Interaction between Actors and Information Systems in Web-based Imaginary Organisations – Experiences from two Case Studies

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Abstract

This paper reports findings from case studies conducted in two web-based imaginary organisations. The purpose of the paper is to explore and discuss critical factors that effect quality of interaction between actors as well as interaction between information systems (IS) in web-based imaginary organisations. The motive for this study is to emphasise the importance of designing functional IS architectures as well as actor structures in order to develop successful electronic commerce. This highlights two important concepts; IS architecture and actor structure. IS architecture implies a structure of interacting IS that for example exchange data or share database. IS architectures can be viewed both as internal and inter-organisational. Actor structure includes several actors connected to each other. These actors appear both inside the legal unit (internal actors) and outside the legal unit (external actors; i.e. other legal units). The fact that speed has been prioritised when web-based organisations have been established explains why many Internet-shops have appointed partners to handle activities such as logistics and economy. Thus, many web-based imaginary organisations have been developed. The business processes of imaginary organisations must be designed in a way that enables the organisation to be cost effective, have a functional distribution with fast deliveries, reach many potential customers, and offer products with high quality. From empirical findings reported in this paper we highlight some empirically grounded statements important to consider when establishing an imaginary organisation.

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1. Introduction

Many web-based businesses have been established in the last couple of years. They are often divided into two groups; organisations focusing on electronic commerce with other organisations (business-to-business) and electronic commerce oriented towards end-consumers (business-to-consumers). The latter kind of web-based organisations can be described as Internet-shops that offer products and services to individual shoppers. Internet-shops that were established early in the Internet era, seem to have had their main focus on fast establishment and gain of market shares. The fact that speed was prioritised explains why many Internet-shops have appointed partners to handle activities such as logistics and economy. Thus, many web-based imaginary organisations were developed.

To become a strong and persistent business actor in electronic commerce, the business processes of the imaginary organisation must be designed in a way that enables the organisation to be cost effective, have a functional distribution with fast deliveries, reach many potential customers, and offer products with high quality. Information systems (IS) are obviously an important means to reach these goals. All actors within an imaginary organisation have their own IS to support their internal business. The IS also have to interact with IS of the other actors in an optimal way, in order to achieve the mentioned goals.

This paper reports findings from case studies conducted in two web-based imaginary organisations (Segerkvist, 2001). The research question addressed in this paper is how IS architectures and actor structures support the business process in web-based imaginary organisations. This question highlights two important concepts; IS architecture and actor structure. IS architecture implies a structure of interacting IS that for example exchange data or share database. The IS architecture can be viewed both as internal and inter-organisational. Actor structure includes several actors connected to each other. These actors appear both inside the legal unit (internal actors) and outside the legal unit (external actors; i.e. other legal units). An imaginary organisation consists of several connected actors. When we discuss interactions between actors, in this paper, we refer to it as actor structure.

We recognise IS architectures and actor structures as two important prerequisites for conducting a web-based business process that results in desired effects. The purpose of the research has been to find critical factors that effect quality of interaction between actors as well as interaction between IS in web-based imaginary organisations. The motive for this study is to emphasise the importance of designing functional IS architectures as well as actor structures in order to develop successful electronic commerce.

The paper has the following disposition. After this introduction some theoretical foundations are discussed in section 2. We present our case studies in section 3, followed by the empirical findings discussed in section 4. Finally, in section 5, we draw some conclusions from these studies.

2. Theoretical Foundations

In this section we discuss theoretical foundations important to this paper. First we introduce some central concepts of electronic commerce. Then we explain and define imaginary organisations as well as IS architectures. Finally, a phase model for understanding of business actions is presented.

2.1. Electronic Commerce

Doing business is basically about developing relationships between a buyer and a seller. The buyer experiences a need or a lack which the seller is able to fulfil. The seller has the ability to offer something which the buyer is prepared to pay for. Both parties trust each other enough to exchange values; such as products and payment. This business logic is the same for both traditional business-making and for electronic commerce.

Electronic commerce applications have been present since the early 1970s, when electronic fund transfers were made possible. The invention of electronic data interchange (EDI) made it possible

to exchange other information besides financial transactions, thanks to specially formatted standard business documents such as orders, bills, and confirmations sent between business partners. In the beginning, EDI was ran on value added networks (VAN), but when Internet was commercialised in the mid 1990s Internet-based EDI became a cheaper alternative. Since 1995 the use of Internet has grown tremendously. (Turban et. al., 2000).

Electronic commerce implies that the business actions in (at least some of) the business phases are supported by an inter-organisational IS. Electronic commerce can be supported by different kinds of inter-organisational IS; for example Internet, electronic data interchange (EDI), or electronic mail. In this paper we focus on web-based businesses and we will therefor only discuss electronic commerce via Internet from now on.

Kalakota and Whinston (1997) use four perspectives to define electronic commerce. They recognise it as *communication* when information, products or services, and payments are delivered over telephone lines, computer networks or other electronic means. Electronic commerce also means automation of business transactions and work flow, which implies a *business process* perspective. Electronic commerce can also be seen as a tool to cut service costs while improving quality of goods and increasing speed of service delivery, i. e. a *service* perspective. Finally, from an *online* perspective, electronic commerce provides capability of buying and selling products on Internet and other online services. (Kalakota & Whinston, 1997). All these four perspectives are relevant, but in this paper we emphasise questions in particular related to the business process perspective and the communication perspective.

When discussing electronic commerce it is usual to distinguish between electronic commerce between organisations (business-to-business) and individual shoppers buying from an Internet-shop (business-to-consumer). Turban et. al. (2000) also add some other categories of electronic commerce; customer who sells directly to another customer (consumer-to-consumer), customer who sells to an organisation (customer-to-business), non-business organisations using electronic commerce to reduce costs (non-business EC), and internal exchange of goods, services and information through an intranet (intra-business EC). The two studied Internet-shops are mainly focused on business-to-consumer transactions, but within the imaginary organisations there also exist business-to-business transactions between the external actors.

There are also differences within the field of electronic commerce. Whether the purchased products are physical or digital implies a totally different business logic when it comes to logistics and delivery. The number of business phases supported by an inter-organisational IS also differs; from marketing, business offers and/or orders to a fully automated business process. Internet can be the organisation's only market channel or it may have complementary channels besides Internet. Financial transactions can also be handled in different ways; invoices may for example be send to the customer by mail or the transactions can be accomplished via Internet supported by a Secure Electronic Transaction (SET) protocol. We have chosen the case studies so that some of these differences are covered, as discussed in section 3.

2.2. Imaginary Organisations

In the previous section we discussed some general features of electronic commerce. Many organisations involved in electronic commerce are characterised as networks, partnerships and strategic alliances. Some of them can be defined as imaginary organisations. In an imaginary organisation, one actor organises an organisation that is built upon long-term relationships with other actors. Thus, the organisation is actually a network of legal units although it looks like one organisation to an outside observer. Hedberg et. al. (1997a) call the organising actor the *imaginator*, which is a legal unit that possesses a unique core competence. To become an imaginary organisation, this legal actor has to combine its core competence with external actors with other important core competencies. Together these actors form an imaginary organisation. Hedberg and Olve (1997b:2) define imaginary organisations like this:

"Imaginary organizations are organizations where important processes, actors and resources appear both inside and outside of the legal unit of enterprise, both outside and inside of the accounting system and of the organization charts. Markets and hierarchies are interconnected through networks of cooperating people and coordinating information technology. Imaginary organizations are greatly facilitated through advanced IT, although IT in itself does not create imaginary organizations."

The imaginator is, thus, the leading unit who acts as a director of the play and organises production through networks of actors. The imaginator can be characterised as a mediator between vendors and clients (ibid.). This actor has the ability to recognise and develop an imaginary organisation. Information technology, e.g. Internet, is an important enabler when organising an imaginary organisation. Imaginary organisations can be characterised and defined by the following features (Davidow & Malone, 1992; Byrne et. al., 1993; Handy, 1995; Chesbrough & Teece, 1996; Christie & Levary, 1998):

Each actor *concentrates on its core competence* and, thus, makes the imaginary organisation more competent than each involved actor is on its own. Imaginary organisations builds on the same *flexibility* concept that dynamic network organisations do. Involved actors are able to be *opportunistic* and change their prioritisation of the co-operation and with short notice reduce their engagement in the imaginary organisation. This is an obvious disadvantage of this kind of organisations. *Information technology* and communication networks are presuppositions for interaction between involved actors. Information is the factor that usually is defined as the basic foundation for imaginary organisations. *Trust* and communication between involved actors are essential for establishment and development of imaginary organisations. The success of an imaginary organisation is closely linked to the mutual interaction between actors.

The two case studies described in section 3 are both defined as imaginary organisations.

2.3. Information Systems Architecture

When IS interact in an organisation, by for example using the same database or exchanging data, these systems form an IS architecture. The concept implies how information and responsibility for information are divided within the organisation. It also denotes how communication among systems as well as between systems and business units are achieved (Axelsson, 1998). The IS architecture can be divided into an information architecture and an application (or system) architecture (Zachman, 1978; van der Poel & van Waes, 1989).

The IS architecture is mutually dependent on the IT-infrastructure, i.e. hardware, networks, operating systems, etc. In this study of electronic commerce in imaginary organisations, Internet is of course an important part of the IT-infrastructure. The concept IS architecture has been further examined by for example Andersen and Opdahl (1995a; 1995b) and Magoulas and Pessi (1998). IS architectures can be described as depending on what degree of centralisation the organisation aims at attaining (Opdahl, 1996).

IS is often developed one at a time. During each systems development process, the IS architecture changes and evolves. This may occur without any conscious plan; the IS architecture then evolves in an ad hoc manner. The IS architecture can also be planned through strategic IS planning (Galliers & Baker, 1994) and other activities aiming at architectural IS design. This implies that architectural IS design can be seen either as a consequence of systems development or as strategic design of the IS architecture. The latter is a separate activity which needs to be done in constructive co-operation with systems development or acquisition of application packages (Axelsson, 1998; 2001).

In our case studies there exist both internal IS architectures within the legal units and an inter-organisational IS architecture for the entire imaginary organisation. Since we are interested in interaction between IS as well as between actors within imaginary organisations, we have mainly focused on the inter-organisational IS architecture. Though, it is not possible to totally separate these levels from each other, since the internal IS architectures are prerequisites of the inter-organisational IS architecture. Magoulas and Pessi (1991) discuss some characteristics of inter-organisational IS architectures:

- Responsibility issues cannot be handled in the same way as in the internal IS architecture

- Involved organisations may have to give up some of their independence in order to make the interaction work

- Communication between involved organisations must be carefully studied

- Information must be handled in a way that is acceptable for all involved organisations

2.4.   Business Action Theory – A Phase Model

A dyad consists of a supplier and a customer performing actions directed towards each other. These actions together form a business interaction. Parts of this interaction consist of exchange of information (i.e. business communication) and parts of it can be labelled as exchange of value, i.e. exchange of products (goods/services) vs. money. The business communication cannot be seen as mere information transfer. The business communication consists of communicative acts that include both representation of the world talked about and certain "relationship creators". When performing a communicative act, an actor is not only presenting some facts of the world. The communicator is *doing* something when communicating in relation to the recipient; e.g. commitments and expectations are raised.

We use a phase model for describing and understanding business transactions between customers and suppliers, which we call business action theory (BAT) phase model (Goldkuhl, 1996; 1998). Speech act theory (Austin, 1962; Searle, 1969) has been a vital source of inspiration for BAT. It is not enough, though, with general theories concerning communication. A proper understanding of business issues is also needed. This can be found in what we call business relationship theories, e.g. business network approach (e.g. Axelsson, 1996; Håkansson, 1989) and relationship marketing (Gummeson, 1995), which is the other important theoretical source for BAT.

The BAT phases are arranged around a business transaction: What generic acts are performed when a supplier sells something and what generic acts are performed when a customer purchases something? A graphical model is presented in figure 1 where the different phases are made explicit. Business interaction is divided into six generic phases: 1) Establishing business prerequisites phase, 2) Exposure and contact search phase, 3) Proposal phase, 4) Contractual phase, 5) Fulfilment phase and 6) Assessment phase.

The first phase is concerned with establishing prerequisites for performing business. The supplier must have an *ability* (a capacity and a know-how) to perform business; to make offers and contracts and to fulfil these contracts. This ability can exist within the supplier's own organisation, but it can also be mobilised by the supplier with help from other actors outside the organisation. The customer does not have the corresponding ability, instead the customer has *lacks and needs* which may be satisfied by potential suppliers and their products (goods/services). This first phase represents the processes of establishing prerequisites for business interaction.

The second and third phases can together be viewed as a *business interest* stage. In the second phase both parties search for contact. The ability of the supplier is exposed and offered to the market. The lacks and needs of the customer give rise to desire and potential demand which guide a possible search for products or suppliers. To find each other the supplier and the customer must *expose* their interests to perform business. Advertising can be seen as an example of actions in this phase.

When supplier and customer have found each other they *establish contact* and perhaps start *negotiating* (phase three). Bids and counter-bids are made. The desire and demand of the customer are expressed and the supplier can make different offers. Of course in many cases there are fixed (and standard) offers which have to be taken or rejected as such. *Proposal* is the key notion in this phase. If we analyse proposals from a communicative action perspective, a dual character can be seen. A proposal from a supplier (i.e. an offer) can be seen both as an attempt to influence a potential buyer to make a purchase decision and as an expression of willingness to sell under certain conditions.

Prerequisites
- know-how
- capacity
- supply

Prerequisites
- operations with
- lacks
- needs

Business interest

| Offer | Exposure & contact search | Desire & demand |

Contact establishment & proposal

| Delivery promise | Contract (Mutual commitments) | Order |

| Delivery | Fulfilment (exchange of value) | Payment |

Assessment
- satisfaction
  or
- dissatisfaction

Claim   Claim

Assessment
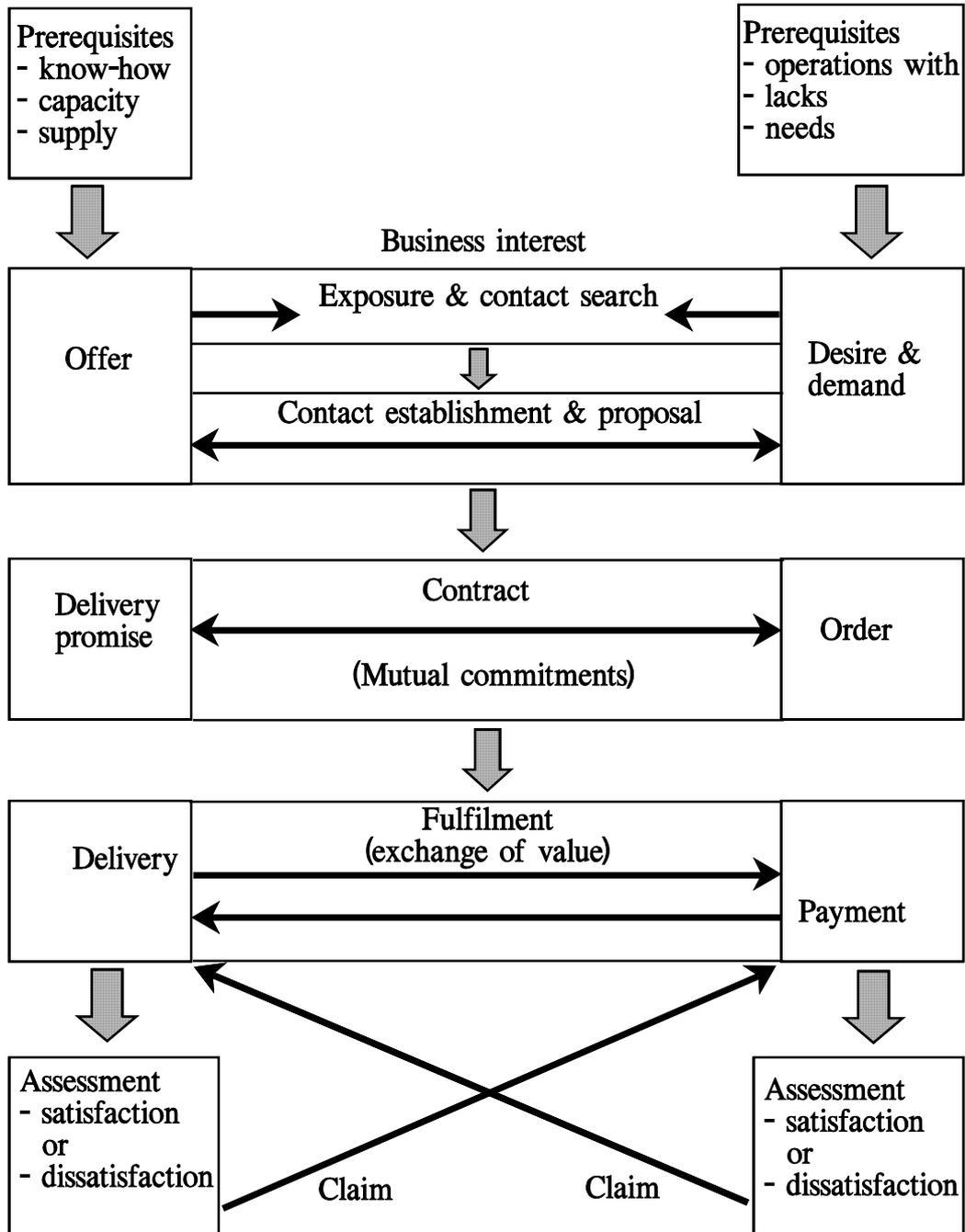- satisfaction
  or
- dissatisfaction

Figure 1   Business Action Theory: A phase model (building on Goldkuhl, 1998)

The negotiation in phase three can be transferred into a contractual phase; the fourth phase. The key word here is *agreement*. Customer and supplier come to an agreement concerning the business transaction. The contract is a mutual communicative action expressing the *mutual commitments* made; i.e. commitments for future actions. This involves a delivery promise of the supplier. The order of the customer also includes an obligation for future payment. The contract can be either written or oral.

These different commitments must be *fulfilled*, otherwise the contract is broken. The supplier must deliver and the customer must pay (phase five). These material actions can be guided and

accompanied by different communicative actions. The supplier can enclose a delivery slip together with the delivery. The supplier usually present an invoice to evoke payment from the customer.

If not satisfied with the delivery, the customer can make a *claim*. The supplier is requested to make some modification in the delivery. Correspondingly, the supplier can make payment claims towards the customer. This is the sixth and last phase which involves *assessments* of the fulfilment leading to *satisfaction* or *dissatisfaction*.

The BAT phase model is a generic model describing the inherent logic of different possible business interactions. It can be used as a basis for describing and understanding both business-to-business transactions and business-to-consumer transactions and also both long-term based business transactions and casual transactions.

3. Case Studies

In order to find out how IS architectures and actor structures support the business process in web-based imaginary organisations we conducted two case studies. The case studies consisted of ca. 20 interviews with different actors within two imaginary organisations, with a particular focus on the imaginators. Internal documents were also used as a data source. The empirical material has been structured and analysed through the use of several models and method components. In order to understand business interaction within an imaginary organisation, the BAT phase model has been used. The studied business processes were first structured in action diagrams (Goldkuhl & Ågerfalk, 1998), where different actions are described and related to each other in sequence. In action diagrams the performer of the action, as well as prerequisites (input) to and results (output) from the action, are illustrated. Inputs and outputs can be both informational (communication) and material. After having documented actions within the business process in detail, the BAT phase model was used in order to relate the action diagrams to the different business phases. This gave the data material the necessary structure to be analysed and discussed in a proper way. It was possible to view relations (or business transactions) between the imaginary organisation and the customer through BAT. The BAT phase model was also usable when analysing relations between actors within the imaginary organisation, since these actors are responsible for different business phases. They co-operate in order to fulfil the business process directed towards the customer.

Besides this, analyses of problems, strengths, and goals have been conducted and graphically illustrated, in order to identify relationships between problems as well as between strengths and goals. The existing IS architectures have also been documented and analysed. All together, these documents resulted in well-structured pictures of the actor structures and the IS architectures. The two studied organisations are briefly described below.

3.1. Netshop

The first case study was conducted from autumn 1998 until autumn 1999 in an imaginary organisation which is anonymous. The organisation is therefor named NetShop in this paper, as in all reporting from the case study. NetShop sells a physical product via Internet and has no other market channel besides the Internet-shop. NetShop was established in 1997 and had, when we conducted the case study, Internet-shops directed towards the Nordic markets (one shop for each language). The case study was conducted at the Swedish office with ca. 30 employees. NetShop has 3 000 suppliers in Sweden, England, and USA. These suppliers provide totally 2 millions of products to the customers. NetShop is primarily focused on private customers but does also sell to organisations. NetShop does not possess any own product stock. Instead, NetShop orders the products from the suppliers when the customer has ordered the product from NetShop. Thus, NetShop mediates products between customers and suppliers. NetShop interact with external actors for logistics, economy, systems development, database design, advertising, graphical design of the web-system, suppliers of products and text writers for the web-system.

Netshop's inter-organisational IS architecture consists of a web-based IS for order and purchase at the imaginator's, which interacts with different IS in the external actors' organisations. The customers make their orders in this web-based IS. The web-based business phases (according to

the BAT phase model) are the establishing business prerequisites phase, the exposure and contact search phase, the proposal phase, and the contractual phase. The fulfilment phase (i.e. delivery and payment) is not web-based. Customer claims and questions in the assessment phase are handled via electronic mail or by telephone. The external actors for invoices, logistics, and deliveries have IS that interact with the web-based order and purchase IS, and all these interacting IS together form Netshop's inter-organisational IS architecture.

3.2. Buyonet

The second case study was conducted at Buyonet during 1999. Buyonet sells software via Internet. This is an important difference compared to NetShop, since Buyonet's products are delivered electronically. Instead of having partners for logistics, the business process of Buyonet is fully automated from product offer to delivery and payment. Buyonet was established in 1997 and has ca. 25 employees. There is no other market channel besides the Internet-shop. Buyonet has 180 suppliers who together offer 2 000 products to the customers. Buyonet reaches customers in 130 countries, has designed the Internet-shop in six languages and handles 22 currencies. The external actors that Buyonet interact with are the suppliers, a bank (credit ratings), partners who join an affiliate program, an advertising agency, and an actor taking care of financial transactions to the suppliers.

Buyonet's inter-organisational IS architecture is built around the web-based IS that handles the entirely automated business process, from the customer making an order to delivery and payment. This means that the web-based IS at Buyonet handles all business phases according to the BAT phase model. This web-based IS interacts with some external actors' IS during the payment phase, but the inter-organisational IS architecture is less complex than in the Netshop case.

4. Empirical Findings

The empirical findings are divided in two sections; findings regarding inter-organisational IS architecture and actor structure.

4.1. Inter-organisational IS Architecture

The architectural IS design at Netshop and Buyonet have been greatly influenced by their business processes and are both task oriented. Since Netshop and Buyonet have differing business processes, this way of action has resulted in two rather different IS architectures. Netshop has a distinct inter-organisational IS architecture; it consists of clearly defined autonomous IS which interact through computerised messages. The message interaction is governed by mutual contracts between the external actors. Each IS has an own local database, there are no integrated databases. This description is close to a VBS architecture[1], though, there is one important difference. In a VBS architecture the executives are responsible for the IS architecture and the IS interaction. In Netshop's case, however, there is no one responsible for the inter-organisational IS architecture. The imaginator has designed the IS architecture, but cannot take full responsibility and make decisions about IS belonging to the external actors. In Buyonet's case the IS architecture has less inter-organisational elements. The web-based IS handles the entire business process (all business phases) and, thus, the architectural IS design has mainly focused on internal aspects. The result is an IS architecture with a high level of flexibility, since the imaginator owns and controls the web-system.

IS interaction is often defined as "interaction through integrated databases" (i.e. register interaction) or "interaction through messages sent between autonomous IS" (i.e. message interaction). When we studied IS interaction between the imaginary organisations and their customers, none of these interaction types seemed valid. When a customer communicates with the web-system and orders a product from the imaginary organisation, his or her computer together

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[1] VBS is a Swedish acronym for Verksamhetsbaserad Systemstrukturering (Hugoson, 1986).

with the browser can be characterised as a terminal to the web-system. From a technical perspective communication between the web-system and the browser can be viewed as a client/server solution, where the browser is the client and the web-system the server. This kind of IS interaction is neither register interaction nor message interaction, but a combination of both. Between the browser and the web-system there exist message interaction. The messages sent to the browser are based on access of registers in the web-system's database. We call this interaction type *message interaction with register access*.

IS interaction at Netshop and Buyonet differ from each other. Netshop's business process is more complex than Buyonet's and involves a larger amount of external actors. Each of these actors has their own IS supporting the fulfilment of their parts of the entire business process. This puts great demands on the IS interaction. In order to make full use of all external core competencies, the IS interaction between all these external systems has to work perfectly. In Netshop's case, interaction with the customer (i.e. message interaction with register access) is fully automated. On the other hand, the activities to fulfil the business process after the customer has ordered the product is automated to a lesser degree. Netshop has 3 000 suppliers, thus, it is not realistic to try to establish IS interaction with all these actors.

The lack of standards makes this kind of IS interaction very expensive and demands great resources. It is obvious that IS interaction with customers (business-to-customer) is easy to solve, but IS interaction with suppliers and other external actors (business-to-business) is more difficult. In the first case there is only one interface to develop, but in the latter case there should be thousands of interfaces in order to interact with all suppliers.

As we stated earlier, it is easier for Buyonet to control its IS architecture since Buyonet is responsible for development and maintenance of the web-system. Thus, Buyonet has the ability to make decisions about the web-system without negotiating with other external actors. This flexibility makes it easier for Buyonet to adapt to changes in the surrounding world. Netshop, on the other hand, has placed out responsibility for systems development on an external actor. The IS architecture also consists of many external actors' IS and it is therefor more complex to change. Each actor is, of course, responsible for its own IS and is able to optimise this IS for its work tasks. Changes in the IS architecture is, nevertheless, complex and demand compromises of several actors. There is obviously an inertia within the inter-organisational IS architecture.

Another factor that influences the imaginator's possibility to control the IS architecture is whether the product is digital or physical. Buyonet's digital products are the presupposition for the fully automated business process, that also made it possible to develop a single web-system for the entire business process. This was not possible for Netshop since they sell physical products. Imaginary organisations selling physical products involve several external actors, and it is then more difficult for the imaginator to control the web-system.

The studied web-based imaginary organisations are rather recently established. It may be an advantage to be able to design a business process from the beginning, without having any old processes to take into consideration. This kind of organisations are able to be innovative and to make the best use of new IT-solutions. They do not have any own legacy systems to take care of. Though, a distinct inter-organisational IS architecture, as in Netshop's case, is influenced by existing IS of the external actors. This implies that the legacy systems problem is apparent for imaginary organisations as well. The imaginator designs a business process for Netshop, but has to consider existing restrictions in the external actors' IS.

4.2. Actor Structure

If we compare the two studied imaginary organisations, we recognise that Netshop consists of more external actors than Buyonet. This can be partly explained by the differing product types of the two organisations, as we discussed earlier. It is not only the amount of external actors that differs, but also the strategically importance of these actors. Netshop is very dependent on their external actors, which play important roles in the fulfilment of the business process. Buyonet is very dependent on their suppliers of the software they sell, but has few other really strategically important external actors. Buyonet has an affiliate program where partners (i.e. other web sites) show a banner with a link to Buyonet's site. The partners get bonus of everything that customers buy from Buyonet via these banners. The amount of partners are of course important to Buyonet,

but each partner cannot influence Buyonet and is rather easy to exchange. The affiliate program is an example of Internet's possibility to reach many and establish a relation with everyone.

Trust and opportunism are two important concepts in imaginary organisations. Trust creates loyalty which has to be mutual between involved actors. Netshop puts great effort on establishing and maintaining trust between their actors in order to fulfil the business process successfully. For Buyonet, on the other hand, the external actors that offer the prerequisites for the business process, i.e. the suppliers of software, are the most important actors to build a trustful relationship to. This implies that the way trust and opportunism are handled at Netshop affect the effectiveness and quality of the business process in a more direct sense. Both Netshop and Buyonet are of course extremely dependent on trustful customers in order to stay in business. Thus, they put a lot of effort in building trustful relationships to their customers.

Core competencies of the external actors differ between Netshop and Buyonet. At Netshop the core competencies placed outside the imaginator's are systems development, responsibility for IS, logistics, economy, design, image, and text writing. The fact that so many core competencies are placed at external actors is explained by the initial goal of establishing Netshop very fast. A fast establishment of an organisation of this size had not been possible without help from external actors that already had their businesses running. At Buyonet the core competencies placed outside the imaginator's are credit ratings, bonus payment to partners, design, image, and text writing. Buyonet's business idea of selling software on Internet has made it unnecessary to employ the same amount of external actors as Netshop. Both Netshop's and Buyonet's core competence can be characterised as the ability to combine different competencies with IT in a way that creates value for the customers. There is a great difference between placing out the prerequisites for the business process (as Buyonet does) and placing out the fulfilment of the business process (as Netshop does). The latter kind of outplacement demands that interaction between both actors and their IS work in a reliable way. Accessibility and actuality of information must be very high in order not to damage the business process.

The differences found in our case studies are summarised in table 1 below.

Table 1   Differing characteristics in the case studies

Characteristics	Netshop	Buyonet
Business process automation	*Partly automated*	*Fully automated*
Product type	*Physical*	*Digital*
IS architecture	*Distinct inter-organisational*	*Main focus on internal aspects*
Imaginator's influence on IS architecture	*The imaginator is dependent on external actors*	*The imaginator owns and controls the IS architecture*
Responsible for IS architecture	*No one is responsible for the entire IS architecture*	*The imaginator is alone responsible*
IS interaction	*Complex*	*Rather simple*
Legacy problems	*Existing*	*Non-existing*
Strategically importance of external actors	*High*	*Low*
Outplacement of core competencies	*Fulfilment activities*	*Prerequisite activities*

5.   Conclusions

We have discussed interaction between actors as well as interaction between IS within imaginary organisations in this paper. We have studied two organisations in order to find critical aspects for

developing electronic commerce settings. In this section we draw some conclusions from our findings regarding interaction. As we stated in the beginning of the paper, the business processes of imaginary organisations must be designed in a way that enables the organisation to be cost effective, have a functional distribution with fast deliveries, reach many potential customers, and offer products with high quality. The aspects we highlight in our conclusions should be seen as empirically grounded statements important to consider when establishing an imaginary organisation. Our findings need, however, further exploration before they can be recognised as valid for any kind of organisations conducting electronic commerce.

- The major differences between logistics of physical and digital products result in totally different demands on the business process, its complexity, and realisation. This impacts on the IS architecture as well as on the actor structure.

- In web-based imaginary organisations it is necessary to focus on both internal and external architectural IS design issues in parallel, in order to reach a feasible inter-organisational IS architecture.

- IS interaction is vital for the imaginary organisation, but it can be obstructed by lack of standards, organisational concepts with semantic differences, etc.

- IS interaction demands a visible management responsibility for the inter-organisational IS architecture.

- It seems to be strategically important for the imaginary organisation to own and control development resources for the web-system.

- Internet offers great opportunities to reach many actors and to establish a relationship with every actor, which results in a flexible actor structure.

- Independently of any formal agreements, confidence and trust are important for actor relationships within the imaginary organisation. Confidence and trust are depending on high quality in communication between actors (e.g. integrity, honesty, sincerity).

- Being able to identify core competencies is vital to become a strategic actor in electronic commerce. In both the studied organisations, the core competence of the imaginator was the ability to combine different competencies with IT in a way that creates value for customers.

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