Relationship Alignment between Small Firms

An Information Exchange Perspective on Dyads

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In parallel to my work as an instructor at the division for Information Systems Sciences at Luleå University of Technology, I have taken doctoral courses, attended research seminars and conferences in order to learn more about the research process as well as the subject chosen in this thesis. However, I would not have been able to finish the work if it not had been for fund providers, my supervisor, colleagues, and of course my family.

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During field work I also met great generosity from CEOs and other administrative personnel. Without all of you this doctoral project would not have been possible to finish, and I do hope that I may return to your businesses someday and take part once again of your knowledge and hospitality.

To my children I want to say ~Now it’s our time. I hope you will understand all of this someday.

Karin and Linda – You are the best!

Dan Harnesk
November 2006
ABSTRACT
This thesis is about conceptualizing relationship alignment in small firm relationships from an information exchange perspective. The thesis has a theoretical focus but is also informed by three case studies. The thesis is based on five papers dealing with information exchange with different focus: inter-organizational information systems, information exchange patterns, social information exchange, coordination of information, concepts for relationship alignment. The context in which information exchange is examined is small firm relationships. While there are research of information technology in such context on strategic issues of IT alignment, there is still a great need to find out how the small firm relationship can be aligned from the perspective of ‘working together’ with an information focus rather than technology focus. The thesis examine and criticize three sets of theoretical bodies; Social exchange theory, relational theory, and information systems theory in order to understand how relationship alignment may be articulated in a differentiated style. The main conclusion drawn from this work is that relationship alignment between small firms could be expressed by a relationship alignment conceptualization that consists of three different aspects of information exchange. The three aspects of the concept are: presence which is the social dimension of exchanging information, formality which has a transaction focus, and mediation, an information technology concept for information exchange.
**Figures and Tables**

Figure 2-1, Relationships and interactions in industrial networks.

Figure 2-2, The working-together context

Figure 3-1, Linkages of social exchange theory concepts.

Figure 3-2, The social construction of meaning: An alternative perspective on information sharing.

Figure 4-1, Relationship alignment.

Figure 4-2, A model of an information exchange system.

Figure 4-3, Information systems structures.

Figure 5-1, Dependency configurations.

Figure 5-2, Cognitive map showing parts of the social theme

Figure 5-3, Cognitive map showing parts of the business theme

Figure 5-4, Cognitive map showing parts of the IT theme

Table 5-1, Relevant situations for different research strategies.

Table 5-2, Firm descriptions.
## CONTENTS

Cover paper

1 Introduction .................................................................................................................    1
  1.1 Research objective ................................................................................................. 5
  1.2 Structure of the thesis ............................................................................................ 6

2 IT in organizations ......................................................................................................    9
  2.1 Information flow ................................................................................................. 10
  2.2 Information management ...................................................................................... 11
  2.3 Challenges for information systems ....................................................................... 13
  2.4 Strategic IT alignment .......................................................................................... 16
  2.5 Critique on the traditional IT alignment approach ............................................... 20
  2.6 Emergent perspective on IT alignment .................................................................. 22
  2.7 Small firms ........................................................................................................... 24
  2.8 Small firms and Information technology ............................................................. 25
  2.9 Organizational characteristics of information technology use in small firms ........ 27
  2.10 Inter-firm relationships ....................................................................................... 29

3 Towards a conceptualization of relationship alignment ............................................. 33
  3.1 Inter-organizational relationships ...................................................................... 33
  3.2 Information exchange ......................................................................................... 38

4 Theoretical perspectives on relationship alignment ................................................ 45
  4.1 Social exchange theory ....................................................................................... 46
    4.1.1 Social integration ........................................................................................... 47
  4.2 Relational exchange theory ................................................................................... 48
    4.2.1 Transaction coordination ............................................................................... 50
  4.3 Information systems theory .................................................................................. 51
    4.3.1 Information exchange systems structure ....................................................... 54

5 The research process .................................................................................................. 59
  5.1 Qualitative or quantitative? ................................................................................ 61
  5.2 Case study as a research strategy ......................................................................... 64
  5.3 Credibility of the study: Validity and reliability .................................................. 65
  5.4 Design of the case studies ..................................................................................... 69
  5.5 Case description and data collection ..................................................................... 71
  5.6 Data visualization and analysis ............................................................................ 72

6 Conclusions and discussion ....................................................................................... 75

7 Further research ......................................................................................................... 83

8 Summary of the papers ............................................................................................. 85
  Paper 1 ......................................................................................................................... 85
  Paper 2 ......................................................................................................................... 85
  Paper 3 ......................................................................................................................... 85
  Paper 4 ......................................................................................................................... 86
  Paper 5 ......................................................................................................................... 86

References .................................................................................................................... 88
Paper 1:
Inter-organizational information systems and inter-organizational cooperation .................... 107

Paper 2:
Being there, Doing it: Information Exchange Patterns in Small Firm Relationships............. 123

Paper 3:
Small Inter-firm Cooperation: Aligning Social Information Exchange.............................. 143

Paper 4:
Addressing Formality: A Conceptualization of Information Exchange Coordination in Small
Firm Business Transactions ....................................................................................................... 159

Paper 5:
Relationship Alignment: Multi-contextual Issues in Small Firm relationships.................... 177

APPENDIX 1 .................................................................................................................................. 195
1 Introduction

This thesis is about conceptualizing relationship alignment in small firm relationships from an information exchange perspective. Relationship alignment is in this thesis concerned with social, transaction, and information technology matters and how small firms align to each other in these matters. The kind of firm relationships in focus is dyadic relationships. The thesis is based on five papers, which elaborates on three different aspects of information exchange: social information exchange, business transaction information exchange, and the mediation by information technology of these two different orientations of information exchange. The thesis is based on the rich tradition in IT alignment research that deals with matters of adaptations between IT strategies and business strategies, by expressing the synergy between them on the attributive level. While there are research conducted in the traditional alignment domain that emphasize the importance to consider firms social and business environment, little research is conducted on the theme of aligning the relationship between firms applying an information exchange perspective. This thesis therefore aims at exploring alignment of information exchange rather than the correlation between different strategies. However, the small firm business relationships are supported by strategic dispositions in the collaborating firms, for example, cooperation strategy. Despite the close relation to the traditional view upon IT alignment this thesis is relational oriented. Furthermore, in business management research the concept of relationship alignment is not a new idea. For example, Owen and Wagner (1996) define relationship alignment as a process that aims at strategic and operational improvements of business relationships. Capability needs in support of the organizations business strategy, and total costs and quality are examples of variables that indicate how organization strategically and operationally can improve the business relationship continuum.

Relationship alignment is also known as the “win-win” concept (Cox, 2004). The “win-win” concept is expressed by Cox as the search for profits and mutuality in business relationships. Cox’s transactional approach to relationship exchanges is based on the power relation between business partners, and how conflict and tension between partners may become inevitable and thereby affect the relationship alignment negatively. However, in the IS field the notion of relationship alignment has not been studied sufficiently enough and particularly the information exchange dimension to the phenomenon is not too well represented in the cumulative tradition of IS knowledge.

In this thesis, the discussion of relationship alignment promote a perspective that builds on reciprocity and mutuality rather than a strategic and profit based performance perspective that can be identified in IT alignment research and business management research. Research in IT alignment focuses on strategies and technology while research in business management directs the attention to transactions and performance between organizations. The contribution of the research conducted in this thesis is a
promotion of a relationship alignment perspective that is based on information exchange in social relations, business transactions, with technology support. In relation to other trajectories in relationship alignment research, it is possible to say that the approach taken in this thesis regarding relationship alignment also is about improvement of business relationships continuum.

As a starting point for this thesis I would like to quote three well known researchers in the IS field and their view on some of the problematic situations which may occur in organizations, and at the same time inspired me to deal with the topic of this thesis.

A systems development perspective on information:

The problem with information is that we all too often take it too much for granted. There’s no need to spend time analysing it, surely? We all know what information we need to do our jobs, to make decisions … or do we? If an information analysts came to interview you to ascertain your information needs and simply asked you to provide a list of information requirements. I wonder what your reaction would be? Sit back for minute or two and think about it. (Galliers, 1987:3)

An information management perspective on information:

To begin with, the organizational structures that provide information support to businesses don’t help much with information. Despite titles like “Information Services,” “Chief Information officer,” and “Information Center,” most such functions are preoccupied with technology- if not hardware, then software, application development, and communications. Few of these groups could provide, for example, a listing of key information types an organization (including information not on computers) and their locations. Davenport and Prusak (1997:25)

A perspective on information in context:

If people could fully agree, cooperation would be smoothly achieved even in an uncertain and complex world. But when uncertainty, complexity, and information asymmetries and lack of trust cannot be ruled out a priori, then the multitude of contingencies which affect work in organizations may require the negotiation of complicated contractual plans to arrange cooperation (Ciborra, 1987:260)

To me, these different perspectives are the very base for my view on information related issues in organizations. Information systems are being developed but organizations tend to focus more on technology itself rather than on the flow of information in businesses. The information flow (and the technology) needs to be managed, but who
does this and who is responsible? How can we understand the contextual dependencies of information exchange? These different views depict the complexity of information related issues that intertwine humans and information technology by a reciprocal relationship in modern organizations.

The link between humans and technology is studied within the field of information systems science and studies are concerned with management, use, design, and construction of information technology in social contexts. The social context in focus for systems science scholars is often the organization and its various business processes and actors. From the quotations made above it is obvious that the information environment in its widest sense contains complex entities, such as, systems, information, management, external firm environment, etc. Depending on the complex structure of inter-dependencies between such entities several concerns arise when understanding and knowledge are to be developed. Questions such as; what is the system? How to manage the systems? What are the human resources? How can organizations benefit from IT usage in the overall business context? Does the IT infrastructure fit the business infrastructure? These are legitimate reflections and not always easy to answer due to the many aspects of the information environment that organizations must manage.

The inter-relatedness that information technology and organizations compose bears in itself the foundation of how we can perceive information technology in relation to human activities. In general, the situation is interactive (Latour, 1999) but it is an unbalanced interaction because IT cannot produce intentional result to the user. This has to do with the technological determinism that underlies technological design, i.e., the duality of technological structure, which is the structure of technology as a medium and outcome of action. At best, we can say that technology follow its own independent aim of greater efficiency (Khong, 2003). The user on the other hand, is full of intentions, having decomposed organizational goals at hand as well as individual goals in carrying out work tasks. In information systems research the situation is substantially investigated and reflects the perceived usefulness (David, 1989) that humans expect IT to deliver.

The work of Markus and Robey (1988) expresses the duality and inter-relatedness between IT and organization in the perspectives: technical imperative, organisational imperative and emergent perspective.

The essence of the technological imperative in conveyed by the word “impact”. This perspective views technology as an exogenous force which determines or strongly constrains the behaviour of individuals and organizations. (Markus and Robey, 1988:585)
The organizational imperative assumes almost unlimited choice over technological options and almost unlimited control over consequences. (Markus and Robey, 1988:587)

The emergent perspective holds that the uses and consequences of information technology emerge unpredictably from complex social interactions. (Markus and Robey, 1988:588)

One way to understand the information environment in the organizational context is to consider the duality between technology and humans as a trade-off between standardization and deliberate choice. The technological imperative exhibits an inherent denial of the complexity of the world and promotes a mechanistic view of human and organizational action. The mechanistic view on the world allows things like standardization of practice to become the solution to all possible problematic situations in every-day work life. Any conscious choice in such direction requires that humans adapt to controlling structures in work and technology practise. However, humans have intentions and goals and sometimes these matters do not align to organizational intentions. Hence, at least we seem to still have an option for the choice of action in today’s businesses. Managers in organizations can decide on conformity or recurrent changes, that each will affect the use of information technology, which then may very well be ephemeral and fragmented, depending on that information technology in fact has both constraints and capabilities. In the article “The Signification of Machines”, Janis Kallinikos (1992) elaborate on the theme of trade-offs between standardization and choice. Kallinikos argues that the historical tradition of using mechanistic metaphors throughout the industrial era in the Western society has emphasized the difference between man and machines. In essence, the organizations of the Western society are left with two contradictory trajectories; standardization as mechanical motion and choice as deliberate action. Kallinikos asks:

> What are the tasks and socio-cognitive operations embedded in the rules, principles and conventions whereby the dance of artistry and craftsmanship (e.g. the art of picture-making) becomes frozen, reduced and turned into a closed and repetitive sequence of movements (e.g. the camera) (Kallinikos, 1992:116).

The abstract and de-contextualized knowledge embedded in software constitute one of the principal means whereby contemporary work contexts handle the intricacies of collective actions. Standardization requires, at least, an assumption that it is possible to create a common world-view. To what extent is that possible? As Kallinikos mention himself, industrial organizations seek to restructure the functions of the technical sys-
tem, the behavioural system, and the cognitive system and to achieve predictability through superimposition of these three systems involved throughout the medium of the digital machine.

The digital machine (the computer) or the networked infrastructure of pre-programmed computing facilities in organizations serves the human by its efficiency and undifferentiated space of information. This could, for example, mean that no conscious structuring of an organization’s information base has been performed. As a serving facility, the computer is important but when, for example, managers in the organization need to act upon contingencies in the environment it is done by the use of the human mind and all the capability that is bound within the human perception and cognition. The situation may be described as a socio-technical relationship where humans and technology experience inter-relatedness in the organizational milieu that strives to be efficient and effective to serve the organizational objectives.

1.1 Research objective

This thesis is both theoretical and empirical. The theoretical part of the thesis aims at supporting new concepts and patterns of thought that are useful for describing the issue of relationship alignment from an information exchange perspective. The empirical part consists of three case studies of dyadic small firm relationships.

The purpose of this thesis is to create better understanding for the multi-contextuality of information exchange in small firm relationships. The avenue for this is to theorize how small firms can be perceived aligned with other firms by studying information exchange in the social, transactional, and technological context of small firm relationships. With the argument that the socio-technical relationship is not studied sufficiently enough this research draw attention to inner properties of social relations and business transactions and how these properties can be supported by information technology.

The overall research question is formulated as:

How is it possible to express identified concepts, from an information exchange perspective, that elucidate relationship alignment between small firms?

This thesis is complementary to the ongoing trend in IT alignment research by providing a differentiated perspective on relationship alignment in small firm relationships. The complementary approach that I argue for is that alignment research need to address relational issues in the IT and organization linkage, rather than the attributive focus that have dominated the field of IT alignment. The approach to express relationship alignment is based on theories of social exchange theory, relational theory and information systems theory. As such, this thesis contributes with knowledge about the
social and transaction aspects of developing aligned businesses from an information exchange perspective.

1.2 Structure of the thesis

The thesis consists of a cover section and five papers. The cover section starts with an introduction of the research problem, research objective, and thesis structure. Then follows a broad introduction to IS/IT in organisations, comprising the topics of strategic alignment and IS/IT in small firms. After that, in chapter three, a discussion of the basis for a conceptualization of relationship alignment is outlined. Then, in chapter four, theories for social exchange, business exchange, and information technology are described and discussed in relation to the results of the papers. In chapter five the research approach and methodological issues are discussed. After that, in chapter six the conclusions made in this work are presented and in chapter seven some ideas and suggestions for future research are discussed. Finally in chapter eight a summary of the papers is presented for the reader who doesn’t have the time available or doesn’t feel comfortable to read each specific paper. The topics of the papers are:

- Inter-organizational Information Systems and Inter-organizational Relationships.
  o In short, this paper served as an idea generator for my Licentiate dissertation in 2004. I also utilised the constructs cooperation, coordination, and communication from this paper in this doctoral dissertation when I delimited this research. The constructs mentioned above is also used in paper five as parts of a theoretical frame for relationship alignment. The research method in this paper may be described as qualitative survey research approach.

  o This paper conceptualizes information exchange patterns between small firms and the patterns are viewed from an information technology perspective. This paper addresses the technological dimension of relationship alignment, as viewed in this thesis. The research approach utilises a qualitative case study strategy.

- Small Inter-firm Cooperation: Aligning Social Information Exchange.
  o This paper explores the social interaction dimension of information exchange between small firms. There is a strong human focus in this paper and so this paper emphasizes the importance of social information exchange when considering how relationship alignment may be expressed
in the small firm context. The research approach utilises a qualitative case study strategy.

- **Addressing Formality: A Conceptualization of Information Exchange Coordination in Small Firm Business Transactions.**
  - This paper deals with the business transaction level of small firm relationships. It is argued in this paper that generic transaction models are insufficient tools to use when identifying detailed information content in exchanges when coordination of transactions is required. The resulting model of mine focuses on how relationship alignment may be expressed by the use of generic transaction models with some refinements suggested. The research approach utilises a qualitative case study strategy.

- **Relationship Alignment: Multi-Contextual Issues in Small Firm Relationships.**
  - This paper is the resulting theoretical discussion of relationship alignment between small firms and is mainly based on the three latter papers above. This paper then serves as the major contribution to the theoretical argumentation I provide in the cover section of the dissertation.
2 IT in organizations

In organizational work life humans exchange information sometimes by the use of technology and sometimes without technology support for the purpose of performing tasks in business processes, managerial support, and other kinds of defined activities congruent with the goals of the business. IT has played an important role in business performance since the 1970s as a tool for back-office process automation (Sauer and Yetton, 1997). In the 1980s organizations realized the informative nature of IT meaning that IT permits the capture and analysis of data that can be used to redefine business processes (Zuboff, 1988). Subsequently, the management of IT were aimed at improving technical functions of the IT systems and focused on securing resources for the development of technical systems (Sauer and Yetton, 1997). As I see it today, not much has been redefined in the way we understand IT in organizations. Researchers still rely on the old mechanistic approach of addressing the external environment of organizations through the lenses of business strategy and IT strategy (e.g. Cragg et al., 2002; Levy et al., 2001). There is still much focus on traditional and measurable formal approaches with focus on technology and less focus on contextual dependencies when explaining the IT and business relationship. Contextual dependencies is in this thesis viewed as the information related issues that occur when people interact socially, when they conduct business transactions, and when they use technology as a communication facilitator for the exchange of information. Social interaction, business transaction, and information exchange is considered as the domains, that constitutes the information environment for inter-firm relationships in this thesis.

Furthermore, alignment of these three domains in the context of small firm relationships is the subject of matter in this thesis. Information use and organizational activities need to be further investigated due to lack of research regarding social aspects and information exchange aspects within the alignment research field. According to Ciborra (2002) the alignment case is a hybrid and this hybrid deals with socio-technical artefacts. On one hand we have a set of technical systems (information systems), and on the other hand human resources devoted to use and management of these systems. I will in this introductive chapter try to prepare for the idea of relationship alignment in small firm relationships which I consider the cumulated knowledge in IT alignment research has missed.
2.1 Information flow

Organizations and individuals constantly face increased amount of information in day-to-day life. This can be seen in the use of e-mail systems and the almost uncontrollable replenishment of information in our mail system folders, to organizations demand and supply of information in various business processes. It is clear that IT is an interwoven artefact in today’s businesses. Firms use IT as support to tasks in virtually all business processes. IT is used as a tool to reduce transaction costs, coordination costs, and if trustworthy, also continuously business process improvement and learning. In order for IT to act like an efficiency and effectiveness improver, which often is motivated by organizational objectives, organizations need to address business target issues and also reinforcing issues in the IT infrastructure (Ciborra, 1997).

It is agreed in research that IT facilitates and enhances the flow of information between stakeholders in and between organizations (Henderson and Venkatraman, 1989; Luftman, 1996; Broadbent and Weil, 1997). In its clearest sense, this is the desirable functionality of IT and as such, firms use databases, software, and different communication facilities to support humans in their activities. This is what traditional IT alignment is about, establishing the connection between the technology context and the business context. Considering that firms, together with technology, comprise sheer human actions and interactions as a social construction of the firm base, we realize that there is a social dimension to the business and technology relation in order to adjust to work procedures and its goals. Previous research that has studied the social-technology relation is, for example, studies of communicative action (Habermas, 1981; Goldkuhl, 1996). Goldkuhl’s language approach is well-known and comprehensive by the way the approach explains social interaction in the business context.

In work life, it is often the case that we apply a life-cycle perspective to the installed systems in organizations. This is the case whether we consider humans or technology. Management expects people to be productive over predefined period of time. Ranging from a day-to-day perspective (i.e., working the required 8 hours) to a life-long perspective in which the individual can retire after a predefined amount of working years. Of course, organizations support with concepts like life-long learning, but nevertheless work life in its design follow a predefined route. The similar discussion occurs when we install technology into firm operations. Designers, managers and users define the working area of the system, its content, and its expected term of life. However, this is not the case when we discuss the space of information in our work places. Human interactions carry information which often is stored in physical systems. We, as humans inform each other intentionally and expect meaningful actions to occur as a response, and as such we form the direction in processes so that we eventually reach organizational objectives. Of course, all informative actions and its related information is not
always meaningful in itself, rather there is imperfection in the information content as well as in the interpretations of the information.

Furthermore, the information need in businesses is variable as a consequence of environmental pressure, which requires adaptation of work procedures. Thus, how shall we look upon information per se? Organizations cannot preserve the information base for ever and as we as humans apply different meaning to the information over time, how should we manage differences that occur in information objects, due to redefinitions of business processes and IT structure. Humans also seem to apply new labels to old etiquettes. For example, today, hardly anyone speaks of data. Instead we use the term information for the same thing. Isn’t it also the case that organizations accumulate huge amounts of information in its storage facilities not knowing the meaning of information? Zachman (1978) have discussed the nature of information and its tendency to be finite:

> Looked at the purest conceptual sense, the data has a tendency to be finite in nature. What is infinite is the use of data, or the combinations of various pieces of data for various purposes or the functions to be satisfied or the flows of data (Zachman, 1978:9)

In essence, this signifies that the information environment is not possible to predefine. Availability and exchange of information arise from specific needs and should not be hindered by regulation in plans. Thus, organizations can react on environmental pressure and respond to new business opportunities.

### 2.2 Information management

Managing the environment that encompasses business activities, social activities, and information technology has been considered important in research for a long time. Of course, development of IS/IT strategies that ensures business outcome and organizational performance have received the majority of attention in research. In the early 1970s, Nolan developed the stage hypothesis, showing that investments in IT followed evolution in business maturity (Nolan 1972). Rockart (1983) used a concept called critical success factor (CSF) to find out the information need among firm executives. Earl (1989) discussed the strategic components in the application portfolio and also the differentiation in information strategies (i.e., the linkage approach). These are examples of approaches that emphasized the need to prepare IT-plans in order to respond to business activities, solely within organizations. These examples, and many more, had an understanding of information systems as a resource that needed to be controlled in order to benefit the business. Strategic management of IS/IT became a common and overall notion, and important areas were, and still are: Investment of IT, services between IT-department and users, and information management. Basically all the exist-
ing models in the area are devoted to efficient use of normative steps to achieve ‘good management’, so called formal planning. Ward and Peppard (2002) wisely declare that strategic management is a combination of: formal planning, creativity, innovation, informal thinking and opportunism. Such a management agenda is welcome but will come in conflict with the well-established systematic views (mechanistic principles) in work organization. The systematic view has its origin in systems theoretical traditions, such as, the cybernetic notion of a system (Bansler, 1989):

In other words, the systems theoretical tradition treats organizations a kind of “machinery”, which function regularly in accordance with certain basic rules (Bansler, 1989:8).

In consequence, systems in that tradition seek for “rationalization”, “efficiency”, and “control” in order reach predefined organizational objectives. Subsequently, it will be difficult to manage changes that occur in organizations because planning for change is not a natural part in this style of management.

Applying the view of mechanistic regulation on information systems in organizations will certainly not support the dynamics that Ward and Peppard (2002) consider attainable for developing an altogether competitive firm. The mechanistic approach (originating from Taylor)¹, applied in field of information systems possess the beliefs that it is possible to find “the best way” to carry out organizational work (Bansler, 1989). Today, work life has become more and more knowledge intense, partially dependent on the use of information technology, but also, as a consequence of increased human interaction between firms, and between firms and its customers (Luftman, 1996; Porter, 1987).

Clearly, dimensions such as understanding and learning aspects for the different contexts (social, business, and technology) that constitutes the domains in the overall information environment need to be considered when using information technology. Bansler (1989) refers to the socio-technical tradition when identifying that it is evident that systems development not only involves problems of technical nature, but also social and organizational problems. The socio-technical tradition emphasizes the adapta-

¹ Taylor, F.W. "Principles of Scientific Management".
tion feature between two separated systems, the social system and the technical system, in order for the organization to work optimally (Bansler, ibid.). The overall idea was that technology introduction in organizations was a good thing and it was expected to ensure well-being to workers and welfare to the organization. The central theme in the socio-technical tradition is that “job satisfaction” and “human factors” are important when introducing new systems. Participative approaches to systems development was recommended because workers processed important knowledge of the work situation, which the systems designer lacked. Adman and Warren (2000) clarify that the socio-technical approach encompasses a soft systems dimension and a hard systems dimension. Eventually, the tradition also visualized the struggle between labour and capital as the trade union took on a protectionist approach that encapsulated the worker. The same thing occurred on the management side, management ensured the economic interests for the organization and thereby the struggle was moved to the political sphere. Subsequently, the “introduction” of the political sphere fortified the distinction between workers and management. In that respect, the role of information systems has been seen as a facilitator of empowerment at lower levels in organizations (Ehn 1988). In the organization the workers would be empowered by the virtue of access to information to carry out higher level tasks (Zuboff, 1988).

2.3 Challenges for information systems

In today’s work life one cannot say that organizations are static. In research we find reports of many new ways to organize the “job situation”. As a response to assumed, or real expectations in markets, firms adapt to concepts, such as, imaginary organizations (Hedberg et al. 2002), adaptive organizations (Fulmer, 2000.), and virtual organizations (Malhotra, 2000). These new forms to organize the internal firm structure also challenge the IS structure. One can argue whether it was a trivial task to make coherent choices regarding IS support to the organization formed as a cybernetic systems or a symbiotic socio-technical system in the 1960s and 1970s, or not. What differs between “now” and “then” is the numbers of parameters that firms of today have to cope with. Economics of scale, globalization, time-to-market, etc, even the utmost necessity to cooperate for business survival, pressure firms to, for example, introduce integrated product development and other cooperative arrangements. This has of course promoted decentralized responsibility among the work staff (Gale et al., 2002). This can be seen in virtually all areas of human work life, the automobile industry, the food industry, the drug industry and research teams working together, all crossing national and economic borders. In recent years this has been a trend in the software industry as well. The so called global software development (GSD) has received great attention in research (Carmel and Agarwal, 2001).

Of course this challenge the IS structure and the use of IS. Organizations have no tool like IS to use for the information exchange, which they have become increasingly
dependent on in business processes. So, organizations are using IS to build and maintain global and local business relationships and as everything in work life is expected to be profitable, situations of conflict will occur from time to time. Rigid use of management models that are highly idealized characteristics of the real world will hamper the development of IT infrastructures that enables the organization to prosper from IT support in the business activities (Ciborra, 1997).

Looking back on the eras of cybernetics and socio-technical organizations it is easy to understand the emergence of the critical tradition in IS research. The distinction between workers, technology, and management that the former traditions nurtured also feed the critical idea that organizations are not harmonious views of social relations, and that organizations should be looked upon as frameworks of conflict (Bansler, 1989). Social relations at work are characterized – not only by cooperation – but also by conflicts and struggles between managers and employees, and among different groups of employees (Bansler, ibid.). This critical tradition was in Scandinavia grounded in political ideology as representatives for this school advocated on behalf of workers and the union. I believe that the intention in this school to emphasize the role of the individual also can be used when we as researchers consider information technology and organizations as well. Virtually all concepts for modern systems development take the user-perspective into consideration when introducing new concepts of information technology. Other critical reasoning for the case of IS design have been put forward by Walsham (1993), who mean that “critical theory places a strong emphasis on the values and emancipation of the individual”. As we know from IS research and IS development, capturing user values is not a one-time event. Virtually all IS-methodologies contain iterative features and this means that the “value capturing” is a process rather than an outcome, in which full participation among equals (Lyytinen and Klein, 1985) must be pertained.

As firms today, collaborate in different areas and regarding various matters of collaboration, the need of supporting information technology increases and being able to interact with different participants become a vital importance (Hunter et al., 2002). The rise of the Internet in the mid 1990s has further stimulated these developments. It challenges traditional organizations to innovate their processes, and enables them to enter electronic marketplaces with completely new ways of doing business, (Boddy et al., 2002).

The collaboration efforts and activities that firms carries out, in and between different socio-cultural settings, imply that there is a need for approaches in strategic alignment that visualizes the intrinsic characteristics of “working-together”, which in this thesis is regarded as the information exchange that participants perform in order to benefit from the agreements made between them. In addition to the common strategy fit approaches, which does not contain any sayings for how organizations could relate to the dynamics of different business processes, some ideas dealing with social aspects
as well as learning aspects is available in research. For example, Earl’s (1987) learning maturity model and Ciborra’s (1997) cultivation approach to alignment between the organization and IS/IT. The approach proposed by Earl is a top-down planning procedure, ranging from the actual context for planning to the very tasks that carries out the connection between business and IT. Even if the concept deals with ambiguity in priorities and organizational impatience in planning activities, it follows the normative tradition in model creation as it is directed towards strategy formulation. Thus, if one should use this approach it would require a step-by-step advice, which in itself is normative.

Ciborra (1997) deals with drifting technology as a consequence of difficulties in management of the same. Users and managers need to know and understand how to exploit technology in their different work procedures and work situations. This learning process is called drift by Ciborra:

> By drifting, I mean a slight or significant shift of the role and function in concrete situations of usage, that the technology is called to play, compared to the planned predefined, and assigned objectives and requirement (irrespective of who plans or define them). Drifting can be looked at as the outcome of two intertwined processes. One is given by the openness of the technology, its plasticity in response to the reinventions carried out by users and specialists, who gradually learn to discover and exploit features and potentialities of groupware. On the other hand, there is the sheer unfolding of the actor’s “being in the workflow” and the continuous stream of interventions, bricolage and improvisations that “color” the entire system life cycle. (Ciborra, 1996:8)

Ciborra (2002) strongly criticizes the management agenda of today’s business. Firms are to narrow in their perspective of managerial issues. Too much focus is directed towards controllable heterogeneous resources, overlooking that IS/IT is transcending firm boundaries. Instead, management tries to control the decentralized business environment with a narrow MIS (management information systems) mindset. The tactic to refuse this misalignment in management is according to Ciborra the concept of cultivation. Cultivation is about destabilizing current strategy and creating imbalance with the current level of technology (Ciborra, 1997). The tension this creates will at the same time stimulate learning as users are enforced to give feedback concerning the current level of technology-the installed base- and how it affects their work situation.

Beside the need to theoretically improve the field of information management organizations constantly struggle with pragmatic problems. Well known problem-situations with information systems in relation to business processes, according to Magoulas and Pessi (1998) are:
Task solving by use of several information systems.
Information needed for tasks are not available.
The same information is retrieved and maintained in different places in the organization.
Overall systems maintenance is expensive.
Difficult to implement changes in the systems. Results in unexpected consequences in other systems.

Magoulas and Pessi continue, the consequences of the problems are, islands of information, information labyrinths and rigid structures. First, the content in two or more information systems is overlapping or complement to each other. Secondly, information labyrinths or “spaghetti structures” arise when building bridges between systems in order to eliminate islands of information. Thirdly, rigidity is concerned with structures that won’t be subject for change. Clearly, the drawback is heavy costs for often quick and ad-hoc corrections in the systems. In practice, we can also identify the wide range of dispositions towards IT. Somewhat general the term logic of theory (science) and logic of practice (action) can be used to describe the situation. On one hand large organizations with the capability to implement management models for its IT-environment. One the other hand there are firms, preferably small firms that regard IT as a supporting resource to the business. Whenever anything happens in the installed IT base they call for a technician to correct the faults. Firms like that do not consider IT to be a strategic resource in any sense. Like one informant from the case company in the empirical part of this thesis said:

“Having trouble with IT is like having trouble with the plumbing – you just pick up the phone and have somebody taking care of it.”

Clearly, this firm (and assumingly others as well) follow the representation of logic of practice and may risk not to benefit from IT usage as a vehicle for continuously improvement of business processes. The opinion expressed in the quotation above corresponds well with Yetton’s (1997) suggestion, that IT is merely a service and therefore could be outsourced. Clearly, the importance of IT, proposed by Broadbent and Weil (1997) stating that IT must be considered as a core activity in organizations, does not altogether apply to small firms.

2.4 Strategic IT alignment
The area which is devoted, through scientific studies, to investigate the outcome from IT usage in relation to business activities is strategic alignment. Sauer and Yetton (1997) posit that strategic alignment involves configuring the organization so that IT is
strategically, structurally, and managerially aligned to the business strategy and management process. The corresponding principle of strategic alignment is, according to Sauer and Yetton (ibid.), that IT should be managed in a way that mirrors management of the business (ibid.). Strategic alignment has many pseudonyms according to Avison et al., (2004). In the article called “Validating the strategic alignment model” they identify a number of concepts for the case of integrating strategies relating to business and IS/IT:

- Fit (Porter, 1996),
- Linkage (Henderson and Venkatraman, 1992),
- Fusion (Smaczny, 2001),
- Bridge (Ciborra, 1997).

In this thesis I will describe these four concepts in order to visualize the diversity of thoughts that formed IT alignment thinking since the 1980. There is no unity in the details of achieving aligned organizations, but all thinkers in the area conceptually agree that if organizations can position the IT strategy in closer relation to the business strategy, the organizations will benefit from better IT effectiveness and higher profitability (Porter, 1987, Luftman, 1996; Ciborra, 1997; Levy et al., 2001; Cragg et al., 2002).

According to Porter (1996) the concept of fit expresses the connection between functional strategies. There are three types of fit according to Porter: The first-order fit concerns the simple consistency between each activity (function) and the overall strategy, for example, activities and low-cost strategy. This can for example mean that the firm avoids commissions to intermediates. The second-order fit occurs when activities are reinforcing. Parties can, for example, use each other to promote products at one party’s location. The third-order fit is optimization of effort. Porter emphasizes that coordination of activities and information exchange across activities will reduce redundancy and thereby minimize wasted efforts. (Porter, 1996: 70-73)

Porter’s concept of fit is similar to the idea of maturity models. The concept has an aspect of growing capability to it, as firms understand how they strategically can move from internal efficiency to external effectiveness.

Another concept of strategic alignment is the linkage approach by Henderson and Venkatraman (1992) in which the IT strategy and business strategy are both internally and externally determined by the linkage to both organizational structure and IT infrastructure. Therefore Henderson and Venkatraman propose a set of choices for positioning a firm in the business environment using IT characteristics and IS characteristics as well. The IT characteristics are:
Technology scope. Specific technologies like LAN-WAN that support current business strategy initiative or could shape new business strategy initiatives for the firm. This is analogous to the business scope, which deals with choices pertaining to product-market offerings in the output market.

Systemic competencies. Those attributes of IT strategy (for example, systems reliability, interconnectivity flexibility) that could contribute to the business strategy. This is analogous to the concept of business competencies, which deals with attributes like pricing, quality and value added service.

IT governance. Selection and use of mechanisms (for example, joint ventures with vendors and strategic alliances) for obtaining the required IT competencies. This is analogous to business governance, which involves make-versus-buy choices in business strategy. Such choices cover a complex array of inter-organizational relationships such as strategic alliances, joint ventures, marketing exchange and technology licensing.

The choices for the internal IS characteristics are:

- IS architecture. Choices that define the application portfolio, the configurations of hardware, software and communication, and the data architecture that collectively define the technical infrastructure. This is analogous to the choices within the internal business strategy arena to articulate the administrative structure of the firm dealing with roles, responsibilities and authority structures.

- IS processes. Choices that define the work processes central to the operations of the IS infrastructure such as development, maintenance and monitoring and control. This is analogous to the need for designing the business processes that support and shape the ability of the firm to execute business strategies.

- IS skills. Choices pertaining to the acquisition, training and development of the knowledge and capabilities of the individuals required to effectively manage and operate the IS infrastructure within the organization. This is analogous to the skill required to within the business domain to execute a given strategy.

The argument for this distinction is the need for IS/IT strategy to be elevated from its traditional internal focus to address external issues of how well the firm is positioned in the fast-changing IT domain.

The most obvious critique one can put upon the linkage concept is that it requires a well defined planning process in order to answer positively to all the choices that make an organization altogether aligned. Furthermore, the development of the linkage concept was based on state-of-the-art of IT design in an era when mainframe computers with internal organization focus still was the prevailing view in strategic achievements.
A third concept of strategic alignment is the concept of fusion (Smacny, 2001). This concept is built on the author’s own critique towards the mechanistic approach in earlier IT alignment models. Smacny’s view on the issue of IT alignment is process oriented with an apparent role for the CIO and the CEO to be the head of business strategy. The fusion of these roles is the guarantee of having alignment between business and IT because these strategies would be developed at the same time (Smacny, 2001). How does this work then?

In general terms there will be only one strategy. The IT strategy is not developed separately to the business strategy but at the same time. As a matter of fact the two are intertwined and IT related ideas might create business opportunities that otherwise would not even be considered and vice versa business ideas need to be enabled by IT ideas. (Smacny, 2001:800)

What is interesting with Smacny’s approach is the emphasis on the roles and that these roles need to interact as human beings in order to determine the landscape of IT and business. Alignment can be achieved by employing a learning approach to strategy formulation in contrast to the approach used in strategic management schools, which usually is design oriented.

However, one important assumption in the author’s view is that technology is the key to use when shaping the strategy. To me, this may be risky as the result and outcome of the strategy is heavily dependent on the IT infrastructure in Smacny’s approach. Smacny state clearly that organizations change their strategy frequently and I believe that would require a corresponding change in the IT infrastructure. The issue of change in the IT infrastructure is not covered in Smacny’s approach.

Ciborra (1997) launch the idea that alignment is similar to a ‘bridge’. The bridge concept is the link between the organizations strategy and the IT infrastructure. Ciborra identify and emphasize that changes in IT infrastructure occurs in a self-reinforcing manner and the more the IT infrastructure attracts new implementations the more it will become standardized, and subsequently the strength of the bridge increases. The avenue to achieve alignment is through a language that addresses the interaction between strategy and technology. Ciborra uses the terms care, hospitality, and cultivation to demonstrate the dynamics of managing a business and its support in technology. Care refers to the care taking that is performed by actors when they are involved in design, implementation, and use of IT applications. Care taking builds on attributes that we as humans recognize as familiarity, intimacy, and continuous commitment when we identify needs of a system and throughout its construction phase, end user training and systems
introduction. Hospitality denote how organizations accept new technology in existing infrastructures, because technology is ambiguous and therefore acceptance is the unstable way of coping with the stranger (Ciborra, 1997:814). Hospitality specifically addresses the understanding for technology integration in workflows, and is dependent on the real-world perceptions among managers. Cultivation refers to the process by which technology gets accepted and specifically focuses on the limits of rational, human control that technology can attract (Ciborra, 1997, 2002). The reasoning rationale for this is that IT infrastructures are not easy to change, there are dependencies built in old infrastructures that influence the way new technology can be implemented.

Clearly, it has been an evolution of the strategic alignment concept since the 1980's. Interestingly enough it seems like the humans and the dynamics of organizations have attracted researchers to further the area into modern ways of dealing with information technology. There is, for example, an increased interest in the understanding of how implementations of IT solutions could prove to leverage revenue when entering the new deregulated and global arena of business (Weill and Broadbent, 1998). Still, it seems that information technology usage is not a straight forward issue in organizations, at least not from an IT alignment viewpoint.

2.5 Critique on the traditional IT alignment approach

Henderson and Venkatraman (1992) provided evidence that IT by itself cannot provide sustainable competitive advantage. IT needs to be integrated with the organization and then IT can influence change in organizations demising the technical problems that continuously arise that constrain the deployment of IT in the business domain. This evidence supports the idea of strategic alignment being a dynamic process (Burn, 1997). Burn argues that alignment achievement is not a one-time activity and that alignment is a balancing act between a lead or lag strategy. IT sometimes leads the changes in organizations and sometimes IT has to catch up on changes (Burn, 1997:56). Burn further argues, knowing the lead-leg cycles of change will facilitate the management of the alignment process in terms of aligning the IT strategy with the business strategy, or if firms wish to use IT as a driver for organizational change.

There is criticism to the rationale of strategic alignment, and the critique is of course also a critique of the misuse of IS/IT, mismanagement of IS/IT, and misalignment of IS/IT in organizations. Burn (1997) refers to this as the assumption that alignment is asymmetric in practise. In a cyclical perspective IT may take on a leading role in change processes as well as a supporting role that may drive the organization out of alignment (Burn, 1997). This can be seen in effects such as, individuals contend with technology not being in line with work practice (David,
The problem of drifting technology (Ciborra and Hanseth, 1998a) hinders new implementations in the existing infrastructure (the rationale for IS/IT investments is not fully understood). Sauer and Burn (1997) mean that misalignment occurs when a company tries to align IT with the business but the business is not in a state of tight fit. Both Sauer (1997) and Burn (1997) seem to emphasize that alignment is a balancing act, which management has to control. Sauer and Burn, both, emphasize the dynamic nature of alignment. Sauer elaborate on misalignment:

Misalignment is important because it has damaging effects and because it is a common occurrence. It can be expensive and make management of IT difficult. Misalignment can be expected to occur because, contrary to common assumptions, alignment is not a one-time project; in fact once alignment has been achieved companies continue to move in and out of fit. This fragility of fit makes misalignment a likely prospect. The link between misalignment and adverse outcome is the lag between the occurrence of misfit and corrective organizational change. It is to be expected that during the relatively long periods involved in transformation, pathological outcomes will occur as a result of misalignment (Sauer, 1997:95).

And Burn suggests that:

Being in a state that is not aligned is not necessary undesirable if the state is viewed as part of continuing balancing act of the process of alignment (Burns, 1997:57).

The pathologies that Sauer refers to are: stagnation, conflict, and confusion. Stagnation occurs when IT finds itself unable to develop in a way that serves the business. And the stagnation occurs through cyclical effects, through deliberate policy, and as an unintended by-product of business decisions. Conflict occurs when firms’ businesses are global oriented but local identity is priority. This combination of local business autonomy and global conformity implies a conflict in strategic alignment. Confusion in alignment occurs when economic infrastructure, social and cultural values, organizational culture, and personal readiness to accept IT all influence the efficacy of technology transfer and make global alignment a multicultural issue with many dimension rather than single dimension of business alignment.

Given these pathologies, how is it possible to measure alignment when it seems to be dependent on so many intrinsic variables? What may be the area of concern?
Is it the organization or the strategies within the organizational setting? Is it the systems development projects? Or is it the individuals, managers and workers? What is the best way to study strategic alignment?

In literature a great amount of studies concerning the economic outcome by having aligned strategies are reported. A common approach is to select business strategy variables and then examine how the IT strategy meets those variables. Cragg et al., (2002) for example, build on Khandwalla (1977) and Thong et al., (1997), measures organizational performance in terms of business performance and IT impact. They use typical managerial variables, such as, profitability, sales growth, availability of financial resources, image and client loyalty, time and cost savings, integration and quality of decisions, and image and competitive advantage. When choosing strategies as the unit of analysis Cragg et al., (2002) uses a matching strategy to evaluate the IT support to the nine different business strategy items. The matching perspective is commonly based on the difference between two measures, and thus, alignment is the level of similarity between the measures.

Chan et al., (1997) also focused on the strategy level as they quantified the relationship (i.e., fit) between IS strategy, business strategy, IS effectiveness, and its effect on performance. They examined eight dimensions of strategy and concluded that alignment positively contribute to overall business performance. In addition to the traditional approaches that could be characterized as a static view on alignment Sabherwal et al., (2001) argued for a dynamic approach that account for changes in strategies over time. The key components in the model they propose (i.e., the punctuated equilibrium model) is the set of fundamental choices the system has made of (1) the basic parts into which the units will be organized and (2) the basic activity patterns that will maintain its existence. In particular, this is the reflection of the organization’s basic choices in terms of strategies and structural arrangements, in IS and business domains. The critique seem to restate the same message: strategic alignment is static in terms of harmonizing predefined business and technology variables.

2.6 Emergent perspective on IT alignment

Despite some attempts to view the dynamics of alignment prior studies has pointed at outcomes from alignment research with focus on strategy-to-strategy synergy. However, there is an emergent trajectory identifiable in literature that differs from the previous by the underlying social assumption that there are shared norms and harmony of interest between parties that influence the relationship, which leads to, for example, trust issues that is not conveyed by the strategic management and the economic perspective in IT-alignment research. Research in this group show an alternative view of alignment by extending the focus beyond strategic planning and strategy fit to include issues, such as, knowledge
sharing among groups of humans (Nelson and Cooprider, 1996). Reich and Benbasat (2000) also emphasize the social dimension of information alignment as they study factors for alignment between business and information technology objectives. Examples of these factors are: work experience among IT managers, and education level. Qing and Huang (2006) expanded the work of Reich and Benbasat by adding a managerial perspective by utilizing a balance scorecard tool to align IT initiatives with business strategies. Despite the social touch to the work mentioned above, the underlying epistemology seems to be classical management knowledge. In addition, an interactive perspective is partially suggested by Konsynski and Tiwana (2004) who argue for a move from alignment to aligning, meaning that an inter-firm relationship is an ongoing process and not a discrete event where managers mechanistically use classical notions of strategy formulation.

As the research in this thesis is designed to study the issue of relationship alignment this new trajectory was an important source of inspiration and also it supported my idea that there should be more to alignment than performance outcome by integrating IT strategies and business strategies. The study of Reich and Benbasat opened up the avenue for alignment research to consider social issues among group members and how they become aligned in their line of work using IT.

Clearly, the importance of aligning business and technology cannot be argued. I fully agree that achievement of aligned IT and business should be mirrored from strategic insights concerning the same environment. However, since firms are exposed to environmental pressure, for example, the introduction of E-commerce and its need for new technology implementations, I believe it is important to understand how firms can use a knowledge base in order to benefit from such pressure. The external link, that E-commerce creates, is in research referred to as changing the boundaries to firms (Konsinsky, 1993, Massimo 1998; Marsden, 2002). In opposite of the internal perspective of the alignment problem, in which firms can focus solely on its own business activities, an external business relationship perspective requires collaborative actions that initially are not strategy alignment oriented. Firms can still align to internalized strategies even if they strategically benefit from cooperative arrangements, such as, joint ventures, strategic alliances, and dyadic relationships. But, what is required in a business relationship that comprise of social interactions between humans in order to establish synergy or harmony, so that participants actually can benefit from a business partnership? The available literature in IS research regarding alignment achievement do not guide such discussion.
2.7 Small firms

There are several definitions of small firms in terms of the number of employees. In a global perspective the small firm is a firm that have less than 500 employees. In Sweden the line is drawn at 250, but there are also definitions such as, micro businesses with 1-4 or up to 19 employees, small businesses with 10-49 employees. In this thesis I refer to micro businesses and small business definition when I use the term small firms.

In research there are attempts to characterize small firms, and it is commonly understood that small firms differs substantially from large organizations, and the so called size-effect is often referred in research (Burgess, 2002). The size of the firm seems to inhibit conformity in small businesses view on the importance of, for example, training. Small firms engage in far less training activities. Gray and Mabey, (2005) conclude that small firm managers are far less committed to the use of different training activities. For example, activities like using internal programmes, external courses, and e-learning differs significantly from large businesses. Small firms also have a resource and time constraint due to the size of the firm. In addition to these shortcomings Gray and Mabey continue with saying, a self-employed culture of individualism and anti-participation limits the economic role of many small firms. For example, the dominance of one person in management of small firms has been identified by Bridge et al., (1998) as a possible constraint to manage unstable environments. Small firms are also clearly far less likely to commit to written policies, and less likely to link their management development to longer term strategy. Small firms also have simple external information systems (Julien, 1998), for example, the use of Internet technologies in small business is the use of e-mail for communication and the Internet to gather information for strategic action, and to execute EDI exchanges in B2B arrangements (McDonagh and Prothero, 2000; Dandridge and Levenburg, 2000).

Small firms are more likely to be driven by practical outcomes such as customer satisfaction. So, to some extent small firms are more exposed to business failures. However, Storey (1994) posits that the theoretical framework for an understanding of business failure is poorly specified and exemplifies with the lack of understanding in finance theory why firms cease to trade. In small firm literature, uncertainty, innovation and firm evolution seem to be essential dimensions in which small firms differ from large firms (Julien, 1998; Storey, 1994).

Uncertainty may have several sources and dimensions but one interesting aspect of uncertainty is diversity of objectives of the owners of the small firms, compared with large ones. Small business owners do not have to concern themselves with reporting their actions to external shareholders, and so therefore, effective “performance monitoring” does not exist. For a small firm, the relationship between the business and the owner is much closer than it is between the
shareholders and the large firm. The motivation of the owner of the small firm is, therefore, a key influence upon a small firm’s performance. This contrasts with large firm management literatures, which emphasize the importance of control. Here the central issue is how the owners of the business ensure that the managers exert control over more junior managers. This form of “internal” conflict is absent in small firms, where ownership and control are located in the hands of a few people, or possibly a single individual. (Storey 1994)

Furthermore, Storey (ibid.) state that large and small firms also differ in the distinctions of their role in innovation. Small firms grow by the introduction of new products which makes the growth itself extremely rapid. Where large firms have standardized products and services, the small firm provides something marginally different in terms of products or services. The small firm is also less likely to undertake research and development. Even so, small firms are more likely to introduce fundamentally new innovations than large firms. This feature is often attributable to small firms having less commitment to existing practice and products (Pavitt et al. 1987).

Moreover, large and small firms differ in terms of evolution and change. Storey (1994) demonstrates that a small firm is likely to become larger by undergoing a number of stage changes which then influence the role and style of management and the structure of the organization. There is no intention to discuss the small firm per se in this thesis but some main characteristics of the small firms is important to be aware of for the further discussion of relationship alignment between small firms in the thesis. The characteristics mentioned above play an important role for the information environment in small firms. In general, uncertainty may constraint investments in IS/IT resources. Innovation of new products may stress divergence between IS/IT and business in terms of focus. Evolution is driven by innovation and lack of focus on IS/IT aspects may eventually make IS/IT a barrier to efficiency in the small firm.

2.8 Small firms and Information technology

The literature around the area of small firms and information systems is rife with what now is accepted as list of barriers to successful implementation of information technology in small firms (Burgess, 2002). These barriers typically include:

- The cost of IT
- Lack of time to devote to the implementation and maintenance of IT
- A lack of knowledge combined with difficulty in finding useful impartial advice
- Lack of use of external consultants and vendors
- Short-range management perspective
A lack of understanding of the benefits IT can provide, and how to measure those benefits

- A lack formal planning and control procedures

Burgess (2002) also report on success factor that the small firm and IT literature agree will provide greater chance of successful implementation of information technology. This list includes the following factors:

- The involvement of owner/manager in the implementation of IT
- The involvement of users in development and installation
- The training of users
- The selection of applications chosen for computerization
- The use of disciplined planning methodologies in setting up applications
- The number on analytical/strategic (versus transactional) applications being run
- The level of IT expertise within the organization
- The role of the external environment (especially consultants and vendors)

In a pre-study to the research conducted as a basis for this thesis I observed some of the barriers as well (Harnesk, 2004). Especially cost of IT, the time devoted to IT matters, and the knowledge level of the relation between IT and the businesses hampered the participating firms in achieving IT support to business activities. The firms (manufacturers) investigated expressed that operational support and transaction processing was the most important IT issue if they would seriously consider IT as a strategic asset. This is contradictory to the findings of Levy et al., (2001) who concludes that the SMEs IT investment is strongly influenced by their strategic context. Foong finds support for the focus on operational IT in SMEs when concluding that the introduction of IT in small firms has tended to be fragmented and oriented towards efficiency improvements like operational support and transaction processing (Foong, 1999). In a survey based study of 1000 SMEs in Sweden, Junghagen (1998) conclude that the firm owners’ perception of IT is the base for the strategic dispositions in IT that firms employ.

Also, the formal structure of the small firm seems to be significant for the view on IT. For example, Palvia et al. (1994) argues that firms with 50 employees or more often have a formal MIS department and a community of end users. In smaller firms, the lack of formality makes it difficult to organise an effort to implement IS/IT strategically, both in terms of developing a IS/IT strategy and carry out the intention of the strategy. This corresponds to the lack of formal planning and control procedures that Burgess (2002) stress as one barrier for small firms to employ a strategic effort for IT issues.
Size of the small firm is in research also referred to as a key variable for the problem small firms may have with technology (Burgess, 2002). Size in itself is a neutral variable that says nothing about the inner properties that may be an effect of being small. For example, IT capability, knowledge and awareness of IT as a flexible tool may be low but does not necessary mean that size of the firm are the issue. There are examples of small firms that despite their low number of employees are successful, even in strategic achievements in IT.

In literature the area of electronic commerce and the use of the Internet for information gathering (McDonagh and Prothero, 2000; Dandridge and Levenburg, 2000) is considered as a strategic adoption by some firms. However, when considering the actual information infrastructure regarding IT in small firms, size of the firm seems to be crucial. Blili and Raymond (1993) compare the situation with the early introduction of IT into large organizations. Large organizations also experienced lack of knowledge for the benefit IT could provide to the business and many faults in decision making missed out on the correlation between IT and business (cmp., Nolan, 1972).

One factor that is missing in the ‘barrier to IT list’ by Burgess (2002) is the management style in small firms. The firm owner’s attitude towards implementation of IT in the business and how the firm owner experience IS/IT as a strategic alternative for the firm is identified as a potential barrier (Atkinson and Hurstfield, 2003; Winston and Dologite, 2002; Junghagen 1998). The motive is that the firm owner is the one individual that makes decisions and execute control over the personalized management of the business and that subjective opinions therefore hold the key to strategic insight for information technology in small firms.

2.9 Organizational characteristics of information technology use in small firms

Despite the differences between small and large firms and personalized styled of management in small firms there are attempts to define organizational characteristics of information technology use in small firms. For example, Junghagen (1998) concludes his work (based on a survey of 1000 small firms in Sweden) by describing four different areas of use in which a technical solution is embedded. The area of use is defined by the way the firm owner experience the contextual situation and also how he/she manages the context. Within the frame of use, a small firm can have highly sophisticated or less sophisticated use of information technology, however the attitude towards technology remains the same. The four areas defined by Junghagen (1998) are:

- Stable structures
- Stable relationships
Adaptiv change
Strategic development.

Stable structures. Information technology is used by the influence of structure in the firm’s situation. A stable structure is for example a concern relationship of companies. In terms of information technology use, firms in this context have, what is characterized as, inactive attitudes towards the relationship between strategic planning of IT and the use of IT.

Stable relationships are characterized by use of information technology to reduce uncertainty and to maintain strong relationships with business partners. Such relationships are commonly found in value networks where long-term relationships are supported by IT as an interactive mechanism.

Firms which are in the area of use - adaptive change, also use IT in the sense to reduce uncertainty. However, they have ambitions to maintain dynamics in the business. Dynamics and changes in business are triggered by events in the business environment and the strategic perspective on IT takes the form of being reactive.

The last context of use, according to Junghagen (1998), is strategic development. This area of use encompasses firms in the service sector and such companies show a low reduction of uncertainty and high degree of dynamics. IT is considered to be a strategically important resource and in many cases the use of IT is a core competence in the firm.

Junghagen (ibid.) stresses the importance of the firm owner’s perspective and the attitudes towards IT. However, attitudes may stem from different sources, such as lack of interest, IS/IT being considered just as costs, and shortcomings in knowledge of how IS/IT may be used to support business transactions.

Another, similar construction of small firms strategic use of IT was conducted by Levy, et al. (2001) who placed firms into categories such as:

- Efficiency firms,
- Coordination firms,
- Collaborating firms
- Innovation firms.

Efficiency firms use IT for financial control of internal processes in which word processing and accounting spreadsheets are common. IT is consequently viewed as a cost to the business.

Coordination firms seeks to, in addition to low cost approach in efficiency firms, maintain customer relationships by the use of communication tools like e-mail. The objective is to improve the effectiveness of business processes. IT is viewed as a cost
to the business, but a necessity as manual systems cannot cope as customer numbers increase.

Collaborating firms have increased sophistication in the systems used. The amount of information exchange with external suppliers increases as the customers often are the driving force behind the introduction of new information technology.

Innovation firms view IT as an integral and tightly woven part of the business strategy of the SME. Therefore, IT influences the direction of business strategy as well as reacting to it. Strategic benefits are realized only when IT are seen as part of the business strategy.

Despite the differences in the unit of analysis between the studies of Junghagen (1998) and Levy, et al. (2001), firm owners strategic disposition towards IT (Junghagen) and strategic context for IT use (Levy et al.), it is obvious that the categorizations reveals great similarity. Therefore it seems to be difficult to draw the line between strategic and operational IT usage in small firms. Firms, for example, in a stable structure may actively employ an internal non-sophisticated IT infrastructure and that would unintentionally count as a strategy because their line of business may not be under continuous external pressure by customers or even competitors. Clearly, there is also not altogether evident that small firms have simple external information systems. This was identified in paper one, however, the firms that participated in that study was not distinguished in any other way than being small firms. In other words, the sample contains a mixture of small firms and small businesses according to the categorization made in chapter 2.4 – Small firms.

From these structures of IT and small firms we learn that IT is in fact a highly heterogeneous facet in the small business environment. An interesting aspect of the difference between large and small firms is whether there are any actual differences in the information entities that both types of firms act upon? Is there really any significant difference between, for example, an order or an invoice per se? If we carried out an analysis of the information in transactions could we then find any differences? However, I believe the important issue is to examine business environment with an understanding for the specifics that constitute that environment, and not take anything for granted, for example, that IT strategies and business performance are static. Ciborra (1987) posits that “the role of information in organizations must be explained within the context of exchanges” (Ciborra 1987:137). This is supported by Davenport and Prusak who state that “contextualizing information is a powerful way to increase both the interest of an audience and the audience’s propensity to act on information in a certain way” (Davenport and Prusak, 1997:122). I couldn’t agree more.

2.10 Inter-firm relationships

Since the 1980s there has been an increase in inter-organizational alliances throughout many industries. Perhaps the so called high-technology industry, have shown the
greatest increase in cooperative arrangements between firms (Mowery 1988). Other cooperative arrangements is found in for instance the car industry and construction where sub-contracting relationships are well-entrenched forms of organizing large projects, (Ebers 1997). The wide variety of relationships among organizations such as, joint ventures, strategic alliances, consortia, buyer-supplier, etc is usually conceptualized to the abstract notion of inter-organizational networks. The notion can be used to characterize any set of recurring ties (e.g. resource, friendship, informational ties) among a set of nodes (e.g. individuals, groups, organizations and information systems) (Ebers, ibid.). These arrangements have evolved from the need to acquire complementary assets in a way that resources can be combined to produce efficiency enhancing behaviour (Kay, 1998). In literature of organisational theory and marketing there is a substantial body of knowledge concerning strategy and relational issues in different arrangements inter-firm relationships. Some well-known concepts used by small firms according to Fuller and Lewis are:

- Network relationship strategy, aims at facilitating formation of informal interconnected channels of communication through participation.
- Contract relationship strategy, is an expressed wish to work with people that share the same vision of mutual trust and reciprocity, i.e., the transfer of goods or services for payment of the same.
- Personalized relationship strategy, considers the individuality of a person or an organization and to build adapt the relationship on the basis of its distinctiveness. (Fuller and Lewis, 2002:323)

In marketing literature investigations of different relational constructs is common. Constructs such as, cooperation, coordination, and communication are investigated from intra-organizational as well as inter-organizational viewpoints (Kern, 1997; Anderson and Narus, 1984; Kanter, 1994; Willcocks and Kern, 1998; De Ruyter and Wetzels, 2000).

- Cooperation refer to the undertaking of complimentary activities to achieve mutual benefits
- Coordination is the management of interdependencies between participants in a relationship
- Communication is the formal and informal sharing or exchange of meaningful and timely information between parties facilitates the capacity of these norms to serve as a conduit between the other norms.

Clearly, the research in these areas is focused on business management and its planning activities in various forms aiming to achieve sustainable relationships among
firms. Also, in research more closely related to the field of information systems sciences, including aspects of using IT as a tool to coordinate and communicate the information flow during cooperation, emphasis is put on strategic oriented issues, for example, deciding what kind of information systems that could be used to coordinate business activities. Kumar and van Dissel (1996) study how to achieve sustainable collaboration in inter-organizational relationships. They conclude that inter-organizational information systems can be used to facilitate cooperation but also that such a system involves a human dimension, that need to be considered in order to maintain sustainability in the firm relationships.

At this point I would like to outline the frame for this work and the underlying assumptions for small firm relationship alignment in this thesis. In chapter one, I argued that traditional IT alignment with the focus on synergy between the business strategy and the IT strategy within organizations do not explicitly deal with the socio-technical relationship that comprise any business of today. Thus, in this thesis I approach the area with a differentiated view on small firm relationship and how alignment can be understood. Johansson and Mattson’s model of relationships aspects and interaction contexts, Figure 2-1, supports my idea that a differentiated view on alignment may extend the knowledge base of alignment research by explicitly focusing on different levels of interaction. In this thesis, I use the conceptual framework for relationship exchanges suggested by Johansson and Mattson (1987) to visualize my intention with the differentiated concept for relationship alignment in this thesis.

![Figure 2-1, Relationships and interactions in industrial networks (original source Johansson and Mattsson, 1987)](image)

The model combine relationship processes with interaction processes in a symbiotic form and expresses that the mutual orientation between two parties is important for successful interaction processes. The mutual orientation in a situation of ‘working-together’ for small firm relationships is in this thesis comprehended as that different types of interaction lead to some kind of transaction regulation, Figure 2-2.
The normal way to regulate a transaction between two business partners is by the use of a contract. The contract stipulates the engagement and obligation among parties in a certain business situation. Engagement towards a business agreement between firms is built by social interaction and information exchange on a person-to-person level and establishes the foundation by which cooperation is conceivable by parties. Negotiation is a means by which information is exchanged in such a way that the content is interpretative and understandable to each party. The result of a negotiation process is a business agreement that formalizes the goods/services exchanges between parties. The goods/services exchanges is determined by the business agreement and regulated by the contract. Thus, the contract stipulates the obligation to commit to agreements of prices, operations, deliveries, payments, etc. Hence, the information exchanged need to explicitly describe the business interaction specifics so that coordination of the transactions can be maintained. Furthermore, my assumption is that social interaction and business interaction between parties express inter-relatedness. The way that social interaction controls the business interaction and the way that business interaction may, from time to time, require re-negotiation between parties create dependency between these types of interactions.

The model of Johansson and Mattsson (1987) and the demarcation that my assumptions exhibit will serve as a guiding frame to the roles of theories for relationship alignment that this thesis intend to explore. Based on the introduction made in this chapter a work definition of relationship alignment can be outlined at this point:

"Relationship alignment is the process by which mutual orientation is achieved through information exchange at the social and transactional level of a business relationship."

The definition above is by no means final. However it serves the following discussion in the next chapter. Chapter three outlines my basic view of the theoretical foundation that will be presented later in chapter four.
3 Towards a conceptualization of relationship alignment

This chapter provides the initial discussion to the theories which I consider encompassing the conceptualization of relationship alignment. The chapter deals with the transactional and social dimension of inter-organizational relationships in general and information exchange issues for managing information in the organizational context.

3.1 Inter-organizational relationships

This thesis is concerned with inter-organizational relationships between small firms. The type of relationships of interest is the dyadic form of relationships. A common definition of the dyadic relationship is: “A relationship between two interacting and mutually influencing organizational entities” (American Marketing Association). The organizational entities may be a distributing organization and a manufacturer, for example, suppliers and customers (Martin and Martin, 2005; Goldkuhl and Lind, 2004). The dyad is often referred to as the ‘first-tier’ of an extended business network (Qing and Huang, 2006). The dyadic relationship is also similar to the concept of hierarchy which could be traced back to Simon (1957). A hierarchy is characterized by the way longer-term contracts regulate the exchange of goods and services in the relationship (Malone et al., 1987). The contractual agreement as a form of regulation between firms has received attention, for example, in relational exchange theory. MacNeil (1980) outline the ‘enduring relational exchange’ which is based on repeated transactions over a long period of time. The transactions can be mediated by different types of contracts between firms. From an IS perspective on transactions Ciborra (1987) identify the ‘structured, the semi-structured, and the unstructured contract’ which differ in terms of level of formality in the way exchanges are regulated in the relationship. In contrast to long-term contracts Lambe et al., (2000) have introduced ‘intermistic relational exchange’ which is a regulation form that spans over short time cycles. However, short term agreements may be regulated on long-term basis with the use of general agreements between firms. In Williamson’s (1995) transaction costs view the general agreement would be called ‘non-specific transaction’, in which parties in a valuable on-going relationship benefit from each other during projects, for example, the use of frame contracts in software development firms.

Goldkuhl and Lind (2004) distinguish between frame contracting and transactions in their view of structural exchange in a dyad. Frame contracting is long-term agreements made between parties and a transaction is a particular transaction occasion. The frame contracting is based on each party’s capability to, for example, develop new products. The frame contracting concept is oriented towards the management level since decisions regarding joint product development are a management responsibility. The transaction level assign responsibility of a business transaction to specific units concerned with the transaction in the organizations, for example, sales and delivery in
From a relational exchange theory perspective an exchange is a mutual agreement in which the outcome from the relationship exchange is greater than if exchanges are performed through other forms of exchange and also with a different partner. The mutual orientation is the key aspect of the relational exchange theory body (Goals and Chin, 2005). The mutual orientation is sometimes in literature referred to as reciprocity, but in essence it means that an exchange creates a net gain or surplus that does not exist prior to the exchange (otherwise there is no motive for the exchange). Neither party can benefit from this surplus without the participation of the other. Thus each party is to some degree dependent on the other for an improvement in its pre-exchange situation. (Goals and Chin, 2005; Kanter, 1994)

In literature, issues such as social norms, influence, commitment, and reciprocity has been made explicit by the use of relational exchange theory in several studies of inter-organizational relationships (Ring and van de Ven, 1994; Klepper, 1995; Kern, 1997; Lee and Kim, 1999). The sustainability of the relationships is determined to great extent by these kinds of attributes and may be consolidated “as the willingness to commit to the relationship” (Kanter, 1994:103). Kanter (1994) mean that business relationships may be described from two perspectives: the strategic and financial perspective and the individual perspective. The strategic and financial dimension comprise the focus of relationships on which relational exchange theory explains the basic contractual agreements that is reached by negotiations, leading to consensus for expected outcome of the relationship (Kanter, 1994; MacNeil, 1980; Ring and van de Ven, 1994). The individual dimension concerns the personal side, i.e., the chemistry between managers of a business relationship (Kanter, 1994) which forms the social and personal bonds that build trust and compliance (Rogers Gilmore, 1987) so that the relationship can sustain over long time (Kumar and van Dissel, 1996). Other studies have emphasized the role that social interaction plays in inter-organizational relationships (Håkansson and Snehota, 1989; Heide, 1994; Staber, 1996). From these scholars can be learned that the perceived exchange potential triggers actions or reactions that is largely determined by social interaction, and is therefore enacted rather than predetermined and given.

My conclusion at this point is that relational exchange theory is a suitable body of knowledge to use when discussing and explaining aspects of firm relationships that can be formalized in, for example, legal contracts. However, in terms of explicit individual oriented matters, such as, social bonding between managers the theory is not a complete candidate for the purpose of this thesis. Despite the claims from marketing research that there has been a paradigm shift from focusing on exchange events to emphasizing exchange relationships (Goals and Chin, 2005) the trajectory can still be viewed as “event orientation”. Lambe et al. (2000) mean that, for example, trust and
commitment develops through various stages over long time and still, in literature, the area seems highly appealed by the contractual regulations to explain success or shortcomings in business relationships. However, the theory of relational exchanges seems to be suitable as a base to discuss the aspect of relationship alignment that I call -formality-, see paper 4 and 5 for a detailed discussion of the underlying issues that conceptualizes formality.

I understand from literature of small firm management and have experienced from a pre-study (Harnesk, 2004) that the small firm often is controlled by a single manager. The individually based choices that the manager executes within the business in relation to the external business partner affect the firm as a whole. This situation calls for a body of theory that explicitly deals with the individual and at the same time concentrate on relationships between individuals. Social exchange theory is a body of knowledge that accounts for individual behavior rather than structural patterns in a relationship (Rogers Gillmore, 1987) even though attempts in the area of sociology has been made to explain the structural relationships, i.e., group to group relationships in network exchanges (Lévi-Strauss, 1969).

The social exchange theory has been developed through cumulative contributions in various scientific fields, for example, sociologists (Homans, 1961; Blau, 1964; Emerson, 1976), and social psychologists (Jones, 1964; Adams, 1965). A clear emphasis on the relationship as a root for social solidarity can also be identified in literature of social exchange (Blau, 1964; Homans, 1974) as well as the focus on interpersonal matters. Social identification and integrative bonds between members promote social solidarity and will make important contributions to the relationship (Blau, 1964). Cooperation between individuals as a means to contribute to the well-being of relationship as a group of members has been studied in many forms using social exchange theory to explain intrinsic significance for the participants, for example, involvement in group activity, and interest in tasks (Homans, 1961). The social identification of participants is about creating a feeling that members of a relationship belong together and trust each other, which strengthens the bonds between them (Blau, 1964). In the inter-organizational relationships I studied, the social identification was strongly emphasized as a foundation for working together. I believe that the concept of presence (paper 5) that I suggest as an aspect of relationship alignment will be well supported by the social exchange theory as a frame.

In paper 2-4, I have emphasized the need to consider different types of information when discussing alignment of relationship between two firms, and I believe the types of information together with mutual orientation factors that social exchange theory mention is well suited for constituting a relationship alignment concept like presence.

The guiding chain of reasoning I rely on in the theoretical discussion of the relationship alignment concept -presence- is drawn from well known factors in social
exchange theory and social presence theory, Figure, 3-1. The purpose here is not to theoretically establish a dependent relation between the factors, but to express that presence can be articulated by the use of these factors.

Presence is in this thesis seen as the process of social activities in firm relationships that contains exchange of social information. In paper 5 I suggest that presence is constituted of three specific information relations: acquiescence, simplicity, and reciprocity. A body of knowledge that is used to explain issues of presence is social presence theory (Rourke et al., 1999). Social presence theory is defined as “the feeling of contact in a mediated communication situation” (Williams, 1978:127). Social presence theory is concerned with ‘media-facilitated’ communication (Short et al., 1976; Hackman and Walker, 1990) and basically this refers to the human-machine interaction. The term presence has been labeled as ‘transactional’ due to the media involvement in the prevailing view of social presence (Shin, 2002). The concept of presence has been addressed in IS research as well. Miranda and Saunders (2003) investigated how meaning is constructed socially from an information sharing perspective. Presence is in their view expressed as the inter-subjective interpretation between sender and receiver of messages during interaction, which could be both transactional and relational meaning that mediation is not required. Inter-subjective interpretation mean according to Miranda and Saunders that reciprocity create meaning of the information that is shared between humans in oral and written style, and that the use of electronic media make social presence low. There are two aspects I would like to comment on regarding Miranda and Saunders reasoning: the fact that they only consider reciprocity to affect social presence, and the dimensions of information exchange that they call breadth and depth of information exchange. First, I consider acquiescence to be important as it shows the interest to cooperate and comply with the other party’s requests. People tend adjust their actions, and re-actions in respect and consideration of the other party’s interest if they can exchange information openly. Also, simplicity which in essence express the cost of exchanging information during actions taken together with other party’s. If a firm has low information simplicity the firm may use several information
systems for both business transactions and informal information exchange with the other party.

Secondly, Miranda and Saunders suggest that presence could be viewed by the dimensions of breadth and depth of information being shared between parties. I agree that humans will experience a high level of presence if there is an extensive ongoing interaction between them. I also believe that if there is diversity in information exchange the parties will also experience a high level of presence. I agree with Miranda and Saunders; however, I believe there is more to inter-subjective interpretation than breadth and depth of information sharing so I have added the dimension of diversity to Miranda and Saunders' original model, which is redrawn in Figure 3-2. Diversity, in my opinion, is concerned with a wider range of interpretation for the same phenomenon, i.e., this is similar to allowing several views and perspectives enlightening any conversation. An example of this is the discussion of goals with the relationship that CEOs carry out, see paper 3.

![Figure 3-2, The social construction of meaning: An alternative perspective on information sharing (source Miranda and Saunders, 2003:91).](image)

The way that IS researchers’ deals with words or terms that is used in other scientific fields is a complex matter. Do IS researchers’ mean the same thing with the words as the original source did? A simple yes or no answer is not always easy to give. Nonetheless, researchers in IS use these words in order to conceptualize reasoning and the purpose is not to bring any change into the origin of the words, but rather enlightening the IS field with new and preferably better explanations of the phenomenon’s that are investigated. An example of this is the two terms, breadth and depth of information, of inter-subjective interpretation that Miranda and Saunders (2003) use in a social context. The two terms are also used by Massetti and Zmud (1996) when explaining EDI connections between interacting firms, but then from a technology and management perspective. These words and others are discussed in paper four where I address the formal dimension of business transactions.

Another example is the word ‘connectedness’ which refer to the belief or feeling that a reciprocal relationship exist between two or more parties, involving an subjective judgment on the extent of the engagement the parties are concerned with (Shin, 2002). Connectedness can also be observed in transactional theory (Williamson, 1995) and coordination theory (Malone et al., 1994) and information systems engineering
(Solotruk and Kristofic, 1980) but connectedness is known as ‘inter-dependency’ in these scientific fields and expresses the level of dependency between activities using allocated resources in specific processes. The conception of the word connectedness may then be both a matter of subjectivity and objectivity, for example, it is quite difficult to estimate the belief or the feeling for the other person in a relationship, but the resource allocation in the relationship can rather easily be measured by quantification. In this thesis I think of the term connectedness in the sense of expressing the relatedness that two managers in two separate firms can perceive towards each other. In that sense it is possible to say that social integration occur if the managers can identify themselves in accordance to the mutual belief of collaboration benefits.

3.2 Information exchange

The concept of exchanging information evolves from two areas: information theory and communication theory. Information theory origins from the mathematical/statistical field and its view is primarily used in connection with telecommunication and databases to quantify and measure channel and storage capacity for information exchange and processing (Skyttner, 1996). Communication theory is traditionally concerned with the processes by which messages can be coded, transmitted, and decoded (Skyttner, 1996). The field of information systems science has a long tradition of investigating the exchange of information and how computers can mediate information between two or more participants in any kind of relationship. The relationship may be both human based and technology based and this is often in research referred to as face-to-face communication and computer mediated communication (Miranda and Saunders, 2002; Davenport and Prusak, 1996; Markus and Robey, 1988).

The term information is today often used as synonymous to data and sometimes also with the term knowledge. However, it is useful to define them, not only from pure scientific perspective but also because that by distinguishing them helps to detect where an organization has its focus in terms of supporting the business with different types of information systems. The term data is commonly defined as observations of states of the world. It is raw facts of real world representations which is easily stored in computer facilities or manual archives. The term information is defined as “data endowed with relevance and purpose” (Drucker, 1988:46). This is a general definition that applies to virtually any view of organizations, but I believe that Drucker mean that information may be intended for other purposes than for example, control of business activities. Other definitions of information show the direct purpose with information use in organizations. An organization that focus on decision-making as the most relevant output of the information systems would accept the definition by Verrijn-Stuart who state that: “information is generally accepted as consisting of data that has been selected, refined, and grouped to serve some specific purpose” (Verrijn-Stuart, 1986:412). A somewhat unifying definition of the two definitions above is the one that
Galliers promote: “information is the collection of data, which, when presented in a particular manner and at an appropriate time, improves the knowledge of the person receiving it in such a way that s/he is better able to undertake a particular activity or make a particular decision” (Galliers, 1987:4).

Galliers mean that information is best understood as being both contextual and enabling. Information is best understood in a certain context and unless it enables necessary activities or decisions to take place it is unlikely to be relevant. Galliers himself state that his definition might be too narrow and to closely correspond to a definition of effective information. I agree with Galliers, but I think the troublesome part may the presentation aspect in his definition of information. Galliers expression ‘presented in a particular manner’ does in my view of information exchange mean that there is one active part and one passive part in the relationship where the exchange of information is taking place. In that sense, Galliers express a definition of information that is more coupled with the view of organizations being regarded as control systems or decision systems, where information serves the purpose of supplying top-level managers with information (active part) from the sources beneath (passive part). These kinds of views of organizations was dominant paradigm in IS research during the 1970s and the 1980s and so Galliers should be understood by that paradigm when he express that information is best understood in its context.

If information is contextually bounded, then information should in some way express different content that may be used in various exchange settings. In literature, several definitions of information can be found, and, for example, Land and Kennedy-MacGregor have proposed the following taxonomy of information:

1. Descriptive information,
2. Probabilistic information,
3. Explanatory and evaluative information,
4. Unexpected information,

Descriptive information is information that is used in firm operations and also definable, such as, price, quantity, time-frame, orders and invoices, etc. and is executed in transactions. In other word, descriptive information is a description of the real world entities needed to be managed by a formal information system.

Probabilistic information is information that is derived from a limited set of real world observations or measurements gathered from a sample selection of, for example, consumers.

Explanatory and evaluative information is information that is future and planning oriented, and is not known or at least not always possible to predefine. This type
of information is rarely made explicit and for example, norms, values, attitudes and subjective judgments are attributes that exemplifies this type of information.

*Unexpected* information is information that for some reasons occurs unexpected. For example, a manager’s decision making may have a discrepancy between the way he say decisions are made and the actual output of a certain decision.

*Propaganda* is information that is selected, manipulated, and presented (or concealed) in such a way as to gain maximum impact.

These types of information are examples of the content in information exchanges among business partners at different levels within organizations. The information types indicate that different purposes can be assigned to exchanges, for example, there may be a clear efficiency aim when shared routines, such as, coordination activities are carried out. There may also be a political ambition connected to the information exchange, for example, managers may misuse information for personal gain.

In literature, a common conceptualization of the information environment in organizations is how to manage the information exchange. Davenport and Prusak mean that organizations are involved with management of information with a focus on control by four aspects of controlling information:

- Control of unstructured information
- Control of intellectual capital and knowledge
- Control of structured information on paper
- Control of structured information on computers (Davenport and Prusak, 1996:16-21).

Control of unstructured information, in general, unstructured information is information that we can find in journals, reports, and books. In work life the management of this type of information has been controlled in an ad-hoc manner where, for example, workers gather information for a specific purpose and deliver it to the decision-makers for their use. The challenge is to determine when to exert control when organizations become more decentralized.

Control of intellectual capital and knowledge, knowledge is often referred to be the most valuable asset in organizations; still few organizations actively manage this information. Knowledge management has thus far been addressed either philosophically or technologically, with little pragmatic discussion of how knowledge can be managed.

Control of structured information on paper, paper-based records and documents have ruled the information roost until very recently. For the vast majority of its history, this stream has been dominated by what is now called records management. The problem today is that the volume and complexity of information is simply overwhelming the traditional methods, such as, paper files, microfilm, and tapes.
Control of structured information on computers, using computers to handle structured information has become the most popular approach to information management, partly because of the problems associated with the other three streams. Given this technological focus, IT professionals have mainly concerned themselves with managing computer-based data, rather than information more broadly defined.

Davenport and Prusak conclude that these four aspects of managing information all have their strengths in the right context but they emphasize that organizations should not equalize information progress with technological progress. I agree with that, especially regarding the unstructured types of information that organizations exchange with various business associates.

Clearly, organizations are concerned with a variety of information which entails that responsibility for information management sometimes is characterized by uncertainty. The IT department may clearly identify the coupling between structured information and technology, but at the same time be less concerned with unstructured information that indirectly affects the users and their use of the information systems.

The complexity of information usage in modern organizations is expressed by Ciborra (2002):

This is the context of the information society, characterized by ubiquitous information infrastructures, as well as by processes of globalization, networking, increased speed of economic transactions and rapid social information. In particular, the global dynamics we are confronted with are the ones of the increasing quantities of knowledge embedded in systems and shared between organizations and individuals; the increased transparency and interdependency that the new systems bring about, and hence the higher level of risk for systems, individuals, and organizations when breakdowns do occur. (Ciborra, 2002:7)

Ciborra use the terms economic transactions and social information which in fact are based on structured and unstructured information, to enlighten that the former paradigm of top-down demand of information not altogether can be expected to fully describe modern organizations. Certainly, organizations are still today goal oriented and need to control business activities so that the organization may prosper from specific business decisions. However, the diversity of contingencies in business life, such as uncertainty of market specifics when entering a new market with business partners and the variety of information channels (Daft and Lengels, 1986), creates ambiguity in the management of the organization and that will certainly affect the information infrastructure within organizations. One example of problematic situations in information management that might occur is the problem of integration of information which is locally bound with global information (Goldkuhl, 1986).
Davenport and Prusak (1996) mean that the management of information needs a new guide due to the drawbacks of the former paradigm that resulted in a one-way communication of the information need in organization. In that spirit they suggest a number of steps that may guide the management of information in organizations:

- Integration of diverse types of information
- Recognition of evolutionary change
- Emphasis on observation and description
- Focus on people and behaviour.

Integration of diverse types of information. This concerns the integration between unstructured and structured information. Business processes use information of, for example, customers and their specific need of not only formal information, whilst the logistic process plans for volumes of items shipped and for example, complaints on shipments may be directed to another department. At a higher level of abstraction the issue of integration also concerns non-computer users and the computer users, and how they manage to complete business transaction by not being integrated.

Recognition of evolutionary change. It is impossible to understand or predict fully how a company’s information environment will evolve over time, information management must allow for change. A common approach to deal with change in systems design is to use iterative prototyping and rapid application development.

Emphasis on observation and description. Like the early biologists and naturalists like Darwin described the world of biological system, the information environment, in its complexity need to be described and understood. It is an ignorance to believe that information requirements can be understood after only days or weeks of interviews with a few people; yet this all-too common assumption drives many information engineering projects.

Focus on people and behavior. In the past, providers of information have focused almost exclusively on the production and distribution of information. What the recipients have done with it upon receiving it has been nobody’s business. Therefore we have little idea how to help individual workers seek, share, structure and make sense of information.

The guide that Davenport and Prusak suggest, even if they do not explicitly discuss the implementation issues of the guide, is widening the view of the role of information in organizations. Davenport and Prusak’s reasoning together with Ciborra’s argumentation for complexity of information use makes, in my view, the role of information relational oriented in modern organizations, rather than the attributive orientation that goal oriented and controlling organizations assign to information. I mean that the claims on information of being complete, relevant and interpretable
should comprise the social exchange of information as well as the business exchange with its descriptive data provision in business processes.

Clearly, it is a complex environment of information in today's businesses and it is understandable why organizations have difficulties with realizing, for example, the effect of an IT investment in relation to productivity, and for users to learn how to perform work activities (Hitt and Brynjolfsson, 1996; Ciborra, 2002). Even if it can be assumed that Davenport and Prusak together with Ciborra depicts large organizations as they refer to the MIS concept, small firms also struggle with the information provision and information evaluating. Even though there are different types of information defined in literature (see paper 4) there is an emphasis on dealing with structured information in IS research of small firm relationship.

I agree with Davenport and Prusak that it may be an attractive choice of action to use management control for the information flow in organization because it shows a clear structure for supporting managers in decision-making. The MIS concept provides managers with tools to measure business performance and deliver high quality reports to the board members and owners. On the other hand this approach is reactive and exclusively supports automation of tasks (Zuboff, 1988) and do not allow for organizations to use IS as a change facilitator:

There is a widespread acceptance that information technologies (IT) have evolved from a traditional administrative back-office support orientation towards a more strategic, central role within organizations. (Venkatraman et al., 1993)

As discussed in chapter 2.6 – Organizational characteristics of information technology use in small firms, comprehension of the strategic importance of IT seems to depend on, among other things, the external environment of the small firm and I believe that small firms prefer low cost investment in IT applications. Therefore, it is inevitable that focus will be on automation issues rather than strategic issues to support change within the firm. In this consideration I agree with Senn (2000) that information is usually communicated between parties with the purpose of reducing costs of routine transactions (Senn, 2000). However there is a dimension of exchanging unstructured information between small firms as well. This kind of exchange is not necessarily strategically oriented, but rather it aims at maintaining personal relations with other firm managers.

My idea of conceptualizing relationship alignment need therefore to consider at least the two types of information presented above; unstructured and structured information. Therefore I suggest the concept of mediation (Ciborra, 1993) that contains discussion for supporting both efficiency and socialization (see paper 5) as one of the dimensions constituting relationship alignment.
To sum up, I believe that for relationship alignment to be successful the concept need to account for that behavior is not static in any sense and that humans’ exchange information purposefully. Ciborra mean that the role of information in organizations must be explained within the context of exchanges (Ciborra 1987:137), and I strongly agree with that. Two separate contexts for information exchange in businesses are the social level and the transaction level in which, unstructured and structured information is exchanged. This is also in research sometimes addressed as operational and strategic information (Moberg et al., 2002). My opinion is that unstructured information is a better term to use since it does not implicitly imply that planning activities are in focus. Rather, unstructured information implies that some kind of social interaction is carried out. I believe it is important that any initial attempt to conceptualize relationship alignment focus on abstraction levels that are not shadowed by detailed operative descriptions. Therefore, I think that Homans’s interaction definition from the field of social exchange theory is pertinent to my intention with mediation of unstructured information in relationship alignment.

"Interaction is the behavior emitted—whether it is an activity or a sentiment, or a particular kind of activity or sentiment—but simply in the fact that the behavior, whatever it may be otherwise, is at least social” (Homans, 1961:35).

The transactional level of structured information exchange consists in the business world of “documents” that specify the contractual agreements that parties have established through negotiations (Smoliar, 2003; Ciborra, 1987, 1993). Example of this is the business transaction for order fulfilment (see paper 4) that parties repeatedly perform with each other. This type of formal exchanges is routine transaction oriented and therefore efficiency in the automation of such information flow is required in businesses. The kind of documents that are being exchanged is virtually always a contract between the two interacting firms (MacNeil, 1980; Williamson, 1995) that regulate the exchange per se. The concept of efficiency applies to the way formality is maintained in predefined information exchanges and needs to be seriously managed since the contract often is what reduces risk in a business relationship.

The underlying rationale of mediation will be theoretically discussed further in the section information exchange systems in chapter four.
4 Theoretical perspectives on relationship alignment

In paper five I have theoretically discussed concepts I believe may explain how relationship alignment may be articulated in small firm relationships. In this chapter I will try to further my conceptualization of relationship alignment by the use of the theoretical frameworks that were introduced in the previous chapter. Figure 4-1 depicts my resulting view, based on the content of paper five, of the phenomenon relationship alignment. I consider information exchange to be the central issue for sustaining relationship alignment. Information exchange is in my opinion necessary to differentiate in social interaction, expressed here by the concept of presence, and business interaction, here expressed by the concept of formality. These types of information exchange could be facilitated by information technology, here expressed by the concept of mediation. I mentioned in chapter one that my approach is related to the traditional view in IT alignment to create synergy between business strategy and IT strategy. In my approach, the relation between business and technology is not specifically concerned with strategy issues, but rather that relationship alignment should express the commitment towards the relationship through the three concepts I suggest. Presence is concerned with the social interactions that people undertake in order to create, maintain, and further develop the relationship with business associates. Formality relates to the specific business transactions between firms and the need for coordination of information flow in the business transactions. Mediation is about the support or enabling of formal and informal information exchange that business operators use during social interaction and business transactions.

![Figure 4-1, Relationship alignment.](image)

Research of relationships is not a new occurrence. Homans (1961) and Blau (1964) discussed social interactions in cooperative arrangements between humans from a socio-psychological viewpoint as the social exchange theory evolved. The collective dimension, for example, organizational and societal issues of social interactions was discussed by Makoba (1993). Other modern studies used relational exchange theory
with a viewpoint from marketing and law research, to conceptualize exchanges between firms. Marketing researchers, such as, Anderson and Narus (1984) and Lambe et al. (2000) emphasize that exchange partners consider the relationship important in and to itself, and that parties are eager to dedicate resources towards preserving and enhancing the relationship. The contractual perspective of exchanges is well known in law research, and MacNeil (1980) reasoned on the life cycle contingencies of contracts. Economics of transactions (Williamson, 1995) is also well known in research. Williamsson’s transaction cost theory has been applied in many research projects, so also in IS research by, for example, Ciborra in his reasoning on teams, markets, and systems (Ciborra, 1993). Ciborra emphasize the availability and symmetry of information in order to complete transactions.

Clearly, many different academic disciplines have investigated relationships between humans as well as between organizations. Information systems science is a field that for long time has drawn on others fields’ theoretical knowledge. According to King and Lyytinen (2003) this imposes no problem within the field as such since it is an applied science. On the contrary, using other theoretical cores furthers the knowledge base in information systems research as long as the studies are conducted from the IS perspective.

4.1 Social exchange theory

Social exchange theory evolves from the socio-psychological field and seeks to explain how participants or rather, actors in interpersonal relationships gain valued tangible or intangible resources through interactions, and focusing on cost-benefits and self-interest (Homans, 1961). Cooperation is a way to achieve value in relationships. Homans mean that “cooperation occurs when, by emitting activities to one and another, or by emitting activities in concert to the environment” (Homans, 1961:131). Accordingly, individuals associate with one another because they all benefit from the association (Blau, 1964, p15).

Social exchange theory specifically attempts to account for the emergence, persistence, and demise of sustained social relationships (Friedman, 1987). Emerson (1987) posit that the interpersonal dimension of social exchanges differ from economic theory of exchanges because economic theory identifies the market as a coordination mechanism for actors. The issue that I believe Emerson addresses is the difference between the individual and the collective approach for governance of inter-organizational exchange.

Social exchange theory originally evolves from studies of dyadic relationships in which Blau (1964, p89) identify the institutionalized form of exchanges as two general functions of social exchange, namely, to establish bonds of friendship (i.e., social identification) and to establish super-ordination over others. In paper 3, these issues were empirically identified in the firm relationships although with great favor for
friendship creation. The issue of super-ordination was related to technological power execution as the relationship lacked social intervention. These two forms are of course extremes in themselves and as Blau continues; the significance of the social commodities exchanged is never perfectly independent of the interpersonal relation between the exchange partners. However, resource availability is a determinant of power-dependence (Stolte and Emerson 1977) if one actor has a position based on advantage relative other actors in the structure.

The original body of the social exchange theory is micro-sociological and focused on interpersonal relations. The question may then be whether dyads of small firms can be framed with the social exchange theory? In the case studies that informed this thesis it was clearly the case that there was equality between the individual manager and the firm as the manager always enacted on behalf of the firms. In other words, I could not say anything about the firms that could not be said about the manager except for formal issues such as number of employees and so on. Recent attempts have been made to draw attention to the individual-societal relationships. For example, Makoba (1993) draw on the origin social exchange theory and develop a concept for a collective dimension in social exchanges. Makoba found no difference between the individual and collective. Makoba’s position is that the norm for transactional reciprocity in the collective domain for exchanges, correspond to individual settings for transactional reciprocity. According to Blau (1964) the norm for individual transactional reciprocity is based on: social rewards, reciprocity and imbalance, impression and expectations, obligations and trust, dependence, differentiation of power. The exercise of these elements in social relations may evoke social approval or disapproval, which lead to consideration of legitimacy and/or social opposition of the relationship. If, for example, trust is misused by participants I believe that the feeling of presence in the relationship will be affected negatively and severely would diminish the confidence for the other party. In terms of a collective aspect of social conflict the use of inter-organizational information systems, as a human activity system, may cause problem if, for example, opportunistic behavior as a result of information asymmetry is not managed (Kumar and van Dissel, 1996).

Related studies in communication between humans, groups, and organizations have identified that the level of social presence among communicating members can affect the sense of responsibility for the action taken, and diminish concern for personal standards and morality (Prentice-Dunn and Rogers, 1989).

4.1.1 Social integration
Integration is a term that has been used in schools of economy to analyze the structure of different chain configurations or network configurations of organizations. Also the field of information systems engineering use the term in the contexts of systems-to-systems connections. In this thesis the term is used with the meaning to specify the
social dimension of inter-personal linkages in a firm relationship. Social integration contains the four elements cultural, normative, communicative, and functional integration (Landecker, 1951). Since my interest and focus taken in this thesis is information exchange the type of integration is communicative. I believe that relationship alignment may be understood in terms of how information exchange creates presence through social integration among participants in the firm relationship.

Social integration is about the formation of a constellation that involves the development of integrative bonds that unite individuals in a cohesive whole (Blau, 1964). The unification of individuals depends on two types of attachments that can be expected to reward the relationship. Firms can be attached to each other by intrinsic benefits and extrinsic benefits. In the first case, the other firm as such is the source of attraction, while in the second, specific benefits the firm supplies is the inducement for associating with that firm. The intrinsic benefits are those that consider the relationship as an end-in-itself (Blau, 1964). Viewing the firm relationship from this perspective denote that the level of commitment for the well-being of the relationship extends any other value of the relationship. Extrinsic benefits concerns the objective criteria comparing associates, choosing between them, and abandoning one in favor of another (Blau, 1964). Viewing the firm relationship from this perspective denote that the level of commitment for the well-being of the relationship extends any other value of the relationship. Extrinsic benefits concerns the objective criteria comparing associates, choosing between them, and abandoning one in favor of another (Blau, 1964). Viewing the firm relationship from this perspective denote that the level of commitment for the well-being of the relationship extends any other value of the relationship. Extrinsic benefits concerns the objective criteria comparing associates, choosing between them, and abandoning one in favor of another (Blau, 1964). Viewing the firm relationship from this perspective denote that the level of commitment for the well-being of the relationship extends any other value of the relationship. Extrinsic benefits concerns the objective criteria comparing associates, choosing between them, and abandoning one in favor of another (Blau, 1964). Viewing the firm relationship from this perspective denote that the level of commitment for the well-being of the relationship extends any other value of the relationship. Extrinsic benefits concerns the objective criteria comparing associates, choosing between them, and abandoning one in favor of another (Blau, 1964). Viewing the firm relationship from this perspective.

4.2 Relational exchange theory

In opposite to the inter-personal orientation that social exchanges are concerned with, the business transactions can be viewed as formal exchanges. In literature two main trajectories for describing a business transaction can be found (1) a business transactions infers expectations from the other party (2) business transactions are regulated by formal contracts. Having expectations in business transactions signify that the transactions could be expected to be stable over long time (e.g., Kanter, 1994; Hendersson, 1990; Dwyer et al., 1987) and also that firms actually will have a ‘want list’ that contain the goods, services and the intangible factors, the ownership of which will, they believe, enhance their possibility of creating value (Blois, 2002).
Traditionally this body of theory was used in marketing and law research aiming at explaining relational events, for example, establishing contractual agreements between participants in the business relationship (MacNeil, 1980). Relational Exchange Theory is based on the notion that parties in an exchange are in mutual agreement that the resulting outcomes of the exchange are greater than those that could be attained through other forms of exchange, or from exchange with a different partner (Goals and Chin, 2005).

In relational exchange theory the mutual agreements made by firms are analyzed by the use of a transaction approach (Lee et al., 2000). Accordingly, Ciborra (1993) view the transaction approach as a means to consider the contractual nature, i.e., the mutual agreements, of the use of information systems in organizational contexts where there is ambiguity of goals and interest among its members. In business exchanges, the instrument for the governance mechanism is virtually always a contract which stipulates the obligations among business partners in the relationship. MacNeil (1980) investigates relationships from a contractual viewpoint and apply the relational contract theory on studies of exchanges and argue that the contract is a control mechanism of relational behavior. Ciborra (1987) classifies exchanges based on the types of contracts that regulate relationships:

- **Structured contract**, i.e. spot contracts which govern transactions such as those occurring in an ideal market.
- **Semistructured contracts**, i.e. longer-term, open contracts, such as the employment relation, where adaptation, sequential modifications at low renegotiation costs are permissible.
- **Unstructured contracts**, related to those exchanges which cannot be modelled or ‘written down’ in an explicit contract form, either because communication between the parties is difficult or because they cannot be satisfactorily spelled out and formalized (Ciborra 1987, p262).

In the case studies that informed this thesis the structured, and semi structured form of contracts were used. The contracts can be seen as regulators of information exchange in specific business transactions, which always contain some form of order fulfilment process. In respect to that, I have suggested the transaction oriented aspect of relationship alignment, which I have addressed as -formality- as an aspect of relationship alignment. Information exchange that is supported by contractual agreements is about exchanging ‘factual data’ (Ciborra, 1987), which is accessible through formalized procedures, routines, and information technology, by both parties in a relationship during transactions.
4.2.1 Transaction coordination

Studies in economics have focused a great deal on governance mechanisms for business transactions, and a number of concepts are identified: markets and hierarchies (Malone et al., 1987), joint ventures, networks, and global coalitions (Williamson, 1991) as governance mechanisms. Markets and hierarchies are two polar models for coordination of the flow of materials or services through adjacent steps in the value-chain (Malone et al., 1987). Markets coordinate the flow through supply and demand forces and external transactions between different individuals and firms (Malone et al., 1987). Hierarchies, on the other hand, coordinate the flow through adjacent steps by controlling it at a higher level in the managerial hierarchy (ibid.).

Beside the traditional view on transactions as something that contains a flow of physical goods between firms (Sheombar, 1997) the transaction approach also acknowledges information as an element of exchanges that needs to be coordinated (Ciborra, 1987; Clemens and Row, 1992). The transaction approach especially aims at investigating how interactions among economic activities are organized (Clemens and Row, 1992). Several studies have investigated the information parameter in interaction between firms and posit that information exchange create inter-dependency between actors and between activities in a relationship. Malone et al. (1999) identifies three basic kinds of dependencies: flow, sharing, and fit. These three types of dependencies arise from resources that are related to multiple activities. Flow dependencies arise whenever one activity produces a resource that is used by another activity. This kind of dependency occurs all the time in almost all processes and is the focus of most existing process mapping techniques (such as flow charts). Sharing dependencies occur whenever multiple activities all use the same resource. For example, this kind of dependency arises when two activities need to be done by the same person, when they need to use the same machine on a factory floor, or when they both use money from the same budget. Even though this kind of dependency between activities is usually omitted from flow charts, allocating shared resources is clearly a critical aspect of many management activities. Finally, fit dependencies arise when multiple activities collectively produce a single resource. For example, when several different engineers are designing different parts of a car (such as the engine, the transmission, and the bodywork) there is a dependency between their activities that results from the fact that the pieces they are each designing need to fit together in the completed car. The dependencies among these constituents provide constraints on how firms can be organized. Further, coordination theory (Mintzberg 1983) suggests alternative ways in which these dependencies can be managed. For example, when coordinating dependencies involves flows of information, they may be especially amenable to the application of information technology. This is also supported by Ciborra (1987) who view information systems as a mean to streamline exchange transactions.
Lewis and Talalayevsky (2004) applies a transaction cost theory approach for evaluating supply chains and identifies some changes to current supply chain structures that are motivated by the utilization of technology-enabled information flows. The study concluded that information flow will have significant impact on the decision-making process and physical flow if the information accuracy is improved at all points in the firm relationships.

Relational exchange theory does acknowledge that inter-firm relationships and its business specific exchanges, with its corresponding flow of information, needs to be coordinated. In paper 4 I have discussed a specific approach to manage the information flow of ‘factual data’ (Ciborra, 1987) between firms during business transactions.

4.3 Information systems theory

Systems theory in different shapes is the theoretical area that has been one of the most influential areas to information systems science. An early definition of a system is made by Langefors (1973) who posit that:

A system is a collection of objects, called parts, which are correlated in some way (Langefors, 1973:35).

And:

Every system which is subject to influence from its environment is a subsystem of some larger system and every system part is potentially a system (Langefors, 1973:36).

Churchman (1968) specified five considerations, based on management science literature at that time, for thinking about the meaning of a system:

- The total systems objective and more specifically, the performance measures of the whole system.
- The systems environment: the fixed constraints.
- The resources of the system.
- The components of the system, their activities, goals and measures of performance.
- The management of the system (Churchman, 1968:29).

Churchman stressed critique to these kinds of lists as he mean that they omit any mention of people. Particularly, Churchman posit that the people who should be served by the system or the people who should be making the decisions are too important for not to be part of the meaning of system. Nonetheless, Churchman framed the essence of the system concept, and by suggesting an approach for a scientist or a developer to
describe a system, Churchman marked five issues important to consider in systems design:

- Finding out who the decision-maker is,
- Finding the people or things that are fixed or given from the systems point of view,
- Finding out how different resources can perform different activities.
- Finding out the actors that perform given activities.
- Finding out how the management of an organization sets the component goals, allocates resources, and control the systems performance (Churchman, 1968:29-45).

Two domains that the scientific field information systems science has applied the concept of systems to are: social system and information systems generally known as soft systems and hard systems (Checkland, 1999). According to Checkland, soft systems are systems that are said to contain fuzzy and ill-defined situations involving human and cultural considerations. Hard systems is in Checkland’s definition; systems that manage well-defined technical problems. I prefer to use the term social system instead of soft systems as it intuitively leads my mind to the socialization processes such systems contain. Social systems can be described as the human interpretation of activities carried out in interpersonal relations that are viewed as the system (Checkland, 1999). Social systems are not constructions of goal-based activities related to each other. Social systems are in fact receptacles of individual expectations and comprehensions of a system. For example, a penitentiary may be viewed as a system for rehabilitation, a system for punishment, a system for protection of citizens from criminals, or a system for advanced studies in criminality. This is different examples of the different interpretations that we as humans may present of a system.

I find it convenient in this thesis to use the term information system instead of hard systems because the terms refer to a precise application of hard systems, and with focus on information exchange. The simplest definition of information systems within the field of information systems research would probably be the one suggested by Langefors (1995, p51), information system is a system of information. Nonetheless true, the definition needs some support. One way to understand information systems is by its functions. Andersen (1991) means that an information system performs different types of information manipulations (1) collection (2) processing (3) storing (4) transfer, and (5) presentation. Another definition provided by Langefors (1973) is:

The function of a system is when it changes the state within time that we need a continuously working information system and, as a consequence,
meets the problem of designing the information system for efficient information flow and information collection. (Langefors, 1973:199)

In respect to the definitions above I believe that the dyadic relationships I have investigated in this thesis (paper 2-4) can be described as information exchange systems. A general image of an information exchange system is depicted in Figure 4-2. The relationship contains two firms (F1, F2). The firms have agreed to establish a relationship between each other (A) and the firms cooperate with each other in terms allocating internal resources (B) to a certain cooperation item (C1).

![Figure 4-2. A model of an information exchange system (source, Andersson, 1979:37)](image)

Exchange system can be described from two structural viewpoints Uzzi (1996). Firms operate together in arm-length ties, which impersonalize relations between buyers and sellers, and ongoing social ties, which emphasize the importance of close social relationships. The relationships that I have studied can be categorized into these structures. The pooled relationship is a pure buy/sell relationship, which actually had a high degree of impersonalized relations, and therefore part of arm-length tie. The sequential relationships and the relationship with a reciprocity character are of the social tie type. In terms of information exchange these two types of ties differ in information content. Uzzi mean that information exchange in social ties is more tacit than information exchange in arm-length ties. It includes tacit know-how that boosts a firm’s transactional efficacy and responsiveness to the environment (Uzzi, 1996:678). Uzzi also emphasize that it is social relations that make information credible and interpretable; imbuing it with qualities beyond what is at hand (Uzzi, 1996:678). Uzzi further posit that in impersonalized relations between firms, the loose coupling are thought to optimize efficiency by facilitating access to information, and by averting asset-specific/small number exchange situations (in paper 2 this is noticed) that impede unilateral action and add needless coordination costs to inter-firm exchanges.

The concept of mediation which I suggest as the third facet of relationship alignment is acknowledged by information exchange systems theory. The theory deals with human interpretation of information and efficient transfer by the use of information systems, which is an excellent foundation to register relationship alignment upon.
4.3.1 Information exchange systems structure

Virtually all the managers that participated in the case studies that informed this thesis emphasized the separation between human interaction and the technology mediated interaction. When the managers talked about their business operations they used the term data, and when they talked about commitment activities for the beneficial of the relationship with another firm they used the terms information and knowledge. In the firm relationships where information exchange systems were used, the data flow between firms was confined in specific systems. Human exchanges (talk, communication) of the very same information content were constantly occurring in work processes, and is not replaceable with information technology altogether. It is not a coincidence that what we call bits and pieces (i.e., elements) are communicated through electronic channels for formal messages. In terms of human communication, this occurrence is called dialog, even if we use the telephone facility. An enlightening example (envisage the electronic and social situation for the exchange):

- “Order quantity =100”. (formal message)
- “We’re having trouble with the delivery of such a quantity. Can we postpone the same?” – No, that will affect our end-customers needs. (dialog)

The “message” is virtually always predefined and agreed by participants utilizing the electronic information channel. For the sheer message exchange it is common to apply different purposes with cooperating information technology. For example Senn (2000) exemplifies with the common ambitions of such technology:

- Reducing the cost of routine transactions.
- Collapsing cycle time in the fulfilment of transactions regardless of geographic distance.
- Eliminating paper and inefficiencies associated with paper processing.
- Creating application-to-application processes between buyer and seller.

We, as humans, can interpret and judge the relevance of the information exchange if we are allowed to have social contact between sender and receiver. Social communication processes, such as the dialog, are interwoven with the processes of knowledge creation (Nelson and Cooprider, 1996). Nonaka and Takeuchi (1995) distinguish between information and knowledge. Knowledge is, contrary to information, about beliefs and commitment, action, and meaning. As a consequence of that we can say that knowledge is a result of a “thinking” process, whereas information is merely an object that can be manipulated and diffused by different types of media.

Information exchange can be seen as a means to gain knowledge from interacting activities. This matter has been addressed in previous research, for example, using
Information richness theory, which is a body of knowledge that is concerned with the issue of how information can change conceptual understandings of a certain context in a time interval (Daft and Lengel, 1986). The change of the understanding require a media and the media mentioned here does in descending order decrease the possibility to change the understanding of a certain phenomenon: (1) Face-to-face (2) Telephone (3) Personal documents, such as letters or memos (4) Impersonal documents (5) Numeric documents. The main difference in richness between different media is the level of immediate feedback, personalization and language variety. In literature of IS research there are examples of studies that use information richness theory to explain how technology may enhance the understanding of contextual exchanges. Lee (1994), for example, investigates how richness occurs in communication that uses electronic mail, which corresponds to personal documents in the list above. Lee concludes that managers who receive electronic mail are not passive recipients of data, but active producers of meaning. However Lee also conclude that the creation of meaning depends to great extent on the skill of the managers in using the media and that electronic mail should be seen as an reagent of meaning because the mail document has to be interpreted by humans, i.e., it is difficult to draw the borderline between data and information.

The concept of mediation, which I address in chapter three, and paper five is two folded; it is concerned with the exchange of information in social contexts and supports human interaction by acknowledging the socialization processes that occurs in human interaction. The other side of the concept is the efficiency aspects for co-operative computer systems. These types of systems can maintain the conceptual models of the respective businesses. This is due to the programmable conceptual schemes that we can design the system for. Therefore, co-operating systems express the inter-dependency as a linkage between two or more information systems (i.e., structure of information flow) (Solotruk and Kristofic, 1980), Figure 4-3.

A unified system is a system which has incorporated two or more independent systems at the expense of the incorporated systems own structure. By unification a system is
created that is larger, more costly and inflexible than the systems originally accounted for.

Overlapped systems are a consequence of having one or more elements whose properties are identical in the participating systems. Maintaining a common database that is not duplicated is one example of overlapped systems structure.

Interlinking systems are systems that support exchange of formalized elements (especially of data). A significant feature of interlinking systems is the absence of interference with the structures of the participating systems and the limitation of their interdependence.

One important issue to consider in exchange systems structures is the organization of cooperation between the systems. This means in my approach to a relational view of information exchange to consider how the inter-subjective interpretation, expressed as the concepts of presence and formality, may be mediated by a cooperative systems structure. That is to say, it is important to consider the underlying rationale for information exchange which I believe may best be understood in view of organizations managing information in the two contexts: socialization between individuals, and support in formal transaction processes. A number of views of cooperation systems structure are available in literature covering the inter-dependency in information flow that, for example, Figure 4-3 depicts. The systems structure is concerned with the relationship that exists between integral functional units within the system and is in essence constituted by three structures (Ackoff, 1980; Churchman, 1971):

- Cooperation structure, which shows the relationship between activities within the system.
- Communication structure, which is the structure of information in dependent activities.
- Control structure, which is the structure that determines the integral unit’s action.

Cooperation is the basic condition that needs to be fulfilled in order for the system to support the goal intentions and these goals need to be determined during early phases of cooperation so that evaluation of systems performance can be made.

The basic task in an exchange system is coordination of activities and the communication structure should express the procedures and tasks that coordination is built upon. Another important issue in the communication structure is the support to users of the systems in creating a feeling of motivation and responsibility. Shortcomings in this structure may hamper the use of the system in terms of mistreatment of the information used in activities.

The control structures role is to ensure performance in cooperation by securing the flow of information to activities and processes in the exchange system and also ensure the longer-term based recourses, and the efficiency of the system.
The system can also be seen as a social construction in opposite to technical systems, which the previous structures of exchange systems mentioned above, is relying upon. In social systems thinking two other structures need to be added alongside the technical systems thinking: the informal information structure and the power structure (Checkland, 1999). The informal information structure is needed as it is derived from the cultural setting in the organization, which promotes the diffusion of social norms and values to other participants, such as, actors, clients and systems owners. The power structure reflects the socio-political relationships between the participants. The most obvious difference between this view of the system and the one built on technical systems thinking is the role of the individual and intentions and expectations the individual have of the system. The technical system is almost predefined and measurable in terms of productivity and performance in general whilst seeing the system as a social construction mean that the systems itself has to account for subjectivity and heterogeneity in actions of participants.

The exchange systems structure that was identified in the case studies that informed this thesis was of the interlinked systems structure. Details of the concept mediation can be seen in paper five and the practical usage of the systems is discussed in paper two. And from information systems science perspective these interlinked systems have in essence two dimensions as they contain technical support to business transactions and socially enables construction of meaning between participants that are legally seen as two separate units. It is in my opinion possible to explain relationship alignment as a construct of relational properties that may be understood by formal transaction foundation as well as socially oriented inter-subjective interpretation through the differentiated approach that I put forward in this thesis.
5 The research process

This chapter describes the research process and the methodology used to select the cases, collect and analyze the data. The sources for my findings are based on case studies in small firms in the northern part of Sweden. Altogether nine managers were interviewed, giving their understanding for the social-, business-, and technological context that were subject for investigation in the case studies. The papers supporting this thesis show respectively the detailed view of different firm relationships, which I was interested to study. My interest for the topic -relationship alignment- comes from my experience as a practitioner in engineering during the 1980s and beginning of the 1990s. I observed that the many relationships that many of the projects I was involved in generated different problems. However, shortcomings in human communication often seemed to be direct cause of the problems that occurred. The problems in the project also concerned sheer technological issues, which often were quite easy to solve. However, when it came to human interaction it seemed that problems were not so easily solved, and I come to think of the situations as what scientifically could be described as the logic of contextual boundaries. Many different stakeholders were often involved in the projects and these stakeholders naturally had the ambition to manage their own input to the project. In that way the project itself seemed to create boundaries that weren’t easy to cross. Specifically the small firms engaged in the projects seemed to be ones facing problems when changes in the requirements for the project occurred. From this little story of my work life experience I draw my interest for both the social and the business context, together with an interest for technology.

During the time frame for my research studies the following questions assisted in the selection of a research approach by providing arguments for the chosen epistemology:

- Why is it necessary to study the phenomenon?
- What kind of knowledge is to be developed?
- Who will benefit from the study in question?
- What is the best way to gain knowledge?

Why is it necessary to study the phenomenon? Chapter two – IS/IT in organizations indicated that there is a lack of research in the field of firm relationship alignment. The cumulated body of knowledge in alignment research have only recently been complemented with attempts to investigate the social dimension of alignment (e.g., Reich and Benbasat, 2000). Regarding the business transaction dimension the alignment discussion is somewhat blurry. Firm relationships and exchanges have been studied with the use of transaction cost theory (Ciborra, 1987), but alignment per se were not the focus in Ciborra’s reasoning. The information technology relationship between small firms
is often viewed with the lens of interlinking systems, for example, EDI (Electronic Data Interchange) and the lens mostly reflect how small firms adopt and use EDI systems (Chau and Hui, 2001; Iacovou et al., 1995).

The literature search that resulted in my view of alignment not being differentiated enough and unfocused on information was carried out over a long period of time. The literature search started with readings in the field of IT management and strategic IT alignment. From this literature I gained understanding that those fields were rather normative in nature by suggesting universal solutions to both organizational and IT related issues. Also, this literature had an intra-organizational focus, and if addressing the external environment of the organization it was often from a strategy perspective. In this literature there was no difference expressed between writings concerning large and small firms. Reading this kind of literature gave me evidence that from the IS field the support to my research topic would comprise information technology aspects. Eventually, as I used the keyword exchange my search result included titles and topics in the field of social exchange theory and relational theory which I considered thoroughly and eventually decided to use as foundations of the social and the transaction dimension of my research topic.

What kind of knowledge is to be developed? Merriam (1994) discuss the knowledge that a case study can provide and states that the knowledge we can obtain from a case study differs from other scientific knowledge in four aspects:

- Knowledge from case studies is tangible and more congruent with our experience since it is vivid, tangible and immediate, rather than abstract and theoretical. This is congruent to my case since my own experience formed and guided the trajectory of my topic of this thesis.
- Knowledge from case studies is contextual. The researcher’s experience and the knowledge that can be obtained from case studies are grounded in different contexts.
- Knowledge in a field develops through the researchers interpretations. The use of earlier research, together with experience, adds on to the cumulative knowledge of that field, which leads to generalizations when new information from the “case” is added to prior information.
- Knowledge from case studies is based on a selection of a certain population that the researcher selects. The kind of generalizations mentioned above always refers a certain population. In contrast to quantitative research the contribution of extended generalizations refer to different populations.

I think of knowledge development as a continuous process of learning where gained insights of a phenomenon nurtures future investigations by the resulting proposition or hypothesis that can be formulated after a study event. Knowledge development from
research activities is an ongoing process of the examination of bits and pieces in empirical situations that can help us to understand the complexity of the contextual setting of the inquiry.

The question of who will benefit from the study is an interesting aspect of scientific work in general. The issue of the research being “valuable” is an important outcome of the research process. In other words, the research should be relevant to an audience. The audience consists of two types of communities: the research community to which the researcher addresses his argumentation, and the surrounding society to which the result of the research should be transferred. I believe it is much more difficult to disseminate knowledge to practitioners in the society than to debate within the science community. The main barrier is probably the language that researchers use, which is not easily understood by practitioners. The scientific language need to support a chain of argumentation for the result of research. The chain that links the initial research questions to the conclusions need to be apprehensible and grounded in motives for the selection of theory and methodology (Yin, 1994). In order to make research valuable to practitioners Davenport and Markus (1999) suggests that the IS researchers should pick up practical problems, including the attempts made by practitioners to solve them, and in turn improve the situation. In that way the research is becoming not only theoretically rigorous but also explicitly relevant for practitioners. I agree with Davenport and Markus but I believe their reasoning concerns IT practitioners primarily because they are the ones dealing with subjects, such as, information systems design methodology, and that is something IS researchers have devoted much interest in for many years. However, there are other aspects of the intervention in practice, for example, the level of knowledge in IT use and investment. I my study several managers made personal reflections of this matter, when they said things like “IT is not our core business”, and, “how to determine what kind systems to buy”, and, “your research topic seems interesting and relevant but how should we apply it”. These were managers from other firms than the IT consultancy firms that participated in my study and I believe the knowledge that should be transferred to them is of learning character instead of a new method that might put another burden on the managers. Eventually, I believe my research can be packaged like a commodity, for example, a relationship alignment learning toolbox, but that requires work to transform the conceptualization of alignment (paper 5) to practical implementations and a research approach that is action oriented to fully see the merits and shortcomings in implementation of the concepts.

5.1 Qualitative or quantitative?

The question of the best way to gain knowledge is a complicated issue in itself. A researcher can rely on a certain tradition in a field or a community or having the topic or the “problem” guide in the research approach. Axelsson (1998) suggest that the chosen
approach should be guided by contextual dependencies rather than relying on conviction of excellence in different scientific paradigms. In IS research it is quite common to use interpretive epistemology (Walsham, 1993) when studying human interpretation of social settings and how technology play a role for accomplishing various assignments. Interpretive approach is appropriate when studying organizational transformation through information technology (Markus and Robey, 1988; Orlowski, 1992). I believe such approach requires a research design that spans over long time, perhaps even years in order to really build knowledge of a change phenomenon. I believe such an approach would fall under ethnographical methodology and should be supported by observations. The interpretive approach, ethnography, and other strands of qualitative research is interested in in-depth understanding of the meanings presented by respondents rather then finite measurement of their behavior, delivering research products (Merriam, 1994; Repstad, 1988).

The idea with my study was to grasp how people, i.e. managers perceived information exchange in a relationship context, and therefore a “snap-shot” design were expected to deliver the necessary data input. I did not believe that to be in conflict with the qualitative research paradigm. It can of course be questioned whether not a quantitative approach could provide the data in my cases. Such a claim automatically infers a discussion of the epistemological concerns that the researcher has to unveil for the legitimacy of the study in question.

Quantitative approach is often characterized by the formulation of hypothesis that could be tested by sample selection of a representative population. Often surveys and structured interviews are instruments for the data collection and then statistical techniques are used for analysis. One important issue in quantitative studies is that the results should be possible to generalize to a larger population (Bryman, 1997). The basic assumption in the analytical positivistic paradigm is the objective belief (Burrel and Morgan, 1979) of the world and that normative suggestion can be drawn from conclusions.

I could have used an analytical approach starting with formulating hypothesis based on assumptions of the information exchange within the relationships. The research design could have been survey based with structured questionnaires sent out to a representative sample of small firms. As I outlined in the very early phases of my research project I took an interest in three different types of small firm relationships, which would compose my data input, it would have been possible to use the analytical approach. However, there are several reasons for the rejection of such research design. First, I was concerned with the response rate. During doctoral courses I’ve participated in the message from professors was that a 15-20 percentage response rate was common, and how could one expect to draw valid conclusions on such material. Second, I had no intention to generalize the results as my research topic, at least from an IS perspective is not sufficiently ex-
plored. Therefore, I assumed that the analytical approach would not give the deep understanding of the information exchange phenomenon I strived for.

A qualitative research approach is used when the researcher want to identify unknown phenomenon or aspects of a phenomenon in social environments. Several different strategies for research design and case selection can be used (Yin, 1992; Miles and Huberman, 1994). In IS research, techniques for data collection based on grounded theory and phenomenology is common, but the common denominator in all qualitative approaches is the interpretation and understanding from the perspective of the informant and the context.

Considering that the research question, stated in chapter one, is formulated with a “how is it” approach it seemed rather obvious that a qualitative research design would be the most appropriate approach to use. Also from the story in the first paragraph of this chapter the well informed reader may understand that I consider communication to be crucial for accomplishing tasks during collaboration. A qualitative approach is suitable to use when, as I wanted, to understand the underlying rationales for small firms working together, from an information exchange perspective, in dyadic relationships. Furthermore, I wanted managers to speak as freely as possible, especially when following up on my questions in the semi-structured questionnaire. Also this approach would give the managers an opportunity to express their view on issues that were important for them. In that way I would have a rich data input, which I assumed would benefit to the study. However, the main reason for not using a quantitative approach in this study was supported by the argumentation of Ciborra (1997) regarding idealized apprehensions of a phenomenon:

We are now in the position to explain the trajectory of the formerly promising research program on strategic alignment: those researchers made multiple abstractions out of the muddling through drifting; idealized tinkering and called it strategy; idealized technology as controllable set of means and called IT; granted to these concepts existence & essence, transformed them into boxes and traced a line between them. Then, they started the difficult journey back to the real world, and found difficulties in measuring “the strength of the line” or formulating prescriptions that would be followed by managers when tracing the line on the field of practice. They ingeniously provided more and more sophisticated representations of alignment, as more analytical and detailed maps for the actors to operate in the real world. To no avail; the higher conceptual detail remained confined to the world of idealized abstractions, but had little impact on the life worlds of business and organizations. The research wheel was turning empty. (Ciborra, 1997:811)
This, if anything, did in my way of thinking exclude the use of a quantitative approach as that avenue have difficulty with revealing the underlying, inner properties of a phenomenon. I assumed that if I had tried to view my research topic as something objective I would only receive input from the informants that would be formal in nature. This means that it could have been a risk that managers would provide information deriving from their formal plans or formal strategies and not from them as individuals.

5.2 Case study as a research strategy

Case study approach is preferred when investigating a contemporary phenomenon in real life context and when the purpose is to answer how and why formulated questions (Yin, 1994). Case study methodology does not raise any barriers towards stating theoretical assumptions early in the research phase. I believe that however “disconnected” a researcher may consider himself to be towards a phenomenon there are always some initial assumptions in the mind of the researcher regarding that phenomenon. I believe the root for this is the cultural fostering that we as humans undergo in our social life, when growing up, during education, and in the work life. Clearly, I believe that such issues have a significant impact on us as researchers and this is the bottom-line for the epistemological base that we rely upon in research. The epistemology guide the selection of research strategy, selection of methods and techniques, and towards the epistemology the researcher validates the result of the study.

Yin (1994) points out five possible strategies for investigation of a certain phenomenon: experiment, survey, archival analysis, historical and case study. The choices of a strategy depend on the form of the research question, and if the researcher needs to control behavioural events and/or if the focus is on contemporary events, see Table 5-1.

<table>
<thead>
<tr>
<th>Research Strategy</th>
<th>Form of Research question</th>
<th>Requires control over behavioural events</th>
<th>Focuses on contemporary events</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experiment</td>
<td>How, why</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Survey</td>
<td>Who, what, where, How many, How much</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Archival Analysis</td>
<td>Who, what, where, How many, How much</td>
<td>No</td>
<td>Yes/No</td>
</tr>
<tr>
<td>History</td>
<td>How, why</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Case study</td>
<td>How, why</td>
<td>No</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Table 5-1. Relevant situations for different research strategies (Yin, 1994:6).
Case study, as a research strategy, was the given choice in this study since the case study strategy enables the acquisition of qualitative and in-depth data in a social context (Yin 1994). The social context in these studies is the organizational relationships and activities that take place in different exchanges. Yin (1994) categorises case studies as being: descriptive, explorative, or explanatory. Determination of which category a certain study belong to is by the formulation of the research question. Research questions like “what” and “how many” is best answered by using surveys and is of the descriptive and exploratory character. Questions like “how” and “why” questions are typical explanatory case study formulations. The three case studies (paper 2-4) can be described, as explorative since they provide information of the social dimension in information exchange, business activities in business transaction and how these dimensions may be conceptualized as patterns in order to understand the issue of relationship alignment.

5.3 Credibility of the study: Validity and reliability

There are limitations in any research approach and that of course also includes this study. In science there are two instruments available to evaluate the credibility of a study: validity and reliability. Validity is about the trustworthiness of the study, that there are reasonable interpretations made from the empirical data (Yin, 1994; Miles and Huberman, 1994). Validity denotes that a theory model or concept accurately depicts reality (Kvale 1989). Thus, validity has to do with the interpretations that the researcher does from empirical data. As such, validity concerns the research design as a whole, from the initial design, data collection, data analysis, and the final result.

Different concepts of validity are mentioned in literature of research methodology. Maxwell (1992), for example, argues for three types of validity that are important tools when using a case study strategy: descriptive validity, interpretive validity, and theoretical validity. Descriptive validity concerns the understanding of what happened during an interview, rather than the meaning of what happened. The technique to ensure descriptive validity is, for example, the use of a tape recorder during interviews. Interpretative validity is meaning oriented concept and accounts for the abstractions that is employed by informants rather than theoretical abstractions. The meaning is always a construction made by the researcher based on participants statements. Theoretical validity refer to the explanation of the phenomenon studied, and not only a description of the facts or an interpretation of the underlying meaning, This type of validity is concerned with the theories or concepts used to explain the meanings of action are explicitly related to studied phenomenon. Most important is that the chosen theories can be presumed to reveal a true picture of the contextual conditions that is subject of inquiry.
Other concepts of validity mentioned in literature are construct validity, internal validity, and external validity (Yin, 1994; Merriam, 1988). Construct validity relates to the data collection process establishing correct operational measures for the concepts being studied. Internal validity has to do with whether the findings make sense and if conclusions made are transferable or valid within the studied context, to another setting that were not investigated. This type of validity is also closely related to theoretical validity. External validity concerns the generalization of results. Preferably, the result should be transferable to other populations.

A number of techniques are mentioned in literature to ensure validity. The researcher can make use of – triangulation, participation, long-term observations, investigator review, participative approach, bias statements (Merriam, 1988). Triangulation signifies that the researcher uses other researchers, different data sources, different methods, and different theories to confirm the result of the study. Participation has to do with having informants reviewing the descriptions and interpretations that the researcher have made and control the trustworthiness of the result. Long-term observations mean to collect information over long time and as familiarity for the phenomenon grow the validity increases. Participative approach has to do with the involvement of informants in the research process in all phases. Bias clarification is about the bias that the researcher bring into the investigation. This is concerned with explicit statements of underlying assumptions, worldview, and theoretical perspectives that need to be clarified early in the research process.

I believe I have been open with my own biases as a researcher and individual. I have also stated my assumptions of the perspectives that I believe would enhance the knowledge base in alignment research, namely that the cumulated knowledge in business strategy and IT strategy connection need to be widened in order to understand alignment of small firm relationships from a information exchange perspective. Also, during interviews a checking procedure was carried out by having informants confirming that I have understood their answers and made correct interpretations. All in all I believe I used the validity concept that Maxwell (1992) suggests. I made tape recordings of the interviews, I tried to create meaning of the data by structure data with a cognitive map technique (see chapter 5.6), and finally select theories that were aligned with my assumption of the area of investigation and possible to use when discussing the result of the field research.

Reliability has to do with the extent to which the result of the research can be repeated by other researchers and yield approximately the same result (Gummesson, 1998). There are also levels or rather dimensions of reliability which Kirk and Miller (1986) distinguish as “diachronic reliability, which is stability of observations over time, and “synchronic” reliability, which is stability in the same
time frame. Miles and Huberman (1994) suggest a number of questions that could be asked to ensure these types of reliability:

1. Are the research questions clear, and are features of the study design congruent with them?
2. Is the researcher’s role and status within the site explicitly described?
3. Do findings show meaningful parallelism across data sources (informants, contexts, times)
4. Are basic paradigms and analytical constructs clearly specified (Reliability depends, in part, on it connectedness to theory)?
5. Were data collected across the full range of appropriate settings, times, respondents, and so on suggested by the research questions?
6. If multiple field-workers are involved, do they have comparable data collection protocols?
7. Were coding checks made, and did they show adequate agreement?
8. Were data quality checks made (e.g., for bias, deceit, informant knowledgeability)?
9. Do multiple observers’ accounts converge, in instances, settings, or times when they might be expected to?
10. Were any forms of peer review or colleague review place? (Miles and Huberman, 1994:278).

These questions can be asked when the researcher wants to cover the underlying issue whether the study is consistent, reasonably stable over time and across researchers and methods. I believe I reached 80 percent coverage of these 10 questions aligning to the synchronic dimension of reliability. (1) In this study I formulated an overall research question, which is decomposed in each paper, covering the different dimensions of information exchange. (2) My own role in the study was also clear. I did not participate in any other style but as an interviewer. (3) Concerning parallelism, I used only one informant in each case site as I believed the managers would be the ones with the best knowledge of information exchange issues in the relationship with another firm. (4) As for the basic paradigms I believe I made clear statements for my theoretical choices and they are well connected with the contexts for information exchange at the case sites. (5) The data collection was guided by the division of information exchange that I made based upon the conceptualizations of relationship alignment (see Ch. 3) and so it had strong relatedness to the research questions. (6) Negative since I conducted the study by myself. (7) Coding was made by the use of a cognitive map to outline connections between key statements in the field data. (8) The issue of data quality checks couples to my answer on question 3. I believed that the managers were the best guarantee for quality during the interview session and the trustworthiness of the an-
swers the respondents gave on my questionnaire. (9) Also negative, since I conducted the study by myself. (10) Peer reviews were made during seminars with graduate student colleagues and with my supervisor on a regular time basis.

Miles and Huberman (1994) also argue that reliability in qualitative research “ride largely on the skills of the researcher” (ibid.:38). This has to do with the researcher being an instrument and the following is suggested as reliability improvers:

- Some familiarity with the phenomenon and the setting under study.
- Strong conceptual interest.
- A multidisciplinary approach, as opposed to a narrow grounding or focus in a single discipline.
- Good “investigate” skills, including doggedness, the ability to draw people out, and the ability to ward of premature closure (Miles and Huberman, 1994:38).

In this study I tried to account for these qualities as a whole. I had some familiarity with the phenomenon as I had conducted a pre-study of inter-organizational relationships prior to this study. The pre-study helped me to gain understanding for the firms pragmatic view on firm relationships and also I could develop my mindset regarding how to approach the area during this study.

Regarding the issue of strong conceptual interest I interpret Miles and Huberman (1994) to mean that a respondent with conceptual interest and more than one disciplinary perspective is a good research “instrument”. This was detected in this study as the respondents to various extent expressed different kind of significant issues that concerned different aspects of the way they interacted with an external business partner.

This study was in fact multidisciplinary in nature as it investigated social, business and technological aspects of information exchange. I used theories from IS research, sociology and marketing/economics in order discuss my results from the different angles on information exchange.

Whether I have good “investigator” skill is difficult to say and I do agree with Smith and Louis (1982) who state that “many researchers, from graduate students struggling with dissertations to experienced researchers, work alone on their projects and often focus on single cases, qualitative work is becoming more complex” (Smith and Louis 1982:25). I agree with Smith and Louis that qualitative work is complex and during work several interesting side tracks may appear in mind and often resulted in lost focus. I admit that I on several occasions lost track but the key to focus again was to step aside from details and try to conceptualize different input in terms of theory and methodology. However, during contact and interviews with the managers of the firms I believe I succeeded in establishing a good climate in which the informant felt secure and comfortable enough to open up and discuss relationship issues freely.
5.4 Design of the case studies

The selection of case companies was based on research of inter-organizational relationships by Kumar and van Dissel (1996) who in turn used research results by Thompson (1967) and Robey and Sales (1994) to derive a three part typology for inter-dependencies between firms, Figure 5-1. These are: pooled, sequential, and reciprocal inter-dependencies.

These types of configurations are general configurations that are well recognized in field of inter-firm relationships and inter-organizational information systems (Thompson, 1967). I have used these network configurations as metaphors for identifying dyadic firm relationships. From each one of the dependency settings in Figure 5-1 I have selected dyadic firm relationship based on the insight that this research is novel, and taking on too many linkages in the empirical part of the work would possibly conceal the essence of underlying aspects of the information exchange. The number of cases in a thesis project is controversial to different audiences. Research communities belonging to the analytical tradition believe in generalization based on a representative population and that statistical analysis provide credible results. On the other hand, qualitative schools believe in interpretations from context bound information that is received from human action, human speech, etc. This kind of information sources give the researcher access to deeper informant based knowledge. To me, this is a matter of ‘relatedness’ to empirical data that served my purpose with this research in a better way than the analytical methodology. Therefore, I did not felt rigid about the number of cases in my research. Also, Yin (1994:46) does not seem too rigid about the number of cases as he posits that two or three cases can produce reliable results. However, I interpret Yin’s discussion of research design of case studies to be a bit more experimental oriented than qualitative oriented. The best example of this is Yin’s discussion of the replication logic and how the researcher may use predictions prior to the actual research. Nonetheless, Yin’s approach is an attractive guide to follow as much as possible when designing research, especially when you have little experience in doing research.

Figure 5-1. Dependency configurations
The overall selection strategy used in this thesis was a non-probabilistic strategy (Merriam, 1988), which means that there is no way to calculate the probability for a certain element to be selected. Specifically in this thesis this meant that the choice of firms were not given in advance, rather this was a process of thinking and evaluating a number of alternatives. This was the opposite of the common probabilistic strategy often used in quantitative studies. A common approach in non-probabilistic strategy is to use a goal oriented selection (Chein, 1981). A goal oriented selection is based on the assumption that the research wants to discover, understand and gain insight, therefore the selection should be done with the objective to learn as much as possible. Therefore my selection of case study objects was based upon the suggestion by Whetten (1982) who, inspiringly for me, stated that the most interesting research of inter-organizational relationships require a heterogeneous sample of organizations. By using firms from different industries I believed that different apprehension of contextual variables could be identified. That denotes that different firms have different social milieus that will guide the firms in their employment of relationship tactics. Whetten (1982) exemplifies with the claim that inter-organizational research requires a deeper knowledge of the different firms. This is essential since different firms are likely to vary significantly in terms of decision-making autonomy and technology use. In the case studies I used the same selection of industries that I did in the survey, which paper 1 is based on. Therefore I selected firms in the food and office supply industry as samples of the pooled relationship. The sequential relationship contains suppliers and customers in manufacturing. Finally, firms in the reciprocal relationships were IT consultancy firms. Also, my selection of case sites was influenced by my familiarity with some the work characteristics in the types of firm relationships that I selected as case sites. I mentioned early in this chapter that I used to work as an engineer prior to my academic position and during that time I developed knowledge for the IT business and manufacturing as well.

The selection of informants may also be a complex task and the problem is to select the most informed respondent (Whetten, 1982). My strategy for the selection of respondents was in opposite of the firm selection of probabilistic nature. I selected the managers of the firms based on the reason that they were the ones involved with the work of establishing the social milieus in which friendship and bonding between business partners may prosper. At the same time, as the firms were small it was not controversial to believe that the managers also had deep knowledge of business activities and transactions. I did not seek for deep technical knowledge of managers but as they had overall responsibility in the firms, they were also responsible for the IT environment in the firms. There is of course a problem that the chosen respondent is not the best informed in various detailed
matter (Whetten, 1982), but I sought for holistic input and in that respect the managers seemed to be an appropriate selection.

5.5 Case description and data collection

In order to answer the research question in this thesis I undertook an explanatory study of information exchanges between small firms in different dyadic contexts. The firms were carefully selected to represent different industries in terms on business focus. The interviewees within the firms were CEOs with deep knowledge of relationship matters as well as internal business processes. Table 5-2 show an account of the firms that participated in this study.

<table>
<thead>
<tr>
<th>Relationship Type</th>
<th>Firm</th>
<th>Industry</th>
<th>Size (No. of employees)</th>
<th>Line of Business</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pooled</td>
<td>A</td>
<td>Food</td>
<td>22</td>
<td>Supplier of food to C</td>
</tr>
<tr>
<td></td>
<td>B</td>
<td>Office supply</td>
<td>16</td>
<td>Supplier of office supply to C</td>
</tr>
<tr>
<td></td>
<td>C</td>
<td>Municipal agency</td>
<td>*</td>
<td>Buyer of A and B’s products</td>
</tr>
<tr>
<td>Sequential</td>
<td>D</td>
<td>Manufacturing</td>
<td>25</td>
<td>Electric sliding windows</td>
</tr>
<tr>
<td></td>
<td>E</td>
<td>Manufacturing</td>
<td>12</td>
<td>Customer designed steel components</td>
</tr>
<tr>
<td></td>
<td>F</td>
<td>Manufacturing</td>
<td>1</td>
<td>Sub-contractor to D</td>
</tr>
<tr>
<td></td>
<td>G</td>
<td>Manufacturing</td>
<td>33</td>
<td>Sub-contractor to E</td>
</tr>
<tr>
<td>Reciprocal</td>
<td>H</td>
<td>IT consultant</td>
<td>25</td>
<td>Software development</td>
</tr>
<tr>
<td></td>
<td>I</td>
<td>IT consultant</td>
<td>45</td>
<td>Software development</td>
</tr>
</tbody>
</table>

Table 5-2. Firm descriptions.

* Notes on the Municipal agency - The municipal agency manager acted as a representative for different school restaurants and these restaurants didn’t have a CEO like the other firms in this study. The municipal agency manager was selected as a respondent due to the overall managerial responsibility that the manager have for the information exchange in the pooled relationship. This manager could then be seen as a coordinator of several small units.

The data collection in this thesis was two-folded. First, I conducted a survey (paper 1) that was qualitative oriented with a purpose to grasp the usage pattern of information technology between small and medium sized firms. Second, case studies (paper 2-4) and interviews were conducted with the CEOs of small firms which were selected exclusively for the case studies. Seven interviews at the firm location were conducted and two interviews were done with the use of telephone. The interview guide is reproduced in Appendix 1. I collected the data during a period of two months in the autumn of 2005 in small firms located in the northern part of Sweden. The interview guide that
I used was semi-structured in character. I structured the interview guide in three themes: the social relationship, the business transactions, and information technology. Each theme contained precise issues that I put forward to the respondent as question or as an expression for the respondent to comment on. In that way I succeeded in forming the interview situation as a conversation rather than just questioning. As a result, the interviews were quite informal in most cases, but the telephone interviews felt rather formal due to the communication distance such situation denote. The interviews were taped and transcribed and that increased the descriptive validity (Maxwell, 1992).

I decided to protect the managers I interviewed as a number of them expressed such wish. Therefore the firms are only labelled A-F in paper 2-4. Two of the firms in the sequential relationship, the suppliers to C and D are just depicted as suppliers.

5.6 Data visualization and analysis

Linking data to propositions and the criteria for interpretation are components of data analysis (Yin 1994). The idea of analysis is that patterns emerge in some sense from the empirical data and it is quite a demanding effort to manage both theoretical and empirical bias that might exclude important information from the analysis domain (Merriam, 1988). The question is whether the biases are controllable or not. If they are controllable, checkpoints during the work with analysis should be built in to the analysis process. If they are not controllable, any propositions made should be supported by a clear definition and use of an analysis strategy. Yin (1994) suggests that researchers may rely on theoretical propositions as the strategy for analysis. This kind of strategy has to do with the original propositions of research objectives and design of the case study. Particularly, Yin emphasizes that propositions helps to focus attention on certain data and avoid other data. I have applied Yin’s approach in terms of assumptions rather than explicit propositions. Based on the pre-study (Harnesk, 2004) I made the assumption that inter-organizational relationships were formed by constructs, such as, cooperation issues, coordination activities, and information technology mediation. This assumption helped me to discuss the conceptualization of relationship alignment in this thesis, and provided insight for the construction of the interview guide as well.

The next dimension in my analysis approach is the level of individuality. Investigations in the papers (2-4) are based on managers’ individual comprehensions of the relationship with the other firm. Miles and Huberman’s expression: “A cognitive map displays the person’s representation of concept about a particular domain, showing the relationship among them” (Miles and Huberman, 1994:134) seemed to be a rational and valid approach to use for further analysis. The cognitive map is a technique to structure information content, i.e., words in groups where linkages can be made between these words in order to create associations that eventually support drawing of conclusions. According to Miles and Huberman this technique is used by the researcher and the informant together as the re-
searcher proposes something and then the informant confirm or deny the interpretations.

I did not use the method completely as suggested by Miles and Huberman, but I did however check the interpretations during conversations with respondents and then I turned to theoretically informed interpretations as can be seen in the papers. Excerpt from the work with the cognitive map are shown in Figure 5-2, 5-3, and 5-4.

The first excerpt, Figure 5-2, is concerned with social orientation of the small firm relationships, and is an example of keywords used by the informants and the significance of these keywords in terms of which type of information parties do exchange. The interpretation made in this case was that information that allows participants in a relationship to submit different kind of input into a person-to-person conversation, in fact may act as a link between trust and personal chemistry, individual characteristics, and shared understanding.

![Cognitive map showing parts of the social theme](image)

The second excerpt, Figure 5-3, is related to the transaction environment and is concerned specifically with the order fulfilment procedure between two firms. The transactional activities exclusively contained descriptive information (factual data) that pointed out the effectiveness of the transactions to participants, so that knowledge of the transaction content was gained and that in turn improved the coordination activities in the small firm relationships that informed this thesis.
The third excerpt, Figure 5-4, shows the structure of the IT environment in virtually all firms that participated in the case studies. By the use of different technologies the firms could exchange (to some extent) different kind of information. However, sometimes human intervention in exchanges was required. The interpretation made by me was that the firms perceived themselves connected to its business partner as they could use technology to communicate.

![Figure 5-3, Cognitive map showing parts of the business theme](image)

![Figure 5-4, Cognitive map showing parts of the IT theme](image)
6 Conclusions and discussion
This thesis sets out to explore how relationship alignment in small firms may be expressed from an information exchange perspective. The point of departure for this work is the emerging view of IT alignment that recently have gained increased interest in contrast to the prevailing focus in IT alignment of performance outcome from the synergy between IT strategy and the business strategy. The five papers together suggest some conclusions that serve as input to the theoretical discussion of relationship alignment that this thesis has been concerned with.

- The use of inter-organizational information systems as a strategic tool is increasing in social exchanges. In business exchanges the main purpose still is to gain operational efficiency. Information exchange processes in SMEs covers both operational and strategic dimensions. However, there seem to be less focus in SMEs about becoming integrated, both internally and externally. The overall conclusion of this work is that there is a need to discuss the design of integrated tools, which could leverage both operational and strategic use of inter-organizational information systems in order to avoid increased maintenance cost and coordination costs in future cooperation between companies.

- Patterns of information exchanges in small firm relationships are dependent on human intervention in which trust, commitment and confidence is established. However, e-mail and telephones can be used for more simplified matters in social exchanges. Business information exchanges could in the relationships that this research investigated be mediated by different technologies. Internet based technologies such as E-mail, Web-ordering systems, and Web-project management tools are interesting to small firms. These types of communication technologies facilitate the information exchange between firms and these systems are also financially bearable for the small firms.

- Small inter-firm relationships may be socially aligned with each other by creating understanding of proprietary information, i.e., business transaction related information Small firms that collaborate may also be aligned if they share interest in the development of the production efforts. Small inter-firm relationships may also be aligned if they realize the importance of creating a culture that facilitates open exchange of information.

- The coordination of information in small firm transactions may be done by the use of an approach that define and monitor the information that is being exchanged in several different business contexts. If used, the approach will steer...
the view of the managers, or other responsible actors for that matter, on to the specific documents with transaction contents that actually is the information *per se*. In this way, better understanding for how the information exchange is related to the firm’s business activities will be accomplished.

- Relationship constructs such as cooperation, coordination, and communication can be used to differentiate firm relationships in terms of information exchange. Cooperation is a social task and coordination is a transactional task and these two areas differ in terms of information structure, and also, communication of information has to be mediated in some way. Presence is a concept aimed to describe alignment from the comprehensions of the information being exchanged which aims at ensuring that parties comprehend the meaning of information being shared. Formality in business transactions means that the information being shared is structured and predefined and need to be coordinated. Mediation as a concept aims at supporting transactions and relations. Mediation of transactions is state-of-art today but mediation in relationship and socialisation activities is yet to ascertain in social settings of different network relationships. In terms of use of technology it is important to identify what the contextual dependencies are and especially what type of information exchange should be supported by technology.

The research process have been guided by the idea that relationship alignment need to be considered with a view that differentiate between the social aspects in firm relationships, the formal transactional aspects of firm relationships, and the use of information technology as a mediator of information exchange between managers and between firms as a business units. The major lesson learned from this theoretical and empirical work is that work practices are differentiated in nature and that there is no single body of theory that can explain the relationship aspects in its whole. The managers of the small firms, at least in the relationship type of sequential and reciprocal type spent a great deal of their working hours to socialize with their business partners through regular meetings and sometime other social events. This dimension of the relation is virtually based on face-to-face communication and even some of the managers do not consider IT as a tool that would enhance the interaction. On the other hand the dimension business transactions contained IT support in the pooled and reciprocal relationship firms. Surprisingly enough, the firms in the sequential relationship do not use IT even if some of them supports internal transaction related activities with sophisticated IT. Using the terminology of Zuboff (1998), all of the small firms consider IT as an efficient automator of the transaction process, even if they do not realize that automation, if being efficient, need to manage the whole chain of transaction activities. The other aspect that Zuboff (1988) discuss is how to empower people to enact with the use of
technology as an informative tool is not realized in the firms that this study is concerned with. Some attempts to use electronic mail is observed in the IT consultancy firms of this study but the information richness in electronic mail are considered low and therefore human interaction still rules in these small firms.

The information exchange situation in small firms may be explained as being highly focused on flexibility (allowing choices) and standardization of business activities. As we know from IS research IT can be used as a tool that support human agents in organizations, for example, the concept of mediation by Ciborra (1993), however, in the small firms of this study this is not realized and may depend on level of information richness that only social integration can provide. Still, not even electronic mail cannot match the human interaction with its different types of expressions, for example, voice, body language, and sensitiveness towards other human acts. The choices that small firms are concerned with is not only focused on selecting the best supplier or project partner, but also the process of harmonizing with each other contains great amount of choices of, for example, meeting procedures, deliveries, possibilities for taking on another firm as an resource in the ongoing activities, etc. The transaction dimension is far more easily handled in small firms as they quickly identify the need of supporting tools for common transactions. In this dimension small firms adopt to standardize IT and also they rely to great deal of the partners’ knowledge of IT. This situation is excellent depicted by Dahlbom and Mathiassen:

A bureaucracy is like a computer, it is a powerful expression of mechanistic ideals. A bureaucratic organization is programmed, its work tasks are explicitly defined and formalised. It is a machine in which computing machines have their natural place, providing efficient processing and communication of information about products, activities, and resources.(Dahlbom and Mathiassen, 1993:16)

Can small firm relationships then be categorized as a bureaucratic organization? My conclusion is that they could actually, because in one perspective they exhibit high level of formality and pre-programmed actions in activities. At the same time, from an organization point of view the small firms in my study could be seen as flat organizations and in some cases entrepreneurial oriented. I believe that this has to do with the interest in small firms to maintain flexibility for actions and procedural incentives in transactions because they want to have automation in the core activities of the business and freedom in the strategic management of the firm. This corresponds to the reasoning by Kallinikos (1992) of deliberate choice and standardization and also the general assumption that small firms are managed in a personalized style (Storey, 1994).

Specific conclusions are also drawn in respect to the research question stated in chapter one. The ambition was to theorize on how relationship alignment could be
expressed by identified concepts from the papers included in this thesis. The concepts are: presence, formality, and mediation.

**Presence**
Presence is in this thesis seen as the process of social activities in firm relationships that contains exchange of social information. I have reasoned on personal chemistry, social identification, and social integration as means to encourage the establishment, maintenance and evolvement of social relations. These relational facets are acknowledged by social exchange theory, and may constitute presence in the relationship between firms, as the body of theory especially supports the idea that it is individuals in small firm relationship that embodies social information exchange. Also, that is in this context that trust, commitment and ambition to the well-being of the relationship nurtures common action and activities among participants of the relationship. The conclusion here is that social exchange theory explains how it is possible to express the individual oriented facet of relationship alignment.

**Formality**
Formality is in this thesis seen as the contractual regulation of formal flow of information in transactions between two parties. Regulation of business transaction by the means of a contract stipulates the factual data that will be transferred and processed between parties. This information exchange create inter-dependency between parties that need to be coordinated. A common approach for transaction coordination is by the use of a business transaction framework. Such framework stipulates the attribute of a transaction fulfilment process. Paper 4 argued for an addition to such a framework that accounts for the information exchange perspective as a transaction coordination mechanism. The conclusion drawn here is that the body of relational exchange theory acknowledges the formal aspect of business transactions and thereby is a candidate to explain relationship alignment in the transaction context.

**Mediation**
Mediation is in this thesis seen as the concept that supports and enables management of information exchange between two parties in a firm relationship. Furthermore, mediation is a concept that should account for socialization aspects of a relationship, i.e., how presence between participants is established, and also how efficient business transactions can be carried out. From an information systems theory perspective this situation may be described as, on the one hand dealing with a social system and on the other hand coping with a technical system. The information exchange systems structure that is required for mediation need to ensure the credibility and interpretability of social oriented information as well as factual data, i.e., formal messages. This research
concludes that information systems theory acknowledges the socialization aspects as well as the transaction aspects of small firm relationship alignment.

Some thoughts also aroused when addressing the result of the papers in the cover section of the thesis, thoughts that are concerned with the specifics of alignment issues and small firm categorization.

Alignment pathologies
Sauer (1997) mention three different states of pathologies that IT alignment is concerned with: stagnation, conflict, and confusion. Stagnation occurs when IT finds itself unable to develop in a way that serves the business. And the stagnation occurs through cyclical effects, through deliberate policy, and as an unintended by-product of business decisions.

In the case studies that informed this thesis this was not identified per se. The matter that could be coupled to this pathology is the matter of integration between the information systems used in the relations with the business partner and the internal information systems. The lack of integration between these two domains could eventually, as more linkages may be IT supported, cause stagnation to some extent but as this study was concerned with one relational link between two firms the gap between the domains were not evident to signal any tangible deficiency in the management of information systems.

Conflict occurs when firms’ businesses are global oriented but local identity is priority. This combination of local business autonomy and global conformity implies a conflict in strategic alignment. From an information exchange perspective, conflict between global and local identities is not evident due to the willingness of the firms to negotiate for the choice of certain technology to use. In one case site though, the specific technology solution was selected by the large buying organization but as the supplying small firms relied on transactional information flow with predefined structured information, conflicts did not occur.

Confusion in alignment occurs when economic infrastructure, social and cultural values, organizational culture, and personal readiness to accept IT all influence the efficacy of technology transfer and make global alignment a multicultural issue with many dimensions rather than a single dimension of business alignment.

The value of IT in the eye of the managers in the small firms differed in terms acceptance of technology as something else than support to the business. The firms in the pooled relationship consider IT to be best compared with other in-house resources, such as, plumbing and air conditioning facilities. The firms in the sequential type of relationship focused explicitly on in-house activities supported by IT. Some of the firms in this relationship type wanted the work staff to actively use IT as a means to follow up on production and prognoses by reports
based on the information flow. The firms in the reciprocal type of relationship valued IT extremely high as an enabler for enacting in the relationship. However, confusion is not an occurrence in the relationships as contracts are used as a regulator of the business commitments. Certainly, all firms had experienced occasional confusion when unclear decisions for a certain transaction were made but the understanding of the importance for the other party as a supplier or project associate overruled confusion to be a permanent condition.

Small firms and information technology in the relationship context.
Levy, et al. (2001) suggested categories for the small firms’ use of information technology:

- Efficiency firms, virtually all firms in the case studies could be categorized as efficiency firms with the motive that they focus on internal processes to great extent and also that long-term agreement are made with business associates. However, the firms in the pooled relationship type with the buy and sell structure are more oriented to internal matters as the relationship to the customer is merely a channel of information transfer.
- Coordination firms, the firms in the sequential type of relationship, i.e., manufacturing firms can be put in this category as they used e-mail and telephone to improve the effectiveness of transactions with the business associate.
- Collaborating firms. An interesting issue arise when trying to identify firms from the case study into this category. Basically the firms in the pooled relationship are the ones that use sophisticated IT relatively to their level of knowledge and interest of IT matters. The third party Web-ordering system is from a use perspective much more sophisticated than the internal accounting systems in these firms due to fact that the Internet technology still is considered to be a “stranger” in the IT infrastructure of these firms.
- Innovation firms. In the IT consultancy firms joined together in the reciprocal relationship type, information technology is a tightly woven part as they together develop customer adapted solutions.

With the result of case studies that informed this thesis it is not easy to distinguish that the firms belong to one of the categories above. My conclusion is that the study done by Levy et al, (2001) aimed to generalizations of information technology use and that my study with focus on social and business exchange reveals that firms are in some respect efficiency oriented and in some respect collaboration oriented. Now, it should be said here that my ambition is not to strive for explicit belongingness to a certain category for the case study firms, but instead show that my study opens for further investigations as it seems to be difficult to establish a categorization. In terms of the rela-
tionship strategies that Fuller and Lewis (2002) discuss, this study find that all firms follow the personalized relationship strategy with one exception and that is one of the supplying firms in the pooled relationship. This firm relied entirely on the contract relationship strategy. All firms, to different extent and with the one exception, expressed the importance on personal chemistry for the sustainability of the relationship.

**Final note**

Considering the differences in information exchange in terms of types of information that is used in small firm relationships I finally conclude that relationship alignment is utterly dependent how we as researchers can distinguish between social activities, business activities and the contingencies of information technology support to such activities. Returning to the model for relationship alignment that was introduced in chapter four, I believe the theoretical foundations that I have used in my discussion of a possible way to articulate relationship alignment between small firms explicitly well expresses the socio-technical dependency that comprise small firm relationships.

Specifically the distinction between ‘the socio’ and ‘the technical’ is depending on the differentiation of information types that is used in the different kinds of exchanges that the small firms in this study carries out. An interesting final observation as a result of doing this theoretical and empirical work is that both theory and practice under estimate the significance of the nature of information and its role in what can be called multi-contextual firm environments. I find it obvious that literature take information for granted and have replaced the information with the abstraction of technology or perhaps rather, communication by technology. In practice the same dilemma is supported by IT vendors who supply firms with new releases of software on a regular basis. In research this is of course a deliberate choice when specifying the unit of analysis in a certain investigation. However, I believe that relationship alignment may be understood by contextually bound information as a clearer view of the inner properties of information exchanges in a relationship will be gained.
7 Further research

The research activities concerning small firm relationship does not end with the research conducted in this thesis. The area of information, information technology, business transactions, and social relations need to be further investigated in order to develop knowledge of a number of issues in small firm relationships. In essence there are two major issues I consider critical for the understanding and knowledge development of relationship alignment between small firms. It became obvious to me during the field work and analysis of the small firm context that the gap between human and technology in terms of pursuing flexibility in action and the use of IT applications clearly will hamper alignment achievements in the contexts I have studied. Forthcoming research need to address the knowledge level regarding the balance between the need for being innovative in action of the business and the prevailing view of IT solutions only acting as an automation support to action in small firms. That is one important step to take in research if researchers would consider implementation issues of research results within small firms.

Also, the focus of this thesis, the conceptualization of relationship alignment need to be further investigated in other relationship contexts as well as in other industries. I believe that the area of concern in this thesis also would benefit from studies that are based on other theoretical knowledge than this study have used. This study has relied on information epistemology in a socio-technical context with a differentiation of relationship obligations in the inquiry of small firm relationships. By using other theories, for example, actor network theory (ANT) and other research methodology as well, future research may identify other relevant aspects, beside social integration, transaction coordination, and the information exchange structure that may further the exploration of relationship alignment.
8 Summary of the papers

The five papers are briefly summarized below.

Paper 1
“Inter-organizational relationships and inter-organizational information systems in small and medium sized firms”, Published in Proceedings of the 26th Information Systems Research Seminar in Scandinavia, Borgå, Finland.

The aim with this paper is to survey the use of inter-organizational information systems in small and medium sized firm relationships. This paper is based on a questionnaire that was sent to 100 Swedish SMEs in three different industries: manufacturing, service and food industry. The paper is about strategic and operational information systems and the contexts for information systems use is in cooperation which is considered as the strategic context, and coordination which is the operational business context of the SMEs. The result of the paper shows that firms in the service sector are most keen to adopt to strategic information systems whereas firms in manufacturing and food industry adopt operational information systems. This paper served as an idea generator for the following papers in this thesis.

Paper 2

The aim with this paper is to conceptualize information exchange by the patterns that small firms employ for technology based communication with external business partners. The paper builds on information theory and especially different types of information. The empirical study shows that different types of information are being used for different purposes. The main point made in this paper is that socialization between humans requires the use of information that is of explanatory and evaluative character in order to commit to joint social activities, and that transactional exchange needs the support of descriptive information which is easily transferred by IT.

Paper 3
“Small Inter-firm Cooperation: Aligning Social Information Exchange”, Published in Proceeding of the 6th International Business Information Management Conference, Bonn, Germany.

The aim with this paper is to extend the alignment tradition in IS research with its focus on strategy issues by exploring how small firm managers socially interact and how
they exchange information in order to build and maintain the relationships with other firms. The concept of cooperation as a theoretical construct is the base of this paper and the study in the paper investigates cooperation between small firms and identify that there are differences in the information that the firms exchange. Buy/sell relationships are mostly concerned with exchange of pre-determined information such as, Item number, orders and invoices. Manufacturing firms exchange both predefined information but also exchange social information that is of unstructured character.

**Paper 4**

Addressing Formality: A Conceptualization of Information Exchange Coordination in Small Firm Transactions”, *Published in Proceedings of the 7th International Business Information Management Conference, 2006, Brescia, Italy.*

This paper focus entirely on the transaction dimension of a firm relationship and especially how transaction information can be coordinated between small firms. In this paper I present and criticize two well known transaction models and highlight some of the shortcoming these models have in terms of dealing with information per se. I addition to the generic models I suggest an approach that explicitly deals with how information is penetrating the firms and how this approach can be used to coordinate the information flow between firms. The case studies that are conducted in this paper are the same as in paper two and three.

**Paper 5**


This paper is a theoretical paper and aims at conceptualizing the result of paper 2-4. The paper is a critique towards traditional IT alignment and its shortcomings in terms of addressing social issues primarily, but also that the cumulated knowledge in IT alignment research builds on mechanistic and quantifiable measurements that don’t account for human relations, transaction coordination and mediation of information by the use of technology. The result of this paper is the differentiated view on relationship alignment that I focus my discussion in the thesis on. The precise result in the paper is (1) the acknowledgement of a shared understanding of the environment for the relationship in order to facilitate comprehension of the meaning of information exchange content (2) the acknowledgement of the structured style of performing transactions and the information is context bounded to the actual transaction (3) the acknowledgement of information technology as a means to facilitate socializing and automation efforts.
but also the importance of understanding the contextual dependencies of socializing and automation in order to use appropriate technology.
References


Ward J. and Peppard J. (2002). Strategic planning for information systems, Wiley


Paper 1

Inter-organizational information systems and inter-organizational cooperation

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Published in Proceeding of 26th Information Systems Research Seminar, Borgå, Finland, August, 2003.
Inter-organizational information systems and inter-organizational cooperation

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Abstract

Considering the growing importance of information technology in improving business performance this paper examines the level of IS usage in industrial cooperation in Swedish organizations. The paper reports the result of a survey that shows the use of inter-organizational information systems (IOS) for communication, coordination and cooperation in relationship to exchanges in inter-organizational relationships. IOS are being used primarily for operational benefits. However, this study also shows that firms’ strategic business perspective (e.g. in e-commerce and joint product development) now has reached the level where information systems operate. The majority of the respondents felt that IT would become a dominant form for developing and maintaining cooperative relationships.

Keywords: inter-organizational information systems, inter-organizational relationships, cooperation, coordination and communication.

Introduction

Inter-organizational relationships mediated through IT and inter-organizational information systems (IOS), preferably EDI systems, emerged in 70th and 80th with the distributions of transactions over private networks (Walton 1999). Inter-organizational relationships, which could be alliances, partnerships or supply chain relationships, are a fact of life in business today (Moss Kanter 1994). That implies that organizational boundaries are blurring and partnership with clients and competitors are commonplace, and quality and efficiency issues extend well beyond traditional enterprise boundary (Konsynski 1993). Organizations who seek for operational efficiency and competitive position are looking beyond traditional boundaries for cooperative arrangements. This is achieved through information interchange relationships, electronic linkages across organizational boundaries (ibid.).

A field where the competitive advantages are highlighted is supply chain management, which is fueled with the growth in business-to-business e-commerce (B2B) between companies (Premkumar 2000). B2B e-commerce and other forms
of cooperative arrangements and information exchanges that exist in various forms of activities between companies is a common thing in organizations of today (Senn 2000). Such organizations also show a great interest in modern information technology which can be used in exchanges at different levels of inter-organizational relationships. The use of inter-organizational systems are a direct result of the growing desirability of interconnecting business partners to streamline processes like reducing the cost of routine transactions, collapsing cycle time in the fulfilment of transactions regardless of geographic distance, eliminating paper and inefficiencies associated with paper processing and creating application-to-application processes between buyer and seller. (ibid)

The purpose of this paper is to investigate the role of inter-organizational information systems in cooperative arrangements between firms. The empirical part contains different kinds of cooperative arrangements like e-commerce (B2B), service development and distribution. In those arrangements different types of exchanges occur in order to achieve agreed goals and thereby sustain the relationships.

The exchanges that this paper builds on are; social-, business- and information exchange (Johansson and Mattsson 1987). Further, it relies on the levels of sophistication of inter-organizational information systems proposed by (Premkumar 2000). Finally, the types of exchanges and sophistication levels are linked to different types of inter-organizational information systems which Senn points out. The empirical work is based on a pilot study survey in selected Swedish companies which exist in inter-organizational relationships.

The work is based on theories in inter-organizational relationships (IOR) and inter-organizational information systems (IOS). The empirical work consists of a survey which encompasses 90 companies in manufacturing, service (consulting/insurance firms) and the food industry in Sweden.

Methodology and research question
As mentioned in the introduction part of the paper, the survey is a pilot study, which will be used as idea generator for future case studies with selected organizations. A survey is appropriate to use when gathering data from a larger population which is geographically spread (Trost 2001). A questionnaire was developed and sent to a sample of 90 Swedish organizations. The sample organizations was selected from a company register in the municipal of Luleå in the northern part of Sweden and include organizations in manufacturing, service industry (consulting/insurance firms) and food industry, all of them with a number of employees from 50 and more. A total of 50 questionnaires were returned.

The main objective with the survey was to capture the status of cooperation mediated by information technology and the respondent’s subjective opinion on the amount of computer mediated cooperation with other companies, i.e. to what
extent has the cooperation changed in the last 5 years and what is the situation today. The respondents could choose between answering alternatives, ranging from – very much so, to not at all- with, to some extent in between. The respondents were asked to give their subjective view on the matter of how information technology is expected to change their cooperative structure in the next 5 years.

Of the respondents, 56% worked in manufacturing firms, 20%, in the service industry and 24% in the food industry. Those who answered the questionnaire held a position as IT managers, with responsibility for IT-investments, IT-development and IT-strategies.

**Research question**

This paper is based on two questions:

1. What types of inter-organizational information systems are being used in industrial relationships?
2. How are the inter-organizational systems used in the relationships?

Question nr. 1 is merely a marker of what kinds of systems are being used in practise and to show the use of various kinds of systems which enables and/or constraint firms in the actual cooperation with another firm. Question nr. 2 are supposed to highlight enabling factors and constraints in connection with the use of inter-organizational information systems in the relationships.

**Analysis**

The analysis will be based on a model of interactions in industrial relationships (Johansson and Mattsson 1987). Especially the three kinds of exchanges discussed in the model that is related to bonds and dependencies will form one of the legs for discussing the result. The other leg is the classification of inter-organizational information systems, cooperation, coordination and communication (Premkumar 2000). These will be combined and related to each other and form the analysis tool for the survey result in this paper.

**Inter-organizational relationships**

In industrial networks, suppliers and customers establish, develop and maintain lasting relationships with each other. Such relationships are significant to participants. They may reduce costs of exchange and production; they may promote development of knowledge of respective parties; they may give the parties some control over each other; they may be used as a bridge to other firms; and they may be used when mobilizing partners against third parties. (Johansson and Mattsson, 1987)

This implies that firms are prepared to interact with each other and expect each other to do so. Johansson and Mattsson (1987) Two separate, but related, types of
interaction, exchange processes and adaptation processes that constitute the dynamic aspects of relationships are distinguished (ibid) figure 1.

![Figure 1. Relationships and interactions in industrial networks (Johansson & Mattsson, 1987)](image)

Exchange processes are where relationships arise from among parties. The way parties mutually demonstrate respect to each other’s interest is an important aspect of the exchange process. Johansson and Mattsson describe how a relationship evolves in the social context: “Social exchange relations evolve in a slow process, starting with minor transactions in which little trust is required because little risk is involved and in which both partners can prove their trustworthiness, enabling them to expand their relation and engage in major transactions” (ibid 1987:37).

Engagements in social exchange involve elements like sharing knowledge between humans and ability to maintain and administrate commitments over long period of time. It also involve activities like planning for cooperation and focus on goals in the relationship.

Nyberg discuss the business exchange process and divides it into; business information and general business information. The former encompasses information exchange about product properties like price, quality, dimensions, etc (Nyberg 1997). The latter is concerned with information exchange for the creation of long term relationships, for example investment in common computer-based systems. The exchange process implies that parties test how well they fit each other (Johansson & Mattsson 1987).

Business exchange is the match of buyers and suppliers to facilitate transactions between the two. It also includes a technical and institutional infrastructure that supports the transactions. Business exchange operate throughout the industrial relationships (e.g supply chains), facilitating everything from the acquisition of raw materials to the sale of finished goods.

Information exchange is the very flow that supports both the social and the business exchanges. According to Ward and Griffith (1996) that flow can be divided into operational and strategic information exchange.
Operational information typically encompasses short term quantitative information about on daily sales activities or status information on orders and inventory levels. In contrast, strategic information covers long term issues related to the companies other business strategies. This long term qualitative information is used to improve cooperation among partners in inter-organizational relationships. It is then used for planning future practices based on upcoming strategy changes.

Adaptations are important for at least three reasons. First, they strengthen the bond between firms. A supplier whose products are modified to fit a specific customer need becomes dependent on that customer. Vice versa, a customer may be dependent on a specific supplier by adjusting the production process to fit a supplier’s capability. The dependencies may be mutual, but are not necessarily so; it may be assumed that they are more or less asymmetrical in the sense that one party is more dependent on the relationship than the other. Second, reinforcements of relationships through adaptations make them more endurable, which in turn mean that disagreements, as a rule, have to be handled within the framework of the relationships. Third, adaptations are important because they indicate that there is some space for change in the relationships; everything is not given once and for all; rather the parties can adapt to fit each other better. Nevertheless, there are limits to those adaptations, as all adaptations are a kind of investment. The investment has to give some return, which limits the total space for change. (Johansson & Mattsson 1987)

Finally, interaction creates adaptations in attitudes and knowledge of the parties, that is, a mutual orientation develops. This mutual orientation is manifested in a common language regarding technical matters, contracting rules, standardization of processes, products and routines. Less overt aspects of the mutual orientation may involve views on business ethics, technical philosophy and handling of organizational problems. An important aspect of the mutual orientation is mutual knowledge; knowledge, which the parties assume each, has about the other and upon which they draw in communicating with each other. This mutual knowledge may refer to resources, strategies, needs, and capabilities of the parties and, in particular, to their relationships with other firms (ibid).

In this paper, the main focus of interest is the exchange processes. In such processes we will find elements like, investments, bonds and dependencies. Today, in the complex environment that companies exist in it is impossible to say that any of these exchanges and elements alone is exclusive for success in the relationships.

Inter-organizational information systems

Through inter-organizational information systems, buyers and sellers arrange for routine exchange of transactions without the necessity of direct negotiations (Senn 2000). Information is exchanged over communication networks using prearranged formats
Senn, among others, identify the five most prominent types of inter-organizational information systems. They are:

- Electronic funds transfer (EFT). Automated exchange of money between parties in a commercial transaction.
- Electronic forms. Online completion and transmission of forms, for example, claims forms and contracts, routed to appropriated in-house destination for proper handling.
- Integrated messaging. Delivery of electronic mail and facsimile documents through a single electronic transmission system; it may include the combining of EDI and electronic forms for transmission.
- Shared databases. Information stored in repositories shared between trading partners and accessible to both; such databases are often used to reduce elapsed time in communicating between parties as well as to arrange cooperative activities. 

Additional types of systems are systems for supply-chain management (Turban, et al., 2002). These are systems for operational-level planning. Focus is short-range planning, which involves production scheduling at all plants on a day-to-day or hour-to-hour basis. These systems also support the tactical-level planning phase which involves supply planning, which primarily includes the optimization of flow of goods and services through a given network. Decisions at this level include which products must be produced at what plants in what quantity and which suppliers must source raw materials and sub-components. Additionally the systems supports strategic-level planning for supply-chain network design, which determines the location, size, and optimal numbers of suppliers, production plants, and distributors to be used in the network.

Premkumar (2000) categorizes inter-organizational systems into three different levels of sophistication for inter-organizational systems: communication, coordination and cooperation. At the first level inter-organizational systems can be used for electronic communication of messages between trading partners. At this level, firms are substituting paper, phone or fax modes of communication for computer-to-computer communication. Communication can in the same way as the earlier property of information exchange be divided into operational and strategic information exchange. It can therefore be supported by both; typical IOS’s used for coordination (i.e EDI systems) and tools for strategic communication based on purposes with implementation of IOS’s. A simple example of tool used for strategic communication is E-mail systems. Communication requires interaction and contains, besides communicative actions, an information aspect. Meaning that;
actors always communicate about something, irrespective if the actor is a human being or a computer.

The second level of sophistication is coordination, in which computer-to-computer communication is integrated with the internal systems. An order from a customer is automatically entered, after routine validation, into the order processing and production planning systems of the organization. This is achieved with electronic integration, using systems for electronic data interchange. An electronic linkage throughout the relationships requires coordination activities to be successful. Malone and Crowstone (1994) define coordination as follows: Coordination is managing dependencies between activities. Coordination, in terms of IOS implementation usually means the integration of systems in various functional areas in order to have effective flow of information in for example the order fulfillment process.

The third level of sophistication is cooperation, where two business partners share common goals and use similar performance measures to evaluate the performance of their inter-organizational activities. Cooperation can occur over a wide range of levels, spanning many functional areas within the organization. For example, firms can use common repositories for blueprints in construction project or share product information in joint product development projects. Reaching this level requires explicit human-to-human interaction and to maintain this level it is possible to use different communication systems such as different groupware systems. On the other hand, cooperation in specific business processes can benefit from sharing possibilities in IOS’s, for example Extranets. As Bensaou (1997:108) puts it,

“The key role for IOS’s is to increase information processing possibilities of a relationship”.

Further, considering the two folded situation in exchanges Argyres (1999) studied the Stealth bomber development project and concludes that IOS contributes to standardization of communication by the use of “technical grammar” between projects members and can be used as a coordination mechanism. This is supported by Melin (2002) who states that coordination and communication are interlaced through the way that actors interact with the means of a common language.

The categories proposed by Premkumar (2000) imply that there is a hierarchal dependence between the three levels of sophistication. Communication can exist itself but need coordination to be meaningful. Cooperation which involves social aspects and respond to overall and long term goals in organizations cannot sustain without the underlying levels of coordination and communications.

Result
This section provides the result of the survey.
Q1 - Current level of computer mediated cooperation
The overall picture of use of IOS for cooperation is that a high degree of use is in majority among all firms. In manufacturing firms, though, a greater variety in the use of IOS for cooperation is noticed. 45% of the respondents report a limited use of IOS for cooperation. The difference in use seems to correlate strongly to the multitude of information technology in the firms. Those companies with implementations of several information systems for their business report a greater use of them for cooperation.

Q2 - Types of information Systems
The types of information systems that were presented in questionnaire as fixed alternatives and the chosen alternatives seemed to have relevance for practitioners as very few of them reports use of other types of information systems, table 1. The intention of presenting the matrix is merely to show what kind of systems that are being used for cooperation and where the focus is in the three different industries.
In the service sector 22% of the respondents reports use of other types of systems, and to summarize these systems are different kinds of main frame based systems and client/server applications.

<table>
<thead>
<tr>
<th>Categories of systems</th>
<th>I-O Systems</th>
<th>Manufacturing</th>
<th>Service</th>
<th>Food</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cooperation</td>
<td>Extranets</td>
<td>28%</td>
<td>55%</td>
<td>33%</td>
</tr>
<tr>
<td></td>
<td>Shared DB</td>
<td>35%</td>
<td>100%</td>
<td>33%</td>
</tr>
<tr>
<td></td>
<td>Search DB</td>
<td>18%</td>
<td>77%</td>
<td>33%</td>
</tr>
<tr>
<td></td>
<td>CAD/CAM</td>
<td>53%</td>
<td>33%</td>
<td>8%</td>
</tr>
<tr>
<td>Coordination</td>
<td>EDI</td>
<td>35%</td>
<td>11%</td>
<td>75%</td>
</tr>
<tr>
<td></td>
<td>Production control systems</td>
<td>57%</td>
<td>-</td>
<td>16%</td>
</tr>
<tr>
<td></td>
<td>DSS</td>
<td>21%</td>
<td>33%</td>
<td>60%</td>
</tr>
<tr>
<td></td>
<td>Workflow systems</td>
<td>7%</td>
<td>33%</td>
<td>8%</td>
</tr>
<tr>
<td></td>
<td>CRM systems</td>
<td>21%</td>
<td>66%</td>
<td>33%</td>
</tr>
<tr>
<td></td>
<td>Message handling systems</td>
<td>42%</td>
<td>66%</td>
<td>41%</td>
</tr>
<tr>
<td>Communication</td>
<td>Communication systems</td>
<td>18%</td>
<td>33%</td>
<td>8%</td>
</tr>
<tr>
<td></td>
<td>E-mail</td>
<td>100%</td>
<td>100%</td>
<td>83%</td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>3%</td>
<td>22%</td>
<td>-</td>
</tr>
</tbody>
</table>

Table 1. Types of information systems in three industry sectors
Q3 - Level of change in cooperation since 1995
It is only companies in service- and food industry that reports an increased change in cooperation. These companies have applied industry platforms defined as cooperative, for example EDI systems, shared DB’s, and CAD systems and Extranets.

Q4 - Communication between business partners
A complete substitution from phone or fax modes of communication to computer-based communication has not been the case amongst firms in the survey. The vast majority use combination of modes, i.e., physical mode, phone and fax modes and computer-to-computer mode.

Open question answers
The survey ended with an open question where the respondents could give their view on the changing possibilities in relationships based on IOS’s. The following answers summon up many of the respondents view:

“Common investments in order to have cost reduction and increase availability of information”
“IT will bring up new business possibilities”
“Better ways to communicate with, and establish new business partners”
Analysis
Based on the hierarchy between the levels of sophistication we can map the exchange processes with different types of inter-organizational information systems in an ideal manner, table 2. One kind of IOS’s can exist in more than one level due to levels of investments and maturity in organizations. Another important factor is in what purpose information is being used between organizations. The purpose differs in terms of operational and strategic structures of exchanges. The use of IOS’s for the tactical dimension was not well reported by the respondents and thereby it is left aside in the analysis.

<table>
<thead>
<tr>
<th>IOR processes</th>
<th>Levels of sophistication</th>
<th>IOS types</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social exchange</td>
<td>Cooperation</td>
<td>Extranet Communication systems</td>
</tr>
<tr>
<td>Business exchange</td>
<td>Coordination</td>
<td>EDI systems Communication systems</td>
</tr>
<tr>
<td>Information exchange</td>
<td>Communication</td>
<td>EDI systems Mail systems</td>
</tr>
</tbody>
</table>

Table 2. fit between IOR processes and IOS types.

Q2 - Types of information Systems
Using Premkumars categories for inter-organizational systems, we can see that firms have systems in all three categories, communication, coordination and cooperation (table 1). For cooperation the firms use systems like, shared databases, CAD/CAM systems and Extranets, which are systems with possibilities to share and provide information between organizations. An extranet application can prove useful by providing such information as product specifications and designs, schedule changes, team rosters and individual areas of responsibility. Communication between organizations is maintained, apart from e-mail system, with other kinds of communication systems, for example systems that support virtual meetings. The reminder here is that systems can exist in all three categories due to the earlier mentioned purpose in which the systems are used. For example, Extranets can extend cooperation and be used for coordination by the integration to in-house systems and execute an order fulfilment process. Extranet applications for customer relationship management (CRM) can also have an impact on the quality of internal and external communication.

Q3 - Level of change in cooperation since 1995
One possible reason for the difference in progression of change could be that manufacturing has a long history in business and adoption of new technology can be grounded in conservative structures in this sector. They have constructed workable and functional structures of work tasks over a long period of time and a change in the structure
will bring about expensive investments in technology, which in turn undoubtedly will lead to high educational costs and so on.

Q4 - Communication between business partners
It is important to remember the complexity of communication (Hultgren 2000). Dependent of the arrangement of obligations in the business different modes of communication will be preferred. For example, computer-to-computer communication for collection of EDI messages is more likely to happen than computer-to-computer communication about planning and decisions about business prospect. To develop prospects, maturity in the relationship is necessary. The success is dependent on the interpersonal interaction behavior. This is the area where Johansson and Mattssons (1987) concept of social exchange is applied. According to the types of inter-organizational information systems which Senn (2000) reports, there is no support by those types of systems for interpersonal interaction. Companies report that they have to use other kinds of systems for example, desktop conferencing tools for overall strategic discussions. E-mail systems are also used for such activities.

Open question answers
According to Johansson and Mattsson (1987) the bonds in the relationship will become stronger by more and closer information exchanges with firms. The type of information that is subject for business exchange is information about product specific properties like, price, quantity, capacity, etc. This is where operational types of IOS’s are being used for daily coordination. A priority for long-term relationships can also be observed as firm’s makes common investments in, for example, technology for production control.

Conclusion
Companies in all three industry sectors in the survey reports a great deal of IS/IT enabled cooperation but it is only among companies in service- and food industry that an increased change in cooperation has occurred. These companies have adopted cooperative information systems, such as EDI systems, shared DB’s, CAD systems and Extranets.

Manufacturing firms seek for improvements in existing systems for managing the extended supply chain. For instance, efficient information sharing is extremely important in that context and it is obvious that much still remains to do in order to diffuse correct information and to know where the information is located. It is interesting to see that companies in service- and food industry take an interest in extending their systems platforms with tools for human to human interaction, meaning that they want to exploit their knowledge to more strategic use of IT. The challenge is to integrate those tools with existing systems to avoid increased costs of maintenance.
The study shows that use of IOS’s in the strategic dimension is increasing in social exchanges. In business exchanges the main purpose still is to gain operational efficiency. Information exchange processes are well covered of IOS’s in both operational and strategic dimensions. The overall conclusion of this work is that there is a need to discuss the design of integrated tools, which could leverage both operational and strategic use of IOS’s in order to avoid increased maintenance cost and coordination costs in future cooperation between companies.
References


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Paper 2


Author: Dan Harnesk

Abstract. Information exchange mediated by IT has been advocated in research as a crucial factor for successful business performance in small and large firms for many years now. However, most of the research has directed its focus towards the intra-organizational business-IT relationship, expected to ensure competitive advantage and firm performance. The extent to which research has considered that organizations face external issues is mainly strategically, adoptive and diffusion oriented. Thus, the research misses out on what types of information are being exchanged as a means to create sustainable collaboration between small firms. Therefore, this paper empirically investigates three different dyadic small firm relationship configurations in order to describe variations in information exchange. Identified patterns are in this paper defined as: “being there” and “doing it”.

Introduction
Exchange of information between firms is in research often covered from adoption and diffusion perspective of different technologies, for example, EDI systems (Chau and Hui, 2001; Premkumar and Ramamurthy, 1997; Ramamurthy and Premkumar, 1995; Iacovou et al., 1995), focusing on capability issues. Konsynski posit a more general view, pointing at the cooperative and competitive dimension of inter-organizational systems. These systems involve elements that transcend organizational boundaries, thus permitting shared applications across legal enterprise boundaries (Konsynski, 1993). Boundary spanning communication technology (Konsynski, 1993) that small firms easily adapt to is e-mail systems (Dandridge and Levenburg, 2000). The strategic dimension of information exchange is in small firms known as the capability to adopt internet strategies (Bode and Burn, 2002). Common and well known areas of internet application are: business to business (B2B) and business to consumer (B2C) relationships, or customer relationship management (CRM). These relationships can be facilitated with a wide range of technologies, for example, online data access, e-mail, EDI (Premkumar and Roberts, 1999). Such systems usually aim at improving automation with external business partners (Senn, 2000; Premkumar, 2000), and of specific firm operations (Zuboff, 1985). One example of automation is the use of information technology for support to structured activities (Powell, 1993), which involves information sharing among parties in, for example, the order process within supply-chains (Li et al., 2000). The Internet plays an important role in small firms for both automation and strategic related use of information technology (McDonagh and Prothero, 2000). Two
primary uses of Internet technologies in small business are the use e-mail for communication and the Internet to gather information for strategic action, and to execute EDI exchanges in B2B arrangements (McDonagh and Prothero, 2000; Dandridge and Levenburg, 2000).

Automation and strategy are general themes in research on information technology in small firms. However, Feeny et al., assert that, in inter-organizational relationships, information sharing may not necessarily include the technology function of the firms involved, but be limited to relationship between the parties—in the form of trust, commitment, or confidence (Feeny et al., 2003). Also, Henderson (1990) emphasizes the necessity to consider the context for partnerships. Henderson concludes that the relationship will sustain over time if participants’ are willing to pursue longevity, stability, and interdependence in the relationship (Henderson, 1990).

The main point addressed in this paper is that examination of information exchange should not only be done from the automation or the non-technical angle. Therefore, the purpose with this research is to explore the comprehension of information exchange among small firm managers and specifically how they facilitate the exchange of information in inter-firm relationships.

The research question in this paper is as follow:

What are the patterns of information exchange in small firm relationships?

The design of research question is based on Ciborra’s declaration that “the role of information in organizations must be explained within the context of exchanges” (Ciborra 1987, p137). This is supported by Davenport and Prusak who state that “contextualizing information is a powerful way to increase both the interest of an audience and the audience’s propensity to act on information in a certain way” (Davenport and Prusak, 1997, p122). This research addresses the context of exchanges, which in this paper is considered to be constituted by social interactions (Blau, 1964; Makoba, 1993), and business exchanges (Blois, 2002). Therefore the analysis in this paper will be based the on how social and business information are exchanged in small firm relationships.

The paper is organized as followed: First, the theoretical base which is important for the analysis of information exchange is presented, and that is information theory. Secondly, the chosen research approach is announced. Thereafter, the empirical findings and its analysis result and finally comes the conclusions drawn from the research together with a resulting discussion of patterns of information exchange.

**Information theory**

The concept of exchanging information evolves from two areas: information theory and communication theory. Information theory originates from the mathematic-
cal/statistical field and its view is primarily used in connection with telecommunication and databases to quantify and measure channel and storage capacity for information exchange and processing (Skyttner, 1996). Communication theory is traditionally concerned with the processes by which messages can be coded, transmitted, and decoded (Skyttner, 1996). As early as 1958, Ackoff conceptually defined communication saying that communication is purposeful if it changes the state in three different ways:

- Changes the probabilities of a choice – being informative
- Changes the efficiencies of a course of action- being instructive
- Changes the values of the outcomes- being motivated Ackoff (1958, p226).

This research, of course recognize and acknowledge the work in information-physics regarding issues such as, entropy, probability, and noise. However, in this paper the interest is directed towards modern use and structure of information exchange between organizations, and therefore the type of the information being communicated is the focal point of interest in this research. Information sharing is defined by Davenport and Prusak as “the voluntary act of making information available to others” (Davenport and Prusak, 1997, p87). With that focus of interest it becomes natural to think of how exchange of information can be facilitated between parties, rather than how the inner properties of information is constituted. In a small firm relationship information is usually communicated between parties by the purpose of reducing costs of routine transactions (Senn, 2000). One way to reduce costs of routine transaction is to automate, for example, the order fulfilment process. Zuboff use the term automate to demonstrate the employment of programs that mechanically reproduce human skill (Zuboff, 1985). The routine transaction information could be automated with the use of coordination-technology (Konsynski and Tiwana, 2004), for example, EDI-applications. This is also in line with Zachman’s definition of business subject entities, which is the aggregation of descriptions of the data that must be managed in the business environment:

“There may be generic redundancy but no specific redundancy: for example, ‘address’ is generically attributable to both customer and vendor, but specifically attributable to one and the other” (Zachman, 1982, p44).

In general, information is usually mirrored in information systems as variables of the information exchange process of business transactions. One example of that is the trade cycle for the order fulfilment process, which denotes a structured form of information exchange. This type of information is often referred to as descriptive information (Land and Kennedy-MacGregor, 1987). Descriptive information is information that is used in firm operations and also definable, such as, price, quantity, time-frame, orders and invoices, etc. and is executed in transactions. In other word, descriptive in-
formation is a description of the real world entities needed to be managed by a formal information system.

Not all information being exchanged by parties is structured and formalized (Uzzi, 1996). Examples of unstructured information in firm relationships are information that firm managers use when planning for joint activities among cooperating firms. For example, matters of ‘capacity’, ‘capability’, and ‘ambition to commit’ are attributes that are generically understood by partners, but also has a specific meaning to each partner in the business relationship. This type of information is often referred to as explanatory and evaluative information (Land and Kennedy-MacGregor, 1987). Explanatory and evaluative information is information that is future and planning oriented, and is not known or at least not always possible to predefine. This type of information is rarely made explicit and for example, norms, values, attitudes and subjective judgments are attributes that exemplifies this type of information.

As firm relationships have different structure of connection, for example, arm-length ties and social ties (Uzzi, 1996) there will subsequently be more or less equilibrium in terms of information meaning in the relationship. It is then a question of human presence in the relationships, and low social presence will make it more difficult to establish a shared cooperative context (Zack, 1993).

Social integration
Social integration is about the formation of a constellation that involves the development of integrative bonds that unite individuals in a cohesive whole (Blau, 1964). The unification of individuals depends on two types of attachments that can be expected to reward the relationship. Firms can be attached to each other by intrinsic benefits and extrinsic benefits. In the first case, the other firm as such is the source of attraction, while in the second, specific benefits the firm supplies is the inducement for associating with that firm. The intrinsic benefits are those that consider the relationship as an end-in-itself (Blau, 1964). Viewing the firm relationship from this perspective means that the level of commitment for the well-being of the relationship extends any other value of the relationship. Extrinsic benefits concerns the objective criteria comparing associates, choosing between them, and abandoning one in favor of another (Blau, 1964). The extrinsic benefits are judged on factual information and concerns, for example, the selection of a supplier to the firm, which is based on capability to deliver goods on agreed time frame. These two benefits are aspects for the feeling of connectedness between two business partners. Connectedness refer to the belief or feeling that a reciprocal relationship exist between two or more parties, involving an subjective judgment on the extent of the engagement the parties are concerned with (Shin, 2002). At the personal level in a small business relationship the feeling of connectedness is concerned with the non-technical angle of information exchange. This is due to the fact that small firms often have simple external information systems (Julien, 1998).
Transaction dependency

Any cooperative arrangement between organizations creates dependency in common activities (Thompson, 1967). Dependency between firms is studied in several research disciplines. In transactional theory (Williamson, 1995) dependency is viewed as a regulated agreement between firms. In coordination theory (Malone and Crowstone, 1994) dependency is viewed from a coordination of tasks perspective. In information systems engineering (Solotruk and Kristofic, 1980) dependency exists between subunits within information systems. Malone et al. (1999) identifies three basic kinds of dependencies: flow, sharing, and fit. These three types of dependencies arise from resources that are related to multiple activities. Flow dependencies arise whenever one activity produces a resource that is used by another activity. This kind of dependency occurs all the time in almost all processes and is the focus of most existing process mapping techniques (such as flow charts). Sharing dependencies occur whenever multiple activities all use the same resource. For example, this kind of dependency arises when two activities need to be done by the same person, when they need to use the same machine on a factory floor, or when they both use money from the same budget. Even though this kind of dependency between activities is usually omitted from flow charts, allocating shared resources is clearly a critical aspect of many management activities. Finally, fit dependencies arise when multiple activities collectively produce a single resource. For example, when several different engineers are designing different parts of a car (such as the engine, the transmission, and the body) there is a dependency between their activities that results from the fact that the pieces they are each designing need to fit together in the completed car.

The transaction dependency assign responsibility of a business transaction to specific units concerned with the transaction in the organizations, for example, sales and delivery in one of the collaborating firms and procurement in the other firm (Goldkuhl and Lind, 2004). Transactions are virtually always predefined and as such they are easy to formalize with the use of information systems.

Research approach and case study

This research utilizes a qualitative case study research approach since the research takes an interest in managers’ perception of information exchange issues in small firm relationships. The qualitative approach and the case study design are suitable as a means to provide rich insight and explanation for phenomena (Miles and Huberman, 1994; Yin, 1994). This research also delimited the unit of analysis to dyadic relationships. However, Whetten (1982) pointed at some analysis problems in doing research of dyadic relationships:

- Researchers are forced to work with very few degrees of freedom. When the unit of analysis is a network of dyadic linkages, many organizations must be
included in the study in order to obtain a reasonable sample size to validate the research.

- If the sample size is large, a respondent may be colored by all linkages when describing a single linkage. (Whetten, 1982, pp. 117-118)

According to Whetten’s (1982) reasoning, this research made a trade-off between sample size and linkage influence matters on respondents due to the fact that this research is explorative since most research on information exchange is intra-organizational oriented

**Case study**

The context for this research is three forms of dyadic relationships that follow Thompson’s, “interdependency” view on organizations (Thompson, 1967): Pooled relationship is a dyadic configuration with small firms and one large organization (supplier/customer). Sequential relationship is a supply/value-chain setting with supplying firms and buying firms. Reciprocal relationship is a loosely connected network between a numbers of firms.

- Pooled relationship is a dyadic configuration with two small firms and one large organization (supplier/customer). The supplier firms were food supplier and office supplier to a large municipal agency.
- Sequential relationship is a supply/value-chain setting with two supplying firms and two buying firms in manufacturing, i.e., two separate supply/value-chains.
- Reciprocal relationship is a loosely connected network with two IT consultancy firms.

The empirical data in this research was gathered, in the autumn 2005. The assumption was that inter-dependency would differ between different relationship structures. Subsequently, the information exchange would also differ, so, diversity was preferred when designing the research in order to gain broad understanding for information alignment issues. Two firms in a pure buy/sell relationship with a large organization, four firms in manufacturing with a supply-chain structure, and three firms in a more loose, but reciprocal connection were chosen. The total number of interviewed people was nine managers from the small firms and one manager from the large buying organization.

The empirical data was collected by using a case study approach with face-to-face interviews and telephone interviews. Semi-structured interviews were held with managers who are responsible for overall firm performance. The unit of analysis was the inter-firm relationships, which consist of exchanges of social in-
formation, aiming and planning and defining cooperative work settings for the firms, and also the actual business process between the firms.

The size of the small firms is ranging from 1 – 45 employees, and the firms market is local, national, and international based. The firms in pooled relationship strategically oriented their market efforts mainly to the local environment, but could consider expanding if opportunities arose. The supply/value-chain firms focused on the national and international market mainly. Finally, the reciprocal firms took all three market directions under their wings.

The framework chosen for the analysis, cognitive map analysis (Miles and Huberman, 1994) did, when applied to the empirical data help to create a structure of information exchanges between the firms. This structure was then used to make theoretical comparison in order to conceptualize the empirical findings.

Empirical findings
This section presents the empirical findings according to the style of exchange of information in transactions.

The pooled relationships
Firm A, in this linkage is a supplier of food to municipal school restaurants. Firm B, is a supplier of office materials to one large municipal organization (C). This was a pure buy/sell relationship with quantifiable amounts of deliveries of goods on a weekly basis. The municipal organization was not the only customer to firm A and B, but was the linkage in which electronic commerce was used. The structure for exchanges between buyer and seller was easily predefined as the large buying organization had intention to make procurement more efficient. In the large organization, internal systems integration was sophisticated by means of the management of the trade cycle.

The small selling firms did not have any specific IT strategies for the communication with the customer and they had rather different appreciation of strategic use IT. The creation of the relationship between the small firms and the large buying organization (C) was basically a requirement specification communicated to the small firms during few initial meetings. Firm A considered IT as any technical implementation and relied entirely on external IT support when IT trouble occurred. Firm B consider IT to be a strategic resource when the current owner established the business in the first place. Firm B explicitly expressed that the in-house IT system was required to support the trade cycle with any customer, whereas firm A, did not express anything looking like an IS strategy. The style of communication technology being used of both firms in relation to the large customer organization was a third party, Web-based solution for the order transaction, which kept down costs entering the E-commerce. However, in both firms there were no integration between the Web-ordering system and internal adminis-
trative systems. Manual work effort was required for the transfer of information, in order to support the mandatory accounting procedure. A general IT strategy in both firms are outsourcing of the systems maintenance because in-house responsibility was considered to be too costly financially.

The sequential relationship
Firm D is a manufacture of electrically sliding windows and firm E is a manufacture of customer adapted steel components. These two buying firms exhibit different style of managing the communication facilities in relation to suppliers. Like the firms in pooled relationships, the supply/value-chain firms did not have any specific IT communication strategy. The internal systems were at both locations considered extremely important as support to overall business management. Manual work effort was also required in these firms for input of information to internal systems, in order to support production of customer orders, and also the mandatory accounting procedure. The creation and maintenance of the relationship was supported by continuously repeated meetings in order to sustain harmony between supplier and buyers.

For the external input to the order handling E-mail and telephone was used. The suppliers had no specific strategy or technology for the relationship communication but follow the buying firm suggestions, which proposed the use of E-mail and telephone. There were no investments made in specific communication technology in any of these interacting firms.

In this network configuration this research identified that the downstream firms (D and E) had different procedures for internal management of IT. Firm C, the national market leader in its line of business have one person employed full time for IT management. The in-house developed IT system in this firm is a business systems that had been rebuilt and refined over the years and nobody else could be expected to manage the system. Firm D relied on outsourcing of IT management. Following a outsource strategy was considered affordable and attractive because the supplier take care of systems backups and systems upgrades, leaving the business to concentrate on internal manual information sharing improvements. This could concern the position of products in the value-chain, which the firm considered more effective than if IT would be involved in this kind of monitoring.

The upstream supplying firms show the same structure and organization of IT as one of the downstream firms (firm D). IT management was outsourced due to lack of expertise, capability or even interest in IT issues. Interaction of changes in deliveries was carried out by the use of telephones or face to face meetings. More simplified matters concerning collaboration could be supported by E-mail.
**The reciprocal relationship**

The interacting firms (E and F) are IT consultancy firms and they both described that the IT management was in-house bound, aiming at continuously improve the application portfolio. The business case for these firms was to deploy sophisticated customer solutions and the firms need to be up to date on use of software development tools. The internal IT strategy in these firms was very much oriented towards ‘tool matters’, and also business systems like accounting systems. For the internal IT management these firms used dedicated personnel. When these firms collaborated the communication between them was supported by E-mail and third party Web based project management tools, which kept down costs of IT investments. These firms often collaborate in order to provide solutions to very large customers. This was a strategic choice because; if they do not collaborate, large customer orders could not be carried out. Planning activities among parties was carried with face to face meetings and also by using telephones, and if matters of ‘checking and verifying’ occurred E-mail was sometimes being used. The Web based project system was considered a key system for to manage resource allocation, time and money consuming. Any change in project assignment or update of resources is posted on the Web system, which made cooperative project work easy to control and monitor for project managers. Also, in these firms there was no integration between project management tool and internal information systems. The relationship was considered extremely important for business survival and harmony between parties is very important. The maintenance of the overall firm relationship requires human interaction and therefore IT based communication systems could not be used for social information sharing.

**Analysis**

Table 1 shows the two major patterns of information exchange that were identified in this research. These patterns were conceptualized during analysis of the empirical data as “Being there” and “Doing it”. The pattern “Being there” refer to firms being actively engaged in the well-being of the relationship, with other firms and how these firms together may prosper in the future. The pattern “Doing it” refers to the actual business commitment between firms. This is the dimension of which firms exchange information to conduct transactions between them. The two main transactions identified in this research are order fulfillment process in the pooled and sequential relationships, and project management in the reciprocal relationship.
### Table 1: The patterns of information exchange.

<table>
<thead>
<tr>
<th>Type of relationship</th>
<th>Being there</th>
<th>Doing it</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pooled</strong></td>
<td>Social integration: Production planning</td>
<td>Transaction dependency: Order fulfilment.</td>
</tr>
<tr>
<td></td>
<td>Extrinsic: Production planning</td>
<td>Fit dependency:</td>
</tr>
<tr>
<td></td>
<td>Type of information exchange: Descriptive</td>
<td>Order fulfilment/ Production operations.</td>
</tr>
<tr>
<td></td>
<td>IT support: none</td>
<td>Type of information exchange: Descriptive</td>
</tr>
<tr>
<td></td>
<td><strong>Sequential</strong></td>
<td>IT support: Low</td>
</tr>
<tr>
<td></td>
<td>Social integration: Production planning/Maintaining relationships</td>
<td>Transaction dependency: Flow dependency:</td>
</tr>
<tr>
<td></td>
<td>Extrinsic/intrinsic: Production planning/Maintaining relationships</td>
<td>Order fulfilment/ Production operations.</td>
</tr>
<tr>
<td></td>
<td>Type of information exchange: Explanatory and evaluative.</td>
<td>Type of information exchange: Descriptive</td>
</tr>
<tr>
<td></td>
<td>IT support: Low</td>
<td>IT support: Low</td>
</tr>
<tr>
<td></td>
<td><strong>Reciprocal</strong></td>
<td><strong>Transaction dependency:</strong></td>
</tr>
<tr>
<td></td>
<td>Social integration: Actability and response to environmental changes.</td>
<td>Fit dependency: Project management.</td>
</tr>
<tr>
<td></td>
<td>Intrinsic: Actability and response to environmental changes.</td>
<td>Type of information exchange: Descriptive</td>
</tr>
<tr>
<td></td>
<td>Type of information exchange: Explanatory and evaluative.</td>
<td>IT support: High</td>
</tr>
<tr>
<td></td>
<td>IT support: Low</td>
<td><strong>IT support:</strong></td>
</tr>
</tbody>
</table>

**“Being there”**

This pattern is highly oriented towards social exchanges and expresses the level of presence among the firms in the relationship. The type of information being exchanged is explanatory and evaluative information.

In the reciprocal setting “being there” highlights that firms considered it utterly important to create a shared context (Zack, 1993), which also solved any problems with redundant information (Zachman, 1982) as the parties actively discussed relationship issues. Information exchange is thereby being both informative and motivating (Ackoff, 1958) to each party in the relationship. The firms in
this type of relationship mainly account for intrinsic benefits according to Blau’s (1964) reasoning as these firms paid much attention to the well-being of the relationship itself.

In the supply/value-chain relationships this type of information exchange also occurred, mainly without IT support. In the pooled relationships this case virtually never took place due to the content of exchanges (buy/sell relationship). These firms exchanged virtually only predefined descriptive information. Furthermore, actability and response to environmental changes is built on trust, commitment and confidence (Feeny, et al., 2003) in the relationships. The firms in this relationship type seek both intrinsic and extrinsic benefits during cooperation. These firms cared a lot for the relationship itself, but also actively sought for the best supplier. The firms in the pooled type of relationship seemed to assign extrinsic benefits as the most important factor in cooperation.

“Doing it”

A great deal information exchanges small firm relationships aims at effectuating routine transactions. The information being exchanged in automation of business transactions between the case firms is of the descriptive type and follows a generic trade cycle style. This pattern contains different kinds of transaction dependency between the small firms that informed this research.

Within the external environment of firms in the reciprocal and pooled relationships this research find that IT solutions, such as third party Web-order management systems and Web-project management systems is supportive to use of descriptive information. The transaction dependency style in among these firms may best be characterized as a fit dependency as these firms allocate different resources in order to create a single output. The Web-applications supports the transaction in the relationship but lacks internal integrative arrangements. The firms in the sequential relationship make use of phone and fax machines for order handling. The transaction environment among these firms is concerned with activities in a flow dependency style and no information technology is assigned to the information flow itself.

The descriptive information was also redundant (Zachman, 1982) to parties, and was managed internally by the firms as no integration exists between the external linkage and internal business systems. Parties understand the meaning of this type of information because order fulfilment is a generic process with instructive information (Ackoff, 1958), being the purpose with communication.
Conclusions and Discussion

This research sets out to explore two different information contexts in small firm relationships, social interactions and business exchanges. The results show that there are significant differences in the way small firms exchange information according to the type of information they exchange in the relationships, and the information they manage in their organizations.

“Being there”

Social information exchanges require human intervention in order to create sustainability in firm relationships. The information that is exchanged is of evaluative and explanatory character and is used during meetings to prepare for collaboration. This dimension of the relationship requires a shared understanding of the area being discussed and information technology could not exclusively mediate the creation of shared understanding in business prospects. However, E-mail and telephones can be used for more simplified matters in social exchanges. The social integration between parties with the properties of intrinsic and extrinsic benefits characterizes the information exchange as a means to build presence in the relationships, which increases the value of the relationship in terms of trust, commitment and confidence in the relationships.

“Doing it”

Business information exchanges could in the relationships that this research investigated be mediated by different technologies. Information technologies being used are E-mail, Web-ordering systems, and Web-project management tools. These types of communication technologies facilitate the information exchange between firms and these systems are also financially bearable for the small firms. The type of information that collaborating firms use is of the descriptive type, and parties generically and specifically understand the trade cycle being used. This also accounts in other forms of contractual agreements. Information exchange is in this environment achieved by the mediation of descriptive information by the use of communication technologies, which maintain commitment and confidence in business exchanges. The transactions between parties are valuable as such, but overall firm value in terms of performance must be questioned as the total information exchange flow is cut-off at the physical and juridical firm boundary. This means that IT-integration is an issue in all relationships in this study. There is no integration between the external systems for business transactions and the internal business systems in any of the relationships in this study. Thus, there are substantial amounts of manual work performed in the firms of this case study even if the level in IT knowledge is high, at least in the downstream firms in the sequential relationship and also in firms in the reciprocal relationship.
Integration is basically a matter of making the information flow altogether automated, eliminating manual transformation of, for example item numbers. The amount of time spent on manual work effort was approximately 2-3 hours per week due to low level of order volumes in the present state of exchanges within the pooled and supply/value-chain relationships.

Also, in the pooled relationship the IT solution used for information exchange was forced upon the small firms by the large customer organization.

Information theory acknowledges different types of information and these types align to social and business interdependencies between firms. The two types of concepts, “being there” and “doing it”, analyzed in this paper, are according to this study crucial for the understanding how information exchange actually are differentiated depending on which activities firms conduct together.

**Future challenges**

A number of challenges for research are identified as this study investigated small firm relationships and its information exchange. First, as mentioned above integration seem to be a neglected area in small firms. If integration is successful it would enhance the overall relationship business process by reducing the internal management of different information attributes. Second, the knowledge level of IT is low in small firms as managers in small firms are few in number, and have limited time and IT expertise, which limits their ability to devise IT strategy (Mehrtens et al. 2001). Also, the knowledge for the role of information per se, and how it may be managed seem to be low. Third, one important future challenge is the issue of what happens with information exchanges when small firms consider IT as a means to be active in its business environment, rather than being powered by a large organization.

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Paper 3

Small Inter-firm Cooperation: Aligning Social Information Exchange

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Small Inter-firm Cooperation: Aligning Social Information Exchange

Abstract. In addition to research of alignment that seek to explain how information technology can support intra-firm performance by aligning business strategy with IT strategy, so called social alignment is receiving more and more attention. Cooperation between firms is more than adoption to different technologies and day to day transactions are virtually always a result of social exchanges between different stakeholders, often managers'. Therefore, this research concentrate on the actual content of information and how it is shared in social exchanges between small firms. The case study research conducted in this paper explores differences in information exchange content in three different dyadic small firm relationships. The purpose with the research is to extend the “knowledge base” of alignment by focusing on the social information exchange dimension between small firms.

Introduction
In the academy, there is a growing interest for alignment research that provides arguments for alignment from the social perspective. Ciborra (1997, 2002) outline ideas for alignment between business and technology that emphasize social aspects rather than idealized business modeling concepts. Ciborra state that there are human oriented caveats that need to be taken seriously in order to achieve alignment. For example, the expression barriers that prevent clear articulation of the firms’ strategic intent (Ciborra, 2002). Expressions are linguistic by nature and from a social theorist’s perspective, Introna (2001) claims that language is the most important dimension of social interaction, in which spoken words transfer beliefs and values between humans. This creates a shared or at least a debatable world view due to human cultivation ability. Using the terminology of Berger and Luckmann (1967), this “knowledge creation” is a result of common objectivations in everyday life that is maintained by linguistic signification. According to Berger and Luckmann (1967) language has its origin in face to face meetings, but can also be detached from it as people use technology to mediate interactions for information exchange. It is known that small firms use technology to interact with business associates. (Dandridge and Levenburg, 2000) mention E-mail facilities as an easily adopted technology for small firms.

Reich and Benbasat (2000) explore the intellectual influence to alignment which has a focus on planning activities, reaching business objectives. They also study what socially impacts alignment in the sense of how understanding and commitment of IT support business objectives. The explicit social dimension is shared domain knowledge, made operational as experience in business, experience as manager, and familiarity with IT, experience in implementing IT. The
empirical input to Reich and Benbasat’s study comes from large organizations with division of labour, such as business executives and IT executives in formalized work structures, i.e., business units. This is a different structure than small firms often have. Storey (1994) reports that small firms are often managed by single individuals and a personalized style of management is common (e.g., lack of formal plans and strategies). Another example of emphasizing the social dimension of the relationship between business and information technology is the notion of the ‘culture gap’ between IS professionals and their business counterpart have been put forward by Taylor-Cummings (1998) as failure mechanism to systems development. In the inter-firm context Child mention that cultural norms will make it easier for people to cooperate, because shared values establish a common cognitive frame which promotes a sense of common social identity (Child 1998).

However, the attempts to explain social aspects of alignment mentioned above have its focus on intra-firm aspects of the relationship between IT and the organization. Also, the overall focus in alignment research has almost been exclusively directed to the underpinning of positive impact of alignment on business performance (Maes et al., 2000).

Examples of management research with focus on the manager, related to, but not alignment research per se, are Johansson and Mattsson (1987) who emphasize the mutual orientation in firm relationships, in which for example managers’ need to show respect for each others interest is important for the evolution of the relationship in a social context. Also, McCann emphasize that collaboration regardless of its form, must proceed from a shared understanding of the environment, confronting domain members (McCann 1985) in order to manage the relationship. Furthermore, Moss-Kanter emphasize that personal chemistry and interaction between corporate leaders, and compatibility between the organizations on broad cultural, philosophical and strategic ground will determine if the alliance will sustain over time Moss-Kanter (1994).

While social exchanges is described as valuable and even a pre-requisite for long term collaboration between firms, there is little research, if none, in aligning small inter-firm relationships from the social information exchange perspective. This research attempts to explore and describe the type of information being exchanged and how the information exchange is aligned between firms during social interactions between firm managers’ in different cooperative arrangements.

The paper is organized as follow: First, a general introduction to inter-firm cooperation, which this research applies in the small firm context due to lack of research in information related issues in small firm relationships. Thereafter, issues in social alignment are theoretically discussed in order to provide a base for the analysis of the research conducted. This is followed by presentation of the research approach being used, the analysis and finally the conclusions is presented.
Cooperation – brief background

In general, cooperation between firms is concerned with socio-political aspects of social exchanges, dealing with autonomy abilities (Price, 1972; Mulford and Rogers, 1982) within inter-firm relationships. Inter-firm cooperation in research regarded as a strategy to reduce uncertainty in the firm environment, for example, by contracting for services (Mulford and Rogers, 1982). A mechanism, showing the value of cooperation is similarity (Homans, 1961), which express the conformity of behavior to a certain norm. Regardless of its form, collaborative action accentuates the need for a shared understanding (Zack, 1993) of the environment, confronting domain members (McCann 1985), which may shape the norms in the relationship. Moss-Kanter (1994) also state that personal chemistry and interaction between corporate leaders, and compatibility between the organizations on broad cultural, philosophical and strategic ground will determine if the alliance will sustain over time. Thus, cooperation between firms means that there are a number of interdependencies controlling and affecting the way that firms can interact with each other in a certain domain or context. Scott Morton (1991) defines the scope of cooperation as the degree of inter-relatedness of suppliers and customers, and the degree of sustainability rather than contestability that provide cooperative advantages. Thompson (1967) emphasized that a domain cannot work properly if not domain participants acknowledge the claims from any participant and the interdependencies that then occur should be managed with suitable strategies for cooperation. Typical strategies are the adoption of standards and common infrastructure (Mintzberg 1983). However, it is important to remember that firm leaders act purposefully when new business possibilities occur and they exploit intangible characteristics of the firm, even if long-term cooperation agreements has been made across firm boundaries.

Social information exchange alignment

Literature in social exchange theory acknowledges that cooperation needs a media to transfer the information between parties (Blau, 1964). Social exchange theory does not explicitly mention information sharing and its sometime complex structure and content, i.e., in what way information is being communicated and what its meaning is. On the other hand, management research (Sako, 1998), consider information as a resource abstraction, for example, proprietary and confidential information as asymmetry reducers in information flow between parties. Information should then be accurate, comprehensive, and timely (Chiles and McMackin, 1996) in order to avoid opportunistic behavior in firm relationships (Williamson, 1975). The issue for firm management may then be how to implement the information structure that provides meaningful information exchange, appropriate to business partners. However, both bodies of knowledge emphasize the issues of trust and reciprocity (Blau, 1964; Homans; 1961; Mako, 1993; Brenkert, 1998; Child, 1998) between interactive parties on a personal level in cooperative arrangements.
Information exchange in cooperative arrangements is, at the personal level, often of unstructured character and involves, for example, strategic planning aspects of various commitments between parties. Berry (1998) mentions that strategic planning compose of, for example, development of common marketing plans. In such socially oriented work procedures, the type of information being shared is explanatory and evaluative (Land and Kennedy-MacGregor, 1987). This type of information can support in explaining why certain real world situations arise, and suggest a manager to act based on his judgment, rather than on formal model proposals.

According to Land and Kennedy-MacGregor (1987, p68-69) additional subtypes to explanatory and evaluative information are:

- Qualifying and qualitative information, which is information that usually comes from other sources than formal information systems.
- Information of patterns and norms, which forms the memory of how things should be done, and which are often used in a subjective and informal way to evaluate and judge, for example, different business prospects.
- Judgmental information is often based on subjective and intuitive appreciations of a situation and it is suggested that successful organizations are those that retain a significant level of informality in their organizational structure and the way they handle information.

An example of that is when firm managers want to make business processes cross-functional (Davenport and Prusak, 1996). It is then important to recognize shared environmental issues to avoid conflict among parties, and a way to achieve that is to ensure that parties comprehend the meaning of information being shared, i.e., manage its redundancy (Zachman, 1982). In inter-firm relationships there are issues that can limit horizontal information flow, for example, incompatible information architectures and political and cultural differences (Davenport and Prusak, 1996). In essence collaboration, following any cooperative strategy could be seen as a social system of interactions, in which exchanges of social commitments (Feeny et al., 2003) is carried out between managers. Uzzi (1996) refer to this as an exchange system by which firms operate together in arm-length ties, which impersonalize relations between buyers and sellers, and ongoing social ties, which in turn emphasize the importance of close social relationships.

The social information system, or as in this paper using the taxonomy; social exchange system, can also be defined as a inter-subjective socially constructed institution (Goldkuhl and Lyytinen, 1982) This implies the necessity to discuss alignment from the position of how to understand the flow of information in the social context (i.e., its infological aspects), rather than technology per se. Langefors put forward that the infological aspects is human and socially oriented and
this orientation reveals cultural differences (cmp Taylor-Cummings, 1998; Child, 1998). Infology emphasizes how human pre-knowledge, such as language and world views determine how data may inform a person (Langefors, 1995, p91).

From the alignment perspective, the discussion of alignment in this paper is about how information processing has its origin in human communication. The communication of information creates meaning in the relationship and is in this paper considered to assist in aligning two separate information domains.

Research approach
This research utilizes a qualitative research approach since the research takes an interest in managers’ perception of cooperation in small inter-firm relationships. The qualitative approach and the case study design are suitable as a means to provide rich insight and explanation for phenomena (Miles and Huberman, 1994; Yin, 1994). This research also delimited the unit of analysis to dyadic relationships. However, Whetten (1982) pointed at some analysis problems in doing research of dyadic relationships:

- Researchers are forced to work with very few degrees of freedom. When the unit of analysis is a network of dyadic linkages, many organizations must be included in the study in order to obtain a reasonable sample size to validate the research.
- If the sample size is large, a respondent may be colored by all linkages when describing a single linkage. (Whetten, 1982, pp. 117-118)

According to Whetten’s (1982) reasoning, this research made a trade-off between sample size and linkage influence matters on respondents due to the fact that this research is explorative since most research on alignment is intra-organizational oriented and this research aims at providing new perspective to the alignment agenda.

The context for this research is three forms of dyadic relationships that follow Thompson’s “interdependency” view on organizations (Thompson, 1967): Pooled relationship is a dyadic configuration with small firms and one large organization (supplier/customer). Sequential relationship is a supply/value-chain setting with supplying firms and buying firms. Reciprocal relationship is a loosely connected network between a numbers of firms.

- Pooled relationship is a dyadic configuration with two small firms and one large organization (supplier/customer). The supplier firms were food supplier and stationary supplier to a large municipal agency.
- Sequential relationship is a supply/value-chain setting with two supplying firms and two buying firms in manufacturing.
- Reciprocal relationship is a loosely connected network with two IT consultancy firms.
The empirical data in this research was gathered, in fall 2005, from these three different types of network settings in the north of Sweden. The total number of interviewed people was nine managers from the small firms and one manager from the large buying organization.

The empirical data was collected by using a case study approach with face-to-face interviews and telephone interviews. Semi-structured interviews were held with firm managers. The unit of analysis was the inter-firm relationships, which consist of exchanges of social information, aiming and planning and defining cooperative work settings for the firms, and also the actual business process between the firms.

The size of the firms is ranging from 1 – 45 employees, and the firms market is local, national, and international based. The firms in pooled relationship strategically orientated their market efforts mainly to the local environment, but could consider expanding if opportunities arose. The sequential relationship firms focused on the national and international market mainly. Finally, the reciprocal firms handled all three market directions.

**Empirical findings**

*Pooled relationships*: Firm A, in this linkage, is a supplier of food to municipal school restaurants. Firm B, is a supplier of office supply to one municipal organization. This was a pure buy/sell relationship with quantifiable amounts of deliveries of goods on a weekly basis. The municipal organization was not the only customer to firm A and B, but it was a very important customer. The creation of the relationship between the small firms and the large buying organization was basically a requirement specification communicated to the small firms during few initial meetings. The supplier and the buyer expressed this respectively:

“It was more or less a situation where we had to face the facts if we want to continue doing business“

“If business transactions are well specified the more efficient the relationship would be for the small firm”

Firm A, as a food supplier over long term periods did not make any additional socializing with the customer since contractual agreements determined the commodity volumes and its price. This was never questioned during actual time of business agreement as the larger organization determined the business condition. Firm B, on the other hand sell their commodities to several different units in the same large customer organization and needed therefore to maintain the business relationships on regular personal basis. Firm B arranged for business meeting in which information of new
products, campaigns etc, could be disseminated to the customer. Responsible for these activities was the field sales personal.

The supply/value-chain relationships: Firm D, a manufacture of electrically sliding windows with a painting firm as a supplier, and firm E, a manufacture of customer adapted steel components with a semi-manufacture supplier. The two buying firms exhibit virtually the same style of social interaction in relation to suppliers. When establishing a supply relation both firms searched for serious business partners because long term collaboration was desirable. Both buying firms consider cooperation to be a necessary strategy as a single firm cannot maintain in-house competence for all operations attached to the products. Apart from resulting in manufacturing efficiency the social result is strong bonds between the supplier and buyer. Both buying firms ranked personal chemistry as the most important component for attaching to a supplier relationship. The supplying firms had the same appreciation of success factors for the exchanges in the relationship. Supplying firms consider the buying firms to be too important customers so they could not afford to show any controversial behavior. Both buying firms communicate honesty and trust to their supplying firms and it was altogether considered very important that collaborating firms should play by the rules, which where determined by having repetitive meetings. Face to face meetings were considered, by all firms, to be the most fruitful way to interact as they could easily read off the interest, ambition to commit into the relationship and also create an understanding of redundancy in the relationship objective. The following quote express the business climate in these relationships:

“Trust and reciprocity are the most important aspect of a business relationship. We can actually do business with a supplier as long as we have trust in that partner even if delivery promises and timeframes are not always kept according to contracts “

E-mail and telephone was used when arranging the meetings since the technology was excellent for quick formal response in interactions.

The reciprocal relationship: in which the firms were IT consultancy firms with a cooperation arrangement that aims to provide solutions to very large customers. The relationship was not fixed in any sense, rather business opportunities promoted cooperation and each firm had its own niche of business and focused on customers with specific need for the firms’ exclusive competence. Cooperation was a strategic choice because; if the firms did not collaborate, large customer orders could not be carried out, which from time to time was a business opportunity for both firms. Like the firms in the supply/value-chain relationship the reciprocal firms consider personal chemistry as the most important component for establishing trust between the firms. One of the IT firms has had experiences of mistrust in collaboration activities with other firms
and the business process suffered severely from opportunistic behavior. The process of trust creation relied on honesty in information sharing and the firms in this dyadic configuration continuously arranged for face to face meetings in which dissemination of information took place. The meetings contained business planning activities among parties and also had a pure socialization purpose. It was considered extremely important to establish the common arena for collaboration. The managers’ expressed this respectively:

“Trust is so important. If we don’t trust each other we will never share detailed information and knowledge about internal business competence “

“Joint activities require respect for each other. Otherwise plans would never be realized”

The meetings helped the firms to create a shared environment in which business rules become familiar to both firms. If matters of ‘checking and verifying’ occurred in time between meetings, E-mail was being used for information sharing.

Analysis

The social exchange systems that the firms in this research use are of both characters that Uzzi (1996) define. The pooled relationship firms act in a system of arm-length character and the systems context is impersonalized. The firms in the sequential relationship have a mixed system platform as they perform impersonalized buy/sell transactions, which are preceded by and occasionally maintained by personal interactions leading to creation of social ties. The firms in the reciprocal relationship show high degree of social activities, in parallel to the common business process, with external partners in order to react on new business opportunities.

Common in all three types of relationships is the strategic view on cooperation and by using a common language, i.e., eliminating expression barriers (Ciborra, 2002) the firms in this study can articulate and maintain the strategic intent. The supplying firms in pooled relationship exhibit differentiation in customer relation management. Firm A (the food supplier) concentrate on supply of food and understanding of content in the actual exchange is established by the nature of information being shared. The type of information that Firm A exchange with the customer is mainly proprietary information (Sako, 1998), for example, volumes and delivery data constitute the shared environment (Zack, 1993) and common world view (Langefors, 1995, Taylor-Cummings, 1998; Child, 1998) is determined due to the type of commodity exchange. Firm B partially share the same characteristics as Firm A, but in addition Firm B socially interacts to greater extent with the customer than Firm A does. However, the information being shared in product campaigns is indeed proprietary information containing new products and price. Virtually no information of the explanatory and evaluative type (Land and Kennedy-MacGregor, 1987) is being shared in this type of small inter-firm relation-
ship. Some evidence of qualifying and qualitative information can be seen as the supplying firms occasionally received credit for being good and reliable business partners. Neither do these firms share judgmental information or information of patterns and norms.

The firms in the supply/value-chain relationships exhibit a mix of proprietary information (Sako, 1998) and explanatory and evaluative information, qualifying and qualitative, and information of patterns and norms (Land and Kennedy-MacGregor, 1987). The supplier and buyer work actively with cross-functional relationship issues (Davenport and Prusak, 1997), i.e., how to establish trust and reciprocity (Blau, 1964; Homans; 1961; Makoba, 1993; Brenkert, 1998; Child, 1998) that will create a shared environment (Zack, 1993) for effective collaboration. The case study clearly shows that these firms use both types of information in order to ensure workability in the relationships by using language to inform (Langefors, 1995) each other.

Firms in the reciprocal type of relationship expressed most clearly the strategic dimension of cooperation among the firms studied in this research. The prevailing opinion is that social interaction is the key to success in business relationships. The personal chemistry (Moss-Kanter, 1994) and mutual orientation (Johansson and Mattsson, 1987) in business matters between firm leaders’ determined which firms can work together in a certain business arrangement. The collaborating firms in this type of relationship ensure actability by openly exchange all types of information that Land and Kennedy-MacGregor (1987) define. Information exchange containing all types of information help managers’ to discuss broad goals and thereby evolve governance mechanisms, for example, similarity (Homans, 1961) as the relationship mature over time (Moss-Kanter, 1994). Like the firms in the supply/value-chain relationships, these firms work actively with cross-functional relationship issues (Davenport and Prusak, 1997), i.e., how to establish trust and reciprocity (Blau, 1964; Homans; 1958; Makoba, 1993; Brenkert, 1998; Child, 1998) that will create a shared environment (Zack, 1993) for effective collaboration.

Conclusions
Social exchanges require human intervention in order to create sustainability in firm relationships. The information that is exchanges in the tree different types of relationships in this research is of proprietary and evaluative and explanatory character and is used during meetings, which is the standard (Mintzberg, 1983), with business partners to prepare, establish and maintain cooperation. The following conclusions are proposed for the firms that participated in this case study:

- Small inter-firm relationships of the pooled type of relationship, i.e., a buy/sell type of relationship can align with customers by creating under-
standing of proprietary information, i.e., business transaction related information. The result of social interactions in the relationship that this research observes is mostly expressed by exchange of proprietary information. The buyer is interested in accurate deliveries to pre-determined price levels and the seller want to execute these orders as correctly as possible. The information exchange aims at sustaining status quo in the relationships and cannot be anything else since the relationship is highly impersonalized.

- Small inter-firm relationships of the sequential type of relationship can align with business partners by creating understanding of proprietary information, i.e., business transaction related information and explorative and evaluative information. The information exchange aims at supporting the common trade cycle in the relationships, but also to develop longevity by influencing the social ties between supplier and buyer. This can be achieved as long as both the supplier and the buyer have a common interest in the content of the product, which, for example, a semi-manufacturer have.

- Small inter-firm relationships of the reciprocal type of relationship exhibit virtually the same characteristics as the supply/value-chain firms in terms of information exchange. These firms however emphasize the importance of social interactions somewhat more intensively than the supply/value-chain firms. Therefore this research conclude that any aligning effort must direct its focus towards firm cultural issues, such as aligning to norms in the relationship, thus creating meaning of information content during social interactions.

The research in this paper posits that achieving social alignment in small inter-firm relationships may take a stand from the information exchange carried out between business partners. It is found that firms in all three types of relationships socially interact with the business partners in order to sustain workable relationships (Hendersson, 1990). However, there was one exception to this and it was the food supplier that had established arm-length, buy/sell relationship with the customer, and this firm executed impersonalized business transactions based on quantifiable volumes of goods. The main issue of social alignment is according to this research is that the pooled relationship firms in social exchange with customers equalizes social information with business information, i.e., explorative and evaluative with proprietary information. In the supply/value-chain firms there is mix of usage of social and business information. In the reciprocal relationship there is strong emphasis on sharing social information.

Future research.

The limitation of this study is the focus on few dyadic relationships in each relationship configuration. However, the research has revealed important aspects that certainly will impact future directions in alignment research. In order to develop deeper knowl-
edge of social alignment in firm relationships this paper suggest to future qualitative studies to incorporate more linkages between firms. It is important, if not crucial, to cover the dynamic environment that small firms actually need to manage in their businesses. When studying many linkages the challenge would be to manage great variance in information content and the way information is being exchanged.

References


Paper 4

Addressing Formality: A Conceptualization of Information Exchange Coordination in Small Firm Business Transactions

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Addressing Formality: A Conceptualization of Information Exchange Coordination in Small Firm Business Transactions

Abstract. Based on a review of two existing frameworks for business transactions a complementary approach is presented in this paper. Existing frameworks tend to neglect the information exchange aspect of coordination by focusing on phases or activities in transactions. The complementary approach considers coordination of information exchange from four different aspects: volume, breadth, diversity, and depth of transactions. These four aspects constitute a measurement scheme as well as a judgemental instrument for integrative aspects within small firm relationships. The research reported in this paper is beside the review of existing frameworks also empirical. Three case studies of different dyadic relationship settings is conducted in order to test the complementary approach suggested in this paper.

Introduction
The business environment for small firms includes to great extent exchange of information with business partners. The processes that comprise information exchange require coordination in order to work smoothly. Three mechanisms for coordination have dominated in research: the market, the hierarchy, and the network (Malone et al., 1987; Powel, 1991). The act of coordination in the market is through demand and supply and in the hierarchy trough adjacent steps by controlling the flow of material. In a network of firms coordination is achieved through reciprocity in communication between parties. These mechanisms cover many important aspects in information exchange, such as, the search for information, for example, price information and how information technology can affect and change a firm’s business strategy. Unfortunately, these mechanisms do not cover the issue of coordination of information exchange between firms, and how the information can be transparent to actors concerned with the information flow. Instead, researches have paid much attention towards the different technologies that can be used to facilitate the flow of information. For example, the adoption of EDI technology in small firms (Chau and Hui, 2001; Premkumar and Ramamurthy, 1997; Ramamurthy and Premkumar, 1995; Iacovou, et al., 1995). The issue of how small firms may gain competitive advantages by the means of technology mediated business transactions is also examined with a strategy focus (Cragg et al., 2002; Levy et al., 2001; McDonagh and Prothero, 2000; Dandridge and Levenburg, 2000).

The aim of this paper is to examine two existing formal approaches of phase models for transactions in terms of merits and shortcomings. The examination is then the basis for suggesting a concept that can be used for determining the struc-
ture of formal information exchange. This paper is both theoretically oriented as an exam of existing phase models will be done, but also empirical as three case studies in the inter-organizational context provide data for the discussion of the suggested concept. The suggested concept is originally a scheme for strategic EDI measurement (Massetti et al., 1996), which also can be used as an instrument to determine the structure of information exchange between small firms.

The two phase models that first will be examined are the phase model for mar-
ket transactions (Schmid and Lindemann, 1998) and the framework for E-
interaction (Goldkuhl and Lind, 2004). The analysis of the complementary ap-
proach in this paper is based on dyads of small firm relationships in three differ-
ent configurations following Thompson’s “interdependency” view on organiza-
tions. The configurations are: Pooled relationships, Sequential relationships, and reciprocal relationships (Thompson, 1967).

The paper is organized as follow: First, the examining of the two phase models. Thereafter, the nature of coordination is outlined. Then a transaction view on in-
formation exchange is presented followed by coordination issues of information exchange where a suggestion for new view on information exchange is presented. This is followed by presentation of the research approach being used. Finally, the empirical findings, the analysis and the conclusions are presented.

Phase models for transactions
Within the community of IS and small firms there is great interest for information ex-
change and transactions. Often research concludes that information technology is an efficiency improver in order to facilitate automation with external business partners (Senn, 2000; Premkumar, 2000). Example of automation is the use of information technology for support to structured activities (Powell, 1993), which involves information exchange among parties in, for example, the order process within supply-chains (Li, Shaw, and Tan, 2000). Information technology, with its communication feature supports automation (Zuboff, 1985) of firm operations and actability (Davenport and Prusak, 1997; Henderson, 1990) among firm leaders, and thereby ensuring transaction fulfilment, at all levels.

The phase model for market transactions
Schmid and Lindemann view the transaction fulfilment as a finite number of interaction processes between market participants in various roles (Schmid and Lindemann, 1998), see Figure 1. The phase model is generic and if transaction fulfilment should be considered in a hierarchy context with long-term contractual regulation, then the phase model must include a loop back from the settlement phase to the information phase. This situation is common in dyads of firms.
The interaction processes in the phase model are grouped into classes, which form the phases in the phase model.

Processes in the information phase aims at providing information so that eventually an offer can be made by participants. Important information is the ability of a potential customer to meet delivery date and specifications of goods and services.

In the agreement phase, conditions of the transaction are negotiated which will allow for an agreement to be made. The result is a legal-binding contract representing the agreement between partners.

In the settlement phase, the agreed-upon terms of the contract are fulfilled. Depending on the type of exchanged good or service as well as the participating partners, the settlement phase can have sub-functions, for example, physical goods may include packaging, transport, and storage. Result of the settlement phase is the fulfilment of contract.

E-interaction for business transactions

The second concept, E-interaction for dyadic relationships developed by Goldkuhl and Lind (2004) posit a differentiated view on transactions. The authors’ distinguish between the frame contract level and the level of business transaction. The frame contract is a long-term agreement between two particular parties. The agreement is established through exchange of proposals and commitments (see figure 2). Exchange of proposal means negotiation between the two parties. Bids and counter-bids concerning particular products, prices, and adjacent conditions are exchanged. Proposals may also include exchange of knowledge concerning other conditions relevant to the business interaction, i.e. different aspects of the parties’ capabilities. Exchange of commitments means the establishment of each party’s obligations within a frame contract. These obligations concern the expected future actions of each party. The frame contract is an agreement that governs the subsequent recurrent business transactions.
The business transaction level comprises the establishment, fulfilment and assessment of a business agreement (see figure 3) in order to satisfy one or several related product needs of the customer. This means exchanges of proposals, commitments, fulfilments, and assessments. A business transaction concerns a particular occasion and can include several product needs within the same contract.

The exchange of fulfilments means the exchange of value. It is only on this level that the exchange of value (goods and/or services in the exchange for money) occurs. If either part is dissatisfied with the fulfilment, a reclaim might be directed to the other party, which occurs during the assessment phase.

Criticism that can be addressed towards the phase model for market transactions (Schmid and Lindemann, 1998) and the E-interaction for business transactions (Goldkuhl and Lind, 2004) are:

- Both models have a focus on the supplier/customer relationship which is a pure buy and sell relationship and implicitly account for technology mediation.
- The E-interaction model clarifies the differentiation of contract clearly, but do not explicitly discuss the ‘longitudinal’ dimension of frame contract and that they risk to decline in significance as parties evolve trust in the relationship.
- Differentiation of information exchange per se and how it can be coordinated is not explicitly mentioned.
Neither of the models deals with the fact that transactions are carried out in different configurations of business relationships, for example, pooled relationship, sequential and reciprocal types of firm relationship.

The models contain implicit assumptions that the business transaction event involves information exchange. Often the use of information technology is taken for granted in transaction mediation and Ciborra (1987) state that technology streamlines transactions between business partners. From a progression point of view of information technology implementation support to transactions, technology mediation may involve risks. Kumar and van Dissel (1996) showed that cultural differences exacerbate the transaction risk by increasing the risk of different interpretations of transaction contracts. Negotiation of, for example, frame contract content requires social intervention and has little to do with, for example, detailed delivery dates and prices. Rather, such a negotiation concern ambition to cooperate and as the authors mention – discussions of capabilities that may result in different interpretations. Also, different types of information are being used at different transaction levels. In transactions information is descriptive (Land and Kennedy-Macgregor, 1987) and concern, for example, prices, dates, etc.

This information is usually easy to formalize and make common to business partners. In frame contracting discussions between parties the supportive type of information is explanatory and evaluative oriented (Land and Kennedy-Macgregor, 1987). The key feature of this information type is the positioning towards subjective opinions rather than objective opinions of the real world. This latter type of information is unstructured in nature and subsequently difficult to formalize into information technology.

Models are problematic as they propose solutions in a universal manner, for example, see Lyytinen’s criticism of Nolan’s famous stage model (Lyytinen, 1991). In the case of business transactions however, the generics is tested over many years and by virtually all firms. With the argument that generic business transaction models actually connect to, and are streamlined towards the transaction process these models fits well in the business context. The problem however, is the assumption that detailed information exchange is taken for granted in these kinds of models. That means that expression of information content and which actors with which systems may be affected by the transaction is rarely made, i.e., the transaction process is formalized by the generic attributes of the models. This is where the complementary approach suggested in this paper play an important role as a coordination mechanism.

A differentiation in the transaction process is necessary as Goldkuhl and Lind (2004) point out. However it is not clear if this differentiation apply to all sorts of business relationships or if it is empirically grounded in the supplier/customer context. The supplier/customer context is often of a pure buy and sell character.
and of impersonalized support (Uzzi, 1996), which may de-contextualize the transaction from the firms overall relationship strategy. An important issue is then how these models align to more individual based firms relationships, such as relationships that build on reciprocity between business partners.

It may be so that the different descriptions of transaction frameworks actually have an information dimension to it. However, the matter is not made clear and it seems that the integral parts of the models are attributes, which helps to dissociate from the information itself, rather than providing clear-cut arguments for the role and nature of information exchange in business transactions.

**Addressing formality in information coordination**

Literature in coordination acknowledges that inter-firm relationships and its business specific exchanges, with its corresponding flow of information needs to be coordinated (Aiken et al., 1975). The transaction models described above are excellent examples on how coordination of tasks and decisions can be coordinated by the use of information technology if one thinks of tasks and decisions as information. This has been shown in studies of coordination costs savings by using information technology in business transactions by for example, (Clemons and Row 1992). Clearly, un-coordinated information will create uncertainty in firm relationships if not being accurate, comprehensive, and timely (Chiles and McMackin, 1996).

A concept that is suitable for describing the coordination aspect of formal information exchange is the scheme that Massetti et al., (1996) developed. This scheme aims at supporting the bridge between EDI strategy and operations in organizations (see Massetti et al., (1996) for detailed description). The scheme is actually a tool that I consider can be used to coordinate the information exchange throughout the inter-firm relationship. The first facet of the scheme is – the number of transactions (volume) and shows the intensity of information exchange within a certain function. The second facet concerns the number of several external business partners (breadth) that information is exchanged with. The third facet concerns the different types of document being transferred between firms, for example, direct and indirect material ordering, orders and invoices (diversity). Finally, Information is also reaching into internal business processes that are not explicitly concerned with the external information exchange (depth).

The environment for business transactions in small firms is often efficiency oriented with clear targets and goals, for example, Levy (2001) mention that small firms has effective control systems for performance monitoring on a regular basis. However, the monitoring activities are often concerned with the quantification of transactions, i.e., the status of a certain transaction and not the qualitative significance of the different documents that comprise a transaction. Therefore, the scheme in figure 4 (i.e., the research model used in this paper) may help small
firm managers to coordinate information exchange specifics throughout the entire business transaction with parties.

![Diagram showing information exchange coordination between two companies](image)

**Figure 4. Conceptualization of information exchange coordination**

The meaning of the conceptualization is that during business transaction fulfilment the flow of information can be managed in terms of understanding the total activity in submitting a proposal, clarifying commitments, ensuring fulfilment, and securing assessments. This is in essence indications of the information being exchanged and also clarifying what the responsible actor know of that information. Breadth is a dimension that becomes critical when the numbers of exchanging partners grow and so this dimension may affect the knowledge of the total flow of information. There is a risk that differences in transaction content becomes unmanageable if not the flow of information is clearly and totally understood.

The facets volume and breadth are quantitative measures of the information exchange and are indications of, for example, the structure of information for transaction support in terms of quantities of exchanges and number of external parties with which information is exchanged. The facets diversity and depth are concerned with the actual information flow and of qualitative character, which means that an understanding of the information flow may be gained by examine the information content and the roles within the firms that are concerned with the transactions. As Massetti et al., (1996) point out clearly in the origin of the scheme the facet diversity involves a problematic conversion issue between two parties internal management of information in order to facilitate the exchange. Depth concerns the issue of having different systems or actors that internally manage the exchange so that the transaction can be thoroughly carried out. Thus regarding coordination, diversity and depth stresses the issue of integration within the firms. The value of using information technology is not optimal if the connection between the external and the internal information environment is not established.
Research approach and case study

This research utilizes a qualitative research approach since the research takes an interest in managers’ perception of coordination issues in small inter-firm relationships. The qualitative approach and the case study design are suitable as a means to provide rich insight into phenomena (Miles and Huberman, 1994; Yin, 1994). This research also delimited the unit of analysis to dyadic relationships. However, Whetten (1982) pointed at some analysis problems in doing research of dyadic relationships:

- Researchers are forced to work with very few degrees of freedom. When the unit of analysis is a network of dyadic linkages, many organizations must be included in the study in order to obtain a reasonable sample size to validate the research.
- If the sample size is large, a respondent may be colored by all linkages when describing a single linkage. (Whetten, 1982, pp. 117-118)

According to Whetten’s (1982) reasoning, this research made a trade-off between sample size and linkage influence matters on respondents due to the fact that this research is explorative since most research on alignment is intra-organizational oriented and this research aims at providing new perspective to the alignment agenda. According to this the variable depth mentioned in the section above is excluded in this research since the unit of analysis dyadic relationships.

The context for this research is three forms of dyadic relationships that follow Thompson’s, “interdependency” view on organizations (Thompson, 1967): Pooled relationship is a dyadic configuration with small firms and one large organization (supplier/customer). Sequential relationship is a supply/value-chain setting with supplying firms and buying firms. Reciprocal relationship is a loosely connected network between a numbers of firms.

- Pooled relationship is a dyadic configuration with two small firms and one large organization (supplier/customer). The supplier firms were food supplier and stationary supplier to a large municipal agency.
- Sequential relationship is a supply/value-chain setting with two supplying firms and two buying firms in manufacturing, i.e., two separate supply/value-chains.
- Reciprocal relationship is a loosely connected network with three IT consultancy firms.

The empirical data in this research was gathered, in autumn of 2005, from these three different types of network settings. Two firms in a pure buy/sell relationship with a large organization, four firms in manufacturing industry with a supply-chain structure, and three firms in a more loose, but reciprocal connection were chosen. The total
number of interviewed people was nine managers from the small firms and one manager from the large buying organization.

The empirical data was collected by using a case study approach with face-to-face interviews and telephone interviews. Semi-structured interviews were held with managers who are responsible for overall firm performance. The unit of analysis was the inter-firm relationships, which consist of exchanges of social information, aiming and planning and defining cooperative work settings for the firms, and also the actual business process between the firms.

The size of the small firms is ranging from 1 – 45 employees, and the firms market is local, national, and international based. The firms in pooled relationship strategically oriented their market efforts mainly to the local environment, but could consider expanding if opportunities arose. The supply/value-chain firms focused on the national and international market mainly. Finally, the reciprocal firms managed all three market directions.

The framework chosen for the analysis was the cognitive map technique (Miles and Huberman, 1994). This approach helped to create a structure of information exchanges between the firms. This structure was then used to make theoretical comparison in order to conceptualize the empirical findings.

**Empirical findings**

Each firm manager in all three types of dyadic relationships described the flow and structure of information between themselves and the corresponding business partner.

**Pooled relationship**

The pooled relationship: was a pure buy/sell relationship with quantifiable amounts of deliveries of goods on a weekly basis. The municipal organization was not the only customer to firm A and B, but was the linkage in which electronic commerce was used. The volume of electronic commerce transaction differed substantially between firm A and B. Firm A’s channel to the municipal organization was exclusively electronic and they received orders on a weekly basis. Firm A considered the volume for electronic commerce transactions to be very low, but felt imposed by the large organization to adapt to this specific style of business channel. Firm B on the other hand, had developed business relations with several units within the municipal organization and considered the linkage of electronic commerce to compose extremely small part of the business relationship. For firm B, the overall volume of information exchange with the customer organization was high. For both firm A and B, the diversity of information exchange was low in the dyadic linkage to the municipal organization, i.e., order fulfilment was the only type of transaction. The depth, i.e., the penetration of information exchange into each firm’s internal information domain was considered low by the firm managers’. Internally, there was manual work effort connected to the information ex-
change, i.e., print-outs of product orders’ from the electronic commerce system and manual input of data into internal business systems.

**Sequential relationships**

The managers of the firms in the sequential relationships (two different dyadic firm relationships) described the same structure and flow of information as the firms in pooled relationship. These managers’ also reported a ‘gap’ between the external and internal information management meaning that manual work had to be carried out in the order fulfilment process. The main difference between firms in the sequential relationships and the pooled relationship firms was the media used for information exchange in the order transactions. These manufacturing firms used e-mail and telephone for the information exchange between supplier and buyer. Volume, diversity and depth of transactions were considered low by firm managers’ and by low they meant that the intervals in the order process could range from days to weeks in the examined relationships.

**Reciprocal relationship**

The managers’ of the firms in the reciprocal relationship described the information structure and flow in the specific business case that this relationship was concerned with. The business case was to deploy sophisticated customer solutions in a wide range of software applications. Considering the business case and its project team orientation in work assignment, the time interval between contractual project transactions could range from weeks to months’. Accordingly, volume and diversity of transaction content was low. As for depth, there was a manual transfer of information from project managers’ to administrative staff in order to enable regular accounting procedures. The coordination of business related information in this case was supported by E-mail and third party Web based project management tools.

**Analysis**

Table 1 shows the extent of information exchange that was identified in this research. The input to the analysis grid was the cognitive map of information exchanges that was outlined in order to comprehend the actual flows of information between the firms.
The values of low, medium, and high are not based on nominal calculations or any other statistical approaches. The value low means that the number of transactions is low and, for example, in the pooled relationship the order amount was 5-10 per week. In the sequential relationship the number was approximately 20 altogether considering that this context contained two separate dyadic supplier/customer settings. In the reciprocal relationship the numbers of order transaction was even lower than in the pooled relationship. This is due to the fact that these firms collaborate through frame contract regulations since such arrangement could easily invite other partners in new projects. However in the investigated dyadic relationship in this study the number of transactions is very low.

As mentioned in the section for research approach, the measurement breadth was excluded since this research is focused on dyadic relationships only.

The measurement diversity showed low value in all relationships. Virtually all contracts regulating the business relationship concerned same attributes over and over, for example, price, delivery, payment, etc.

Quite naturally the measurement depth showed high value in all relationships. This is because the information flow contains specifics that both the procurement staff and the internal administrative staff are concerned with. The information flow reaches as deep into the firms as it need to do. However, in none of the firms any electronic linkage was made between the external and the internal information systems.

**Conclusion and discussion**

This research sets out to suggest a complementary formal view on coordination of information by proposing the use of a information exchange scheme that originally was developed to address the gap between EDI strategy and operation (Massetti et al., 1996). What I mean by the complementary approach is that the integral parts of the scheme are suitable to use when reasoning of information flow in exchanges between parties, which the case studies also revealed. These integral parts are concepts for the

<table>
<thead>
<tr>
<th>Type of relationship</th>
<th>Volume</th>
<th>Breadth</th>
<th>Diversity</th>
<th>Depth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pooled</td>
<td>Low</td>
<td>-</td>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td>Sequential</td>
<td>Medium</td>
<td>-</td>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td>Reciprocal</td>
<td>Low</td>
<td>-</td>
<td>Low</td>
<td>High</td>
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</table>

*Table 1. Measurements of information exchange.*
different ways a transaction i.e., information content in documents is processed in dyadic firm relationships.

This research concludes that the use of the complementary approach with its features is a pragmatic tool to define and monitor the information that is being exchanged in several different business contexts. As a tool this concept may support managers’ in performance monitoring of business activities as it focused on the information flow in exchanges in several relationship settings, not only the supplier/customer relationship, but also in a general company to company transaction situation. If used, the concept will steer the view of the managers’, or other responsible actors for that matter, on to the specific documents with transaction contents that actually is the information per se. Thereby, greater understanding for how the information exchange may be coordinated in business transactions between small firms will be accomplished. The best example of this is the manual translation of ordering information.

It is important however, to point out that the complexity level of information exchange will grow if firms connect to more firms, for example, more customers and of course more suppliers. Still, this conceptualization of information exchange coordination is well suited to use as there is no scaling deficiency incorporated in the concept of information exchange coordination.

Future research
Two specific avenues for future research are obvious as a result of this study. Firstly, the design of a study that involves a greater number of participants in order to increase complexity in management of transactions, which would stress the issue of interdependencies between parties. Assumingly, managers’ would have to deal with efficiency improvement and consider systems integration specifically. In essence, what is the information related explanations for the defectives in information exchange and information technology in small firms

The second avenue is concerned with training of small firm actors in basis of information technology and how it may support the business activities and also enable new ways of performing the business. This is not a new problem; it has been stressed for many years that organizations lack knowledge of creative use of information technology, especially in large organizations. This study also shows that there are shortcomings in small firms as well and future research should perhaps design research from an information perspective rather than focus on technology or technologies.

References


Paper 5


Author: Dan Harnesk

Relationship Alignment: Multi-contextual Issues in Small Firm relationships.

Abstract

The concept of IT alignment has been discussed in literature but almost in the context of large firms and how the IT strategy harmonizes with business strategy. The traditional research trajectory of IT alignment has shown a tendency to miss upon the multi-contextuality of business activities and business relationships. The contextual factors addressed in this paper are: cooperation, coordination, and communication. Based on these contextual factors this paper suggests a concept for differentiated relationship alignment in the inter-organizational context. The themes of the concept of relationship alignment are: Presence, formality, and mediation. Presence is a relational concept with attributes that are derived from theoretical perspectives of cooperation. Formality is a concept that is transaction oriented and builds on coordination theory. Finally, mediation is the concept of communication, which is the technological support to the other two concepts. The conceptualisation made in this paper builds on information theory and specifically different types of information that small firms exchange. The primary contribution from this paper is an advancement of knowledge regarding the nature of alignment in the small firm relationship context.

Keywords: Relationship alignment, information exchange, cooperation, coordination, communication, small firms.

Introduction

This paper is concerned with reversing the ongoing trend in strategic IT alignment research, explaining different harmonic facets between business strategy and IT strategy (Avison et al. 2004; Cragg et al. 2002; Levy et al. 2001) due to the fact that small firms utilize different forms of networks for exchange of firm assets (Li et al. 2000; Mulford and Rogers, 1982). Therefore, the traditional intra-organizational focus in IT alignment research is not sufficient enough for to explore, or explain alignment issues that arise when small firm relationships emerge, specifically, the problem concerns the information exchange relation to the arrangement of cooperation between firms. Research of relationships is not a new occurrence. Homans (1961) and Blau (1964) discussed social interactions in cooperative arrangements between humans from a sociopsychology viewpoint as the social exchange theory evolved. The collective dimension, for example, organizational and societal issues of social interactions was discussed by Makoba (1993). Other modern studies used relational exchange theory with
a viewpoint from marketing and law research, to conceptualize exchanges between firms. Marketing researchers, such as, Anderson and Narus (1984) and Lambe et al. (2000) emphasize that exchange partners consider the relationship important in and to itself, and that parties are eager to dedicate resources towards preserving and enhancing the relationship. The contractual perspective of exchanges is well known in law research, and Macneil (1980) reasoned on the life cycle contingencies of contracts. Economics of transactions (Williamson, 1995) is also well known in research. Williamson’s transaction cost theory has been applied in many research projects, so also in IS research by for example, Ciborra in his reasoning on teams, markets, and systems (Ciborra, 1993). Ciborra emphasize the availability and symmetry of information in order to complete transactions.

Other research related to firm relationships is the case of outsourcing in which the IS functions of a firm is managed by an external partner (Goals and Chin, 2005). Research in firm relationships agrees that cooperation reflects the acknowledgement and agreement of exchanges of firm assets (Goals and chin, 2005; Mulford and Rogers, 1982). Although there is a recognition of the importance of relationship issues from different research disciplines there is a relative lack of theoretical conceptualizations with a holistic view, and especially from the IS field. This paper addresses these issues by suggesting a theoretical solid conceptual foundation specifying the constructs that comprise relationship alignment, and doing that from an information theoretical viewpoint.

The assumption in this paper is that the information exchanges are too complex for to consider the organization, groups, or even the inter-organizational level as the area of concern to explore relationships, and how alignment in the relationship can be understood. Therefore, this paper will describe three conceptualizations that support a differentiated view on the relationship alignment. The motive for a differentiated perspective is concerned the fact that inter-firm relationships are not solely transactional oriented, they are also relational oriented in the sense that social interaction enhance, for example, trust-building efforts among business partners, which is considered extremely important in contexts where small firms operate (Storey, 1994).

Prior research
Research in alignment is mostly done from an IT perspective concentrating on the return on IT-investment angle, how to achieve competitive advantage through IS, and the way that IT can provide direction and flexibility to react on new opportunities (Avison, et al. 2004). From a theoretical viewpoint alignment research can be categorized into three groups, according to whether the study employs a strategic management, economic, or a social outlook.
The first group is concerned with developing competitive advantages and flexibility to react on new opportunities. Research in this group employs a strategic management perspective in which alignment is explored from the perception that the business and IT should contain statements that visualizes how IT is linked to the business. The outcome of good alignment is good performance of the firm (Cragg et al. 2002; Hendersson and Venkatraman, 1992). Blili and Raymond (1993) outline a formalized approach for IT alignment in small and medium sized firms, in which threats and opportunities and critical success factors are supposed to guide managers in their attempts of making strategic business use of information technology. Often this perspective is explored via a resource based view of the firm or resource-dependency theory. Both considers the firm’s resources as a base for its strategy, and view alignment as a means to allocate valuable IT resources.

The second group is concerned with the investment angle of IT, and explores alignment in small firms via an economic perspective. For example, the spending on IT and the profitability gained as a result. Hitt and Brynjolfson (1996) did not find a positive link between the amount of money spent on IT and profitability of the firms. Also, technology is typically treated as a cost centre or viewed as an expense rather than an enabler of business value (Venkatraman, 1997). It seems that from this perspective that IT is not considered to be a critical resource for business. However, economic performance may be enhanced by alignment, by finding the right fit between external positioning and internal arrangements (Ciborra, 1993).

The third group is an emergent discourse that differs from the previous by the underlying social assumption that there are shared norms and harmony of interest between parties that influence the relationship, which leads to, for example, trust issues that is not conveyed by the strategic management and the economic perspective. Research in this group show an alternative view of alignment by extending the focus beyond strategic planning and transaction costs to include issues, such as, knowledge sharing among groups of humans (Nelson and Cooprider, 1996). Reich and Benbasat (2000) also emphasize the social dimension of information alignment as they study factors for alignment between business and information technology objectives. Examples of these factors are: work experience among IT managers, and education level. Konsynski and Tiwana (2004) argue for a move from alignment to aligning, meaning that an inter-firm relationship is an ongoing process and not a discrete event where managers’ mechanistically use classical notions of strategy formulation. While new ideas, or rather focus of interest are emerging in research of IT alignment it is still biased by the intra-organizational focus.
Framing relationship alignment

The discussion of relationship alignment is in this paper nourished by the emergent perspective on IT alignment presented above. In order to discuss alignment within the inter-organizational context, three constructs are in this paper utilized as a starting point:

1. Inter-organizational cooperation is defined by Anderson and Narus (1990) as the undertaking of complimentary activities to achieve mutual benefits
2. Linkages, as a result of cooperation between organizations require inter-organizational coordination (Aiken et al. 1975).
3. Linkages require communication of information that may be formal and/or informal (Anderson and Narus, 1990).

These constructs are utilized in this paper as an initial research model for guidance more than for exhaustive explanations or descriptions of relationships. A number of relational constructs are identified and defined in, for example, relational exchange theory (Goals and Chin, 2005), but the interest in this paper is not to examine these but rather to emphasize that the constructs mentioned above are naturally related to the IS field. The construct communication in for example, CSCW research is well-known. Aiken et al. (1975) mention information as an entity that need to be coordinated in firm relationships. The construct cooperation comprises the actions in a relationship that are concerned with information exchange.

In order to reverse the discussion from traditional IT alignment to relationship alignment this paper suggests three aspects of relationship alignment as a consequence of the constructs cooperation, coordination, and communication. First, the aspect of presence, which is a framework for determining the undertaking of mutual achievements by inter-dependent parties. Secondly, formality, which contains measurements for examining the interface between the external and the internal environment in firm relationships. Finally, mediation, which refer to the usage of technology for information exchange in relationships. But, first, information theory is outlined with the purpose to focus on information exchange types rather than using the abstraction of communication.

Information theory

The exchange of information is often conceptualized with the notion communication. Different language approaches, example, the BAT model (Business Action and Transaction) by Goldkuhl (1996) characterizes exchanges between suppliers and customers by a communication and coordination perspective. IS research acknowledges IT as an
instrument for performance of communicative actions (Goldkuhl and Ågerfalk, 2002; Winograd and Flores, 1986). In the business context, information technology focuses on issues of economic coordination (Ciborra, 1993). Modern information technology have an enormous capacity to manage (i.e., process, analyze, and systematize information). Still, a major issue is in what way interlinked firms can communicate and coordinate both unstructured and structured information with the use of a standardized protocols (e.g., the Internet), when information itself sometimes is impossible to standardize due to, for example, differences in business structures and business power. Therefore, it is important to emphasize that information can take many different shapes when considering the exchange of information as a communicative action which needs to be coordinated. A theoretical basis for information differences is the taxonomy of information proposed by Land and Kennedy-MacGregor (1987), which contains five basic types of information:

- Descriptive information,
- Probabilistic information,
- Explanatory and evaluative information,
- Unexpected information,
- Propaganda.

Descriptive information is information that is used in firm operations and also definable, such as, price, quantity, time-frame, orders and invoices, etc. and is executed in transactions. In other word, descriptive information is a description of the real world entities needed to be managed by a formal information system.

Probabilistic information is information that is derived from a limited set of real world observations or measurements gathered from a sample selection of, for example, consumers.

Explanatory and evaluative information is information that is future and planning oriented, and is not known or at least not always possible to predefine. This type of information is rarely made explicit and for example, norms, values, attitudes and subjective judgments are attributes that exemplifies this type of information.

Unexpected information is information that for some reasons occurs unexpected. For example, a manager’s decision making may have a discrepancy between the way he say decisions are made and the actual output of a certain decision.

Propaganda is information that is selected, manipulated, and presented (or concealed) in such a as to gain maximum impact.
The acknowledgement of differences between information types and its meaning shape the understanding among relationship participants of business processes activities, as well as the outcome of processes. Using information types instead of the term communication in the analysis of cooperation in firm relationships opens for detailed understanding of the significance to different between for example, social, and business oriented information exchange (Harnesk, 2006).

**Cooperation**

A fundamental dilemma in inter-firm cooperation is that the partners cooperate but usually also compete with each other at the same time (Lui and Hang-Yui, 2005). From an organizational perspective cooperation between firms is concerned with socio-economic aspects of firm relationships, dealing with autonomy abilities within inter-firm relationships (Price, 1972; Mulford and Rogers, 1982).

The concept of cooperation is well defined in research. Cooperation may be defined as undertaking of complementary activities by firms in an interdependent relationship with the objective of achieving mutual benefits (Anderson and Narus, 1990). Also, cooperation is defined as a strategy to reduce uncertainty in the firm environment, for example, by contracting for services (Mulford and Rogers, 1982). Cooperation has in research also been described as a social phenomenon in which corporate leaders should harmonize on broad cultural, philosophical and strategic issues if the alliance will sustain over time (Kanter, 1994). A legitimate question is then to ask; what kind of action patterns characterizes interaction in cooperation? Lui and Hang-Yui, (2005) suggests the following action patterns:

*Action acquiescence.* A cooperation process with high action acquiescence indicates that partners cooperate. When firms face possible opportunistic situations, they act in the interests of their partners and comply with their requests. They tend to adjust their actions taking into consideration the interests of their partners.

*Action simplicity.* Action simplicity captures the degree of specialization of firms towards their partners in terms of the actions taken towards them. Firms with low action simplicity take a wide range of actions when dealing with their partners. They may in some instances acquiesce, but in other instances manipulate their partners. In contrast, firms with high action simplicity are consistent in their actions and take only a narrow range of actions when dealing with their partners. It should be noted that the concept does not differentiate between the particular actions that the firms have taken. Firms that always deflect and firms that always acquiesce both have high action simplicity.

*Action reciprocity.* Action reciprocity refers to the extent that firms reciprocate the actions of their partners if their partners acquiesce, they will acquiesce; if
their partners defy, they will defy. Reciprocity prescribes that a negative action will elicit a negative response, and a partner’s opportunistic behaviour will be punished.

**Presence – the relational aspect of relationship alignment**

Presence is a concept that could be used to describe parties’ engagement in the relationships. Presence in itself is not new; research in psychology and communication has explored the distance between interacting humans. (Zack, 1993). This research suggests that the communication distance can be less influential if parties create a shared environment of information exchange. It is important to actively work on communication matters in order to gain sustainability in the relationship (Kanter, 1994). Furthermore, presence should not be confused with commitment. Commitment is defined as the willingness of the parties to exert effort and resources in order to sustain an ongoing relationship (Fontenot and Wilson, 1997). Thus, presence emphasizes human and social values and is therefore less resource oriented than commitment. As the first aspect of relational alignment, the following characteristics are suggested:

*Information acquiescence* is characterized as a cooperation structure with open flow and understanding of properties in information exchange. The exchange of information in order to achieve mutual adjustment is through the use of explanatory and evaluative information. This type of information makes parties confident in each others’ interests of the mutual arrangement.

*Information simplicity* refers to the degree of specialization in different styles of exchanging information among collaborating parties. In small firms this could mean that they use, for example, e-mail for both business transactions and informal interaction with business partners. The type of information that may best apply to simplicity is probabilistic information since that type suggests use of a limited set of measurements or even limited knowledge of possible exchange styles.

*Information reciprocity* refers to the information exchange equilibrium. If partners to a firm acquiesce on information content, they will acquiesce on information content; likewise if their partners defy, they will defy. This aspect of exchanging information has a voluntary flavour to it. Any sharer of information could pass information on but doesn’t have to (Davenport and Prusak, 1997). The types of information that apply to this aspect of relationship alignment is explanatory and evaluative, and also propaganda. Explanatory and evaluative information provide a judgmental aspect as firm managers’ can act purposefully when new business possibilities occur and they exploit intangible characteristics of the firm, even if long-term cooperation agreements has been made across firm boundaries.
Information theory suggests that activities that are informal in nature involve information exchanges that provide explanations and evaluations of real world phenomenon (Land and Kennedy-MacGregor, 1987). This type of information typically supports the characteristics above in the way that information exchange is a means to create common norms, trust, and reciprocity, and as such, promote engagement and make parties aligned with each other.

**Coordination**

In general, inter-organizational coordination is concerned with business planning of physical process integration for business exchanges within inter-firm relationships (Mulford and Rogers, 1982; Whetten, 1982). A common definition of inter-organizational coordination is: “the process whereby two or more organizations create and/or use existing decision rules that have been established to deal collectively with their shared task environment” (Mulford and Rogers, 1982). A common procedure in which information is coordinated is the trade cycle used to deal with the shared task environment, Figure 1:

![Figure 1. A generic repeated trade cycle.](image)

The trade cycle procedure is well defined (Goldkuhl and Lind, 2004; Whitely, 2000; Goldkuhl, 1999) as it describes the exchange of predefined information, for example, orders and invoices. The trade cycle model includes actors (buyers and sellers) and visualizes the flow of information and material. Research in small firms and IS has shown that the use of information systems helps to coordinate the information flow, and thereby reduce the cost of intervening human activities in different transaction processes, for example, the order fulfillment process (Li et al. 2000) but also managing increasing number of customers and customer care (Levy et al. 2001). Subsequently, mixed coordination by manual efforts and the use of information systems will be inefficient and counter productive to business goals.

**Formality– the transactional aspect of relationship alignment**

It is argued in small firm research that these firms are far more informal than larger organizations (Storey, 1994). However, at one dimension small firms also exhibits formality, and that in the use of the trade cycle. In this paper, formality is addressed through the concept of integration due to the fact that the information flow in the use of a trade cycle penetrates the firms to various extents. Integration refers to the inter-
twining processes and attributes into each party’s structure and processes (Goles and Chin, 2005). Integration enhances the quality of the parties internal business processes (Henderson, 1990) as well as the linkages that bridge differences between firms (Kanter, 1994). Davenport and Prusak suggests that: “companies typically seek to share common information in order to ease communications across divisions, functions and/or business processes” (Davenport and Prusak, 1996, p52). Even if somewhat general, the quote expresses that inter-dependency in the structure and content of information flow is a function of a cross-functional communication processes. In this paper it is suggested that the measurements developed by Massetti et al. (1996) may constitute such a function for integration, as the second aspect of relationship alignment. The measurements are: *Volume, Breadth, Diversity, and Depth.*

According to Massetti et al., (1996) these measurements constitutes a measurement strategy aimed to direct an organization’s EDI initiatives. Apart from being a scheme for EDI measurement, it can without adjustments, be used as an overall scheme for the flow of information throughout the inter-firm relationship. Information is in such context often handled (i.e., created and delivered) through many systems, sometime manual, connections (volume). Information is exchanged with several external business partners (breadth). There are also different types of document being transferred between firms, for example, direct and indirect material ordering (diversity). Information is also reaching into internal business processes that are not explicitly concerned with the external information exchange (depth). In essence, information exchange in business activities is not just a point-to-point experience. Even in small firms there are often different roles effectuating, for example, an order transaction. The formal dimension of information exchange in transactions may then be depicted as in figure 2 (Harnesk, 2006):

![Figure 2. Conceptualization of information exchange coordination](image)

The facets volume and breadth are quantitative measures of the information exchange and are indications of, for example, the structure of information for transaction support. The facets diversity and depth are concerned with the actual information flow and of qualitative character, which means that an understanding of the information flow
may be gained by examine the information content and the roles within the firms that are concerned with the transactions. Further, regarding performance monitoring, diversity and depth stresses the issue of integration within the firms. The value of using information technology is not optimal if the connection between the external and the internal information environment is not established.

Information theory suggests that activities that are formal in nature, such as the order fulfilment process, involve information exchange that mirrors real world entities, i.e., the information is predefined and agreed upon (Land and Kennedy-MacGregor, 1987). In order to appreciate better how relationship alignment may improve the functioning of the relationship as a mechanism of formality, it is useful to identify the content and extensions of information flow in transactions.

**Communication**

Communication refers to the proactive formal and informal sharing or exchange of information (Goles and Chin, 2005). Information technology, applied to functionality in firm operations is expected to facilitate communication with external business partners (Senn, 2000; Premkumar, 2000; Konsynski, 1993). Communication of relational and transactional related information with inter-firm based information technology as well as other media (e.g. telephones and fax machines) is expected to support the effectiveness of firm management (Zuboff, 1985), as well as firm operation efficiency (Masetti et al. 1996).

Accordingly, the computer mediation of business rules and how the information should be exchanged in computer networks needs consideration. In inter-firm relationships there is a need to agree on common operations of business rules, and since no business is totally integrated, a separated view on rule bases should be preferred (Jardine and Yasid 1989). Such approach is appropriate in cooperative arrangements where each firm need to harmonize internal organizational goals as well as common relationship based goals (e.g., value-added services). For specific business terms Wang and Wadnick (1989) advocates for heterogeneous term bases which are interlinked and could be translated into specific business environments when needed. This approach also supports the possibility for each firm in a relationship to develop and prospect from various business arrangements and goals.

Proximity is also a matter in information exchange; Rasch and Hansen (1993) stress the numbers of decision makers, their locus in the relationship, and the current information available for effective information exchange structure. Nonetheless complex, the question of proximity is mainly a question of availability by maintaining information in one common information base or in two or more information bases. In transactional cost theory this is addressed through the level of access of information (Hirschleifer, 1980). If there is a fault in the information
channels, asymmetry of, for example, price information will incur search costs (Ciborra, 1993) to relationship parties.

**Mediation— the technology aspect of relationship alignment**

One way to understand inter-organizational information systems mediation is by the classifications of functionality (Premkumar, 2000; Francis, 1986). Another way is to consider the structure and knowledge support of information technology. The work of Orlikowski and Zuboff are excellent examples of this. Orlikowski (1992) means that IT is a medium of human action and that technology facilitates and constrains human action through the provision of interpretative schemes and norms and as such technology may be a resource as well as a restriction for human action. Also, the reasoning of IT as an automator and an informator by Zuboff (1985) is example of how IT can support efficiency and socialization as rationales for relationship alignment in IT mediated information exchange. In that sense, Ciborra suggests a classification that incorporates features that are network oriented (Ciborra, 1993):

- Scope of applications
- Interface
- Extension of linkages
- Function in context
- Reflection (Ciborra, 1993, pp 65-67).

Scope of applications suggest that technology has one clear purpose, as a go-between, but it does not take part per se in any conversion processor the attainment of a specific and unique goal of the community served. The second level is the classical boundary specification of the user community, that is, it looks at the man–machine interface between the user and the network. At a first glance this level looks trivial but it should be clear that a network contains at least two different communities of users affected by the same technology. The third level denotes the physical and virtual extension of the network. This level deals with the architecture of the network, location of data and processing nodes, and the modes of access. The fourth level deals specifically with the role of technology and how it is understood by being placed into its surrounding. Function in context indicates what type of socio-economic interdependence the technology actually favors or supports: a team arrangement, a hierarchical departmentalization, a market or a mixture thereof. The final level is the reflection level, where the social and the cognitive contexts of the technology are intertwined. In what way does technology change our worldview on the network? Does it radically change the foundation for behaviour, the execution of routine tasks, or the devising of new ones, Ci-
borra asks In today’s business it is obvious that, for example, the adoption of E-commerce channels have had great impact on firms as they entered the global market.

Ciborra also furthers the five levels into conceptualizations that help to facilitate appreciation of the two previously outlined aspects of relationship alignment in this paper: presence and formality. Ciborra’s conceptualization is viewed from the impact the mediating technology may have on the organization. The first type of impact is efficiency of exchanges to which technology is applied. Levels such as scope, interface, and function in context can all affect efficiency in determining scale and scope of economies. Standardization is one common approach to acquire efficiency. The second type is concerned with sheer socialization. One of the latent activities of groups is to maintain itself. This is achieved by a continuous and subtle sequence of mutual adjustments. Maintaining the relationship between a member and the rest is an essential factor at this stage (Ciborra, 1993, p69). The concept of efficiency applies to the way formality is maintained in pre-defined information exchange and socialization links to the concept of presence by emphasizing the need for human interaction.

Conclusions and discussion
This paper, have drawn attention to relationship alignment as an addition to the traditional view of IT alignment. The primary contribution from this paper is an advancement of knowledge regarding the nature of alignment in a relationship context. One important starting point was that there is no single universal theory or concept that can frame relationship alignment. The focus was directed towards three constructs adopted in this paper to discuss relationship alignment: cooperation, coordination, and communication. Relationship alignment was then conceptualized according to the constructs and this paper suggests three concepts according to each construct: presence, formality, and mediation. This paper has shown that relationships are differentiated in terms of information exchange. Cooperation is social task and coordination is a transactional task and these two areas differ in terms of information structure, and also, communication of information has to be mediated in some way.

Presence is a concept aimed to describe alignment from the comprehensions of the information being exchanged. In general, firm managers’ exchange strategic and non-neutral information, which are examples of the explanatory and evaluative type of information (Land and Kennedy-MacGregor, 1987) in different joint activities, for example, common business prospects. An example of that is when firm managers want to make business processes cross-functional (Davenport and Prusak, 1996). It is then important to recognize shared environmental issues to avoid conflict among parties, and a way to achieve that is to ensure that parties comprehend the meaning of information being shared.
Formality in business transactions means that the information being shared is structured and predefined. Integration is important, not only in the actual linkage to another firm but also how information affects internal responsibilities of a firm. Formality as a concept also connects harmoniously to the trade cycle procedure used by firms in a relationship, by the way that predefined information (Land and Kennedy-MacGregor, 1987) is exchanged. Hence, it is important to acknowledge the positions in the firms as they are concerned with execution of transaction bounded information. The measurements suggested: volume, breadth, diversity, and breadth of transactions may be a determinant of the transactional level in relationship alignment.

Mediation as a concept aims at supporting transactions and relations, i.e., the structure of information content communicated throughout the relationship. The two concepts suggested by Ciborra (1993): efficiency and socialization provide a tool to understand the richness in information exchange and how contextual dependencies challenge the use of technology. Mediation of transactions is state-of-art today but mediation in relationship and socialization activities is yet to ascertain in social settings of different network relationships. In terms design or use of technology it is important to identify what the contextual dependencies are and especially what type of information exchange should be supported by technology.

A number of potential avenues for field research are opened by this research. The first concerns the overall nature of relationship alignment and how different parties perceive the role of information exchange between them by compare and contrast each firm’s perspective on the relationship. Another prospect lies in examining what specific capabilities and competences of the parties influence the relationship and what role different types of information used in exchanges plays in success or failure of relationship alignment. One more opportunity for future research is to use this paper as a springboard to examine different types of relationships.

The aim of this paper was to reverse the ongoing trend in alignment research by suggesting a differentiated view on relationship alignment. This differentiated view was based on three constructs: cooperation, coordination, and communication. Even if these constructs are useful to describe the context of firm relationships there may be others that more precisely pin-point the intrinsic properties of firm relationships. Research should take into account the preliminary nature of this paper.

References


APPENDIX 1

Guiding questions to the conversation with managers

Theme - Social environment

What are your thoughts regarding success factors for establishing, maintain, and develop firm relationships?

Relationship strategy:
- How do you proceed with creating the relationship with another firm?
- What are the roles in such procedure?
- What kinds of activities are carried out?
- How often do you have meetings with the other party and when is it possible to say that the relationship is established?

If the relationship is already established
- In what way do you maintain the relationship?
- What are the roles in such procedure?
- How often do you have meetings with the other party

general aspects:
- How do you perceive the role of information in terms of structure?
- Is there a formulated plan for users of information systems and the structure of information management between you and your business associate?
- How is possible conflicts managed in the relationship?
- Other issues…(open for the managers to elaborate)

Awareness
- How do you proceed to create awareness of each others firms culture?
- Is it important to develop a shared mindset of understanding for the relationship?
- What is important to know about the other party?
- Is openness important in the relationship?
- Other issues…(open for the managers to elaborate).

Cooperation
- What are the goals with external cooperation?
- Do you follow any specific strategy for cooperation? E.g., legal agreements, coalitions, etc.
- How do evaluate and control the cooperation with the other party?
- In terms of control, how centralized or de-centralized is the firm relationship?
- Is longevity of importance? What prerequisites are then important?
- What about balance in the relationship? Do you experience external pressure from the other party or do you experience that you yourself is driving the relationship?
- Other issues… (open for the managers to elaborate).
**Theme - Business environment**

What are your thoughts regarding success factors for business transactions?

**Business strategy**
- Do you have a business strategy? If so, what is the focus
- How do you maintain the strategy?
- Is there a formulated plan for information exchange regarding the business terms?
- Other issues…(open for the managers to elaborate).

**Business demand:**
- Describe the events in typical transactions.
- What are the roles in such procedure?
- How do you manage new or changed demands within the transaction?
- Describe the flow of information in typical transactions.
- Can you describe the information?
- How do you manage the information flow when new demand in the transaction occurs?
- Other issues…(open for the managers to elaborate).

**Coordination:**
- How do you coordinate business transactions within the relationship?
- Do you use any kind of information technology while coordinating the transactions?
- Approximately, how much time do spent on manual coordination within the relationship
- Other issues…(open for the managers to elaborate)

**Integration:**
- Can you describe the volume of information flow in transactions?
- How many systems are concerned with the information flow
- What kind of organizational roles are concerned by the information exchange
- What kind of information (document) is exchanged?
- Other issues…(open for the managers to elaborate)
Theme - Technology environment

What are your thoughts regarding success factors for using IT in firm relationships regarding the relational oriented matters and the business oriented matters of the relationship?

IT Supply:
- Do you have any kind of formal plan or strategy for the overall management of information technology?
- What kind of IT is used in the firm?
- How is the IT infrastructure managed? Internal IT group or third party IT suppliers
- Other issues…(open for the managers to elaborate)

Distribution:
- What kind of systems connection exists between your business and the partner?
- Do you experience well integrated information systems between your internal systems and the external information systems?
- Other issues…(open for the managers to elaborate)

Communication:
- Do you prepare any strategic and operative plan for common information structure together with your business associates?
- In what way have you implemented business terms, business rules and management of information so that they fit into the business transactions?
- Other issues…(open for the managers to elaborate)

Changes within the relationship

What are your thoughts about success factors for changes in cooperative relationships?
- To what extent is changes occurring in the relationship with external parties? How does change affect the cooperation system?
- In what way do you manage information resources during possible change and what is the role of IT before, during and after radical change?

Ask for information about the company; number of employees, turn-over, age of the company, geographical location, etc.

Ask for a person to contact at one of the collaborating firms.