

## EDI: A Pessimistic Viewpoint

**EDI has been promoted as a technology which helps to reduce conflict and enhances collaboration and 'partnership' between trading organisations. Is this always the case? In what circumstances are organisations continuing to interact in adversarial ways, and for what reasons? To answer this question, we start by examining the development and application of an EDI network in the motor industry.**

In the mid-1980s Ford established a corporate network, Fordnet. The network covers all Ford sites in Europe, and has mailbox facilities for Ford's business part-

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ners (e.g. suppliers, dealers and shipping companies). EDI is only one of the applications served by the network which handles all kinds of corporate data transfer within Ford and with its trading partners. EDI in Ford was developed and implemented expressly in order to streamline business processes and eliminate inventory.

### The Case of Ford Europe

In developing a proprietary interorganisational network, Ford had a basic objective - to gain competitive advantage by locking its suppliers and customers into its systems, and locking its competitors out of them. Indeed, the company wants this lock-in to restrict its suppliers' and dealers' ability to do business with other manufacturers, or at the very least, to inhibit their trading relationships with other companies.

When the network was introduced, Ford made it clear to its established suppliers that they should use EDI. New suppliers were informed that trading by EDI was a requirement of trading with Ford, and that no paper transactions would be done. Ford provided its suppliers with Fordnet software and with Fordnet training courses. Suppliers with incompatible systems, or with no systems at all, were required to find appropriate solutions as quickly as possible.

It is quite clear from both the design and the implementation of Fordnet that Ford does not regard its trading relationships as if they were partnerships, made on an equal basis, but relationships involving its domination and their subordination. This is not really surprising, given Ford's market position and purchasing power, but it does run counter to the popular view of 'collaboration' and 'partnership' in trading relationships - a view which is often promoted by corporations themselves when publicising their EDI networks.

Ford's attitude to its trading partners was revealingly expressed by one of Ford's systems staff, describing the reaction of suppliers across Europe to the

imposition of the requirement that all future transactions were to be conducted using EDI rather than paper: The Spanish were extremely obedient. Ford is their bread and butter. When we say „Jump“, they jump. The Germans gave us the most trouble. Among other things, they didn't like the dedicated network.

Ford also shows little inclination to re-engineer its business processes, at least not outside its own corporate boundaries. The company's only objective is for its business partners to use its proprietary network; it is unconcerned with the established trading and information handling practices of its suppliers, with the way in which Fordnet cuts across these, and with developing solutions to such incompatibilities. Neither is it concerned with how the data transmitted over the network is used by its trading partners. Ford's suppliers have enormously contrasting levels of technological sophistication. While over 50% of its trading partners in Germany, for example, are able to integrate EDI messages from Fordnet with their own in-house computing applications, most of its Spanish suppliers have low levels of office automation, and simply 'view and print' Ford's EDI messages. EDI has therefore had no impact at all on their business processes; it has simply meant an additional expense. Serious attention to business process redesign would involve addressing these kinds of inefficiencies throughout the supply chain, and, if necessary, providing training in how to streamline information handling procedures.

Companies who supply to Ford find the trading relationship coercive and the strictures of using Fordnet EDI unnecessarily expensive and inconvenient. One supplier complains that doing EDI with Ford has increased the costs of the trading relationship, but has not reduced expense in any way. Moreover, there are technical incompatibilities between Fordnet and the supplier's computer systems, which the supplier has had to deal with, at its own extra expense and inconvenience. The supplier in question is not a small company lacking market muscle or in-house computing expertise. On the contrary, it is a large multi-national company with customers throughout the motor industry, with a long-established history of supplying to the motor industry, and indeed, with a trading relationship with Ford

which dates back to Ford's arrival in the UK in the 1920s. Nevertheless, the company feels constrained to trade on the terms dictated by Ford, and to conceal the costs and inconvenience of doing so. As for many other suppliers to the automotive industry, Ford is its biggest customer, and this inhibits suppliers from challenging Ford's approach to EDI. However, also like other companies in the same position, it privately questions whether supplying Ford is worthwhile.

### EDI, Coercion and Power in the Supply Chain

Is Ford an exceptional case? It seems that Ford's EDI practices typically derive from its position as a large manufacturer with considerable market power. An OECD study of telecommunications use by U.S. motor manufacturers confirms this: The problem for US suppliers, and especially the smaller ones, is that they have little choice but to accept the will and network solutions of their large clients. Indeed, the small suppliers have had little, and overwhelmingly negative, experience with this type of application [1].

It is not only the smaller players which find themselves hampered by the EDI strategies of the automotive giants. Even the larger suppliers - some themselves multinational corporations with considerable telecommunications expertise and technological sophistication - find themselves forced to conform to the objectives and programmes of their customers. They too have to accept networks deliberately designed and configured to meet these objectives and to preserve the power and dominance of the large customers.

Because of their purchasing power, the 'hubs' in the trading network can dictate the terms on which they do business with the 'spokes'. They use EDI to heighten their control over their trading relationships, and, as the case of Ford demonstrates, they may even enshrine this control in the EDI system itself, through particular configuration of the network, hardware and software. In pursuing their agendas for reducing market uncertainty, or simply for locking trading partners into trading relationships with them, these powerful players have unilaterally imposed their own in-house computer systems or information handling practices upon their trading partners, extending their own hardware systems into their suppliers' premises, dictating product and inventory coding according to their own established in-house information systems, and dictating the type and frequency of data to be exchanged.

The spokes are left with little choice but to conform to the trading terms, conditions and systems dictated by the hubs and to contribute to their perpetuation, and these can now become crystallised

into EDI networks. Moreover, they have little or no influence over the development of these EDI networks. They are forced to adopt the preferences of their major customers, which are geared to the requirements of the latter, and not to their own procedures or business strategies. And the lack of collaboration or prior consensus about the structure, function and design of these networks affords the spokes little opportunity to develop their knowledge and expertise in EDI use. This is not a problem in cases where the spokes themselves have their own established EDI systems (which is true of many of Ford's larger suppliers). However, small and medium enterprises (SMEs) embarking on EDI use for the first time are confronted with foreign systems whose functioning they do not understand, where they are merely required to interpret and act upon the messages transmitted to them.

### **What are the Reasons for Conflict and its Persistence?**

How can we understand this imbalance of power in electronic trading relationships? First, there are factors relating to the structure and workings of the supply chain in the industries considered. The typical 'hub-and-spoke' arrangement of the automotive and, in the UK, retail industries in which large corporations trade with a constellation of smaller partners (albeit that some of these smaller partners are large multinationals in their own right), confers on the large customers a great deal of purchasing power. Moreover, the nature of the automotive industry worldwide, with, in the US, a couple of very large assembly companies, and in Europe, very large numbers of suppliers per assembler, gives the assemblers a powerful position in the marketplace which again makes their suppliers highly dependent upon them for business [2].

Secondly, the established expertise and resources in information systems held by the hubs increase their ability to use these systems to pursue corporate strategic objectives. High technology utilisation in automobile assembly, in which the assemblers have built up substantial levels of know-how in systems development, has placed them in a strong position to proactively construct systems which are designed to serve their longer-term business objectives. Systems like Fordnet have to be seen in the context of previous generations of automation in Ford, and the company's accumulated expertise in this sphere. Although this kind of technological capability is equally held by some of the large first-tier suppliers (including Ford's supplier discussed above), certainly small suppliers have neither the resources nor the expertise to

strategically develop systems, nor therefore the opportunity to build up a technological capability. This lack militates against them when it comes to dealing with large hubs who have no interest in disseminating their expertise, but are purely interested in using systems to control their supplier base more strictly. This is evident from Ford's attitude to its Spanish suppliers in particular. Given this context, it is easy to understand why small suppliers find themselves disadvantaged in the application of electronic trading networks, and feel forced to comply with the imperatives of their customers.

Thirdly, electronic trading networks themselves crystallise this power imbalance. Proprietary networks by their very nature confer advantage upon their proprietors and disadvantage upon the non-owners. The company which owns and controls the network may dictate its functioning: network architecture, communications protocols, message standards, product coding and information handling procedures.

Fourthly, at the level of the national and international economy more generally, it is indeed not surprising to find that competition, which entails conflict, continues to be a motive force for business organisations, and that it continues to express itself in many supply chain relationships. Even where companies move towards more co-operative trading relationships, by suspending competition in specific areas and by carefully negotiating with other companies and associations in their industry, their strategies are still underpinned by competitive motives. Where corporations like Ford develop proprietary EDI systems as part of a strategy for establishing or reinforcing domination over their trading partners, this can be likened to the classic strategy of vertical integration. It replicates the control of the vertically integrated organisation, without actually requiring the ownership of subordinate companies. Instead, control over these subordinate trading partners can be achieved through electronic linkages. These linkages constitute what Yates and Benjamin [3] have referred to as 'virtual vertical integration'.

### **Some Positive Aspects of EDI**

The experience of EDI has not been entirely coercive and conflictual, even within the motor industry. Some organisations do engage in collaborative behaviour, facilitated by the introduction of EDI. Many organisations are now themselves recognising that EDI also offers them the benefits of increased data accuracy, decreased administration costs and speedier handling of information. As a result, they are in turn initiating new EDI linkages with their trading partners. In the

UK retail industry, for example, some of the large multiples engaged in 'rolling out' EDI to their entire supplier network provide their suppliers with training in EDI use. The purpose of such training is to encourage uses of EDI which confer benefits upon the suppliers themselves, on the grounds that suppliers will be much more amenable to electronic trading if the benefits percolate through the supply chain. Perhaps, then, the disadvantaging of suppliers in electronic trading relationships is merely a temporary phenomenon.

A wholesale shift towards collaborative trading practices must involve a significant change in the motivations of EDI users and the mechanisms that they use for trading with one another. New shared information handling procedures cannot be assumed simply because organisations introduce a technology which facilitates such change. How much information is shared? How is access to it controlled? Who is excluded from information exchanges, and to whose advantage? These questions are subject to management choice rather than technological imperative. And they are determined by the structure and quality of supply chain relationships which are already established. Any assessment of the organisational dynamics which are associated with the use of EDI must crucially take into account this political dimension of particular supply chain relations which shapes and constrains the interactions between organisations. The vision of collaboration is still a rather romanticised vision, perhaps more of a managerial ideology of the way in which organisations ought to interact with one another, rather than a description of how they necessarily do interact. ■

### **References**

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