STUDYING NETWORK MANAGEMENT FROM THE COMMUNICATION PERSPECTIVE - A LITERATURE REVIEW

Heli Huhtinen[1], Veli-Matti Virolainen[2]
[1] Telecom Business Research Center Lappeenranta, E-mail: heli.huhtinen@lut.fi
[2] Lappeenranta University of Technology, Dept. of Business Administration
E-mail: veli-matti.virolainen@lut.fi, Box 20, FIN-53851 Lappeenranta, FINLAND

Abstract: This paper aimed at studying how the communication perspective in the network management context has been taken into account in the recent research in the field of Supply Chain Management (SCM) and other business management literature. The basic network management framework used in this study consists of 1) network strategies led from the network visions, 2) organization and 3) working principles, where the management aspect will be further elaborated through communication perspectives. As a result of this paper it became evident that the current research does not support or deal with the role of communication in interorganizational relationships, or, if it does, the emphasis is still on operational communication or on the use of communication media. However, it was proven that the exchange of strategic information is essential in managing business relationships, which in turn gives a rise to a research question of the meaning of communication in these relationships. Moreover, this study brought forth the need for considering also other research traditions that complement SCM research especially when regarding the managerial function of communication in the networked economy.

Keywords: communication, networking, literature review

INTRODUCTION

Background to the study

Before getting to the literature review it is worth pointing out the meaning of communication, so to say why to study network management from the communication's perspective. First, the role of communication in the field of supply chain management has been emphasized as a managerial issue in the same time when information society or new economy has arisen. Secondly, the advances in information technology and new e-business tools offer new ways of doing business, but at the same time the utilization of such new technologies is becoming very challenging. Thirdly, along with the technological progress the forms of strategic partnerships, alliances, and networks are becoming more common, which bring about a new dimension to corporate management especially in the field of supply chain management. Thus, together the use of information technology and harness of the networking as a business strategy have led to the emphasis on communication as a means to manage business relationships.

Network management framework

The network management framework used in this paper consists of three main dimensions, namely network strategies, organization, and working principles, while the network vision and targets are the incentives for the build-up of a network strategy.

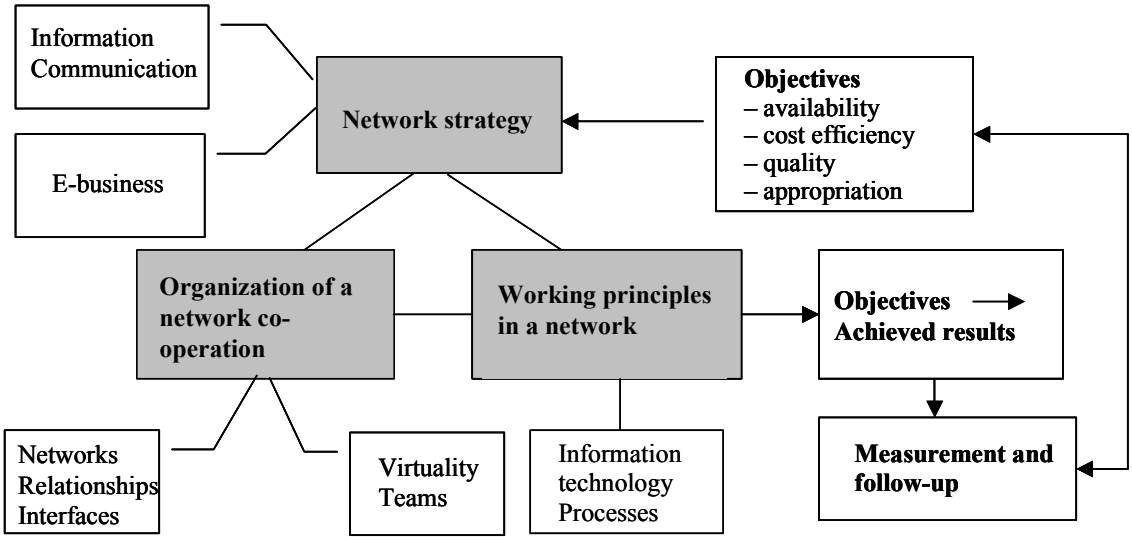

Figure 1 Network management framework (modified from Ollus, et al. (1999), and Huhtinen, et al. (2001))

Figure 1 describes the dynamic approach of management of strategic network. In a network each company has to commit resources outside its organization boundaries (compare idea of quasi-firm, Lamming, 1993). Each company however has its own resource base with which to operate. Objective of a network is to rationalize the part of network to which it relates and to provide added value. The cost of resourcing the network must be justified by the value it adds (cost savings, lead time reduction, new innovations, mutual competitive advantages etc.)

From strategy must come guidelines and directions for management of the network - including organizational issues and working principles. There must be a strategic, mutually agreed plan, to operate different levels with various players in the network. Strategy also marshals to combine differentiated competencies into a cohesive whole.

The organizational issues in network co-operation include some questions that need to be answered: What functions does each member perform for the larger network? How is each member vulnerable? What are the contact points between networks – aside from the manager's own firm? (Borders, et al. 2001) The working principles include decisions on how to operate on the lowest level in a network. In this case the support of the information technology is a counterpoint in communication between members. The objectives and measurement or follow-up considerations are also important in the framework, but they have been excluded from the present study. The basic framework has been complemented with different dimensions found relevant in the SCM literature review and it also clarifies the structure of this study.

Objectives and the execution of the study

The network management framework has been kept in mind when formulating the research questions of the study, which are as follows:

- How the communication perspective in the network management context has been taken into account in the recent research in the field of supply chain management?

This research question generates three sub questions, which are:

- Which are the challenges and dimensions of communication in the network strategy?
- What kind of challenges do organizational structures create on communication?
- What kind of communication related working principles should be taken into account in a network management?

Being such a broad research area, this study is focused on describing the status of the research dealing with communication and network management issues that is to describe the wide range of communication dimensions.

The literature used in this study has been collected from several international journals in the field of supply chain management, and while regarding communication and network or buyer-supplier operations as a strategic function, attention has been paid also to the journals dealing with other strategic or business management issues. In addition to these main journals the search according to the headwords from article databases have got the researchers also into the totally new research field. These research topics mainly deal with a particular industry (like health care), or may approach the behavioral science or computer science, but when keeping in mind the research field of the current work, these studies have been mostly ignored. It is worth noticing that this study is only a part of the whole review, as other scientific publications (books, reports) have been excluded so far.

The literature review has covered years 1996 to present, which authors found relevant enough to be able to capture the main issues when considering the dimensions of communication. That is, the advent of new economy, and the role of information technology and e-business solutions have been emphasized just over the recent years although other dimensions of communication challenges based on networking and interorganizational organizations have existed for years. On a contentual level the literature review is structured in a way that supports the idea of network management framework. Directly communication and information related studies will be presented under the “network strategies” just like e-business and other “e-topics” although they are regarded as part of a holistic picture and not definitely belong only to the strategic but also to organizational options.

Defining communication in this study

Communication refers to any kind of exchange of information between several partners, that is the one-way communication should be limited out of this study and pay attention to the two-or multi-way interaction. In the current literature communication has been called by various terms, such as information exchange, management of information flows, and information sharing. When stressing the SCM point of view, concepts like seamless supply chain, virtual value chain and information supply chain are used to describe the critical role of information in the business relationships.

COMMUNICATION PERSPECTIVES IN THE NETWORK MANAGEMENT

When considering the network management framework, the main research streams deal with the network strategies and organizational issues, although the technological perspective has also been covered in the third part of the triangle, working principles. There are still rather few articles written about the technological considerations during

the early time span of the review, but this has changed when getting to the millennium. Research into the communication aspects has been captured mainly through a couple of perspectives, namely "information management" and "supply management" which cover also the aspects of network organization. Moreover, research into the organizational issues is multidimensional, as the studies have dealt with the relationships, company interfaces, cross-functional departments and teams, not forgetting the virtual enterprises and virtual teams, which really emphasize the information exchange in cooperation.

Network management strategies - Information/communication/knowledge

The conceptual analysis of the information management, communication and knowledge management reveals the broadness of the whole information world and the procedures that should be tackled to be able to manage information in the first place. As an example Lueg (2001) states about information management: "The collection and dissemination of information to the benefit of an organization and its individuals". Apparently, information can be transmitted, stored, processed and retrieved, and when approaching the computer-based information management techniques, information retrieval or filtering tools increase the broad range of information management decisions. Moreover, defining the information need is a one big challenge in companies as "Information and knowledge are only useful in specific situations" and later on "Information must be put into context in order to be useful", which refers to the relevance of information (Lueg 2001).

When considering the network strategies the emphasis is on information and communication strategies, although there are rather few articles written directly about communication (see Deeter-Schmelz and Kennedy (2002), Guinan and Faraj (1998), Heide, et al. (2002), Marmer Solomon (1999), Rapert, et al. (2002), Richeson, et al. (1995), Rosenbloom and Larsen (2002), Spanos, et al. (2002), Spekman, et al. (1999), Varey and Hamblett (1997) and Webb (2002)). It is also worth pointing out that the research perspectives vary a lot and there couldn't be found any main stream in these research topics. As already stated, the emphasis on information and communication aspects themselves has been increased when going from 1990's to the new century.

Strategic decisions of communication in the network management context raise the questions of what kind of information to exchange (type and content) and which media to use. These considerations fall partly into the field of *information management*, which is closely related to communication, as it can be seen as a further step from communication; after the data has communicated, it becomes information, and the storage and processing of information will bring about the need for information management. When arguing on behalf of information and knowledge management and their closeness to strategies Carroll and Tansey (2000) state following: "More complete information may serve as a basis for improving communication and setting organizational objectives thus generating better input for creating new corporate strategies".

The definitions and elaborations of different concepts like information (management), communication and knowledge have reached interest of many researchers over the past couple of years (see Gooijer (2000), Kumar and Palvia (2001), Lueg (2001), Lummus and Vokurka (1999), Mason-Jones and Towill (1998), Noorlander (2001), Ramaprasad and Rai (1996), Rowley (1998), Smee, et al. (2001), and Warkentin, et al. (2000)).

Lummus and Vokurka (1999) state that "Supply chain managers require information at all nodes of supply for all entities to be successful", and moreover, utilizing the moments of information may be the key to successfully competing in the next decade. However, the information management point of view stresses the flows of operational information, such as demand forecasts, inventory, production schedules and order information. The role of communication is emphasized, as managers must communicate that information throughout the demand chain – both from future plans and past operations.

When regarding the role and importance of information and communication, researches are several as well (see the studies from Beer and Eisenstat (2000), Burgelman and Doz (2001), Dyer, et al. (2001), Peng and Littlejohn (2001), Storer (2001), Takeishi (2001), Teeni, et al. (2001), Tomkins (2001), and Yu, et al. (2001)). Especially the role of communication is emphasized in a strategy implementation process and in the relationships management and networks.

Importance of information and communication in SCM
As just stated, several authors have studied importance of information and communication in the literature; Takeishi (2001) emphasizes the critical role of both internal and external communication, as "effective coordination through frequent communication…is critical to successful product development". Ramaprasad and Rai (1996) share the opinion by saying: "Communication of information is essential for coordination and control; and information is also central to the transformation of an organization through informating". In addition Smee, et al. (2001) state that effective and ethical communication at any encounter plays an important role, which include: exploring/discussing the interests of each party; exercising effective listening skills; understanding personalities, cultures, backgrounds, values and beliefs, setting ground rules, etc. Moreover, it is important to pay attention to the leadership in order to define lines of authority and ensure outcome, to embrace change, which means understanding and accepting the information strategy within the organization.

Noorlander (2001) sees information as a crucial and critical raw material for most companies where information should be regarded beyond the boundaries of the current suppliers' contract, communication links, and software/hardware restrictions. Noorlander adds: "*You need to focus on the objectives of your firm, understand where information can add value, understand the information industry and current level of offerings, and bring in the right level of expertise to manage the process*".

Peng and Littlejohn (2001) regard the role of communication very crucial when considering the organizational viewpoint. As organizations evolve in response to social and technical changes (like contemporary organizations, which are shaped by globalization), they often take either corporate forms where management, ownership, technical experts and line workers are separated, or collaborative forms like clusters and strategic alliances. Therefore, as a consequence of separation in distance, language and culture of organization members, communication and cooperation between diverse participants have been recognized as crucial elements to maintain organizational stability and adaptation to change.

When studying the premises for a success in dynamic network organizations, Papazoglou, et al. (2000) have realized the importance of communication. According

to them the quick build-up and dismantling of inter-organizational relationships are important factors just like limited number of core competencies each organization is focusing on. Accordingly, all partners must keep a clear view of the coherence of the total system of competencies within the network that is all actors should have an insight as to where and how value is created and what contribution they can make based on their own competencies, which in turn, points out the critical role of information exchange between the partners. In addition to these studies also the work of Heide, et al. (2002) present barriers to implementation of a formulated strategy, where the communication problem was indicated to be the main class of implementation barrier.

Reviewing these articles has pointed clearly out the fact of importance of information management and communication perspective in company's operations. However, when narrowing down the concept the dimensions are varying and managerial options should be made using multidimensional view.

Dimensions of information and communication

Table 1 reveals the main findings in terms of communication research collected from the SCM and strategic management literature. Contextual dimensions of communication point out the broadness of the concept including company functions and organizational options in arranging communication. Contentual dimensions will reveal the communication decisions on a more specific, operational level including also the attributes of these options. The role in the research points out on a general level the context in which the information and communication aspects have been studied.

Author/Features	Contextual dimensions	Contentual dimensions	Role in the research
Storer (2001)	Hierarchical decision level (operational, management control information, strategic knowledge systems), departments, organizations	Content (products and organizational performance, s/d forecasts, R&D, strategic planning), frequency, directionality, formality, Communication tool	Information feedback system
Moenaert, et al. (2000)	Network level transparency Firm level capabilities Team level capabilities	Parallel structures Cross-functional and inter-unit climate Core team, team leadership, formalization and procedural justice	Communication efficiency and effectiveness Communication infrastructure, and goal congruence
Teeni, et al. (2001)	Organizational communication	Goal-based communication strategies, message form, medium	Communication process
Warkentin, et al. (2000)	Data representation quality, data value quality and data model quality	Completeness, accuracy, currency, timeliness, precision, reliability, consistency, and relevance	Information quality
Albrecht (2001)	Data logistics Data protection Information behavior Information design Knowledge creation	Software and infrastructure Getting information from and providing information to others Software and other tools to create information Analyzing and processing information	Information quality
Fourboul Voynnet and Bournois (1999)	Corporate headquarters and subsidiaries; Information transmission	Communication media and process	Communication patterns, quality of communication
The Palo Alto School in Fourboul Voynnet and Bournois (1999)	Relationships between people, the context, people's behavior and facilitators	Time and place factors in communication	Complexity in communication, Cultures and cultural differences
Richeson, et al. (1995)		Frequency, method, type of shared information (production schedule, quality, and cost information	Communication quality and quantity
Markus, et al. (2000)	Vertical communication		Content of communication
Peng and Littlejohn (2001)	Functional arrangement Role/positions arrangements Group arrangements	Stable and dedicated formal channel and communication is mostly informal and unplanned Formal structures Informal communication channels/activities	Structural arrangements of communication, Notions on pattern of managerial behavior or administrative systems
Rosenbloom and Larsen (2002)	Formulation of communications strategy		Cultural aspects in communication
Hull (2002)	Exchange of operational information		Description of the supply-chain information flows
Deeter-Schmelz and Kennedy (2002)	Purchasing function	Selection of communication tools Operational information exchange	Business-to-business communication
O'Sullivan (2002)	Managing the process of business development	Groupware application	Information architecture and toolset

Table 1 Mainstream of the studies into the information and communication dimensions

As a concluding aspect to the research findings of information and communication dimensions Richeson, et al. (1995) state: "Purchasing managers need to distinguish between routine and nonroutine communications, determine appropriate methods of communication for each, and work together with suppliers to achieve improvements in communication". It becomes evident of what kind of a diverse topic the information exchange is and therefore, it creates many challenges in terms of deciding the right strategy in a network.

Network management strategies – Virtuality and e-business

The advent of *e-business/e-commerce* topics could be found around the year 2000, and these main concepts are closely related to the emergence of other "e-topics" (e.g. Alt, et al. (2000), Borders, et al. (2001), Cheng, et al. (2001), Daoud (2000), John (2001), Lee and Whang (2001), Morris and Olson (2000), Pant and Ravichandran (2001), Shee, et al. (2000), Teresko (2000), and Warkentin, et al. (2001)) from which the electronic supply chain (see for example Van Hoek (2001)) is the most relevant in the field of supply chain management studies. In this review all e-topics have been handled in network management strategies, although the organizational aspects are part of it as well. During the time span 1996-1999 the terms "virtual" and "extended" get more place than before, and they appear in connection with teams and enterprises (see Browne and Zhang (1999) and Bal, et al. (1999)).

Virtual Corporation is not a new concept, Davidow and Malone (1992) presented it already in 1992, but along the information and IT emphasis it is still an interesting topic in the research field. As Browne and Zhang (1999) state: "The success of both the extended and virtual enterprise depends on intensive information sharing"- and according to them the main challenges consist of effective and available advanced information and telecommunication mechanisms (like network computing), maximum degree of compatibility among partners' IT systems, and the coordination of the relationships between the entities. The virtual teams, virtual organizations and virtual enterprises continued to appear a research topic also in the millennium (Alexander (2000), Bal and Teo (2000), Bal and Teo (2001), Dreyfuss (2001), Johnson, et al. (2001), Lurey and Raisinghani (2001), Markus, et al. (2000), May and Carter (2001), Stough, et al. (2000) and Wang (2000)). Common for these researches was the growing emphasis on the information flow separated from the physical flow of goods (Van Hoek (2001) and the creation of information infrastructure (Wang (2000)), communication (Markus, et al. (2000), Bal and Teo (2001), and Johnson, et al. (2001)). At this point it is not worth going deeper into the topics of e-business as it is as broad as business itself – the "e" has become a natural form of business and should actually not be separated from it.

Value networks – e-business

Along the information emphasis a couple of new concept has been launched in the business management literature; namely virtual value chain (see Bhatt and Embad 2001)), and value net (also called value network, value-creating network, value web). Gaining effectiveness and efficiency in information transfer demands for a new way to organize a company's operations, and the concept value net has been launched to describe this new way of doing business. A value net combines the advantages of a traditional network and value chain activities, where the former emphasizes joint efforts when achieving efficiency, and the latter focuses more on the value-creating activities. Value for the customer is built up from customized products at a low price,

in-time deliveries, and good quality, where customer satisfaction requires seamless co-operation among suppliers, retailers, and the manufacturer.

Kothandaraman and Wilson (2001) also regard value networks as a future of competition, and keys to success include value creation process and its links to core capabilities. Information sharing becomes relevant in networked economy, as "Emergence of electronic data and information exchanges support network development through enhanced communication between partners". However, to sustain the competitive advantage means connecting three core concepts of value creation, namely core capabilities, relationships, and superior customer value. Authors also emphasize the role of e-commerce in managing a network by stating: "Electronic commerce will not replace traditional business-to-business relationships but will become an important extension as to how business in conducted". Value nets have been studied rather extensively over the couple of years; see for example Allee (2000), Andrews and Hahn (1999), Bovet and Martha (2000, Bovet and Roucolle (2000), Biederman (2000), Cartwright and Oliver (2000), Glasgow (2001), Kothandaraman and Wilson (2001), Pack (2001) and Walters and Lancaster (2000).

Network organization - structuring the supply operations

This section will reveal the main remarks from the literature in terms of organizational aspects. First the importance of organizational aspects in communication is highlighted, followed by the presentation of wide dimensions of organizations. Communication and organizational aspects are kind of complementary concepts, as the network structure creates challenges on communication on one hand, and on the other hand the communication is a facilitator and key-enabler in network efficiency.

Importance of communication and organizational aspects

When considering the structural implications of supply chains or networks that is the organizational implications, several aspects will emerge. It is not anymore only the matter of the one company, but communication becomes the matter of the whole network or dyadic relationships, and when narrowing down the organization, communication issues touch also the interfaces between companies, the team level and the individuals working in virtual teams.

Möller and Halinen (1999) have also put efforts on analyzing the network impact on companies' operations and performance, and in their study the role of communication is emphasized as a managerial task when outsourcing business activities and creating supplier partnerships. Network visioning capability is seen as an essential strategic capability, although it has received a little attention in the previous studies. Visioning capability is closely related to communication, as companies must systematically generate and evaluate the information of different networks, relevant for its current and future operations. In-depth level information and knowledge only can be generated by participating in the activities of the networks or through having relationships with actors knowledgeable about the networks. More complex this becomes when considering all the network management levels; industries as networks, firms as networks, relationship portfolios, and exchange relationships.

Borders, et al. (2001) combine electronic commerce and networking when dealing with the future challenges of companies. According to them, "A network-centric view makes it important to map the networks…and…managers must collect information on

all of the firms that play major roles in each network or value chain". Moreover, to be able to optimize the network, information must be shared that is not only operational information but also the exchange of competitive intelligence across the network. In this sense the information sharing is approaching the concept of knowledge management. Fletcher and Barrett (2001) see the managerial issues in the similar way, as there is a need to understand the relevancy of the relationships in international business, the role of interdependency between buyers and sellers, the need for buyers and sellers to build up knowledge about each other in order to facilitate both the creation of business and accessing the resources, and the need to treat internationalization of the firm as a dynamic and evolutionary process.

Moreover, several other authors have dealt with network level issues and enhanced the problems in this kind of structure as also the solutions and tools for this. Young and Kielkiewicz-Young (2001) have approached the network dilemma by a concept of sustainable supplier network. They regard the social, ethical and environmental aspects especially important to cover in company operations, which will lead to the emphasis of leveraging the ability to open, work with and learning functions with other companies. There is no denying the importance of communication in this field of networks, although trust between partners is the main attribute. Additionally, according to authors the length and size of the network are dependent variables, whereas the cross-functional teams can be seen as a facilitator and coordinator in communicating the relevant information between network companies and intra company departments.

Network level structures

The research in the management literature has strongly focused on studying the varying roles of different network actors or roles in a supply chains and what are the implications of these in the strategic management as well as operative performance of the companies. However, the emphasis is now more on value creation and on end-customer requirements than ever before, which may be due to the fact that these requirements are now more easily attainable.

Schotten and Scherer (1998) describe the communication challenges in a networked environment, where a network can take the form of strategic network, regional network, operative network and virtual network. The IMP (Industrial Marketing and Purchasing) –school has also strongly focused on describing the network structures and relations between companies and their findings offer a broader view on the structural decisions. It is obvious that the coordination schemes are highly dependent on the form of network, which thus creates challenges also on communication. The IMP-view of network management (see e.g. Dubois and Gadde (2000)) connects the actors in a network, resource ties between the companies and activities they process. This creates still another way to see the challenge of managing business relationships, and it becomes evident that also communication, information sharing or knowledge use have importance.

Harland and Knight (2001) narrow down the network structuring by introducing different roles in networks and factors impacting on their performance. Such factors have been categorized into six parts, which are: 1) network setting (relational), 2) network setting (informational), 3) organizational setting (tacit and informal), 4) organizational setting (systems and processes), 5) team competence, and 6) role expectations. To be successfully managed network level decisions need a close

consideration about structural decisions with external partners, confirmation and establishment of interorganizational transparency and openness, availability of quality data, all of which are crucial especially from the communications point of view. The organizational setting requires also widely shared information and high quality communication, expertise for communication. Communication challenges arise in terms of managing the tacit and informal knowledge (knowledge management as a whole), negotiations, aligning between own vision of role and others' expectations, and of course, the effective use of IT to support communication.

Lamming, et al. (2001) approach the supply networks by handling of lean supply and emphasize its importance in today's competition. According to the authors the product type is one important factor, which also affect on the nature of information and information sharing. As authors state (cited from Fisher (1997)): "…Supply chains must be managed according to the nature of the product being supplied". A knowledge intensive product (also innovative product) requires different kind of decisions than a functional product, as the former must be more market responsive and the demands are more difficult to forecast, and additionally, complex network structures especially in the upstream of the supply chain shift the emphasis on the management of information. Of course, some innovative and unique products are also of lower complexity, where the role of IT is less critical in the sharing of information.

Evans and Berman (2001) introduce three levels of supply network decisions, which are 1) supply network member, 2) links between the processes and 3) integration level between operations. The role of communication is strong, as value chain elements must be well communicated to all of a firm's publics, customers, employees, wholesalers, functional specialists, and the general public. Challenges arise due to this broad scope of communication, but also due to the decisions concerning the communication media and the manner of communication; it has to be integrated and uniform.

Relationships

When emphasizing the role of communication in the relationships or supply chain management instead of network management, studies are several (see Andersen and Buvik (2001), Brewton and Kingseed (2001), Briscoe, et al. (2001), Buvik and Halskau (2001), Forker and Stannack (2000), House and Stank (2001), Khalfan, et al. (2001), Papazoglou, et al. (2000), Poon and Lau (2000), Vrijhoef and Koskela (2000), Walter, et al. (2001), Webb and Gile (2001) and Zuckerman (2001)). It is worth pointing out that the value creation is an important part in these studies that is how companies can increase the value of the relationship.

Patterson, et al. (1999) approach the managerial aspects of supply chain management from the viewpoint of different types of buyer-supplier relationships. Three different relationships (transcendental, transitional, and transactional) require different objectives and strategies, and by describing their differences shortly, the former calls for high levels of interdependence and commitment, long-term cooperation and loyalty, as the transactional relationships are characterized by distrust, constrained sharing behavior, minimal information exchange and short-term cooperation. This in turn generates a new dimension in the communication challenge framework, namely the form and type of buyer-supplier relationship.

Interfaces between companies
Managing interfaces is a one step down from the network level aspects. Araujo, et al. (1999) deal with the network-based dilemma from the supplier interface viewpoint: When dividing supplier interfaces into the four different categories, also four different managerial challenges will be born and the cooperation with suppliers will get new forms also in terms of communication. However, authors emphasize not the role of communication in managing supplier interfaces but the interdependence, core competence and variety of amongst the set of suppliers. By narrowing down the interface issue there will emerge the interfaces between separate departments (see Morash, et al. (1996)), and in the supply chain management context this normally concerns the R&D, production, purchasing and sales departments. This is actually a critical issue when organizing company's operations and communication between different parties, as the cooperation with external parties and partners might be even easier as between the company's internal units (Sourcing manager 2001).

Christopher and Jüttner (2000), Christopher and Towill (2000) and Dowlatshahi (2000) have also studied the interfaces between companies that cooperate. At this point the relationships management becomes important, but it is also crucial to decide the right interface structure (see Christopher and Jüttner (2000)) to complement the relationships strategy. This in turn will affect also the decisions and procedures concerning communication, where the main interest is given on the linkages between partners' information systems. In addition it is important to decide which business functions should be connected in the boundary spanning processes in the first place. Dowlatshahi (2000) tackles different aspects of communication in the company interface management, as information must take place between and within different functional areas, between the marketing-logistics team and the buyer/supplier group, must be targeted to the improved flow of ideas/operations, and by arranging formal and effective channels of communication between and among different teams who collaborate on the same product/project.

Team level considerations – tasks, people, processes
Communication challenges are tremendous in a teamworking, including such matters as cultural issues, meeting facilities, security/authorization problems, problem with technology, time wasted and time required in communication etc. Bal, et al. (1999) offer the virtual teaming as a solution for managing the diverse information flows in an agile supply chain. Building effective virtual teams is a complex task, and requires an organization to tackle several technology, process and people related factors. Authors also successfully handle the matter of different communication media in the virtual teams, the topic that becomes more and more popular when getting to the 21st century.

Additionally Eppler and Sukowski (2000) broaden the perspectives of organizational effects to the team level, where the knowledge management is emphasized. Authors call this "Team Knowledge Management", where considerations have to make about the leadership, tools, processes, norms and platforms. Research results show that the foundation for successful team cooperation lies in a customized assortment of communication tools.

Working principles in a network – Technological perspective
Advances in technology and the progress in information technology have given rise also to the issues of technological aspects in information sharing. Especially this trend

was seen since the millennium, along with the e-business and new economy hypes. When considering the challenges of communication through information systems and technology, couple of issues has been emphasized most. On one hand the current research has focused on communication media, the role of Internet, EDI, etc., while on the other hand the study has focused on analyzing the impacts of using information systems and technical devices, or on evaluating the managerial tasks of such systems. Research in the field of communication media has been done for example by Baker (2000), Curry and Stancich (2000), Larson and Kulchitsky (2000), Mirani, et al. (2001), Ruppel and Harrington (2001), whereas the implications of the use of IT has been studied by Alshawi (2001), Baraldi (2001), Kumar and Palvia (2001) and Motwani, et al. (2000).

The inter-organizational information systems will become more general and need to be coordinated properly (Morrell and Ezingeard (2002)). Also the study of Hong (2002) is concerned with the role of ISs in the inter-organizational business relationships, which supports the importance of information technology in the management framework.

The study of Alshawi (2001) is very extensive, as he considers both the roles of information systems in the supply chain and the media involved (intranet, extranet, XML). The author also points out the importance of visibility, which becomes critical to the extended enterprise's success as many companies are involved in the complex supply chains. Alshawi emphasizes the information flows, which should be dealt with the same system than the physical movement of goods.

CONCLUDING REMARKS

This paper aimed at reviewing the latest supply chain management and other business management literature from the communication perspective in the context of networked economy. With this review researchers wanted to find out whether there is a research gap when studying the role of communication in business relationships. This study is the first part of the larger literature review, meaning that other scientific publications (books, research reports) have been excluded from this present study.

The first concluding remark is that although the strategic or managerial communication aspects in a networked, new economy era seem to be critical and have importance when managing business relationships with partners, there have been extremely few articles written purely on this issue. However, the changes in business environment based on networking, e-business and business dynamic have led to the impression that the topic is very essential when managing the relationships. Information technology and the operational information exchange are very relevant in terms of business operations, but the strategic communication as a means to manage interorganizational relationships should not be ignored, however, and that is why this research topic has been found interesting and worth studying.

As illustrated in figure 1., the formulation of network strategy is essential for successful network operations. The main task of a network strategy is the allocation of differentiated resources into the cohesive competencies (e.g. avoiding duplication). An essential content of the network strategy is arrangements of communication rules, modes and channels.

The latest research in the field of SCM and other business management studies point out the relevance of studying the role of communication in strategy implementation. Also the study into the interorganizational information systems seems to increase, which supports the idea of seamless supply chain or real-time information exchange in a company network. Purchasing.com (2000) provides 10-year visions for the purchasing and supply management functions up to year 2010 in which especially the communication visions are interesting. They have been approached as a consequence of the shift from bureaucratic to virtual corporations, and as a consequence of the increase in digital interactions among people. In ten years the purchasing professionals become highly trained business professionals – creating and interpreting information, defining business rules, guiding processes and managing exception. One could only ask the importance of intra-and interfirm communication in these kinds of circumstances, assuming the above-mentioned 10-year vision to come true?

All in all the study of the communication in the reviewed literature has been varying. When keeping in mind the managerial aspects of networks, it becomes clear how limited the research on strategic issues actually is. Although the studies of communication and information management have been related to the strategic decisions, the content of these researches is mainly operational. Additionally, the challenges and dimensions of communication in the networked economy are pushing companies to rethink their operations and managerial options, as the field seems to be very varying and covers many interrelated areas, as was described in the table 1.

Finally, the analysis of this study has clearly addressed that the study of supply chain management or business management literature do not provide enough base and arguments for communication aspects in a network. This will lead authors to get into the other related research fields, such as knowledge management and communication theories. The former will have added value in terms of business turbulence and managing the intangible resources, whereas the latter one provides more argumentation on communication process and interaction, which are fundamental factors in business relationships and interaction between people.

REFERENCES

1. Albrecht, K., (2001). "Information quality", *Executive Excellence,* Vol 18, Iss 8, pp.11.
2. Alexander, S., (2000), Virtual teams going global, http://www.infoworld.com/articles/ca/xml/00/11/13/001113cavirtual.xml (Referred at 13.11.2001).
3. Allee, V., (2000). "Reconfiguring the value network", *The Journal of Business Strategy,* Vol 21, Iss 4, pp.36-39.
4. Alshawi, S., (2001). "Logistics in the Internet age: towards a holistic information and processes picture", *Logistics Information Management,* Vol 14, Iss 4, pp.235-241.
5. Alt, R., Fleisch, E. and Österle, H., (2000), Electronic Commerce and Supply Chain Management at ETA Fabriques d'Ebauches SA, *Journal of Electronic Commerce,* Vol 1, Iss 2.
6. Andersen, O. and Buvik, A., (2001). "Inter-firm co-ordination: international versus domestic buyer-seller relationships", *Omega,* Vol 29, Iss 2, pp.207-219.
7. Andrews, P. and Hahn, J., (1999). "Value web management opportunities", *Physical Distribution & Logistics Management,* Vol 29, Iss 5, pp.305-307.
8. Araujo, L., Dubois, A. and Gadde, L.-E., (1999). "Managing Interfaces with Suppliers", *Industrial Marketing Management,* Vol 28, Iss 5, pp.497-506.
9. Baker, S., (2000). "Getting the most from your intranet and extranet strategies", *Journal of Business Strategy,* Vol 21, Iss 4, pp.41-43.

10. Bal, J. and Teo, J. K., (2001). "Implementing virtual teamworking: Part 2 - a literature review", *Logistics Information Management,* Vol 14, Iss 3, pp.208-222.
11. Bal, J. and Teo, P. K., (2000). "Implementing virtual teamworking. Part 1: a literature review of best practice", *Logistics Information Management,* Vol 13, Iss 6, pp.346-352.
12. Bal, J. and Teo, P. K., (2001). "Implementing virtual teamworking: Part 3 - a methodology for introducing virtual teamworking", *Logistics Information Management,* Vol 14, Iss 4, pp.276-292.
13. Bal, J., Wilding, R. and Gundry, J., (1999). "Virtual Teaming in the Agile Supply Chain", *The International Journal of Logistics Management,* Vol 10, Iss 2, pp.71-82.
14. Baraldi, E., (2001). Using IT for Managing Resources in Business Networks. A Case Study from the Swedish Furniture Industry, 17th Annual IMP Conference: Interactions, Relationships & Networks: Strategic Dimensions, Oslo, Norway, 9.-11.9.2001.
15. Beer, M. and Eisenstat, R. A., (2000). "The silent killers of strategy implementation and learning", *Sloan Management Review,* Vol 41, Iss 4, pp.29-40.
16. Bhatt, G. D. and Embad, A. F., (2001). "An analysis of the virtual value chain in electronic commerce", *Logistics Information Management,* Vol 14, Iss 1/2, pp.78-84.
17. Biederman, D., (2000). "Value nets." *Traffic World,* Vol 263, Iss 8, p.22.
18. Borders, A. L., Jonstron, W. J. and Rigdon, E. E., (2001). "Beyond the Dyad Electronic Commerce and Network Perspectives in Industrial Marketing Management", *Industrial Marketing Management,* Vol 30, Iss 2, pp.199-205.
19. Bovet, D. and Martha, J., (2000). "Value nets: reinventing the rusty supply chain for competitive advantage", *Strategy & Leadership,* Vol 28, Iss 4, pp.21-26.
20. Bovet, D. and Roucolle, G., (2000). "Unlocking the rusty supply chain", *Ivey Business Journal,* Vol 65, Iss 1, pp.31-35.
21. Brewton, T. and Kingseed, K., (2001). "Getting the most from your B2B-enabled supply chain", *Journal of Business Strategy,* Vol 22, Iss 1, pp.28-31.
22. Briscoe, G., Dainty, A. R. J. and Millett, S., (2001). "Construction supply chain partnerships: skills, knowledge and attitudinal requirements", *European Journal of Purchasing & Supply Management,* Vol 7, Iss 4, pp.243-255.
23. Browne, J. and Zhang, J., (1999). "Extended and virtual enterprises - similarities and differences", *International Journal of Agile Management Systems,* Vol 1, Iss 1, pp.30-36.
24. Burgelman, R. A. and Doz, Y. L., (2001). "The Power of Strategic Integration/Robert A. Burgelman and", *MIT Sloan Management Review,* Vol 42, Iss 3, pp.28-38.
25. Buvik, A. and Halskau, Ø. (2001). "Relationship duration and buyer influence in just-in-time relationships", *European Journal of Purchasing & Supply Management,* Vol 7, Iss 2, pp.111-119.
26. Carroll, R. F. and Tansey, R. R., (2000). "Intellectual capital in the new Internet economy - Its meaning, measurement and management for enhancing quality", *Journal of Intellectual Capital,* Vol 1, Iss 4, pp.296-311.
27. Cartwright, S. D. and Oliver, R. W., (2000). "Untangling the value web", *Journal of Business Strategy,* Vol 21, Iss 1, pp.22-27.
28. Cheng, E. W. L., Heng, L., Love, P. E. D. and Irani, Z., (2001). "An e-business model to support supply chain activities in construction", *Logistics Information Management,* Vol 14, Iss 1/2, pp.68-77.
29. Christopher, M. and Jüttner, U., (2000). "Developing strategic partnerships in the supply chain: a practitioner perspective", *European Journal of Purchasing & Supply Management,* Vol 6, Iss 2, pp.117-127.
30. Christopher, M. and Towill, D. R., (2000). "Supply chain migration from lean and functional to agile and customised", *Supply Chain Management: An International Journal,* Vol 5, Iss 4, pp.206-213.
31. Curry, A. and Stancich, L., (2000). "The intranet - an intrinsic component of strategic information management?" *International Journal of Information Management,* Vol 20, Iss 4, pp.249-268.
32. Daoud, F., (2000). "Electronic Commerce Infrastructure", *IEEE Potentials,* Vol 19, Iss 1, pp.30-33.

33. Davidow, W. H. and Malone, M. S., (1992). *The Virtual Corporation; Structuring and Revitalizing the Corporation for the 21st Century.* New York.
34. Deeter-Schmelz, D. R. and Kennedy, K. N., (2002). "An exploratory study of the Internet as an industrial communication tool; Examining buyers' perceptions", *Industrial Marketing Management,* Vol 31, Iss 2, pp.145-154.
35. Dowlatshahi, S., (2000). "Designer-buyer-supplier interface: Theory versus practice", *International Journal of Production Economics,* Vol 63, Iss 2, pp.111-130.
36. Dreyfuss, C., (2001). "From Hierarchy to Virtual Teams: For Business Reasons", A Research Note for Mobile Business Strategies by Gartner Group. 24 May 2001.
37. Dubois, A. and Gadde, L.-E., (2000). "Supply strategy and network effects - purchasing behaviour in the construction industry", *European Journal of Purchasing & Supply Management,* Vol 6, Iss 3-4, pp.207-215.
38. Dyer, J. H., Kale, P. and Singh, H., (2001). "How To Make Strategic Alliances Work", *MIT Sloan Management Review,* Vol 42, Iss 4, pp.37-43.
39. Eppler, M. J. and Sukowski, O., (2000). "Managing team knowledge: core processes, tools and enabling factors", *European Management Journal,* Vol 18, Iss 3, pp.334-341.
40. Evans, J. R. and Berman, B., (2001). "Conceptualizing and Operationalizing the Business-to-Business Value Chain", *Industrial Marketing Management,* Vol 30, Iss 2, pp.135-148.
41. Fisher, M. L., (1997). "What is the right supply chain for your product?" *Harvard Business Review,*Vol 75, Iss 2 March/April, pp.105-116.
42. Fletcher, R. and Barrett, N., (2001). "Embeddedness and the Evolution of Global Networks; An Australian Case Study", *Industrial Marketing Management,* Vol 30, Iss 7, pp.561-573.
43. Forker, L. B. and Stannack, P., (2000). "Cooperation versus competition: do buyers and suppliers really see eye-to-eye?" *European Journal of Purchasing & Supply Management,* Vol 6, Iss pp.31-40.
44. Fourboul Voynnet, C. and Bournois, F., (1999). "Strategic Communication with Employees in Large European Companies: A Typology", *European Management Journal,* Vol 17, Iss 2, pp.204-217.
45. Glasgow, B., (2001). "Value Networks Emerge as Model in Supplier/Customer Relationships", *Chemical Market Reporter,* Vol 259, Iss 13, pp.22-23.
46. Gooijer, J. d., (2000). "Designing a knowledge management performance framework", *Journal of Knowledge Management,* Vol 4, Iss 4, pp.303-310.
47. Guinan, P. J. and Faraj, S., (1998). "Reducing Work Related Uncertainty: The Role of Communication and Control in Software Development", *IEEE,* pp.73-82.
48. Harland, C. M. and Knight, L. A., (2001). "Supply strategy: a corporate social capital perspective", *Research in the Sociology of Organisations,* Iss Feb (Annual), pp.1-30.
49. Heide, M., Gronhaug, K. and Johannessen, S., (2002). "Exploring barriers to the successful implementation of a formulated strategy", *Scandinavian Journal of Management,* Vol 18, Iss 2, pp.217-231.
50. Hong, I. B., (2002). "A new framework for interorganizational systems based on the linkage of participants' roles", *Information & Management,* Vol 39, Iss 4, pp.261-270.
51. House, R. G. and Stank, T. P., (2001). "Insights from a logistics partnership", *Supply Chain Management: An International Journal,* Vol 6, Iss 1, pp.16-20.
52. Huhtinen, H., Ojala, T. and Virolainen, V.-M., (2001). Conceptual Approach to the Value Net: Benefits, Opportunities, Key-enablers, 6th Annual Logistics Research Network, Edinburgh, U.K., 12-14 September 2001.
53. Hull, B., (2002). "A structure for supply-chain information flows and its application to the Alaskan crude oil supply chain", *Logistics Information Management,* Vol 15, Iss 1, pp.8-23.
54. John, G., (2001). "The tightening net", *Supply Management,*10 May 2001, pp.22-26.
55. Johnson, P., Heimann, V. and O'Neill, K., (2001). "The "wonderland" of virtual teams", *Journal of Workplace Learning,* Vol 13, Iss 1, pp.24-29.

56. Khalfan, M. M. A., Anumba, C. J., Siemieniuch, C. E. and Sinclair, M. A., (2001). "Readiness Assessment of the construction supply chain for concurrent engineering", *European Journal of Purchasing & Supply Management,* Vol 7, Iss 2, pp.141-153.
57. Kothandaraman, P. and Wilson, D. T., (2001). "The Future of Competition; Value-Creating Networks", *Industrial Marketing Management,* Vol 30, Iss 4, pp.379-389.
58. Kumar, A. and Palvia, P., (2001). "Key data management issues in global executive information system", *Industrial Management & Data Systems,* Vol 101, Iss 4, pp.153-164.
59. Lamming, R., (1993). "Beyond Partnership." Strategies for Innovation and Lean Supply. Prentice Hall.
60. Lamming, R., Caldwell, N., Harrison, D. and Phillips, W., (2001). Transparency in Supplier Relationships: Concept and Practice, The 10th International Annual IPSERA Conference 2001, Jönköping, Sweden,
61. Larson, P. D. and Kulchitsky, J. D., (2000). "The Use and Impact of Communication Media in Purchasing and Supply Management", *The Journal of Supply Chain Management,*Iss Summer 2000, pp.25-39.
62. Lee, H. L. and Whang, S., (2001). "Winning the Last Mile of E-Commerce", *MIT Sloan Management Review,* Vol 42, Iss 4 Summer, pp.54-62.
63. Lueg, C., (2001). "Information, knowledge, and networked minds", *Journal of Knowledge Management,* Vol 5, Iss 2, pp.151-159.
64. Lummus, R. R. and Vokurka, R. J., (1999). "Managing the Demand Chain trough Managing the Information Flow: Capturing "Moments of Information"", *Production and Inventory Management Journal,* Vol 40, Iss 1, pp.16-21.
65. Lurey, J. S. and Raisinghani, M. S., (2001). "An empirical study of best practices in virtual teams", *Information & Management,* Vol 38, Iss 8, pp.523-544.
66. Markus, L. M., Manville, B. and Agres, C. E., (2000). "What makes a virtual organization work?" *Sloan Management Review,* Vol 42, Iss 1, pp.13-26.
67. Marmer Solomon, C., (1999). "Communicating in a Global Environment", *Workforce,*Iss November, pp.50-56.
68. Mason-Jones, R. and Towill, D. R., (1998). "Time compression in the supply chain: information management is the vital ingredient", *Logistics Information Management,* Vol 11, Iss 2, pp.93-104.
69. May, A. and Carter, C., (2001). "A case study of virtual team working in the European automotive industry", *International Journal of Industrial Ergonomics,* Vol 27, Iss 3, pp.171-186.
70. Mirani, R., Moore, D. and Weber, J. A., (2001). "Emerging Technologies for Enhancing Supplier-Reseller Partnerships", *Industrial Marketing Management,* Vol 30, Iss 2, pp.101-114.
71. Moenaert, R. K., Caeldries, F., Lievens, A. and Wauters, E., (2000). "Communication Flows in International Product Innovation Teams", *Journal of Product Innovation Management,* Vol 17, Iss 5, pp.360-377.
72. Morash, E. A., Dröge, C. and Vickery, S., (1996). "Boundary-spanning interfaces between logistics, production, marketing and new product development", *International Journal of Physical Distribution & Logistics Management,* Vol 26, Iss 8, pp.43-62.
73. Morrell, M. and Ezingeard, J.-N., (2002). "Revisiting adoption factors of inter-organisational information systems in SMEs", *Logistics Information Management,* Vol 15, Iss 1, pp.46-57.
74. Morris, D. M. and Olson, M. A., (2000). "What Is E-Business and Why Is It Important?" *Management Issues,* Iss Feb 2000, pp.1-6.
75. Motwani, J., Madan, M. and Gunasekaran, A., (2000). "Information technology in managing global supply chains", *Logistics Information Management,* Vol 13, Iss 5, pp.320-327.
76. Möller, K. and Halinen, A., (1999). "Business Relationships and Networks; Managerial Challenge of Network Era", *Industrial Marketing Management,* Vol 28, Iss 5, pp.413-427.
77. Nesheim, T., (2001). "Externalization of the core: antecedents of collaborative relationships with suppliers", *European Journal of Purchasing & Supply Management,* Vol 7, Iss 4, pp.217-225.

78. Noorlander, W., (2001). "Information Management. Who's Controlling Who?" *Online. The Leading Magazine for Information Professionals,* Vol 25, Iss 1, pp.36-38.
79. Ollus, M., Ranta, J. and Ylä-Anttila, P., (1999). *Verkostojen vallankumous. Miten johtaa verkostoyritystä?* ed., Suomen itsenäisyyden juhlarahasto Sitra, Vantaa.
80. O'Sullivan, D., (2002). "Framework for managing business development in the networked organisation", *Computers in Industry,* Vol 47, Iss 1, pp.77.
81. Pack, T., (2001). "Content unchained: The new value Web", *EContent, Wilton,* Vol 24, Iss 1, pp.36-40.
82. Pant, S. and Ravichandran, T., (2001). "A framework for information systems planning for e-business", *Logistics Information Management,* Vol 14, Iss 1/2, pp.85-98.
83. Papazoglou, M. P., Ribbers, P. and Tsalgatidou, A., (2000). "Integrated value chains and their implications from a business and technology standpoint", *Decision Support Systems,* Vol 29, Iss 4, pp.323-342.
84. Patterson, J. L., Forker, L. B. and Hanna, J. B., (1999). "Supply chain consortia: the rise of transcendental buyer-supplier relationships", *European Journal of Purchasing & Supply Management,* Vol 5, Iss 2, pp.85-93.
85. Peng, W. and Littlejohn, D., (2001). "Organisational communication and strategy implementation - a primary inquiry", *International Journal of Contemporary Hospitality Management,* Vol 13, Iss 7, pp.360-363.
86. Poon, W. K. and Lau, K. H., (2000). "Value challenges in supply chain management", *Logistics Information Management,* Vol 13, Iss 3, pp.150-155.
87. Purchasing.com, (2000). "Purchasing 2010", *Purchasing,* December 22, 2000, pp.56-59.
88. Ramaprasad, A. and Rai, A., (1996). "Envisioning Management of Information", *Omega,* Vol 24, Iss 2, pp.179-193.
89. Rapert, M. I., Velliquette, A. and Garretson, J. A., (2002). "The strategic implementation process. Evoking strategic consensus through communication", *Journal of Business Research,* Vol 55, Iss 4, pp.301-310.
90. Richeson, L., Lackey, C. W. and Starner, J. W. J., (1995). "The Effect of Communication On the Linkage Between Manufacturers and Suppliers in a Just-in-Time Environment", *International Journal of Purchasing and Materials Management,* Vol 31, Iss 1 Winter, pp.21-28.
91. Rosenbloom, B. and Larsen, T., (2002). "Communication in international business-to-business marketing channels; Does culture matter?" *Industrial Marketing Management,* Vol 31, Iss 2, pp.1-7.
92. Rowley, J., (1998). "Towards a Framework for Information Management", *International Journal of Information Management,* Vol 18, Iss 5, pp.359-369.
93. Ruppel, C. P. and Harrington, S. J., (2001). "Sharing Knowledge Through Intranets: A Study of Organizational Culture and Intranet Implementation", *IEEE Transactions on Professional Communication,* Vol 44, Iss 1, pp.37-.
94. Schotten, M. and Scherer, E., (1998). "Design of Co-ordination Schemes in the Networked Enterprise", *IEEE,*pp.313-318.
95. Shee, D. Y., Tang, T.-I. and Tseng, G.-H., (2000), Modeling the Supply-Demand Interaction in Electronic Commerce: A Bi-Level Programming Approach, (Referred at
96. Smee, P., North, S. and Jones, H., (2001). "The information triangle", *New Library World,* Vol 102, Iss 1160/1161, pp.38-43.
97. Sourcing manager, B. A., (2001). Interview, Helsinki. Interviewed on 19.5.2001.
98. Spanos, Y. E., Prastacos, G. P. and Poulymenakou, A., (2002). "The relationship between information and communication technologies adoption and management", *Information & Management,* Vol 1979, pp.1-17.
99. Spekman, R. E., Kamauff, J. and Spear, J., (1999). "Towards more effective sourcing and supplier management", *European Journal of Purchasing & Supply Management,* Vol 5, Iss 2, pp.103-116.
100. Storer, C., (2001). Inter-Organizational Information Feedback Flows in Chains: A Case Study Theoretical Framework, 17th Annual IMP Conference: Interactions, Relationships & Networks: Strategic Dimensions, Oslo, Norway, 9.-11.9.2001.

101. Stough, S., Eom, S. and Buckenmyer, J., (2000). "Virtual teaming: a strategy for moving your organization into the new millennium", *Industrial Management & Data Systems,* Vol 100, Iss 8, pp.370-378.
102. Takeishi, A., (2001). "Bridging inter- and intra-firm boundaries: management of supplier involvement in automobile product development", *Strategic Management Journal,* Vol 22, Iss 5, pp.403-433.
103. Teeni, D., Sagie, A., Schwartz, D. G., Zaidman, N. and Amichai-Hamburger, Y., (2001). "The Process of Organizational Communication: A Model and Field Study", *IEEE Transactions on Professional Communication,* Vol 44, Iss 1, pp.6-19.
104. Teresko, J., (2000), E-collaboration, available at Industryweek.com (Referred at 12.6.2001).
105. Tomkins, C., (2001). "Interdependencies, trust, and information in relationships, alliances and networks", *Accounting, Organizations and Society,* Vol 26, Iss 2, pp.161-191.
106. Walter, A., Ritter, T. and Gemünden, H. G., (2001). "Value Creation in Buyer-Seller Relationships; Theoretical Considerations and Empirical Results from a Supplier's Perspective", *Industrial Marketing Management,* Vol 30, Iss 4, pp.365-377.
107. Walters, D. and Lancaster, G., (2000). "Implementing value net strategy through a value chain", *Management Decision,* Vol 38, Iss 3, pp.160-178.
108. Van Hoek, R., (2001). "E-supply chains - virtually non-existing", *Supply Chain Management: An International Journal,* Vol 6, Iss 1, pp.21-28.
109. Wang, S., (2000). "Meta-Management of virtual organizations: toward information technology support", *Internet Research: Electronic Networking Applications and Policy,* Vol 10, Iss 5, pp.451-458.
110. Varey, R. J. and Hamblett, R. L., (1997). "Business excellence review at Royal Mail (NW/NW): a case of strategic communication management", *Managing Service Quality,* Vol 7, Iss 6, pp.281-289.
111. Warkentin, M., Bapna, R. and Sugumaran, V., (2000). "The Role of Mass Customization in Enhancing Supply Chain Relationships in B2C E-Commerce Markets", *Journal of Electronic Commerce,* Vol 1, Iss 2, pp.1-17.
112. Warkentin, M., Sugumaran, V. and Bapna, R., (2001). "E-knowledge networks for inter-organizational collaborative e-business", *Logistics Information Management,* Vol 14, Iss 1/2, pp.149-162.
113. Webb, J. and Gile, C., (2001). "Reversing the value chain", *Journal of Business Strategy,* Vol 22, Iss 2, pp.13-17.
114. Webb, K. L., (2002). "Managing channels of distribution in the age of electronic commerce", *Industrial Marketing Management,* Vol 31, Iss 2, pp.95-102.
115. Vrijhoef, R. and Koskela, L., (2000). "The four roles of supply chain management in construction", *European Journal of Purchasing & Supply Management,* Vol 6, Iss 3-4, pp.169-178.
116. Young, A. and Kielkiewicz-Young, A., (2001). "Sustainable Supply Network Management", *Corporate Environmental Strategy,* Vol 8, Iss 3, pp.260-268.
117. Yu, Z., Yan, H. and Cheng, E. T. C., (2001). "Benefits of information sharing with supply chain partnerships", *Industrial Management & Data Systems,* Vol 101, Iss 3, pp.114-119.
118. Zuckerman, A., (2001). "Managing Global Logistics Operations", *Transportation and Distribution,*Vol 42, Iss 6, pp.4-9.