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Information System Providers in Business-Relationship Triads

Cecilia Erixon and Peter Thilenius

Introduction

Firms have become highly dependent on their use of information systems for daily business activities (Nakata et al. 2010). To function efficiently and provide necessary support to the firm's business, the management of a multitude of information systems involves continuous technical updates, as well as feature additions, adapting the system to the firm's different business situations (Brady et al. 2008; Ekman 2015; Ekman et al. 2015). Information systems generally become more standardised, yet the high expertise needed for maintenance and development of them entails that suppliers of information systems are increasingly specialised on particular systems. Furthermore, the growing number of specialised information systems, and the increasing use in business, make their operational management time-consuming, requiring high degrees

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of specialised knowledge. As a consequence, firms chose to move the management of information systems to external parties providing the systems (IS-providers). This phenomenon has been described as information system outsourcing, with research on the topic mainly placing attention to the strategic process of management decisions on when to outsource and to whom (Lacity and Hirschheim 2012; Rivard and Aubert 2015). Outsourcing effectively means that the firm, not only for internal needs, but also for their ongoing business undertakings in marketing, sales and purchasing, relies heavily on IS-providers for business performance (Heckman 1999). Due to increasing numbers of information systems and information system providers (IS-providers), firms can no longer rely on one single IS-provider but nowadays have a complex arrangement involving multiple IS-providers for the diverse information systems utilised in business (Gallivan and Oh 1999).

The firm's information system outsourcing thus forms a situation where the business with customers and suppliers is contingent on several IS-providers. Resembling a triad (cf., Simmel 1908 in Wolff 1950), the understanding of the situations where three parties—a supplier, a customer and an IS-provider—are involved in performing business operations, calls for a view on how the business of a supplier and its customer is affected by the inclusion of a third-party, the IS-provider. The phenomena of triads have been approached before in the fields of service management, operations management and supply chain management, and in industrial marketing following the business network approach (see Wynstra et al. 2015 for an overview).

Research has shown that information technology used in industrial marketing and/or sales as well as purchasing becomes integrated over time in the firm's business relationships (Lindh 2006), thereby affecting the overall performance (Sánchez-Rodríguez and Martínez-Lorente 2011). The integration of information technology means that a large share of the exchanges taking place in the business relationship of a supplier and a customer are facilitated by, and thus dependent on, a diverse set of outsourced information systems, operated by various third-party IS-providers. Research within the business relationship perspective has, thus far, approached this situation from a dyadic point of view, highlighting the characteristics of the relationships of IS-providers and their customers (Kern and Willcocks 2000) or the effects on the business rela-

tionship of those customers (Ekman et al. 2015; Lindh 2006). In this chapter, the phenomena of the three parties is explored as a business-relationship triad (Havila et al. 2004) where parts of the exchange between a supplier and a customer is contingent upon, and effectuated by, a third party IS-provider.

The chapter starts by outlining earlier research on business relationships and the role of IS-providers, then discussing business-relationship triads. Empirically the phenomenon is illustrated by one firm's customer relationship and the impact of four IS-providers as well as the information systems used. The chapter ends with a discussion and some concluding remarks regarding the contribution of extending the business network approach by viewing the IS-provider and information systems as a business-relationship triad.

Theoretical Background

The business network approach is founded on the notion that business relationships are the inevitable result of repeated exchanges that occur due to the marketing/purchasing activities of two firms. Over time, the exchanges bring directed behaviour and the business relationship becomes an organised structure which handles the business more efficiently. Furthermore, the repeated exchanges mean that the business relationship becomes unique, as well as long-term orientated. Hence, the business relationship, overtime, will be a resource that is difficult to replace. The exchanges are not only related to economic or product/service issues, they can also be based upon information requirements or a social, interpersonal characteristic. The business relationship will thereby hold different behavioural aspects that can, for example, be manifested as adaptations, commitment activities, communication, cooperation, development of interdependences and levels of trust (Hallén et al. 1991; Morgan and Hunt 1994).

Generally, business relationships are studied from a dyadic perspective (Holma 2010) and research has contributed to knowledge about how to analyse such, in addition to their characteristics. However, business relationships do not exist in isolation; they are connected indirectly or directly to other relationships in a network (Blankenburg Holm 1996; Havila 1996).

The fundamental notion behind connected relationships is often attributed to Cook and Emerson (1978: 725) where it is stated that:

> Two exchange relations are connected to the degree that exchange in one relation is contingent upon exchange (or non-exchange) in the other relation.

The connections of one focal business relationship with others in the network can be numerous, as well as supporting or disturbing a company's other business relationships (Ritter 2000). Earlier research addresses that not only business parties, for example, customers and suppliers, are of interest to understand the business network, but also non-business actors and ancillaries (Anderson et al. 1994; Hadjikhani and Thilenius 2009). Ancillaries are connected actors that are not participating per se in the marketing or purchasing, but influence or affect firm's business relationships. The IS-provider can to some extent be viewed as an ancillary; it does not participate actively in the firm's production or business, but their products, the information systems, are used to support the exchanges, and therefore become integrated parts of the firm's business relationships.

The information systems used by a firm are de facto operated and managed by the IS-providers, and it is therefore unavoidable for the firm to become dependent on them. Studies have thus far addressed firms' outsourcing of information systems using a business relationship perspective (Gottschalk and Solli-Sæther 2006; Heckman 1999; Kern 1997; Kern and Willcocks 2000, 2001, 2002; Lacity et al. 2009; Willcocks et al. 2004), as well as the use of information systems in business relationships (Damanpour and Damanpour 2001; Ekman and Thilenius 2006; Leek and Turnbull 2004; Leek et al. 2003; Lindh 2006). This research provides important insights for the understanding of business relationships and the information systems used within them, albeit, with few exceptions (cf., Erixon 2012), split into two perspectives: (1) with focus on the dyadic relationship with the IS-provider, or (2) with focus on the information systems used in the dyadic business relationship with customers or suppliers. In this chapter, the split between the two perspectives is proposed to be overcome by using a business-relationship triad view (Havila 1996; Havila et al. 2004).

IS-Providers in Business Relationship Triads

The IS-provider could be viewed as an ancillary intermediary of the information exchange in the business relationship between the supplier and customer, but '…the impact of the intermediary on the [dyadic] business relationship is usually not treated explicitly' (Havila et al. 2004: 173). This lack of explicit attention is common in outsourcing, that is, the impact on the business relationship of moving the information systems to a third party is neglected. However, this is precisely the main focus of this chapter. In the present situation three firms—a supplier, a customer and an IS-provider—use information systems for exchanges to '… interact on successive occasions […] come together repeatedly or […] be in communication often, conversing, exchanging products, and so on' (Thibaut and Kelley 1959: 191); thus displaying the characteristics of a triad, a business-relationship triad (Havila et al. 2004). In Fig. 11.1 the three parties with four different views on the situation are depicted. Figure 11.1a illustrates the situation of relationships studied separately,

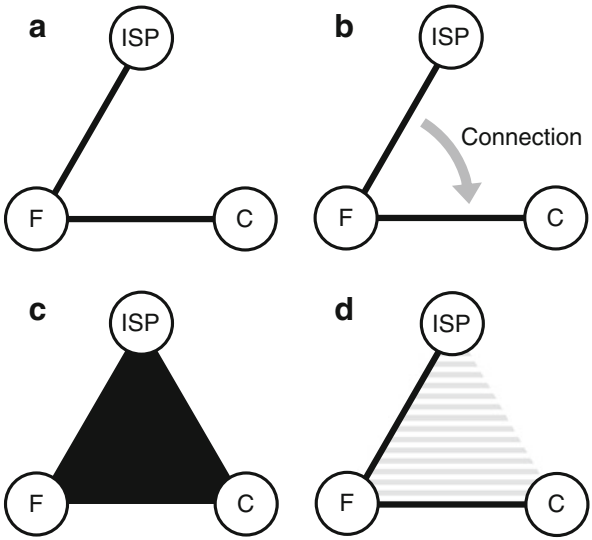

Fig. 11.1 Four firm (*F*)–Customer (*C*)–IS-provider (*ISP*) views: a) separated, b) connected, c) strength and d) continuity

while (b) highlights the connection between the two relationships. Figure 11.1 further illustrates the business-relationship triad in terms of strength (c) and continuity (d) which will be further elaborated upon.

In a business-relationship triad view, the main attention is not on the specific connections between the three parties. Rather, the emphasis is on how the three relate to each other in a group perspective. In the current setting, the extent to which exchange in the business-relationship triad involves the third party, the IS-provider, varies. The rationale for the variation is that some information systems are used on a daily basis, such as enterprise systems or intranets, whereas others are used occasionally, for example decision support or project management. The intensity of the exchanges involving the IS-provider can be understood as the strength of the business-relationship triad; bearing in mind, that intensity may also be mirrored though the non-exchange effects on the triad. The strength of the business-relationship triad (see Fig. 11.1c) may impact on one or more behavioural aspects, such as trust or commitment (Havila et al. 2004).

Information systems, their development and use, are often evolving in a project-like manner. During the projects the information systems have intermittent periods where business is hindered, while there are also periods when it is enhanced due to improved and/or expanded functionality. Continuity is often seen as an indication of stability (Corsaro and Snehota 2012) although business networks are not necessarily stable and business relationships do not automatically last (Kamp 2005). Business relationships may be interrupted, have periods of little or no business exchange and be discontinuous in character (Hadjikhani 1996; Hadjikhani et al. 2012). If the information system usage is uninterrupted the business-relationship triad is more continuous, while if it is affected at certain occasions it is more discontinuous (see Fig. 11.1d). Researchers such as Coughlan et al. (2003) and Easton and Araujo (1992), express the importance of continuity and discontinuity when studying business relationships. Continuity/discontinuity can allow for further understanding of the business-relationship triad as high continuity implies a stable, ‘closed’ triad, while high discontinuity can be associated with an intermittently ‘open’ triad. Thus, the business-relationship triad of a supplier-customer-IS-provider can be understood in the terms of its strength and continuity.

Method

To illustrate the 'supplier–customer–IS-provider' business-relationship triad, information from a case study with multiple interviews has been used (Erixon 2012). Case studies have been argued to be an especially appropriate research approach when studying business relationships and their embeddedness in networks (Dubois and Araujo 2007; Easton 1995). This study has been structured on how the IS-providers of a focal company's information systems impact one of its customer relationships, based on 22 interviews and data from non-intervening observations of information system use. Archival material and business documents were reviewed as a complement to the findings from the interviews. The interviews were guided by a semi-structured protocol and the typical respondents were the CEO or others in managerial positions. Each interview lasted between 45 and 120 min. To promote openness, all interviewees were assured anonymity. The interviews were recorded, transcribed and then posted to the interviewees for validation.

All firms in the study are anonymous and given alias names. The focal firm, referred to as Automata, is in the automation and process industry while the customer, Pulper, operates in the pulp and paper industry. The customer in this study was chosen by Automata with the criteria that it needed to be a long-lasting and important customer. Automata have over the years sold automation products to Pulper, which have been incorporated into Pulper's production system. Automata and Pulper are both well-established multinational companies with operations in several facilities in a number of countries. The business relationship of Automata and its customer Pulper is studied concerning four different IS-providers: one for the enterprise resource planning (ERP) system (Esystems), another for a decision support system (Decidor), the telephony (Phonia) and ultimately for email and the information system infrastructure (Infrate).

Automata was asked questions concerning their information system usage with customers in general as well as on the business relationships with Pulper and the IS-providers. The business relationship in general was focussed upon when interviewing Automata's customer Pulper, specifically the customer's view on the information systems used in their business with their supplier. The IS-provider's relationships with Automata

were in focus when interviewing IS-provider representatives, as was the information system they maintained and managed for Automata. The analysis of the collected data was made in two steps. Initially, the business of Automata–Pulper and Automata–IS-providers were analysed as dyadic business relationships with focus on the business activities in terms of exchange and behavioural aspects, before moving on to the analysis of the four business-relationship triads.

Four IS-Providers and a Firm's Customer

In this empirical illustration the information systems provided by four IS-providers are described with focus on Automata and its important customer Pulper. The communication relating to the ongoing business activities of Automata and Pulper is to a varying extent achieved through the use of different information systems.

Esystems and the ERP System

Automata uses Esystems' ERP system, a cross-functional and company-wide information system supporting a wide range of business activities on a daily basis when dealing with Pulper. The ERP system is crucial in supporting Automata's various business functions, for example, production planning, manufacturing and project management, yet it is also important for business activities with Pulper, such as ordering and invoicing. The ERP system is Automata's main information system and contains data regarding sales, production cost, maintenance cost and various material stocks. This allows Automata to track, plan and analyse the business with Pulper. Esystems has stationed personnel with specialist competence at Automata where they work together with Automata's staff. The business functions handled in the ERP system allow Automata to feel confident in maintaining high delivery quality to Pulper. The business of Automata and Pulper is well established, and Esystems have adapted systems in order for direct transactions to be made. Esystems' ERP system is integrated with other systems regarding the supply of material to Automata's production and tracks all needed for the products sold to

Pulper. Through the ERP system, units within Automata share various information regarding their business. However, the information can be also used in communication with Pulper. Automata and Pulper have conducted business since the 1980s, and the ERP system is important when Automata has larger deliveries to Pulper, as it forces Pulper to completely halt production, which needs to be planned months ahead of time. If Automata fails to deliver as planned, it would have severe economic consequences for Pulper (and most likely for Automata). Esystems' ERP system is the most used and most critical for Automata in its business with Pulper as a manager at Automata explains:

> The [ERP] system is a supporting factor for us. Without the organising [of the ERP system] the entire business would stop. Without [ERP] systems we wouldn't be able to be as efficient as our customers expect and they wouldn't want to have anything to do with us. We wouldn't be able to be competitive and we wouldn't exist as company if we did not use it [the ERP system].

Decidor and Qlikview

Pulper has expressed that high-delivery quality is one of the most important aspects in their choice of a supplier. Decidor, the provider of Qlikview, a decision support system used primarily internally by Automata, was chosen in order to ensure successful 'quality' business with Pulper. Decidor maintained that Qlikview would help Automata to track and manage all deliveries to Pulper by using data over time for prognoses. Qlikview's user-friendly interface, with graphs and diagrams, makes it easier to foresee if delivery performance will decrease. Automata can then evaluate what has happened and how to enhance quality to be proactive in keeping their customer Pulper satisfied. Decidor's system allows Automata to manage and maintain a high delivery value, and the information can be used dealing with Pulper as one manager at Automata stated:

> The Qlikview presentations with the graphs and diagrams help you to get an overview of different data. This makes it much easier to illustrate data to Pulper. For instance at one time they 'felt' that the delivery performance from us had gone down and by using Qlikview we could easily show them that wasn't the case.

Phonia and the IP-Telephony

Automata is highly dependent on the use of the telephones in their daily dealings with Pulper. The telephones run on an IP-telephone system operated by Phonia. All employees use smartphones and can access the intranet, check email, place orders in the ERP systems or search Qlikview using them. Naturally, the IP-telephone system is frequently used to communicate with all business partners, but for contact with Pulper, the telephone is stressed as extra important. One manager in Pulper's procurement and project management expressed the importance of telephone usage:

> A phone call shows higher involvement from the other party since it is so easy to send emails everywhere. A phone call indicates a deeper engagement concerning the errand at hand.

However, even if the telephones are important in the day-to-day business, they are only used to mainly 'grease the wheels of business'. All important business information is in the ERP system. The impact of the IP-telephony system on the business only becomes an issue when it malfunctions. During failure, even if it is only a matter of hours, the possibilities for maintaining communication with Pulper and other customers are disturbed. An account manager at Automata stresses:

> If for example the telephones do not work, there would be severe difficulties regarding our customer relationships. It is primarily telephone and emails that are the most important IT tools for information exchange… at one time we almost missed an order due to the fact that our phones didn't work.

Infrate, the Email, the Intranet and All Machines

Emails are extensively used in Automata's communication internally as well as in contact with all customers and suppliers. The contact with Pulper is no exception, and the email system provides support for sending and receiving both formal and informal messages, often in combination with plans, technical drawings, spreadsheets and pictures, sent back and forth between engineers, marketers and managers. Automata has intense

contact with Infrate, operator of the email system, to ensure that the email system is functional which Automata considers to be as important as the telephone contact with Pulper. The email system is linked to Automata's intranet, which Infrate also operates and maintains. Automata's employees use the intranet to share necessary information for internal purposes. Such information-sharing involves providing product information, production schemes, diverse arrays of forms, as well as employee information. An account manager at Automata explains:

> We have high levels of mail correspondence with all of our customers to exchange information regarding products, projects etc. We also take decisions through email correspondence. We are dependent on the use of email.

Infrate actually operates and maintains Automata's overall information system infrastructure, that is, the hardware necessary to access any of the systems, and has personnel stationed there. A functioning information system infrastructure is a precondition for accessing all the others that Automata uses. Notwithstanding, even if Infrate is in frequent contact with Automata, the hardware infrastructure is rarely an issue impacting on the dealings with Pulper as that communication is all about business.

Analysis

The empirical illustrations above outlined the business of four IS-providers and one firm's customer. The first illustration concerned Esystems (and the ERP system) which Automata communicates with on a daily basis and have their personal stationed at Automata. All Automata's core business exchanges (product and monetary) in the dyad with Pulper are contingent on the ERP system of Esystems, which provides indications of high strength in the business-relationship triad of Automata–Esystems–Pulper. Esystems has personnel based at Automata and the ERP system is integrated in both the production and monetary exchanges with all Automata's customers. For these exchanges to function uninterrupted, the system must always be operational, meaning that, apart from strength, the business-relationship triad also can be characterised by continuity. Automata's use of Qlikview in the

business with Pulper is an essential exchange support in the relationship as it manages Automata's delivery performances, even though Automata does rely more on other IS-providers with Pulper. The system only allows Automata to illustrate their delivery performance, whereas systems handling other aspects, such as production and actual delivery, are of higher importance, thus making the business-relationship triad of Automata–Decidor–Pulper appear weaker. The illustration reveals the intricacy of business-relationship triads; the information exchanged by Automata in the dyad with Decidor maintains their ability to monitor the delivery performance to all customers and indirectly facilitates the possibility for Automata to display their commitment to Pulper by exchanging information corroborating their efforts in maintaining a high delivery performance. The commitment activities shown by Automata may in turn engender trust in the dyad with Pulper, thereby strengthening the business-relationship triad. However, the dyad with Pulper is fundamentally based on the deliveries per se, rather than the information regarding them. This is why the business-relationship triad with Decidor *is* weaker. Furthermore, the commitment activities are not continuous as the provision of significant information, emanating in the use of such decision information system only occurring occasionally. Despite the discontinuity, this business-relationship triad is essential for maintaining the business of Automata and Pulper.

The business Automata has with Pulper is not hinged on the telephone, that is, Phonia's IP-telephony system is there and used, however not in a crucial way. The day-to-day business situation of Automata–Pulper can be managed by the use of other systems, rendering this business-relationship triad weak. Even if the telephony system is frequently used for a variety of purposes, including access to other systems, the main purpose of the communication is to 'smoothen' the business with the occasional rise of importance when acute issues are solved by emergency calls. This discontinuous character of the business-relationship triad becomes evident when the IP-telephony system malfunctions as stated. The subtext is that existence of strong functioning triadic relationships is important, regardless of them being continuous or discontinuous. At a system failure, the communication and exchanges are instantly disturbed by the impact of the temporary IS-provider's interruption. Thus, the business-relationship triad is obvious, albeit occasional and short term in nature.

Email is another system less complex in use, but when employed in the business-relationship triad, it supports all ad hoc communication regarding product features, planning and other issues needing to be resolved. Its role is vital for the long-term cooperation between Automata and Pulper and in extension, the third party Infrate (the system provider), thereby strengthening the business-relationship triad. The use of email is though, despite the frequent use, only crucial at certain occasions when important issues need to be handled by Automata and Pulper, indicating lesser continuity in the business-relationship triad of Automata–Infrate–Pulper.

The analysis has highlighted differences in the business–relationship triads due to varying strength and continuity. Interestingly, the business-relationship triads displayed more complex patterns than can be explained by connecting the two dyadic business relationships. For example, the email system of Infrate and the ERP system of Esystems are both used on a daily basis and both engender continuity in the business-relationship triad. The email system supports communication with Pulper and is used to send information regarding projects, products and management issues, while the ERP system is extensively used for production planning, ordering and invoicing. Infrate is, through the infrastructure, crucial for keeping all information systems up and running, especially since they are linked to Automata's intranet and to the IP-telephony system, which both are important for the personnel's day-to-day problem solving in the contacts with Pulper (and also so regarding Infrate, Decidor and Esystems). This line of argument demonstrates that business exchange involving three parties is better understood as business-relationship triads, rather than one focal business relationship and a few connected relationships. Furthermore, the examples show a situation in which the integration of outsourced computer-based systems elevates the importance of studying connections from a triadic point of view.

Conclusions and Managerial Implications

This chapter has contributed to the extension of the business network approach by highlighting the importance of studying outsourcing of information systems to external third parties, IS-providers, as business-relationship

triads. In prior research, a firm's IS-provider relationships and business relationships have been studied separately and are most likely also managed separately by the firm. Taking a more comprehensive view on externalisation of information systems, as presented in this chapter, may help the complex managerial situation because the information systems are integrated in the business relationship.

At first glance, you would, perhaps, not think that an IS-provider of an internally used decision support system could influence a customer relationship of a firm as the empirical example has highlighted in this chapter. Therefore, a deeper understanding of the impact is important, which implies that the business relationship involves more than two parties. Depending on how IS-providers and the information systems are used, the business relationship is thereby better understood as a triad rather than two dyads. By ascertaining the strength and continuity of the business-relationship triads involving the use of information systems, the firm can identify how and in what ways different IS-providers have a major impact on their business with customers and suppliers. The indication is on a complex managerial situation which acertains that IS-providers are crucial for the firm's business in both short-term and long-term perspective.

The empirical illustration shows that the influence the IS-providers have on the firm's exchanges with its customer is essential in the business-relationship triad. In the empirical illustration, the IS-providers and their relevance for the focal firms' business stability of operations is evident. The implication of the business-relationship triad strength is that IS-providers are not just connected to business relationships in the traditional sense; they are part of the business relationship. In some cases the triad is weak while in others strong, indicating that the effect on behavioural aspects of the business relationship, such as trust or commitment, of the third-party IS-provider varies. The stability of the focal firm's business stability is also affected by the continuity of the business-relationship triad. In some instances the business-relationship triad is continuous indicating a more closed structure resembling a unitary triad (cf., Havila 1996). In other instances, latency or disruptions in impact of the IS-provider generate discontinuities opening the business-relationship triad to aspects such as distrust (Hadjikhani and Thilenius 2006).

Apart from the viability of characterising business-relationship triads by the strength and continuity/discontinuity, the analysis made it apparent that the IS-providers are interlinked. This implies that approaching the situation not only as business-relationship triads but also as complex sets of multiple interlinked triads might provide further insights. In this, when the IS-providers are seen as parties in business-relationship triads and not just suppliers of outsourced information systems, the intricacy of the situation becomes even more apparent and interesting. The observation hints that the business-relationship triad studied in this chapter might be the hidden link that extends the business network approach into the network structures of new technologies.

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