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Implications of Information and Communication Technologies for Business Relations

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Summary

The analysis addresses the issues of how businesses interact in the light of continuous maturation of business-to-business e-commerce. The development of cheaper and more standardised information and communication technologies (ICTs) extends and deepens electronic networks, which may lead to either tighter or looser business relations. Previous analyses have offered different suggestions as to what will result: one view is that tighter connections will evolve leading to electronic hierarchies, whereas another is that the loose transaction-based interactions from the market sphere will dominate. Studies of the value chains in textile and clothing suggest mixed answers. Developments in ICTs and e-commerce offer different opportunities to different segments of the industry.

1. Introduction

Electronic support for business processes is far from a new phenomenon. Business-to-business e-commerce has been supported through various electronic media, for example, exchanges of data-tapes and discs, on-line connections and data exchange through leased lines or public networks. The Internet is just the latest step in the expanding range of information and communication technologies (ICTs) that support business interactions.

Commercialisation of the Internet with respect to interaction between businesses has opened up new applications and communication structures. Application of ICTs has become relevant to more businesses due to the use of open-ended telecommunication networks, increased standardisation of technologies, and generally lowered costs of transmitting data. The formerly proprietary communication standards and expensive communication systems found in closed electronic networks diminish in importance as new technologies develop and spread. For small businesses, electronic commerce has become an increasingly relevant option as the resources required become fewer and as structural bonds loosen.

ICTs, as a support for commercial interaction, relate to both hardware and software technologies, which support computer-based transactions and co-operative work. These technologies include shared databases, computer aided design and manufacturing, e-mail and EDI. Applications of ICTs have a significant impact on business relations. Business relations are understood here as the economic interaction between separate entities, that is, production and/or financial relations between separate businesses, irrespective of their ownership and location. Our conception of business relations does not include non-economic relations, even though this means that social and other relations that impact on commercial activities are excluded.

Transaction cost economics, as introduced by Coase[1] and Williamson[2], has proven to be a powerful tool for analysing business structures and business relations and has been used widely in discussing the impacts of ICTs on businesses. Coase's focus is on explaining firstly the existence of firms and, secondly, their size, i. e. the emergence of hierarchies in a market environment. In our discussion, Coase's analysis of hierarchies and markets is used as a proxy for tight and loose business relations. We are aware that the two sets of concepts are not identical. Hierarchies are obviously tight relations, however, tight relations are not necessarily hierarchies — as in the case of two companies working closely together. But Coase's

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[1] Coase (1937).

[2] Williamson (1986a).

theory on markets and hierarchies forms an excellent a proxy for discussing tight and loose business relations.

Theories on transaction costs in hierarchies and markets have brought forth two opposing views of the results of ICT-development and maturation of e-commerce. The first of these emphasises the reduced costs of internal operations and organisation of closely related businesses leading to increased levels of integration between businesses and hierarchical structures. The second line of analysis highlights the low costs of accessing information, which lowers the co-ordination costs on markets, which suggests that market organisation will become dominant.

However, business-to-business e-commerce has tended to develop within the continuum between pure market and pure hierarchy, that is, as some form of network relation. Electronic hierarchies account for the formation of value chains, based on long-term relations and repetitive economic interactions in relatively static chain structures. The relative rigidity of electronic hierarchies may, however, lead to sub-optimal behaviour as the opportunities of trading on markets are disregarded. Intermediate structures that attempt to combine the short-term competitive market forms with relation-based trusted hierarchical value chains become evident as well. By internalising competition into supply chain management, some benefits of long-term relationships are combined with short-term contracting.

This paper contributes to the ongoing debate on relations in business-to-business e-commerce, and how applied ICTs impact on business relations within the spectrum of market, network and hierarchy. Thus, the question of whether or not applied ICTs lead to tighter or looser business relations is discussed. Tight relations are associated with patterns of interaction founded in long-term relations, with few partners, and based on dedicated technology. Looser business relations are, on the other hand, associated with a multitude of short-term interactions, based on open-ended and standardised technologies.

In analysing the formation of tighter or looser business relations, we commence by revising transaction cost theory. This is followed by a review of the newer literature on transaction costs and business relations. As an illustrative case, this paper analyses the challenges and strategies emerging from e-commerce in the Danish textile and clothing value chains. A Danish industrial textile and clothing district reveals a substantial number of small firms with high degrees of functional specialisation increasingly incorporated into international value chains. The case is open to a variety of interpretations, as parts of the industry show tendencies towards electronic hierarchies, notably close to the highly centralised retail industry, while other parts are based on more short-term economic transactions.

2. Coase and Williamson revisited

2.1 Transaction costs and other explanations

In 'The Nature of the Firm' (1937)[3], R.H. Coase presented his explanation for the existence of 'the firm'. Formerly, in neo-classical economics, the existence of firms had not been explained but was simply taken for granted. Coase's elegant and well-known explanation was that there are transaction costs associated with market transactions and that this, all things being equal, will lead agents in the market to internalise transactions between different production stages. However, Coase also noted that there are internal transaction/management costs inside firms and that the size of the external and internal transaction costs respectively will determine the size of firms.

The reasons mentioned in Coase's article for the costs of using the price mechanism are that there are costs of "discovering what the relevant prices are" and of "negotiating and concluding a separate contract for each exchange transaction"[4] — in short, what has been termed the costs of contacting and contracting.

Some 40 years later, Oliver Williamson elaborated further on the subject, singling out more specifically the basis for transaction costs. In the article 'Transaction-Cost Economics: The Governance of Contractual Relations' (1979)[5], Williamson emphasised "(1) uncertainty, (2) the frequency with which transactions occur, and (3) the degree to which durable transaction-specific investments are incurred".[6] In another article, 'What is Transaction Cost Economics?' (1984)[7], he stated that "transaction-cost economics … relies on the conjunction of (1) bounded rationality, (2) opportunism, and (3) asset specificity"[8]. While Coase did not differentiate between different areas of production with respect to transaction cost, Williamson stresses the importance of ideosyncracies in the production sphere.

The two lists of transaction cost inducing factors by Williamson are not identical except for the two points (3) on asset specificity/*i*transaction-specific investments. Uncertainty, in the first list, is a broad factor that could encompass both bounded rationality and opportunism, while point (2) in the first list concerning the frequency of transactions is not covered by the second list. However, by putting the two lists together and associating them with the factors described by Coase, we have an instructive list of factors that contribute to an explanation of why economic

[3] Coase (1937).
[4] Coase (1937), 390–391.
[5] Williamson (1986a).
[6] Williamson (1986a), 105.
[7] Williamson (1986b).
[8] Williamson (1986b), 177.

exchanges do not function as smoothly as assumed by traditional neo-classical economic theory and why there are transaction costs that must be accounted for.

However, Coase's goal of explaining why firms exist has never been fully achieved. In order to explain the existence of firms, and even the size of firms, other factors must be added, of which the most important ones are: economies of scale and scope, control and market domination, and last but not least, appropriation of value added.

The question of scope is partly dealt with in transaction cost economics with the discussion of transaction costs in markets and in hierarchies. But, the production oriented (production cost savings) part of scope economies and the whole question of scale economies are not taken into consideration.

Control and market domination are two other important factors that have to be dealt with if the existence and size of firms are to be explained. Often, the costs of 'making' that are greater than the costs of 'buying' will be accepted by companies for the purpose of gaining control and domination over a market segment with the long-term ambition of gaining a monopoly or an otherwise privileged position. And even if growth is not among the primary goals of businesses, they have to consider core competencies and specialisation. Specialisation may not impact firm size, but will most certainly improve horizontal positioning in markets and impact positions in vertical relations, as well.

Appropriation of value added must also be included as an explanation for the existence and size of firms. The reason for expanding production and employing labour power is basically to increase the value added, part of which constitutes the profit on the investment. This profit will not be appropriated by means of buying products from other firms unless the company has a hegemonic position in the production chain that allows it to appropriate profits generated in other companies.

The reason for mentioning these objections is that, now and then, transaction cost economics is being canonised as *the* explanation for the existence and size of firms — a canonisation that Coase to some extent supports by attempting to give his theory a hint of universality. However, Coase's explanation for the firm is based strictly on the neo-classical assumptions and modifies only one set of assumptions — regarding frictionless transactions and full information on the market — and gives an explanation for the existence and size of firms merely with respect to the transaction cost problem.

Nevertheless — as long as its limitations are acknowledged — Coase's theory still provides a solid basis for analyses of aspects of the make-or-buy decisions of firms in relation to the transaction cost problem,– especially with respect to analyses that focus on the implications of the increasing usage of ICTs, as Coase's theory deals mainly with information-handling problems relating to contacting and contracting and as these processes are modified by the application of ICTs. However, here, too, it should be realised that ICTs also affect the economies of scale and scope in the production area. Furthermore, ICTs provide new possibilities for gaining control and dominance. ICTs even have implications for the appropriation of value added to the extent that they allow new industries to acquire hegemonic positions in the economy with possibilities for appropriating value added created in other sectors. It is, therefore, important that factors other than just transaction costs be taken into consideration when business relations are analysed — also when the implications of ICTs on business relations are the subject at hand.

2.2 Markets, hierarchies or networks

The discussions regarding business relations based on Coase and Williamson have centred on the hierarchy/market (or make-or-buy) dichotomy. However, a number of authors have argued that neither market nor hierarchy is the realistic situation, but that mixtures of the two extremes are far more likely — which, by the way, does not contradict the ideas of Coase and Williamson. Both also foresee all kinds of intermediate forms. But, some, e. g. Walter Powell,[9] argue that business relations should not be looked upon as a continuum of possibilities between markets and hierarchies, but that networks are separate forms of organisation and not just mixtures of markets and hierarchies.

The prime argument of Powell is of a historical character — that neither market nor hierarchy has been the starting point of business relations.[10] In most cases, networks of businesses have been the primary development form. However, it is difficult to understand why such a historical argument, which is correct, should contradict the economic observation that markets and hierarchies are two extremes in terms of modes of organisation and that in between them there is an endless number of different organisational forms.

It is, however, true that the many different organisational forms should not be interpreted as a one-dimensional continuum between market and hierarchy but should be seen in the perspective that organisational differences have many dimensions. Even at the extremes, there are differences in organisational forms where, for instance, a hierarchy (company) may be organised internally in such a way that there are strict accounting rules between departments of the company.

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9 Powell (1990).

10 Powell (1990), 298.

Two of the buzzwords in business strategies in recent years have been 'concentration on core competence' and 'few but stable business partners'. How these two ambitions can be reconciled is not easily understandable at an immediate level as concentration on core competence must lead to more outsourcing and as more outsourcing should lead to more business contacts. However, if business partners of the company in question tie together different functions in one delivery, then both concentration on core competence and fewer business partners can be realised at one and the same time. But is this more market or more hierarchy? Difficult to say!

Another example is that one of the reasons for externalising a function could be that it may be bought cheaper from a company specialising in this function, when there are, for instance, scale economies associated with the production of the good or service in question. Again it may be asked whether this is more market or more hierarchy. In the vertical dimension (of the production chain), it is more market; but in the horizontal dimension, concentration is taking place. Nevertheless, relations at the interfaces between different functions may be explained partly by the make-or-buy decisions determined by external and internal transaction costs.

2.3 Factors affecting business relations

In this paper, the aim is to analyse the implications of the usage of ICTs on the loosening or tightening of business relations. In order to do this, we must first list the factors that contribute to determining whether business relations are loose or tight. Afterwards, we must examine the implications of ICT-usage on these factors.

Configurations of business relations are affected by a wide range of factors. First, one would include the factors determining transaction costs put forward by Coase and Williamson, second, one could add a number of extra factors that deal with technology standards and market conditions. Hence, the list looks as follows:

- Asset and product specificity, including requirements for the quality of products
- Transaction procedures and their costs
- Frequency of transactions
- Communication standards
- Geographical proximity
- Market constitution
- Formal relation in terms of ownership and alliances

The first three points are dealt with in the writings of Coase and Williamson, but the last ones should also be considered.

The point 'communication standards' deals with the question as to whether or not the usage of specific communication standards could restrict the possibilities for shifting business partners. In many cases, the communication standards and systems used have developed in such specific ways that it is difficult for business partner to break their close interconnections and seek new partners. These locked-in relationships are an aspect of asset specificity but an aspect that is strictly related to the standards of communications themselves.

Geographical proximity is also, for obvious reasons, very important for business relations — not only because transportation costs of intermediate goods are lower when other firms in the production chains are located nearby, but also because of the ease of contacting business partners. This is one of the important reasons for the development of "industrial districts", for instance, those in the textile and clothing areas in Denmark and Italy. Business relations of companies in the industrial districts are, to a high degree, concentrated on other companies in the same districts (tight relations), but inside the districts firms may 'shop around' (loose relations).

Market constitution and value creation are also important factors in determining business relations. In segments of the market that are characterised by stable and predictabile demands regarding quality and quantity, interactions easily develop into long-term relations. On the other hand, more volatile market segments call for higher levels of flexibility in supply and would condition more short-term market-based interactions.

Formal relations also play a crucial role. Two production firms may be owned by one and the same holding company although their development paths, apart from that, may be quite separate. However, the common ownership superstructure could lead to closer integration, also in the production processes. Alliances between companies can have the same effects.

2.4 Implications of ICTs

With ICTs, information searching on the market, contacting, and "discovering what the relevant prices are" become easier — and so do the contracting aspects. This should, all things being equal, lead to greater reliance on the market and the price mechanism and, therefore, to looser business relations. However, all things are not equal as business procedures within firms can also be enhanced by the usage of ICTs.

In 'The Nature of the Firm', Coase writes: "Changes like the telephone and the telegraph which tend to reduce the cost of organising spatially will tend to increase the size of the firm. All changes which improve managerial techniques will tend to increase the size of the firm"[11]. But, in a

[11] Coase (1937), 397.

footnote to this statement he acknowledges that “if the telephone reduces the costs of using the price mechanism more than it reduces the costs of organising, then it will have the effect of reducing the size of the firm”.[12]

The obvious duality in these two statements is very much where the discussion still is today. ICTs may lead both to larger or smaller firm sizes, to hierarchies or markets, and to tighter or looser business relations, as ICTs, among other things, affect both the external transaction procedures and the internal management procedures. The actual outcome of the application of ICTs in business relations and management depends on the specific circumstances.

However, based on the list of factors that affect the tightness or looseness of business relations, a bit more can be said. On a general level, ICTs are not the crucial point with respect to asset specificity. But ICTs may have an effect on asset specificity, especially in the production of services with an information content, as parts of such services may be codified and made available through electronic media. This codification and standardisation potentially reduces asset specificity. Electronic communication forms themselves may, on the other hand, develop in such specific ways that companies develop interlinkages because of asset-specific communication technologies and procedures, as already mentioned.

An additional effect related to asset specificity is that as ICTs allow for sharpened just-in-time procedures, i. e. meeting the need for products that conform exactly to demands and that can be delivered exactly on time. In this way, ICTs increase the importance of tighter relations between businesses in the production chains. The issue could also be formulated in terms of frequency of transactions. With just-in-time delivery, the frequency of transactions increases, which leads to a greater integration between business partners (as pointed out by Williamson in ‘Transaction-Cost Economics: The Governance of Contractual Relations’).[13]

The problems with bounded rationality and opportunism dealt with by Williamson are only to a small extent affected by ICTs. It could be said, though, that the bounds of rationality are potentially extended with the usage of ICTs as knowledge of the surrounding environment increases with the information that ICTs can provide. An effect on opportunism — and agency problems inside the firms — can also be seen in the fact that ICTs allow for a higher degree of surveillance. However, these effects are, in most cases, of minor importance.

Regarding geographical proximity, ICTs could be said to expand the limits of geographical proximity as communications at a distance become easier. Following the classical thesis of Adam Smith that the division of labour is limited by the extent of the market[14], divisions of labour should also increase and thus lead to looser business relations as the market is extended with the usage of ICTs. But again, increased communications may also lead to relations just as tight as before, only with business partners at a greater geographical distance.

Impacts of ICTs on market constitution and thus on business relations are not obvious. On the one hand, the application of ICTs potentially expands markets, and more fluent information flows would allow for more buyers and more suppliers to access markets, which suggests looser business relations. On the other hand, ICTs also enhance market transparency and improve production-forecasting etc.

Finally, what are the implications of ICTs on the formal relations of ownership and alliances? Here, the answer is a bit more certain. Although ICTs — as described just above — lead to improved possibilities for business contacts with companies at a distance, there is no doubt that better communications strengthen the possibilities for managing companies with affiliates located at great geographical distances from one another. ICTs thus strengthen tendencies towards closer ownership and alliance relations and, therefore, to tighter relations in business exchanges.

2.5 Summary and perspectives

In this chapter, we have focused on a discussion of the factors affecting business relations dealt with by Coase and Williamson with respect to the make-or-buy decisions associated with transaction costs. We have also discussed the implications of ICTs on these factors. The result must be recognised to be inconclusive in the sense that it cannot be determined at a general level whether ICTs will lead to looser or tighter business relations. This depends on the specific circumstances in the specific industries at the point in time in question. Thus, in the last section, we analyse the developments in the Danish textile and clothing industry with an emphasis on the industrial district in the Herning-Ikast area in Jutland. However, before turning to the specific developments in this industrial area, we examine the developments in the theoretical discussions that have followed the works of Coase and Williamson.

We have also stressed that transaction cost economics should not be the only approach to the analysis of the reasons for the existence of firms and their sizes. In order to perform such an analysis, it is necessary to also look at the economies of scale and scope, at control and market dominance, and at the appropriation of value added in the sectors analysed. Furthermore, one must include an ex-

[12] Coase (1937), 397 (footnote 3).
[13] Williamson (1986a).
[14] Smith (1776).

amination of the cost of production in different areas. Parts of production processes may be outsourced if production costs are lower in other areas. This is particularly pertinent in the textile and clothing area, where large parts of the production processes, in the Danish case, have been outsourced to low-cost areas, e. g. Poland and the Baltic countries.

It can, therefore, be concluded that if one wants to examine the developments in business relations with respect to the size of firms and the closeness of business relations, one must — apart from an analysis of the changing patterns of transaction costs — also analyse the developments in production costs and in transportation costs. Without this, it is impossible to get a full picture of the direction of business relations and structures.

3. Newer theories on ICTs and business relations

3.1 ICTs and business structures

A new line of debate that superseded the market vs. hierarchy dichotomy in transaction cost economics has dealt with how ICTs can be applied in defining specific business strategies and how to obtain specific business goals (e. g. Rayport & Sviokla, 1994[15], Dabholkar & Neeley, 1998[16], Shaw, 1999[17]). Analysis of this line falls outside the scope of this paper. The other major line of debate, which is presented in the following pages, deals with the structural changes induced by applied ICTs. This approach has suggested some possible trends for the organisation of production, including market organisation, business integration and various hybrid structures.

Some of the first to discuss the implications of ICTs on business relations were Malone et al. (1987)[18] who, in the late 1980s, argued that markets would become the predominant organisational structure. Johnston et al. (1988)[19,20] disputed their viewpoints and emphasised instead the integrating aspects of ICTs. Following the presentation of these conflicting predictions and through growing volumes of observations, the discussion in the early 1990s developed into consideration of in-between structures.

3.2 ICTs in market structures

The arguments for applied ICTs leading to increasing market organisation at the expense of hierarchical integration was put forward by Malone, Yates and Benjamin in 1987[21] and elaborated in their article from 1989.[22] The first article relates electronic commerce to intensive communication and to high levels of information, which in the second article becomes tightly related to the Coasean arguments of discovering relevant prices and negotiation of contracts.

Basically, they argue that markets are characterised by low production costs but high co-ordination costs, and that the reverse is evident for hierarchies. Production costs include all costs related to processing of products or services, and co-ordination costs include use of resources for information-gathering and processing, contract negotiation, and, to restrict opportunism, e. g. monitoring.

Some of the other issues discussed by Williamson like asset specificity and/or product complexity are also discussed, but only little attention is given to communication standards, geography and ownership structures. It is argued that applied ICTs will affect asset specificity somewhat, but will affect the co-ordination process the most, which will improve the viability of electronic markets as compared to vertical integration.

Co-ordination of value adding steps through market mechanisms hinges on three key issues influenced by ICTs. First, there is the communication effect, which is based on the increased ability to communicate complex data, frequently, at all levels, emancipated from geographical constraints, and at low costs. The enhanced level of communication has the potential to improve co-ordination processes and reduce production costs. In these early writings, there is little consideration of what is communicated. Likewise, little attention is given to communication standards and technology that, however, are recognised to induce some degree of asset specificity.

The second element relates to the brokerage effect, where it is suggested that electronic brokerage services or contacting will enable quick and easy identification of the cheapest or best products and suppliers. Searches on electronic markets are eased as brokers navigate on a worldwide scale at very low costs. Arguments on brokerage effects are developed the most in the 1989 article, where discussions are presented on product standardisation, and where the ability to describe and identify products is identified as crucial to brokerage and electronic markets.

The third and final effect is an integration effect, which emphasises the ways in which ICTs can support organisation of physical value chains. ICTs enable firms to interact and shorten production cycles, facilitate just-in-time processes and co-operate on inventory management. Not much is said about relationships between the individual firms, as it is assumed that the economic benefits to the

15 Rayport; Sviokla (1994).
16 Dabholkar; Neeley (1998).
17 Shaw (1999).
18 Malone; Yates; Benjamin (1987).
19 Johnston; Lawrence (1988).
20 Johnston; Vitale (1988).
21 Malone; Yates; Benjamin (1987).
22 Malone; Yates; Benjamin (1989).

value chain from superior organisation will be beneficial to all firms. The only consideration seems to be on asset specificity and product complexity, which are crippling integration due to required high levels of shared information.

ICTs will vastly enhance the electronic co-ordination mechanisms through improvements of these three effects. Communication effects are assumed to be eased under all circumstances, and electronic markets are supported through the brokerage effect when communication and products become standardised, i. e. under low asset specificity. These findings have been supported by Benjamin and Wigand (1995)[23], Strader and Shaw (1997) [24], and by Berryman et al. (1998)[25].

3.3 ICTs and hierarchical business relations

Johnston et al.[26,27] were among the first to oppose the suggested market impact of ICTs presented by Malone et al.[28]. Instead, they view ICTs and notably inter-organisational systems (IOSs) as enablers for business integration and value added partnerships. They argue that developments of IOSs and business integration lead to comparative efficiencies, and that this has an impact on structural bindings and bargaining powers between partners. Whereas Malone et al. argue that the brokerage effect under certain conditions will dominate the integration effect, Johnston et al. argue that the most evident outcomes from applied ICTs are integration and structural bindings.

The line of reasoning presented by Johnston and Vitale is argued on the grounds that IOSs lead to comparative efficiency, with a combination of internal efficiency and interorganisational efficiency. Internal efficiency is obtainable through minimised inventory, just-in-time organisation processes, and improved data accuracy. The interorganisational efficiency is accomplished as organisations export work to other firms (e. g. data provision) and attain the ability to control orders and production status at other firms, apply management tools for vertical integration, engage in shared marketing, etc.

Implementations of basically proprietary IOSs will not lead to increased market organisation, which is due to the limited volume of firms within these networks. Improved business performances within value chains are obtainable through applied ICTs, which implies some structural bonding with partners. Johnston and Vitale recognise that IOSs have direct impact on bargaining powers between partners: application of ICTs lead to technological lock-in, enhanced switching costs, uniqueness of products (e. g. improved quality, immediate feedback, and reliable supplies leading to lower inventory), and may affect search costs related to finding alternative suppliers or partners.

Johnston and Vitale discuss conditions for development of business relations and IOSs, which they relate to trust and shared benefits. A key characteristic of value added partnership is the negation of market-based zero-sum games. Within value chains or value added partnerships there exist instead notions of shared interests and plus-sum outcomes or win-win situations.[29] Partnerships are indeed opposed to markets and characterised by repetitive action and trustworthiness. Markets are seen as very competitive and subject to a continuous struggle. „In fact, organisations often try to weaken a supplier or customer to ensure their own control of profits. This is understandable, given that the widely followed competitive model suggests that companies will lose bargaining power — and therefore the ability to control profits — as suppliers or customers gain strength“.[30]

Discussions of applied ICTs and business integration, following the contributions by Johnston et al., have observed this two-fold approach. One the one hand, arguments have been put forward for the economic benefits of improved business integration. The improved functioning of value chains has been related to speedy and accurate data exchange, which increases quality, reduces time, and lowers stocks [31,32,33]. The lowered stock levels reflect increased interdependency and trust. On the other hand, there has also been some consideration given to the imposed rigidity and loss of flexibility that result from engaging in such proprietary IOSs.

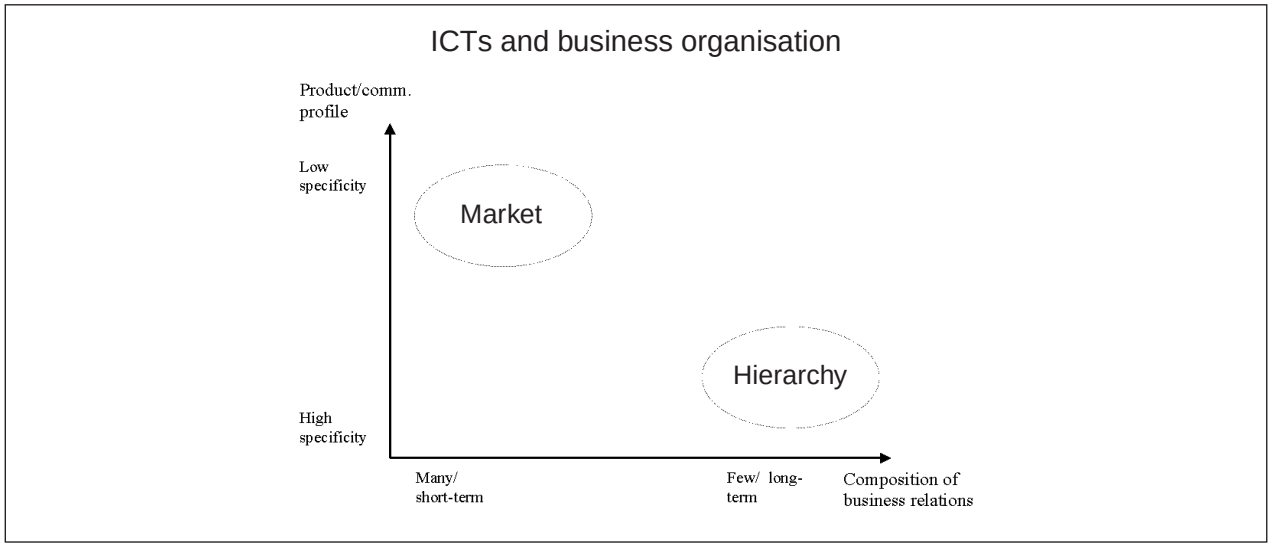
The arguments and factors for the two opposing positions are presented in figure 1. Arguments for market organisations are connected to both products and communications, structured around very low degrees of asset specificity, which support brokerage effects and contacting. These structures indicate market fluctuations, competitiveness, and many short-term business relations. Hierarchy is, on the other hand, connected to high asset specificity, product complexity, business integration and long-term relations. Discussions following from these contributions can be situated between these two categories.

3.4 Between markets and hierarchies

The two opposing positions mentioned above have led to a range of discussions that support some kind of middle position, which negates both pure market and pure hier-

23 Benjamin; Wigand (1995).
24 Strader; Shaw (1997).
25 Berryman et al. (1998).
26 Johnston; Vitale (1988).
27 Johnston; Lawrence (1988).
28 Malone; Yates; Benjamin (1987).
29 Burnes; New (1996).
30 Johnston; Lawrence (1988), 98.
31 Meier (1995).
32 Wilson (1995).
33 Nelson (1998).

Figure 1



archical structures. Rather, there have been a lot of arguments in support of organisational structures that contain both forms.

Some of the first to suggest the in-between position were Gurbaxani and Whang[34] who reached their conclusion through applying both agency and transaction costs. Applied ICTs reduce communication costs, suggesting more centralised structures, but at the same time agency costs related to monitoring and bonding are reduced, which suggests that organisations become decentralised. „In brief, we argue that as decision-making rights are pushed downward in the organisational pyramid, the costs resulting from goal divergence increase. Therefore, decision rights in an organisational hierarchy should be located where the sum of these costs are minimised".[35]

These findings resemble the Coasean conclusions. To Coase, there exist transaction costs in both firms and markets composed of contacting and contracting. In the analysis of Gurbaxani and Whang, transaction costs are specific to the market action, whereas the agency costs of monitoring etc. replace the internal transaction costs of identifying true prices, etc. Application of ICTs reduces costs of organising and management in both markets and hierarchies, which leads to inconclusive predictions: the optimal size of a firm is where the total sum of costs is minimised, and both types of costs are reduced.

Bakos and Brynjolfsson[36] have compared the brokerage effect of Malone et al. with the structural binding suggested by Johnston et al. They examine the apparent contradiction between, on the one hand, the ability of ICTs to improve search possibilities and on the other, evidence suggesting that firms increasingly outsource activities while engaging with fewer suppliers than previously. They suggest that buyer-seller relationships are embedded in fixed costs of technology and that the more suppliers there are, the higher the costs, which in turn determines strategies of having few suppliers.

Buyer-seller relationships are, in this view, not perceived as being based only on market mechanisms, as relationship-specific investments induce improved quality, trust, flexibility, responsiveness, and so on. The binding mechanisms of ICTs in business relations are based on Williamson's terms of asset specificity, e. g. quality, and on opportunism, e. g. trust. And as contracts cannot perceive all possible events, i. e. bounded rationality, contracts have to be incomplete. Firms reduce the risks of under-performance by suppliers through limiting their supplier-base.

One of the most interesting aspects of their analysis rests with identification of incentives for suppliers to engage in tighter relations. "Specifically, reducing the number of suppliers with whom the firm interacts, will increase the bargaining power of each remaining supplier. This will increase their share of the ex post surplus and, ultimately, their ex ante incentives to invest in the relationship. When supplier investments in quality are important, limiting the number of suppliers may be the best way to ensure that they have adequate incentives to make such investments".[37]

Similar analyses have been performed by Clemons and Reddi[38,39] who analyse what they call "the move to the middle", which consists of increasing outsourcing with

34 Gurbaxani; Whang (1991).
35 Gurbaxani; Whang (1991), 60.
36 Bakos; Brynjolfsson (1993).
37 Bakos; Brynjolfsson (1993), 803.
38 Clemons; Reddi (1993).
39 Clemons; Reddi (1994).

fewer suppliers. They argue that ICTs improve both co-ordination and monitoring, which leads to lowered transaction costs.

Clemons and Reddi suggest that transaction costs are affected by applied ICTs on the following accounts: relationship-specific investments increase the risk of opportunism. Having few suppliers, firms are subject to "small number bargaining" and loss of bargaining powers. Increased integration with suppliers enables increased specification complexity, which induces measurement difficulty. Value chain integration means higher uncertainty and a greater need for information. And integration based on shared technology becomes vulnerable to rapid technological changes.

The binding effect from applying ICTs and engaging with few suppliers is evident, but also means that firms get exposed to transaction risks, which is the term they use for increased vulnerability of having fewer suppliers. In order to avoid the most evident risk-taking in moving to the middle, partnerships have to rely on both incentives and trust. Bolisani et al.[40], Ciborra[41], and Holland and Lockett[42,43] have also stressed the limitations in the span of strategic choices from applying ICTs.

Steinfield et al.[44],[45] stress that development into decentralised markets or centralised hierarchy hinges on the two factors of asset specificity and product complexity, factors that may be difficult to separate. The more complex or specified products and communications are, the more likely it is that there will be hierarchical structures. Further, they recognise that physical distance or geography has an impact on the co-ordination costs of market organisation.

3.5 Summary

Reviewing articles on applied ICTs and business relations has brought out some of the key differences of conclusions about markets, hierarchies and networks. The analyses presented here have provided a view of markets as being based on short-term impersonal interaction where competitiveness hinges on lowest costs. At the other extreme, hierarchies are personalised, recurrent interactions, where quality and commitment mark relationships. Networks encompass the multitude of business relations found in the broad span between almost-markets to almost-hierarchy.

Markets are thought to exist where applied ICTs enhance economic efficiency and improve browsing. Advocates of hierarchical business structures emphasise the improved economic efficiency, and stress that it hinges on structural connections.

The network discussion encompasses arguments from both market and hierarchy. Markets are found where products and communication have become somewhat standardised, leading to low asset specificity and improved contacting and contracting. Hierarchies are associated with dedicated technologies and unique products, inducing high asset specificity and increasing transaction costs.

The contributions mentioned seem to accept that ICTs generally lead to increased economic efficiency both internally and interorganisationally, as well as to an increased browsing effect. Key questions arise on the nature of the applied ICTs, whether they lead to improved browsing and interoperationality, which in turn supports market-like structures, or where ICTs provide the instruments for integration and quality improvements that lead to more connections between firms. Surprisingly little has been said on the role of other factors such as geography and market constitutions at large.

4. Business relations in the Danish textile and clothing industry

4.1 Introduction

The Danish textile and clothing industry emerged where there were abundant resources of energy, raw materials, and labour. Two areas in Denmark emerged as examples of this resourcefulness; one around the capital Copenhagen, the other in rural parts of Jutland around the cities of Herning and Ikast. Only the latter has maintained its importance up to the present.

The textile and clothing industry is one of the areas where the internationalisation of competition has had a very direct impact. Fluctuating conditions of demand and supply have called for high degrees of flexibility and have been instrumental in developing networked structures among a large number of highly specialised small and medium-sized firms. However, to remain competitive, value chains increasingly depend on outsourcing to low-cost areas.

Successful adjustments to continuous disruptions in the terms of trade have shown the viability of this industry in Denmark. Competition from low-cost areas and the onset of the oil crises have caused major disturbances in European textile and clothing production. Whereas most European textile industries have declined, the Danish industry stands as a partial exception to this trend. It has been successful in maintaining product levels and values, but not in maintaining national employment levels.

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40 Bolisani et al. (1994).

41 Ciborra (1994).

42 Holland; Lockett (1994).

43 Holland; Lockett (1998).

44 Steinfield; Kraut; Plummer (1995).

45 Steinfield; Chan; Kraut (2000).

Danish competitiveness in this industry stems to a large extent from production of good quality items at fair prices. Industrial segments competing on other terms are found at both ends of the market; fashion and high quality goods at high prices and low quality goods at low prices. Strategies to produce good quality products at fair prices have compelled firms to apply the newest technology in production as well as in support of the administrative tasks. Where mechanisation and substitution of labour intensive functions have not been feasible, strategies of outsourcing to low cost areas have prevailed. Outsourcing has historically shifted from English, over Iberian, to Polish and Baltic production sites, conditioned by labour costs in production and feasibility of trade.

Different forms of ICTs have been successfully applied to support these processes. Technologies have been introduced to get information directly from markets, and to fine-tune the logistics of production and distribution, which have called for altered and intensified information flows and communication patterns. Telephone communications and faxes have been instrumental in transmission of unstructured data with subcontractors and suppliers. These forms of communication together with e-mail remain essential in the administration of international outsourcing. Outsourcing and trade within the regional network is, however, relying on more advanced applications of ICTs. Often EDI, Internet technologies and e-mail support the communication of the order-production cycle. However, some of the most advanced communication patterns are found in the design-production cycle where design and cutting sometimes have been integrated through computer-aided design and computer-aided manufacturing (CAD-CAM) technologies.

4.2 The Danish industrial district

The Danish textile and clothing industry in Jutland has contained some of the special characteristics found in networked industries and industrial districts for a long time.[46] [47] Production patterns are composed of interactions between a large number of small firms who have specialised in their particular function. Value chains are composed of firms primarily found within a geographically limited area in Denmark, but international outsourcing is also taking place here. The opening up of markets and rising income after WWII gave the Danish textile and clothing industry a boost, but rising labour costs and competition from low wage areas since the oil crises have compelled the industry to adjust. In order to maintain a high level of quality in production at a low cost, much of the labour intensive activity has been outsourced to low-wage areas. This industry has performed relatively well, but competitive pressures keep mounting and increasingly less clothing is being manufactured in Denmark.

The area mentioned forms an industrial district, where major parts of the Danish textile and clothing are produced. The high volume of small and medium-sized firms indicates functional specialisation and networked production structures. Further, there is no single firm that dominates the region, rather it is the entire textile and clothing industry that dominates the production structure of the district. Additional evidences of district properties are high rates of newly established firms, low unemployment rates, and supportive regional infrastructures.

The district constitutes less than seven percent of national employment, but almost ten percent of national industrial employment. The high level of industrial activity of the region is primarily driven by textiles and clothing, but there also exist related industries such as metalworking and furniture.[48] The Danish textile and clothing industry is responsible for less than fourpercent of national employment, but for over 15 percent of employment within the district. More than 40 percent of national textile and clothing industrial employment is located in the district and more than 20 percent of workplaces, which suggests high proportions of small firms in the district.

Internationalisation of trade in this industry is evident as Denmark imports materials and exports large proportions of finished products to some countries, but exports semi-finished goods to and imports finished goods from other

[46] Nielsen (1993).
[47] Maskell (1984).
[48] Illeris (1992).

Table 1

Danish industrial district (1996)

	Workplaces			Employment (x1000)		
	Total	Industry	T & cloth.	Total	Industry	T & cloth.
Denmark	300.742	25.460	1.928	2.895,1	516,9	18,7
Industrial district	22.201	2.150	412	189,9	50,1	7,7
Share of total	7,4%	8,4%	21,4%	6,6%	9,7%	41,4%
Based on: Statistical data from Statistics Denmark, and Maskell (1984).						

countries. Trade with the Western European countries has been based on Danish imports of textiles and exports of clothing, whereas trade with Poland is the reverse. Diminishing trade with Portugal and growing trade with Turkey, Lithuania, and Poland are based on exporting cut material from which clothing is produced abroad and then re-imported, as in the well-known strategy of outsourcing sewing. Registered trade with China consists almost entirely of the Danish import of finished clothing, much of which is produced on Danish design and orders.

Outsourcing in the textile and clothing industry seems to reflect a three-tiered structure. One cluster of outsourcing arrangements is based on regional outsourcing to obtain specific skills and speedy delivery, and the connections are often short-lived. The second cluster is international outsourcing to European countries and is mostly based on access to low costs of assembly, and business relations are often long-term. Identification of outsourcing partners depends on costs, skills, and accessibility to Danish management.[49] The latter is sometimes required as local management often lacks the skills needed to operate businesses under capitalist competition. The final cluster of outsourcing is to Asia, where Danish firms gain access to high skills at low costs, and with skilled local management. Here, the business relations tend to be long-lasting. In contrast to the European outsourcing, the Chinese companies often manage the entire organisation of production based on Danish orders and designs.

4.3 ICTs in support for competitive strategies

Competitive strategies of firms are related to the pressures mounting from existing firms, new entrants, suppliers, customers, and possible substitution.[50] Limited amounts of technology required in design and production of garments has made it easy for new firms to enter. Competitive pressures on established firms have not only come from national entrepreneurs, but also from international competition, some of which stems from low-wage areas. The large proportion of small and medium-sized firms in this industry in Denmark have made collective strategies difficult to implement. The major strategic trends can be associated with the following parameters: product characteristics, assembling room, market access, and technology application.

Strategies applied by firms to remain competitive include product improvement and innovation. Textile and clothing manufacturers have introduced new seasonal collections with great success for decades. Seasonal variations of products have obvious advantages for consumers who demand different clothing for different purposes and weather conditions. The advantages for manufacturers lie in generating a consumer need for new clothing and new designs. It is most common for manufacturers to bring out two or four new collections annually, but more are possible. Another means of obtaining product differentiation rests with branding and quality. Branding hinges on customers' perception of a given name or brand that is thought to be high in quality, trendy or to otherwise serve specific needs. ICTs are applied extensively in the design processes, which enable rapid product alterations and outsourcing to specialised suppliers.

Production costs are another key area for competitive action, and they are ascribed to specialisation and economics of scale. Costs of production are related to materials flow and handling, and may be reduced by various means such as lowered transport costs, lowered inventory and stocking costs, and outsourcing. The networking and outsouring structure of the Danish textile and clothing industry enables firms to specialise in core competencies produced under highly-skilled and large-scale conditions. Manufacturing becomes flexible, and production costs are minimised through outsourcing — regional outsourcing to obtain skills and speed, and international outsourcing to low-wage countries to obtain lowered production costs. International outsourcing is viable due to substantial reductions in labour costs, despite the obvious costs and time-consumption in transportation of materials. ICTs are widely used in support for organisation of established national and international value chains.

Market access as part of a competitive strategy relates to marketing, sales, customisation, and distribution. Marketing actions are intensive and related to establishing brand names. Sales are developed through low costs and discounts. Inventory minimisation has been assisted through vendor managed inventory. Mass-customisation reflects the ability to provide the wanted items, when needed, and to produce them at low cost using mass production techniques. Supply of mass-customised items depends on speedy accurate information on sales, the production-organisation of value chains, and the time-to-market. The latter is especially important in order to match the demand for seasonal and high fashion goods. Distribution of stable goods that compete more on price than quality has to be cheap and respect cost minimisation through low inventory. The Internet has become an essential tool in reaching new markets and detecting sales potential, which enables precise demand and production forecasts. Mass customisation has not become a widely applied competitive strategy in Denmark, despite the wide application ICTs that provide quick access to electronic sales data.

Interviews at Danish textile and clothing companies reveal that firms apply ICTs to gain competitiveness or to

[49] Illeris (1999).
[50] Porter (1980).

preserve market shares. The defensive approach that applies ICTs in order to preserve market shares is associated with value chain integration, optimisation of logistics and cost reductions. Within this category, there are firms that have Internet access, web pages and e-mail in order to show their ability to apply ICTs. These firms often lack a strategy for how to use the Internet, and who to target. EDI is widely used, more as a response to mounting pressures from the dominant players of the value chains. The more aggressive applications of ICTs include obtaining new market reach and forming new value chain structures.

Applications of ICTs depend among others things upon competitive strategy, market conditions, and geographical proximity. The competitive strategy is important for the choice of applied ICTs[51] as manufacture of stable goods, i. e. low cost items, is associated with little application of technology, whereas high quality items depend more on correct timing and applied ICTs for precise forecasting, etc.[52] Market conditions also play essential roles in ICT strategy; dominant players may dictate technology choices and standards, e. g. EDI, and success on volatile markets depends more on quick, accurate access to information than on increased market stability. Geographical proximity is evident, as communication patterns are different within the district from overseas communication. The former patterns reflect transmission of complex images, e. g. in CAD-CAM, whereas communications with the low-cost areas are typically limited to fax, telephone and e-mail.

Quantitative analysis of the application of ICTs by Danish firms[53] suggests that the Internet and e-mail are being used widely for processing and accessing commercial information. Actual transactions based on the Internet are, however, few. Nevertheless, Danish firms in general are performing very well with regard to business-to-business e-commerce, due to high penetration levels of EDI in Danish industry.[54].

Our own research on the use of e-mail and web pages in 1999 indicates that this industry has been less active in applying e-mail and the Internet than other industries in Denmark. The relative backwardness of this industry is explicable by the large proportion of small and medium-sized firms. Data (December 1999) from the textile industry shows that about 50 percent use e-mail and about 40 percent have homepages. Differences are found in the use of homepages: producers of final goods such as clothing have high proportions of homepages, many of which present both products and firm. On the other hand, firms performing cutting, sewing or other services have only a limited use of homepages. This segment uses homepages for presentation of firms rather than products. Web pages and e-mail are used only to a limited extent in communication with European and Asian business partners.

4.4 Business relations in textile and clothing

The business relations found in Danish textile and clothing can be divided into three groups depending on competitive strategy, applied ICTs and, importantly, on geographical proximity.

Business relations within the industrial district are loosely based on somewhat short-term market-based interactions, where outsourcing is used to obtain skills and timing for high quality items. Businesses transact with different partners based on specialised skills, costs and quality. Dissatisfaction with sub-contractors easily leads to the exclusion of future deals, and searches for new partners are facilitated by regional institutions and personal connections. Interacting with new partners is feasible due to fairly standardised ICTs and skills. The district is based on a high level of competition between firms, and little co-operation between value chains is evident.

Outsourcing to Eastern Europe is primarily done to access low-priced human resources, and applied in order to make medium and low-level quality items. Business relations between Danish and regional firms in these countries seem to be tight and fairly long-lasting which is to be expected for the following reasons: quality of the sewing services develops gradually, finding substitutes in low cost regions is not easy, social bonds emerge, and applications of ICTs are learning processes. The searching processes are complicated due to incomplete knowledge of regional skills and performances, and contracting is complicated by limited technological skills that restrict application of ICTs to telephone, fax and e-mail.

Despite tendencies towards long-lasting hierarchical business relations between Danish and European firms, there are exceptions. One such exception is Capacity[55], which possesses sufficient knowledge of local conditions to generate easy searches. The firm applies various ICT-tools in communication with their Baltic and Polish business partners and acts as a contact broker between Danish industry and foreign companies.

The Asian business relations are less clear-cut. Outsourcing to Asia is done in order to access special skills at a low cost. The drawbacks are long delivery times and complicated control mechanisms. On the one hand, one would expect tight business relations to emerge as distance and lack of localised knowledge complicate searches and identification of new business partners. However, the Asian firms generally seem better positioned to interact with new business partners — they often possess higher ICT-skills.

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51 Abernathy et al. (1999).

52 Forza; Vinelli (1997).

53 Ministry of Research and Information Technology (2000).

54 Melody (2000).

55 Capacity (2000).

The Danish textile and clothing production has been networked for decades. Functional specialisation and outsourcing are traditional competitive strategies, whereas international outsourcing has bloomed for the last several decades. Outsourcing within the district enables access to specialised resources, and international outsourcing has been motivated by access to low-cost sewing facilities.

One example of this is Brandtex[56], which is a major Danish manufacturer of clothing. The competitive core of the firm is its design and administrative functions, founded on a shared technological base. Design and cutting of fabric is performed in Denmark, approximately 40 percent of the sewing is national, and the rest is outsourced, e. g. to Bulgaria and Poland. E-mail is extensively used in production, and EDI is applied in production, sales, and distribution. The production processes are further supported by CAD-CAM technologies, also in communication with designers. It is thought essential that sales data be quick and reliable. The expected result is increased outsourcing with a few trusted suppliers and hence tighter business relations. Future competitive strategy of the firm is to outsource an increasing part of the value adding steps and to apply ICTs more in communication with partners.

Large parts of the Danish textile and clothing industry compete on aspects other than price. Where quality is one of the driving competitive parameters, outsourcing seems to lead to long-lasting relations. In these situations, partnerships evolve around mutual goals and some shared benefits, and win-win exchanges develop. Partnerships have been coupled with intensified information exchange and with improved quality of production. Better quality sewing services by companies located in, e. g., the Baltic area stems from intensive feedback mechanisms, learning-by-doing and direct involvement by Danish managers. Long term co-operation between these firms has often been supported through technology transfer, direct foreign investment or ownership. Examples of this include firms competing on high quality, e. g. Sunds Velour, a textile producer, and Claire International[57] who manufactures women's clothing. Both companies have engaged in outsourcing relations with low-cost firms, which have developed into long-lasting relationships and direct ownership.

Value chains competing on prices and timing have, on the other hand, experienced more short-term relations. These types of transactions are associated with win-lose relations where dissatisfaction with price or quality will disable recurrent trading. Economic viability of these production structures rests with the ability to find partners that supply promised goods and services at competitive prices and at the promised time. Danish firms shop around to find the suppliers that best match present needs. Bestseller[58] is a very successful Danish manufacturer of clothing, which outsources major parts of their production to regional subcontractors. La-nika is one of the companies that competes for these contracts. The competitive strategy of this firm is twofold: low cost is ensured by international outsourcing, and quick production processes are made possible by well-tuned administration and contracts that penalise delays heavily.

Another aspect of market constitution and dominance is the position of the centralised retail link. Communications between national retailers and manufacturers is probably the area that applies EDI the most within this industry. For a major Danish retailer like Magasin[59], almost all communications with suppliers are based on EDI-messages[60]. The retailing concept is based on shops-in-shops, where clothing manufacturers have the full responsibility for product display, selections and restocking. One such manufacturer is Femilet, which obtains access to direct sales information, which allows for accurate forecasting and production management. Another Danish manufacturer of underwear is JBS, which also communicates intensively through EDI-messages with major retailers. It is important to this firm to have quick and accurate access to sales data in order to plan their mechanised production of stable goods, which depends on large bulk production being economically feasible. Characteristic of the manufacturers mentioned is that EDI is only applied due to strong pressures from retailers and that application supports tight business relations.

5. Summary and conclusions

Development and diffusion of web-based ICTs have brought renewed attention to electronic commerce since the mid-90s. However, business-to-business electronic commerce is far from a new phenomenon, as commercial interactions in electronic networks have been evident for decades. The proposed economic arguments for applying ICTs in support of business operations rest among other things on improved operations of firms and value chains, together with increased ability to search markets and identify new partners and opportunities. Smoothing of value chain management improves the competitiveness of existing structures whereas improved searches suggests more market-like and competitive structures. This paper has set out to investigate whether applied ICTs lead to tighter or looser business relations.

Transaction cost analysis as proposed by Coase and Williamson is instrumental in desribing organisational structures in markets, hierarchies, and intermediate relations. Coase suggests that transaction costs are com-

[56] Brandtex (2000).
[57] Claire International (2000).
[58] Bestseller (2000).
[59] Magasin (2000).
[60] Danish EDI Coulcil (2000).

posed of the identification of right prices and contracting. Williamson emphasises characteristics of the transaction environment such as bounded rationality and opportunism by agents, and asset specificity. Our discussion points to aspects that ought to be given attention in analysing business relations, including firm size, market constitution and geographical proximity.

Applications of ICTs and their impact on business relations have been the topic of a range of newer theories. Different authors have argued for organisational structures from market dominance to hierarchical organisation. The core factors in dealing with these issues seem to be the impact of ICTs on browsing and integration. Questions arise on the standardisation level of products and communications, which make browsing feasible, and on the role of asset specificity that triggers integration.

The case presented describes the business relations in the Danish textile and clothing sector. The discussion of value chain structures proposes that businesses interact on a market-like basis within the industrial district. Here, the firms compete on quality and costs, and ICTs are applied for both browsing and integration. Business relations with outsourcing partners in Europe tend to be more hierarchical and long-term. Formation of these relations is, as expected, faced with difficulties in performing local searches, find substitution for the service providers, learning processes that lift quality levels, etc. ICTs in these relations are only applied at a limited scale. The final cluster of outsourcing is with Asian companies who provide all the value adding steps based on Danish designs to final packing and shipment. Despite the evident geographical distances that make searches complicated, it is suggested that business relations are looser than those with the European partners.

The case reveals the importance of market constitution, competitive structures and geography in dealing with business relations. The findings suggest that both tight hierarchical and loose market-based business relations exist side by side. The recent developments and diffusions of ICTs, and especially the tools that support browsing effects will be instrumental in restructuring value chains. However, on the basis of the present analysis, we predict that these developments in themselves will not lead to increased market organisation. Development of ICTs is only one of many factors that determine the composition of business relations.

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Zusammenfassung

Auswirkungen der Informationstechnologie auf Geschäftsbeziehungen

Der vorliegende Beitrag beschäftigt sich mit der Interaktionsweise von Firmen in Anbetracht der stetigen Zunahme von Business-to-Business E-commerce. Die Entwicklung von billigeren und stärker standardisierten Informations- und Kommunikationstechniken erweitert und intensiviert elektronische Netzwerke. Dies kann sowohl zu engeren als auch zu weniger engeren Geschäftsbeziehungen führen. Bisher vorliegende Untersuchungen lieferten unterschiedliche Einschätzungen darüber, welche Tendenz überwiegt. Während einerseits argumentiert wird, dass eine engere Zusammenarbeit entstehen wird, welche wiederum zu elektronischen Hierarchien führen wird, wird andererseits die Meinung vertreten, dass lockere transaktionsbasierte Interaktionen, also die Marktsphäre, dominieren werden. Studien über die Wertschöpfungsketten in der Textil- und Kleidungsbranche liefern keine eindeutigen Antworten. Die Entwicklungen in der Informations- und Kommunikationstechnik und im E-commerce eröffnen unterschiedliche Chancen für verschiedene Industriesegmente.

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