

## **Adaptation and commitment in Internet-supported relationships and networks: A case study**

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### **Abstract**

In the literature on inter-organizational relationships and networks, interaction is often seen as a process of mutual adaptation among business partners. Adaptation furthermore is viewed as a precondition for obtaining and sustaining commitment within business relationships. This paper is concerned with how the increased standardization and modularization enabled by Internet technologies challenge our understanding of adaptation, commitment and the relationship between the two. A theoretical framework for analyzing different types of adaptation is developed and applied to a case study in the IT industry. Analysis of the case shows how the application of Internet technologies reduces the extent of some types of inter-organizational adaptation; however, without severely affecting commitment. Analysis also shows that the improved efficiency and optimization of activities and resources found in some relationships is contingent upon the continued individualization and market-orientation of other relationships and that the two therefore cannot be viewed in isolation.

**Keywords:** Adaptation, commitment, Internet, relationships, networks, routines, trust, standardization

## **Adaptation and commitment in Internet-supported relationships and networks: A case study**

### **Introduction**

With reference to the increased standardization and modularization of activities and interfaces between companies enabled by Internet technologies, the increased use of such technologies to support relationships with customers, suppliers and other business partners can be expected to cause a fundamental shift in the nature and extent of inter-organizational coordination. As Internet technologies pave the way for business models in which activities and information are less context-bound and accessible without personal interaction, the need for relationship-specific investments and adaptations is expected to decrease and a general change from relational to more discrete exchange forms closer to the market efficiency ideal of neoclassical economics has been predicted (Anselmi, 1997). Allowing a wide range of actors to access large amounts of detailed information across geographical and organizational boundaries, the Internet is seen as an enabler of a new, quasi economically efficient market place, creating the foundation for a general increase in market exchange efficiency reflected in reduced costs of coordinating and executing transactions (Evans & Wurster, 2000; Pires & Aisbett, 2003). However, although the Internet allows for improvements in information sharing and transaction efficiency, it has also been argued that this may not lead to an overall rationalization of interfirm coordination, but instead to increased interdependence and complexity (Gadde, 2004). Discussions have addressed how activities, processes and information that require adaptation to, for instance, customers or markets and that rely on the transfer of un-codifiable and ambiguous information cannot be satisfactorily handled over the Internet and is likely to continue to require physical presence (Leamer & Storper, 2001; Petersen, Welch, et al., 2002).

In the literature on inter-organizational relationships and networks, the interaction process in business relationships is often seen as a process of mutual adaptation among business partners (Hallén, Johanson, et al., 1991; Håkansson, 1982; Johanson & Mattsson, 1987). Interaction and coordination between actors in a relationship take place as these actors make mutual adjustments or adaptations of the activities and resources that are part of the relationship (Håkansson & Snehota, 1995). Due to the idiosyncrasy and irreversibility of the costs of making adaptations for the specific purposes of a single relationship, mutual adaptation reaffirms the intentions of business partners of continuing to maintain or grow a business relationship and a causal link between adaptation and commitment is often assumed (Anderson, Håkansson, et al., 1994; Hagberg-Andersson, 2006; Walter & Ritter, 2003). This paper addresses the issue of whether the use of Internet-technology to support and maintain business relationships may weaken this link. Based on the increased standardization and modularity enabled by the use of Internet-technology, a general decrease in the level of relationship-specific investment and adaptation may be posited (Ford, Berthon, et al., 2002). If the mentioned link between adaptation and commitment does indeed exist, one would further expect decreased adaptation to result in relationships characterized by a lower level of commitment between actors. However, besides comments about changes to the level of adaptation as an outcome of the increased application of Internet-technologies made in related discussions, the issue of adaptation in Internet-supported relationships and networks is seldom explicitly addressed. This paper therefore addresses the following research question: How should we understand adaptation and the relationship between adaptation and commitment in Internet-supported business networks? In order to more fully understand the effect of Internet-enabled ICT on adaptation, it is argued that we need to take into account the interdependencies between adaptations in the different relationships in a network.

The research question is discussed by means of a case study in the IT industry concerning a company called Comlog A/S. Comlog is a Danish developer and provider of telematics solutions for the transport industry and the case is about their introduction of a new Internet-based fleet management solution and how the use of Internet technology as the backbone of their business model has provided a number of opportunities for reconfiguring and relocating activities and resources within this system. It has also, however, substantially affected the level and nature of adaptation in the different relationships within Comlog's network.

The paper is structured as follows. First, a theoretical framework is presented, where adaptations are viewed in terms of an activity, a resource and an actor layer (Håkansson & Snehota, 1995). In developing the framework, the expected effect of the Internet on each layer is addressed. Next, the case study and the methodology applied in developing and analyzing the case are introduced. Then, findings pertaining to the

levels of the framework are presented, leading to a discussion of how different types of adaptations are affected differently in Internet-supported relationships and how apparently relationship commitment can be maintained despite a general decrease in adaptation. It is also discussed how the improved efficiency and optimization of resources and activities made possible through the increased standardization and modularization of some relationships through the use of the Internet is contingent upon the continued individualization and market-orientation of other relationships and that the two therefore cannot be viewed in isolation. Finally, implications for management and further research are outlined.

### **Theoretical framework: Relationships as reflections of mutual adaptations**

The processes underlying buyer-seller relationships consist of interaction (Ford & Håkansson, 2006). Interaction is a range of repeated exchange episodes between two actors, each of whom is influenced by and is able to influence the other (Canning & Hanmer-Lloyd, 2002). In this way, the interaction process is also an adaptation process and repeated interaction results in the linkages between two actors becoming increasingly adapted to each other (Hallén, et al., 1991; Håkansson, 1982; Johanson & Mattsson, 1987). Adaptations have been defined as ‘behavioral or organizational modifications at the individual, group or corporate level, carried out by one organization, which are designed to meet the specific needs of one other organization’ (Brennan, Turnbull, et al., 2003:1639). As such, adaptations are not confined to products, but may be made to a number of different dimensions related to exchange among business partners, such as, for instance production processes, stocks and logistics and information exchange (Brennan, et al., 2003; Hallén, et al., 1991; Johanson & Mattsson, 1987). Adaptations are idiosyncratic investments in relational assets. They are related to specific, individual relationships, represent locally optimized solutions to specific problems and therefore have little value in other relationships (Hallén, et al., 1991). In other words, investments in adaptations represent sunk costs that cannot be transferred from one relationship to another and in this respect, the concept of adaptation bears some resemblance to that of transaction-specific investments and asset specificity as associated with transaction cost analysis (Heide, 1994). At the same time, the concept of adaptations is more inclusive in that it also entails the investments to foster trust and further develop existing relationships just as they are related to inter-organizational relationships and not just transactions (Brennan, et al., 2003). Because making adaptations is an investment in terms of time and money on behalf of the actors that are part of a relationship, the extent of adaptations is generally dependent on the intensity, frequency and complexity of the exchange process. The adaptation literature typically adopts a dyadic perspective, focusing on the type of adaptations made in individual relationships and sometimes also on the adaptation process, but seldom on the consequences of and for adaptation in other relationships with which a focal relationship is connected or dependent.

Adaptation has become a central concept in the literature on buyer–seller relationships and business networks, not least as discussed within the IMP tradition. Adaptation is viewed as a necessary element of the management of individual relationships and as a precondition for value-creation and sustained competitiveness (Brennan & Turnbull, 1999; Brennan, et al., 2003; Hagberg-Andersson, 2006; Walter & Ritter, 2003). A shared assumption underlying the majority of literature on adaptation is that the implementation of mutual adaptations is a pre-requisite for engaging in and developing long-term relationships (e.g. Brennan and Turnbull, 1999), i.e. in order to obtain the necessary commitment in a relationship, adaptation on a relationship-by-relationship basis is needed. Adaptation hence is considered a central feature of business relationships (Hallén, et al., 1991). As illustrated by the arrow in Figure 1, the outcome of adaptations is an increased level of commitment between actors (Hagberg-Andersson, 2006; Walter & Ritter, 2003). According to Anderson, Håkansson and Johanson (1994:10), “[r]elationship commitment captures the perceived continuity or growth in the relationship between two firms”. As such, commitment is closely linked to relationship continuity and is indicative of the intent of business actors to continue their relationship, making them prone to excluding from consideration alternative relationships or exchange alternatives (Anderson, et al., 1994; Dwyer, Schurr, et al., 1987). This, in turn, means that relationships which are highly adapted to fit the requirements of a single counterpart are generally also viewed as more enduring (Johanson & Mattsson, 1987). Although the literature does recognize negative consequences such as increased dependence and loss of control as also resulting from adaptation, the assumption that the benefits of adaptation outweigh the costs of it seems to go largely unquestioned. On the contrary, a high level of mutual adaptation is seen as a desirable end and adaptive behaviour is regarded as symbolic of the commitment of actors within a relationship towards one another (e.g. Hagberg-Andersson, 2006).

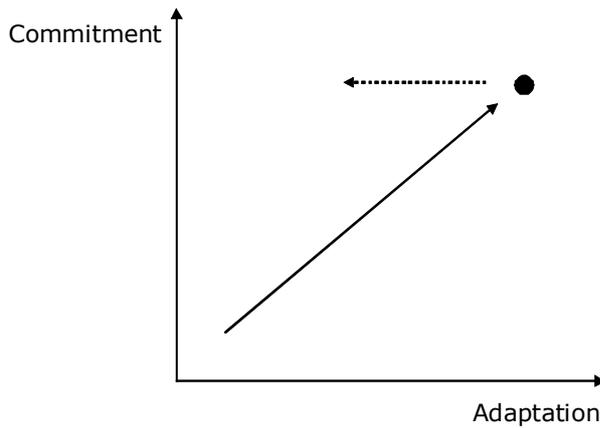


Figure 1. Adaptation and commitment.

However, speculation that the increased use of Internet technologies to support relationships may lead to a general decrease in the need for dyadic adaptations seems warranted. A widely accepted consequence of the digitalization of information and activities is increased standardization and modularization (Gopal, Ramesh, et al., 2003). The modularization debate focuses on the relationship between standardization and costs of coordination and a central claim is that increasing digitalization entails increasingly modular architectures, which, in turn, allow for clearly specified interfaces among activities and firms (Andersen, 2006). Increasing modularity can substantially decrease the complexity of coordination within, for instance, inter-organizational relationships and the coordination of activities previously handled by means of adaptations may be expected to decrease accordingly. Increased standardization may take place alongside differentiation, as one of the advantages often linked to the Internet is its very ability to allow for a greater degree of standardization of activities, while at the same time making these activities appear differentiated or individualized to the counterpart (Moen, Endresen, et al., 2003; Sawhney & Parikh, 2001). On that background, we may reasonably expect that the integration of the Internet into a business relationship may provide opportunities for shifting the balance between standardization and differentiation of activities towards increased standardization. Ford, Berthon et al. (2002), for instance, argue that one of the consequences of the increased use of the Internet is an expected reduction in the level of relation-specific investment. The question is, however, not only if this decrease of dyadic adaptation actually does take place, but also to what degree it affects the level of commitment within a network, illustrated by the dotted arrow in Figure 1. In order to look into this issue, the framework illustrated in Figure 2 will be applied.

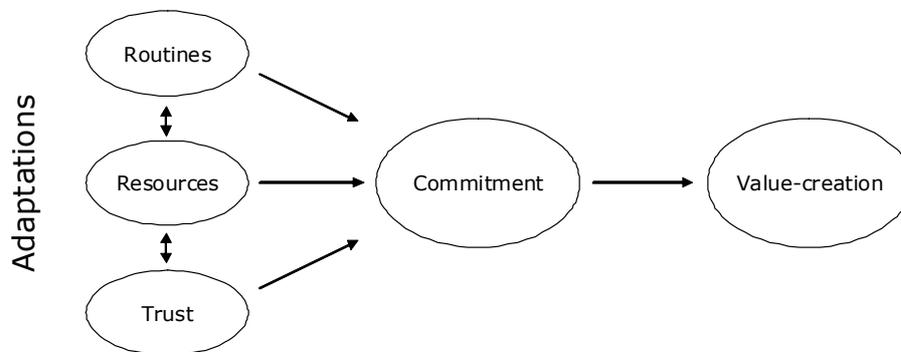


Figure 2. Dimensions of adaptation

Inter-organizational relationships are often viewed in terms of an activity, a resource and an actor layer, which together form the substance of a relationship (Håkansson & Johanson, 1992; Håkansson & Snehota, 1995). The concept of adaptations can be related to each of these layers. First, adaptation of activities takes place as, over time, two actors develop and implement inter-organizational *routines* in order to increase the efficiency of activity coordination (Håkansson, 1982; Håkansson & Snehota, 1995). Second, *resource adaptations* emerge as two actors combine their individual resources to form relationship-specific resource ties. Third, inter-organizational adaptations are also part of a social exchange process leading to the formation of *trust* between actors in a relationship (Hallén, et al., 1991). Together, routines, resource adaptations and trust constitute the collective adaptations within a relationship, which in turn lead to increased commitment and mutual dependence between two actors. At the same time, adaptation and commitment determine value creation opportunities in the relationship (Walter & Ritter, 2003).

### *Inter-organizational routines*

An organizational routine describes a sequenced pattern of activities performed to achieve a specific aim and as such ‘organizational routines can be defined as repetitive, recognizable patterns of interdependent actions, carried out by multiple actors’ (Feldman & Pentland, 2003:95). Used in a business network context, routines are used to coordinate the activities of individuals within interacting companies (Andersen, 2003). They reflect how actors in their attempts to minimize the costs associated with this coordination come to agree on certain operating procedures (Håkansson & Snehota, 1995). These procedures give stability to the relationship and direction to recurring activities within it (Cyert & March, 1963). Routines represent solutions to problems that actors have encountered and solved over time and as such, they represent locally efficient solutions that may only be beneficial for a single relationship (Håkansson & Snehota, 1995). Over time, the formation of routines leads to increased commitment between actors.

As the Internet makes it possible to efficiently coordinate activities in other ways than through the development of relationship-specific routines, the general level of idiosyncratic inter-organizational routines can be expected to decrease. Underlying this expectation is the suggestion that the increased use of the Internet will lead to better informed, more assertive actors, indicating a shift away from ‘the idea of business customers constrained in existing relationships by virtue of inertia and lack of knowledge’ (Ford, et al., 2002:195). This potential ability of the Internet to make redundant or work against the inter-organizational inertia, which traditionally has been the price for efficient relationships, means that efficiency can be obtained in other ways than through the development of idiosyncratic routines over long periods of time. Leek, Turnbull et al. (2000), for instance, expect the improved information access and exchange provided by ICT to lead to a lesser degree of institutionalization of relationships and hence, implicitly suggest that inter-organizational routines questioned by neither of the actors in a relationship will become less prevalent in the future.

### *Resource adaptations*

In general terms, resources can be understood as ‘the tangible and intangible assets firms use to conceive of and implement their strategies’ (Barney & Arikan, 2001:138). Inspired by the work of Penrose (1959), resources can be viewed as heterogeneous (Håkansson & Snehota, 1995; Håkansson & Waluszewski, 2002). Resource heterogeneity reflects the fact that a given resource can be put to use and combined with other resources in an indefinite number of ways and consequently, the value of a resource depends on its use and combination with other actors’ resources (Håkansson & Waluszewski, 2002). The combination of different actors’ resources creates specific resource interfaces between individual actors, which in turn over time create resource ties where resources are adapted to other specific actors’ needs (Håkansson & Snehota, 1995).

The development and increased use of the Internet is characterized by an increase in resource standardization, as Internet-enabled tools in general are more standardized than the resources they replace or complement (Baraldi & Nadin, 2006). The resources that are part of the interaction process between two actors are consequently expected to become more standardized and more easily shared among a wider range of actors. Resources can be viewed as being provided as well as used within the context of a relationship. The Internet can be seen as a technology with the potential to standardize in particular the provision of resources within a relationship. Extending ideas about increased modularization following from the increased use of the Internet to the context of resource adaptations within inter-organizational relationships leads to the expectation that more clearly specified interfaces among network actors will entail a lower level of idiosyncratic investments

within relationships in general owing to the increase in standardized, replicable resources. Discussions of resource standardization owing to the increased use of Internet-enabled ICT have pointed out, however, that not all knowledge can be standardized and transmitted over the Internet. There is agreement that the Internet has potential for the friction-free sharing of objective knowledge, whereas its role as a platform for sharing experiential knowledge is more questionable, as such knowledge is not easily standardized (Petersen, et al., 2002). The degree of resource standardization and the following decrease in resource adaptation are accordingly expected to depend on the type of knowledge.

### *Inter-organizational trust*

The interaction that takes place within relationships has been described as a social exchange process (Anderson, et al., 1994; Hallén, et al., 1991; Holm, Eriksson, et al., 1996; Håkansson & Snehota, 1995). The social exchange element of relationships is important in establishing long-term relationships. Relationships are built up over time and develop during a process to which actors gradually become committed and it comes to embrace other than strictly economic activities and relations (Håkansson & Snehota, 1995). Eventually, this process leads to the emergence of mutual trust and commitment between the two interacting parties (Leek, et al., 2000). Trust implies managing relationships by social norms and informal rules as opposed to managing them by formal authority, and it can be seen as a prerequisite for value creation in inter-organizational relationships (Gadde, 2004; Morgan & Hunt, 1994). Holm, Eriksson et al. (1996) stress the informal character of business relationships as an important feature originating from the social exchange perspective. Traditionally, such informal coordination is based on personal relationships and face-to-face communication, which are considered important features of the trust building process. Impersonal communication channels, therefore, are seen as suitable to transfer only basic information (Leek, Naudé, et al., 2003).

One of the most significant changes emanating from the widespread use of the Internet is the ability of companies to gain access to and exchange rich, even personalized, information through communication channels that are less personal than previously (Evans & Wurster, 2000). As a new communication channel with the potential to complement or even entirely replace existing channels of communication, the Internet can be expected to impact the interaction process in such a way that trust may become less important as a prerequisite for accessing information. Such changes in the business environment of networks have led researchers within the industrial network approach to discuss the future nature and value of relationships; however, so far findings point in several directions. For instance, Leek, Turnbull and Naudé (2003) expect the potential depersonalization and clearer task-orientation of IT-enabled communication to lead to a decrease in face-to-face communication and to relationships becoming increasingly impersonal and formalized. Moen, Endresen et al. (2003), on the contrary, highlight the limited capability of the Internet to substitute for relationship development through face-to-face interaction.

The existence of long-term relationships built on trust and personal bonds may be viewed as a means of risk reduction and minimization of conflict potential (Leek, et al., 2000). From this angle, the existence of long-term relationships characterized by a high degree of trust and commitment could also be seen as a prerequisite for the implementation of Internet-related initiatives in those relationships. For instance, in a study of e-commerce adoption of export intermediaries, Houghton and Winklhofer (2004) found that trust is not only affected by, but also mediates the process of e-commerce adoption of export intermediaries. Likewise, in a case study of the implementation of a shared IT infrastructure to support innovation processes in a manufacturing and distribution network, Baraldi and Nadin (2006) discuss how dissemination of private and critical information within the network is required to achieve proper implementation; yet, communication of such information also requires a high degree of trust and it may be met with reluctance, because actors fear exploitation and the loss of independence.

As mentioned above, adaptation is usually analyzed in terms of its effect on dyadic relationships. Given the idiosyncratic nature and the focus on the designated, individual other actor in a relationship characteristic of the adaptation literature, it typically does not explicitly address the underlying assumption of the industrial network approach that relationships within a network are connected (Anderson, et al., 1994; Holm, et al., 1996). This connectedness is defined as the extent to which exchange in one relationship is contingent upon exchange in another, even if these relationships are only indirectly connected (Anderson, et al., 1994; Cook & Emerson, 1978). Reverting back to the standardization brought on by the Internet discussed above, however, the expected decrease in the general level of relationship-specific investment is linked to the fact that activities can now be performed centrally and then take effect across a wide range of relationships, a process which has been referred to as de-duplication (Yip, 2000). Such de-duplication means, for instance, that activities are less

tied to individual relationships and therefore not dependent on the knowledge and competencies of specific individuals who over time have come to know the details of specific, individually customized activities, processes or products. This in turn leads to the expectation that in order to increase our understanding of how the Internet affects adaptation, we must address not only the effect of the Internet on single, dyadic relationships, but must include also other relationships in the network of which a focal relationship is part.

The following case study addresses the nature and level of dyadic adaptation, the link between adaptation and commitment, and the interdependence of adaptations made in different relationships in a network where Internet technologies are an integrated part of relationships.

### Methodology

In order to study adaptation in Internet-supported relationships and also address network level implications, a single case study methodology was adopted. The case studied is the export marketing network of a small IT company called Comlog. The case concerns the introduction of an Internet-enabled solution into Comlog’s export marketing network and is suitable, because provides an example of the introduction of an Internet-enabled solution into a network, which would otherwise be characterized by a considerable number of dyadic adaptations. Furthermore, the solution introduced has implications for all major relationships within the network and as such allows for studying adaptations in a wider context than single, dyadic relationships. The purpose of the case as it is presented in the following is to serve as an illustration of how adaptation unfolds in a context heavily influenced by Internet technologies. In this way, it provides the basis for elaborating on and refining the theoretical discussions and expectations presented above.

Within the case, multiple actor levels were addressed. These levels were Comlog’s headquarters in Denmark, resellers in Germany, and end-users. As such, adaptations in the relationships illustrated in Figure 3 were analyzed. Dotted lines indicate relationships that were only studied indirectly.

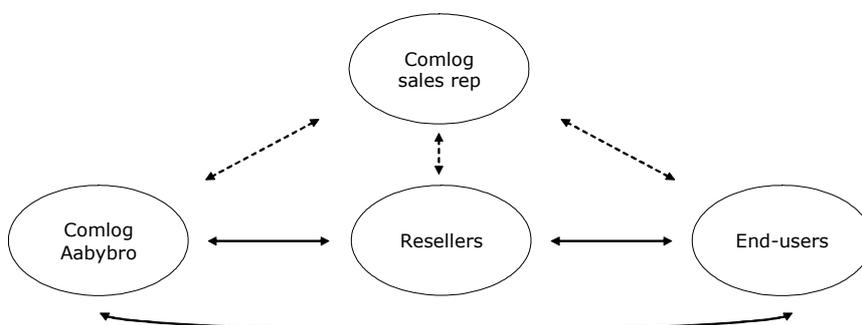


Figure 3. Relationships within the export marketing system of Comlog in Germany

The field study period extended from May 2005 to January 2006. During this period 9 interviews were conducted within the network of Comlog in Denmark and Germany. Interviews were semi-structured and relied on three different interview guides for use at Comlog, resellers and end-users. Interviews focused specifically on activity coordination between the different network actors and the effect of the Internet on inter-organizational coordination and did not address intra-organizational changes. Interviews were recorded and transcribed. Transcripts were subsequently sent to informants along with a separate document containing those passages from the interview that had been singled out for quotation in order to ensure that informants recognized our assessment of their understanding of the change project (Kvale, 1995). This was further ensured by sending the case draft to our contact person for a review, which led to a few factual changes in the case.

### Case introduction

Comlog is a small Danish developer and provider of telematics solutions for the transport and logistics industry. Established in 1998, the company currently employs well over 30 employees who are involved in the

development, sale and support of GPS and GSM/GPRS based fleet management and communication systems used to transfer, document and coordinate activities and administrative routines between customers' administrative personnel (office) and drivers (vehicles). In short, Comlog deliver process optimization to their customers. Today, in order to survive and remain profitable, truck operators are constantly seeking to improve and optimize the utilization of their fleets. Comlog's fleet management solutions seek to improve the performance of both drivers and vehicles by rationalizing and automating internal processes in order to optimize time management and fleet performance.

As part of a generational handover, Comlog is going through a restructuring process, where the main challenge is to move away from focusing on customer-specific development towards becoming more sales and marketing oriented; a challenge that requires the company to devote attention to increasing sales volume through internationalization, a more standardized product suite and an efficient support organization. The backbone of this restructuring process is the introduction of a new Internet-based fleet management solution called ComlogFleet. ComlogFleet consists of a hardware unit that is installed in the customer's vehicles and a software application, which along with the customer's fleet data is stored on a server located at Comlog and accessed via the Internet, as illustrated in Figure 4.

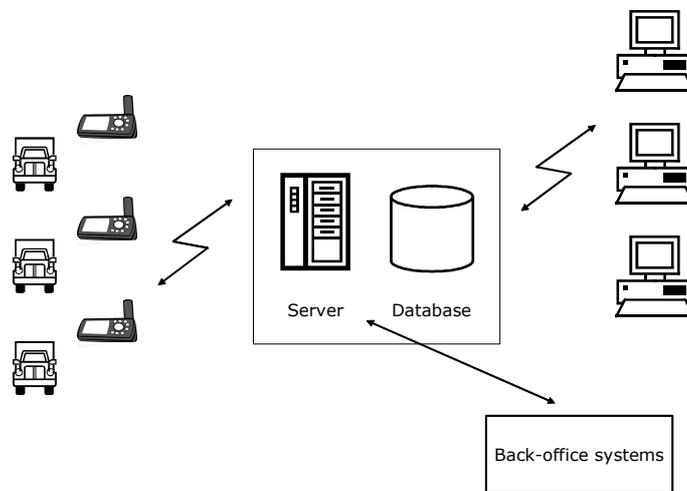


Figure 4. Comlog's system

ComlogFleet was introduced in 2001 and will gradually replace its predecessor, a system called TruckRoute, which runs on a dedicated server. With the former system, the end-user was required to buy and host a communication server and a database dedicated to Comlog software. Communication between the office and the vehicles would then go via that communication server as opposed to via the Internet<sup>1</sup>.

The case study concerns the introduction of ComlogFleet on the German market, which is the cornerstone of Comlog's internationalization strategy. The wish for fast market expansion and the need to gain access to existing network on the German market has motivated the use of a network of presently 12 independent resellers on the German market. The resellers are independent dealers with different profiles. They may, for instance, be software houses that sell back-office systems to the transportation industry or they may be consultants working in the transportation industry. Intermediaries have different levels of commitment with Comlog with respect to their involvement in sales, implementation and support. Some partners mainly arrange contact between Comlog and a potential customer, whereas others are heavily involved in the sales and implementation process. Different levels of commitment then entail different levels of provision for the reseller. The intermediaries work together with Comlog's own sales force, which currently consists of four German employees with regional sales responsibilities.

**Case analysis**

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<sup>1</sup> Using Comlog's own terminology in the following, the two solutions will be referred to as 'server-based' and 'web-based', respectively.

In the following, key findings from the case relating to the three dimensions of adaptations outlined in the theoretical framework will be presented.

### *Inter-organizational routines*

The level of relationship-specific routines in Comlog's network is considerably lower after the introduction of the web-based solution than in the server-based alternative. The most striking example of how the Internet has actually changed the level of inter-organizational routines needed is found in the relationship between Comlog and their end-users, where Comlog have managed to dramatically reduce the need for activity adaptation. When marketing the server-based solution, which preceded ComlogFleet, not only the sales process but also system implementation and subsequent maintenance and support were highly relationship-specific. As Comlog responded to individual customer requests during the lifetime of each of these locally installed systems, they tended to become increasingly customized. Also, with end-users responsible for the purchase and maintenance of servers, these would be managed differently and would require different kinds of support. Hence, over time, the amount of product-related adaptation would increase and this would subsequently require much adaptation to support activities and hence to the management of each individual relationship between Comlog and their end-users, which in turn required substantial amount of resources. The web-based solution, on the contrary, has made possible a reshuffling of e.g. support activities, that can be centralized to a larger degree than previously. As a consequence of this centralization, other support activities become less dependent on specific types of actors. With the entire ComlogFleet system including server, software and data placed at Comlog rather than at each individual customer, support elements related to system support, e.g. server maintenance and updates are centralized and handled from Comlog in Denmark, no matter where the customer is located. This way of supporting the system is radically different from supporting a server-based solution, where system support would often require a Comlog employee on site at the customer's premises. The centralization of system maintenance also allows for better monitoring of and a higher degree of transparency with respect to system use and communication between the system and the units installed in customers' vehicles. In that way, errors can be detected faster and more easily. Other support elements, i.e. those that pertain to individual customer requirements rather than system support may still need to be taken care of locally. With the system supported and maintained centrally, the volume of local support activities decreases.

Generally speaking, the reduction in activity adaptation is achieved through a high degree of standardization, which implies a shift in the balance between standardization and differentiation of activities towards standardization. This is a generally accepted effect of the use of Internet technology (Hagel III & Singer, 1999). Activities within Comlog's marketing system that used to be entirely or partly relationship-specific and which, owing to the Internet, are now replicable across the entire range of end-users, include system development, software 'installation', system updates and server maintenance. Because of this activity standardization, it has become possible to substitute previously idiosyncratic routines for a set of universally applicable routines that can be used to govern many of the activities taking place between Comlog and their end-users; a process which was discussed above as de-duplication. In the Comlog case, de-duplication means that system maintenance is less tied to individual relationships and therefore not dependent on the knowledge and competencies of specific individuals who over time have come to know the details of specific, individually customized solutions.

### *Resource adaptations*

The web-based solution itself represents a resource that is much more standardized than the server-based solution (Baraldi & Nadin, 2006). Consequently, it can be shared across users without requiring significant adaptation and, therefore, the level of resource adaptation between Comlog and their end-users has become lower, at least when viewed from Comlog's side.

From the point of view of the end-user, however, it may be argued that considerable relation-specific investments are still required; although of a slightly different kind than previously, where they had to invest in hardware and software, but had to host the solution themselves. Today, with the shift to a web-based solution located at the premises of and hosted by Comlog, it may be claimed that the need for coordination of activities with Comlog has increased. For instance, Gadde (2004) points to developments within information systems as one of several factors increasing interdependencies between actors' activities and resources and enhancing the need for coordination. Along these lines, the end-user is increasingly dependent on Comlog for system support

and for data security, for instance, indicating a shift of the power balance between the two parties. End-users' willingness to commit a substantial amount of resources to the relationship with Comlog should, however, be considered in the light of the fact that a fleet management solution is always 'mission-critical' for the end-user. Once implemented, it becomes the backbone of day-to-day operations and the control of important processes is assumed to disappear from managerial awareness. The mere decision to enter into a relationship with a fleet management provider can thus be argued to equal the relinquishing of control. From the end-user's point of view, investing in a web-based solution may hence not be regarded as a loss of power, but more as a shift in coordination mechanisms improving the efficiency of both parties (Boyle, 2001).

As for resource adaptation in the relationship between Comlog and their reseller network, they first approached reseller relationships from an arm's length-perspective in the sense that they did not want to make special adaptations for individual resellers. On the one hand, this uniform treatment of the reseller network irrespective of the differences in their profiles and competencies is possible because of the centralization and standardization of the Comlog system. The breakdown and clearer allocation of certain types of activities to certain types of actors can enhance operational control and resource management because products or activities become more easily allocated to those actors who can perform them most efficiently (Gopal, et al., 2003). On the other hand, it was also Comlog's intention that resellers should gradually become more skilled at handling ComlogFleet and that they would gradually be able to take over a number of support activities handled by Comlog and Comlog thus strived for an increasing level of commitment in selected reseller relationships. They had to realize, however, that this required upgrading the product knowledge of the reseller network, which, in turn, mandates a closer relationship between Comlog and the resellers. This cannot take place without dedicating more resources to the relationship with resellers.

### *Trust*

Comlog depend on intermediaries to handle a number of local market-related activities and they have chosen to leave the handling of certain aspects of the end-user relationship to a number of independent resellers. This choice is motivated by several factors. First, the desired fast expansion on the German market would demand far too many resources for Comlog to be able to undertake internally. Second, in order to gain access to local markets, Comlog need access to the knowledge and contacts of local actors. Third, as a new and foreign player on the German market for fleet management solutions, in order to obtain confidence from potential local end-users, a local intermediary is needed to absorb doubts regarding, for instance, trustworthiness. Still, the range of activities with which intermediaries must be entrusted decreases as a result of using Internet technology to support relationships in Comlog's network.

The relationship between resellers and end-users encompass those end-user-related activities that cannot be standardized and that are not much affected by the use of the Internet. Activities performed by resellers include identifying and establishing contact with potential customers and initial identification of customer needs. The resellers' most important activities are those that are related to the actual sales process, including sales meetings, discussion and determination of the type of solution, the handling of specific product-related request, for instance regarding the performance of the solution under certain conditions and negotiation of the terms of the contract. Furthermore, depending on the resellers' profile and competencies, after-sales activities performed include channelling requests to Comlog or the actual handling of some of these requests. These activities are largely contingent on the personal relationship between the reseller and the end-user and cannot be coordinated using mainly 'universal' routines. In other words, the relationship between the reseller and the end-user mandates a number of actor-level adaptations, which, as previously described, produce inter-organizational trust and, consequently, increased commitment between two actors. In fact, the main reason for Comlog to use resellers in the first place is that they are in a position to gain the trust of local markets. Particularly in the initial stages of a sales process, the end-user has to base his impression of Comlog on his impression of the reseller, whose performance and appearance are therefore of crucial importance for Comlog's local market success.

In order for resellers to be able to instil trust in local markets on Comlog's behalf, they are dependent on information and knowledge from Comlog. The relationship between Comlog and their resellers, however, is characterized by a lower degree of trust produced through interpersonal relationships than the relationship between resellers and end-users described above. For instance, the German reseller interviewed had never been to visit Comlog in Denmark; and in Spain, the reseller with whom Comlog has signed up is supposed to handle the market without support from Comlog. These examples illustrate the fact that trust in these relationships is based mainly on issues such as the competencies and contacts of local resellers; i.e. trust that

can be verified through information and where evidence of resellers' failure to perform can be readily obtained (Rousseau, Sitkin, et al., 1998).

## Discussion

By demonstrating how coordination and commitment between actors in a network is obtained not without relationship-specific adaptation, but nevertheless with a lower level of adaptation than would otherwise have been necessary, the case supports the expectation that increased use of Internet technology reduces the need for dyadic adaptation. However, although the above sections have described how relationships in Comlog's marketing system are becoming increasingly standardized and characterized by fewer relationship-specific adaptations this is true for certain types of relationships more than others. The case hence points to two issues regarding adaptation, which challenge the assumptions typically underlying our understanding of adaptation in business relationships. First, the analysis challenges the accepted viewpoint that adaptation is an indispensable precondition for commitment in inter-organizational relationships. Second, and related to this, case findings give rise to changing our understanding of and perspective on adaptation as a dyadic construct and instead encourage viewing adaptation across interdependent relationships.

Adaptation of the activity and resource dimensions of relationships reflected in relationship-specific routines and resource adaptation have decreased following the introduction of Internet-enabled ICT. This decrease begins with a general standardization of resources enabled by the Internet which implies that resources previously adapted to specific counterparts, e.g. information, communication interfaces and products, can now be more uniform and shared across a wider range of actors. Standardization facilitates inter-organizational activity coordination and reduces the need for relationship-specific routines. Relationship-specific routines are thereby replaced by more uniform sets of routines that are applicable to a wide range of relationships without adaptation. As for adaptation at the actor level, on the one hand, the case shows that the need for adaptation is not changed by the use of Internet technology, but on the other hand, as a consequence of the integration of Internet technology, trust is becoming largely concentrated in one relationship, i.e. that between intermediaries and end-users. Hence, trust seems to be less 'ubiquitous' than often suggested by network researchers. In other words, with the use of the Internet to support export intermediation, trust based on long-term, interpersonal relationships seems to lose importance in some relationships, provided that it exists in others, however.

Findings concerning the increased standardization of activities and resources as well as the difficulties in transferring trust from personal to Internet-based relationships leave open the question of the consequences of these changes on commitment. A basic assumption underlying the industrial network approach is that over time inter-organizational relationships become characterized by a growing number of mutual adaptations and that the existence of these adaptations results in and even conditions the development of mutual commitment and interdependence between actors. It is interesting to note, however, that Comlog is able to maintain a high level of commitment to their end-users despite a decrease in the level of relationship-specific adaptations; an issue which is conditioned by adaptations between actors of other relationships. In this way, the case lends support to those who view the Internet as a tool that can actually be used to forge tighter ties between actors, because lines of communication can be used more efficiently to the benefit of both parties (Boyle, 2001). Hence, the reduced level of relationship-specific adaptations does not necessarily mean that relational exchange is replaced by discrete exchange; on the contrary, the Internet can actually have a positive effect on inter-organizational commitment and may be used to draw firms together rather than push them apart. These findings lead to the modification of the contents and relationships between the different types of adaptations as illustrated in Figure 5.

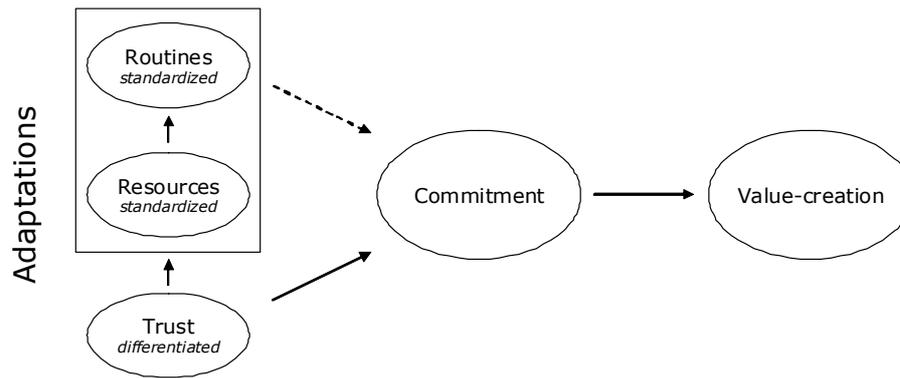


Figure 5. Modified dimensions of adaptation

There are not only differences in how the Internet affects different types of adaptation; however, there are also differences across different types of activities. For instance, the case shows how the shift to an Internet-enabled business model enables increased standardization of so-called core activities, but also that local market-oriented relationships and activities, so-called peripheral activities, still need a high level of differentiation and adaptation. At the same time, the fact that core activities such as for instance software development are centralized provides new opportunities for configuring local market relationships in terms of both activities performed and actors included. Hence, following the integration of Internet technology into the network, Comlog is able to maintain a high level of commitment to the individual end-user, not as often claimed through numerous individual adaptations, but instead through a parallel standardization of core activities and differentiation of market-related activities (Sawhney & Parikh, 2001). This development equals the simultaneous push of network intelligence towards the core and the periphery of a network described, for instance, by Sawhney and Parikh (2001), who argue that increased standardization of activities related to information processing and storage coupled with continued differentiation of market-related activities is one of the main consequences of digitalization. Along similar lines, Malone (2004) argues that standardization of critical activities allows for decentralization of other activities. Such decentralized activities performed at the periphery of the export marketing system studied include mainly local market-related sales and marketing activities, which have proven to be highly dependent on inter-organizational trust as well as personal presence and communication.

There is a parallel between this discussion and discussions concerning what types of knowledge that can be transferred to an online context and what knowledge requires personal communication and physical presence, since in the Comlog case, core activities rely to a large extent on the transmission of codifiable information, whereas peripheral activities are more dependent on the transmission of uncodifiable and tacit information, which is more likely to be committed to a particular relationship and require trust and adaptation (Leamer & Storper, 2001). This is also pointed out by Williams (2007) in his discussion of how discrete knowledge begets activity replication within inter-organizational relationships, whereas context-dependent knowledge, such as that found in the market-related relationships in Comlog's network, requires a higher degree of adaptation.

As pointed out above, however, the Comlog case points to the interdependence between adaptations in the different relationships in a network. On the one hand, the relationship between Comlog and end-users seems to be characterized by a lower level of dyadic adaptation as well as a high degree of commitment, where commitment is understood as the intent to continue and grow the relationship. This is underlined in the Comlog case by the fact that end-users trust Comlog with proprietary, mission-critical information. This is only possible, however, because a high level of adaptation still takes place in other relationships, e.g. that between reseller and end-user or that between local sales representatives and end-users. In continuation of the above discussion the case hence shows not only how different types of activities are affected differently by the Internet, but also that the increased standardization and centralization of certain types of activity at one position in the export marketing system is dependent on other activities being performed locally and, furthermore, standardization of central activities results in increased specialization at the local level. These

findings challenge the view of adaptation as a construct linked to individual dyadic relationships and instead instigate a broadening of the concept to also encompass the network level.

### **Managerial implications and issues for further research**

The Comlog case shows the potential of applying Internet-enabled ICT to support the relationships within an export marketing system in terms of increasing standardization of relationships without compromising market commitment; yet, it also directs attentions to different issues that management should be aware of when considered how to use ICT to support their relationships with business partners. It should be acknowledged that not all types of activity lend themselves equally easily to substitution or complementation of Internet-enabled ICT and hence, organizational requirements differ depending on whether ICT is applied in market-related relationships or development-related relationships, for instance. Although analysis has demonstrated that there are definitely benefits to be gained from the integration of Internet-enabled ICT into the different relationships of a network, particularly by minimizing relationship-specific resource deployment, these benefits cannot readily be obtained in any kind of relationship. Managerial attention should therefore focus, in particular, on the importance of trust when considering which relationships to support with Internet-enabled ICT. Generally speaking, activities closer to local markets are more dependent on the establishment of interpersonal trust than activities further away. Even though trust can be created by external partners, it is important to note that the management of the relationships with these partners, in turn, also requires trust creation and that an active, physical presence is required for partners to be able to generate business. This does not mean that these relationships cannot be supported or complemented by ICT; it does mean, however, that managers must think in terms of 'traditional' physical presence along with virtual presence.

The limitations of the present paper point to a number of opportunities for further research. First, analysis and discussion in this paper is based on a single case study. Although using a single case study has provided the opportunity to study the issue of adaptation in detail in different types of relationships and taking into account the context of Internet-related change, these particular contexts also state some limitations. For instance, the case studied is from the IT industry and as such takes place in a technologically advanced setting leading to the speculation that the effect of the Internet on, for instance, inter-organizational adaptations is likely to be more visible extensive than would be the case in an industry where new technology is integrated at a slower pace. In the Comlog case, this is to some extent countered by the fact that end-users in the transport industry generally have been relatively slow to respond to technological change. Still, research should be extended to cover a wider range of industries, not least because the fact that the product studied in the Comlog case is a digital product, which also might pave the way for changes that would be less extensive for physical products.

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