo is looking forward to a more stable and larger role in the buyer's value creation process. From PlanCo's perspective the pointed problem areas by ManufCo reflect not only their organization but also that of the buyer's: *"Related to the fact that we know how to offer services to our customers, so in a similar way the customer should know how to purchase them. In case a company wants to make supplier collaboration or subcontracting more efficient, then one should think about purchasing projects, meaning that a company can actually purchase an entire project from the supplier, and challenge the supplier with a timetable and a fixed budget that should be able to be met."* (Department Manager, PlanCo). On the basis of these arguments, it seems that there are evidently some problem areas in the relationship that prevent the full potential of the organizations to be realized in the value co-creation process.

## **5. DISCUSSION AND CONCLUSIONS**

### **5.1. Discussion on the results: the role and position of IT in a strategic buyer-supplier relationship**

The study findings reveal differences in how IT posits regarding the structural, action, and management layers of the studied relationships, Alpha and Beta. Regarding the structural layer, IT in Alpha was mainly located in the supplier organization, from where it was brought to comprise a key component in the relationship infrastructure. Conversely, IT in Beta was mainly located in the buyer organization, from where it was brought to comprise a key component in the relationship infrastructure. Similarly the action layer of the relationships was polarized in Alpha and Beta. Through the business exchange in Alpha, the supplier's value creation process facilitated the buyer's value creation process and enabled efficient exchange of information, goods, and that relating to compensation between the key actors in the supply chain. Through the business exchange in Beta, the supplier's value creation process merged with that of the buyer and became an inherent part of it in the activities of planning and designing the components the end products. In other words, IT in Alpha enabled the supplier to contribute to the context of the buyer's value creation process while, in Beta, it enabled the supplier to contribute to the content of the buyer's value creation process. The depicted major differences regarding the structural and action layers of the studied relationships go hand in hand with the role and position of IT in the relationship and are taken to form the 2x2 matrix depicted in Figure 2.



**Figure 2 The four situations contextualizing the role and position of IT in a relationship**

The two dimensions depicted in the matrix greatly contextualize the role and position of IT in a relationship. The wider premises regarding the dimensions (the four quadrants) are associated with the management layer of the relationship, which refers to the dynamic side of the matrix and can be divided into two categories of activities: activities that aim to improve *the consistency within the relationship* and activities that aim to improve *the total performance of the relationship* in relation to the surrounding business context. The consistency of the relationship comprises 1) *the fit within* (the fit between the elements within these layers), and 2) *the fit between* (the fit between the structural, action, and management layers). Based on the findings the proposition here is that the consistency links positively to the efficiency of the value co-creation process within the relationship. The total performance of the relationship refers to the value co-creation outcomes as evaluated by actors downstream in the supply chain, and compared to other available competing solutions. Thus the total performance of the relationship is a function of efficiency and effectiveness; the value co-creation is efficient and produces outcomes that outperform the substitute solutions. The following discusses the studied relationships with reference to the matrix and its three underlying dimensions of action, structural, and management layers of a relationship that link to the efficiency, effectiveness and total performance of a relationship.

**5.1.1. Alpha – A well performing relationship within quadrant 4**

Alpha posits to Quadrant 4 in the matrix – the supplier possesses the IT system and its value creation links to the buyer’s value creation context. The rationale of this relationship was in operational excellence through reliable and swift execution of purchase orders and deliveries. The current situation of the relationship is stable due to the balanced consistency of the relationship and the total performance of the relationship. The current situation is a result of the developmental path being significantly shaped by the development of IT in the relationship.

IT provided a strong foundation on which the companies were able to build, thus converting the previous, moderately performing operational bulk supplier relationship into a high performing partnership. The development of an IT enabled operation model caused changes in the action layer of the relationship – the value creation processes of both parties and the exchange between them, and to

the structural layer – the organization structures of both organizations adjusted to the changes as well as the relationship infrastructure. Also, as a result of the relationship development, management activities have become more planned in areas other than the domain of IT, and the social and technical bonds between the companies have strengthened. The developments within the relationship have enabled the companies to make their organizations (organization structure and value creation processes) more efficient and effective, not only in areas directly related to the mutual relationship but also in dealing with other customers and suppliers. For example, LogisticsCo has successfully transferred the model and knowledge gained to other customer relationships and, similarly, FoodCo to other supplier relationships.

### ***5.1.2 Beta – A moderately performing relationship within quadrant 1***

Beta posits to Quadrant 1 in the matrix – the buyer possesses the IT system and the supplier's value creation links to the buyer's value creation content. The nature of this relationship was innovation oriented through forming a platform on which the supplier could effectively and creatively create and deliver engineering and planning related services. The current relational situation is moderately stable. However, both parties intend to make changes to the relationship due to difficulties in its total performance and ability to realize the potential of the parties in value co-creation. Although IT has had a significant impact on the development of the relationship, it is apparent that there is structural inertia preventing fundamental changes within the relationship.

The relationship stems from the time when ManufCo outsourced part of its R&D operations to PlanCo in 1999, which is highly reflected in the relationship nowadays. PlanCo is more or less an extension of ManufCo, not because of joint development bringing them together but because of a lack of development to drive them apart. The current situation is one of being stuck in an intermediate position between full integration and complete autonomy that is manifest in the inconsistency of the relationship and its moderate performance. By possessing the IT, and thus the tools through which PlanCo operates, ManufCo, as a buyer, controls many of the elements in the relationship inhibiting its development. PlanCo is supposed to adapt to ManufCo's processes and tools, and does not have the power or motivation to actively develop them. In this sense, PlanCo's expertise is not put to best use, and its value potential is only partially realized. In its other roles in the relationship, supporting the order and delivery processes, the IT systems are to some extent underdeveloped and do not guide the order and delivery process effectively. Thus, the current situation regarding the structural layer of the relationship inhibits development of the action layer of the relationship. IT, as a major part of the structural layer, has a major role in keeping the situation in its current form. However, there is great potential for IT to initiate the development of the relationship in a positive direction, similar to the relationship within Alpha.

The results indicate that it is the buyer's intention to strongly control the value creation and asymmetrical roles between the companies. PlanCo, on the other hand, is frustrated in that they see their current role as being involved in scattered projects and various dedicated individual tasks, and not having larger responsibilities through which they could realize their potential more effectively for the benefit of both parties, and improve their competences in the long term for use in the focal relationship as well as in others. To some extent PlanCo blames ManufCo for restricting its role and is looking forward to a more stable and larger role in the buyer's value creation process. ManufCo would also like PlanCo to adopt a greater role in the relationship, and conversely, to some extent blames PlanCo for not having done so.

On the basis of the findings it seems that the parties need to recognize the different tradeoffs within and between the different layers of the relationship and to initiate actions to improve the consistency of the relationship, as well as the total performance of the relationship. The next step in the relationship in question is to define the mutual short and long term goals that identify where the

organizations are going together. It is then a question of defining the framework necessary to reach the goals effectively. What are the parties' roles and liabilities? What kinds of activities, resources, and organization structure do they require? This discussion is still slowly evolving.

## **5.2. Conclusions**

The current article aims at defining the role and position of IT within the buyer-supplier relationship. This theoretical contribution specifically relates to IT with reference to the buyer-supplier relationship, as well as contributing to the relationship management in areas other than IT. First, the study presents a conceptual model for studying the buyer-supplier relationship as an element embedded into a value chain, and as linked to the wider business context. Specifically the framework conceptualizes the actions and structures within and between the individual companies in terms of the three layers of a relationship: action, structural, and management. These layers provide a conceptual platform that facilitates bringing different inter-organizational phenomena under theoretical discussion regarding the buyer-supplier relationship.

Second, the study provides a conceptually and empirically based discussion on the role of IT regarding these identified layers. According to the findings of the empirical study, the IT was located in the structural layer of the relationship; IT was an element in the buyer-supplier organization structure and from there was brought to the technical setting of the buyer-supplier relationship. As a component of the structural layer IT provided support to the action layer of the relationship; among the other elements of the technical setting, IT provided support to the business exchange but was also associated with the value creation processes of the parties. As a component of the structural layer, and hence reflected in the action layer, IT also reflected in the management layer of the relationship. IT may form a strong element around which the management activities are implemented within the companies and, with regard to the relationship, promotes change and improve the consistency of the relationships as well as their total performance. Conversely, IT may constitute an element that promotes the stability or stagnation, inhibiting its operation and development, of the relationship.

As the focal case study shows, IT does not comprise a single, restricted entity but is intertwined with various structures and processes underpinning the intra- and inter-organizational landscapes. Hence the management of IT in a strategic buyer-supplier relationship is a task that needs a holistic approach, top management support, and commitment. At its best, IT serves as a communication forum ensuring organized consideration of the management aspects of the relationship regarding the three layers (structural, action, and management), their consistency, and total performance of the relationship. Wide ranging consideration of the internal resources and value creation of the companies, and their integration into a mutual relationship, and how this is linked to other relationships of the parties can be facilitated by planned and continuous development efforts, such as those related to IT. The effects of one party's actions are always subject to the perceptions of the other party and, thus, the better the companies know each other the better the relationship functions.

The managerial implications of the study derive from the empirical description of the two real-life cases, Alpha and Beta, and theoretical discussion. The IT systems in question are used in specific empirical settings involving different types of companies and, as such, set limits on its direct application in any other context. The general aim in relationship management is to facilitate effective and efficient value co-creation and thus the total performance of a relationship, which means that IT should act as a channel supporting actual value creation, and facilitating the implementation of the buyer's and supplier's goals in building an infrastructure for effective performance in the long term. The IT system should guide and support the service-production process in meeting set goals in at least two ways. First, it should guide the operational level activities as well as the management functions. In this, the buyer and supplier need to jointly determine the key areas of value creation in the relationship, and how IT could improve performance in these areas. Furthermore, the roles of the

buyer and supplier should be considered in terms of performance; to what extent the buyer affects the supplier's value creation by determining how the supplier operates, instead of determining the specifications for the expected outcome. The key to success is to define the various areas of expertise and to determine how they best contribute to value co-creation facilitated by the IT system. It could be concluded from the study that the buyer should intentionally learn to overcome the structural inertia that prevents it from giving responsibility to the supplier. Second, the IT system should guide the development of the technical setting of the relationship in order to support the value co-creation process. In this sense IT is not only about action between dyadic partners, but should also take into account the actions through which the parties could jointly introduce performance enhancing elements into the relationship.

In order to achieve success in this area the buyer must openly give the supplier responsibility for the aspects relating to the development of the process that it knows best. IT is not only a buyer and supplier management tool but is also a joint developmental means of improving value co-creation in the relationship from both parties' perspectives. It follows from this that the long and short term goals and expectations, as well as the instrumental use of the relationship to serve goals in areas outside the focal relationship (relationships with other customers and suppliers), should be openly discussed and agreed between the parties.

The focal study opens up a number of avenues for further research. First, explorative qualitative research would enhance understanding of IT as an intertwined feature present in various activities and structures within and between companies. This study facilitates that type of approach but further research is evidently needed in order to delineate a sharper view of the role and position of IT in a strategic buyer-supplier relationship. A single study can provide only a partial view, the defined linkages of IT with other organizational and inter-organizational activities, processes, and structures thus need more elaboration. Second, in order to strengthen the viewpoint of the current study it would be useful to continue scrutinizing IT with reference to the supply chain or network landscape of various actors. This type of research should aim for more detailed analyses and conceptualizations of IT, not only as a dyadic phenomenon but also as one linked to various intercompany processes and structures. Specific focus points include the disruptive and vitalizing effects on IT that arise in its interplay with other activities, processes, and structure in the inter-organizational space. Qualitative studies would contribute in terms of identifying these links to other organizational and inter-organizational phenomena. It would then be possible to form constructs, and describe their interrelations to be tested in subsequent quantitative research to explain organizational, relationship, value net, and supply chain performance. Finally, further studies should scrutinize the phenomenon in different empirical contexts. The resulting rich and perhaps partly contradictory findings from such studies would serve theorization and reveal other aspects affecting the role and position of IT in a relationship and supply chain.

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Appendix 1: The theoretical framework

**GENERAL BUSINESS CONTEXT**

