

“100% EDI-connected suppliers” projects: An empirical investigation of success factors

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Abstract

Electronic Data Interchange (EDI) is becoming increasingly important, and new organizational forms based on EDI suppliers' capabilities are emerging. Therefore, taking advantage of recent technological changes, especially the development of Web-based EDI systems, many big industrial buyers are seeking to get all their suppliers EDI-connected. Based on previous research on EDI adoption, we conducted a survey to study the opportunities of success of such a “100% EDI-connected suppliers” policy using data from the vehicle industry. Findings from our survey helped us to understand suppliers' responses to such a policy and to provide recommendations to industrial buyers who are seeking to succeed in a “100% EDI-connected suppliers” project. This includes employing tailored communication strategies and selecting appropriate incentives that take into account different levels of suppliers' EDI-capabilities and suppliers' dependence.

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1. Introduction

Electronic Data Interchange (EDI) technology is a type of inter-organizational Information Technology (IT) that enables trading partners to exchange data automatically between their information systems. Different types of information can be transmitted using EDI technology. In this study, we will focus particularly on EDI systems that are used to exchange logistics data such as orders, dispatch information, payment notification and invoice between buyers and suppliers. EDI use to exchange this kind of data or messages has become extremely important, especially for industrial buyers, as a means to radically change their logistics organization and to gain new organizational capacities and competitive advantages (Lewis and Talalayevsky, 1997; Sheombar, 1997; Chatfiel and Yetton, 2000; Agi and Ballot, 2005). Consequently, EDI use between big industrial buyers and their suppliers has

spread very widely. For example, more than 90% of component exchanges between French car manufacturers and their suppliers are managed through EDI (Le Bot, 2004). Despite the importance EDI has acquired for industrial buyers and its wide development—measured by the volume of transactions—we notice that a significant number of low-volume suppliers in the automotive sector, as well as in other sectors, do not use EDI to manage their trade exchanges (Vollmer, 2001; SESSI, 2003). However, the cost of EDI has decreased notably, so its adoption should have become easier, especially for small businesses. In particular, some service providers have developed the Web-based EDI technology enabling trading partners to exchange EDI messages through the internet. To use the Web-based EDI technology, suppliers do not need more than a personal computer equipped with an internet browser and a Web connection. Therefore, Web-based EDI technology is being considered by some big industrial buyers as a means to eventually get all their suppliers EDI-connected. Thus they would be able to conduct all their data exchanges with suppliers by EDI means and definitively eliminate some parallel, expensive and less

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efficient communication and control methods, such as fax transmissions of orders and other logistics information.

What are the likelihood of success of such a “100% EDI-connected suppliers” policy? How could the buyers influence their suppliers’ decisions regarding the request to adopt EDI? To what extent does Web-based EDI technology contribute to achieving the “100% EDI-connected suppliers” objective? To answer these questions, we conducted empirical research using data relating to a Vehicle Manufacturer (VM) who has recently launched a “100% EDI-connected suppliers” project.

This paper is organized as follows. In Section 2, we present the EDI technology, its use in logistics operations and give a brief description of our case study. Section 3 develops the theoretical framework and previous research in the field of IT adoption in general, EDI adoption in particular. Section 4 presents our methodology, sampling method and data collection. In Section 5 we summarize and discuss our findings. Finally, we conclude our study in Section 6.

2. From proprietary to Web-based EDI systems: the challenge of 100% EDI with suppliers

During the 1980s, EDI systems were used according to bilateral agreements regarding the exchanged information, the messages formats, and the communication networks. Then, EDI communications became standardized through the development of EDI For Administration, Commerce and Transport (EDIFACT) by the UN Economic Commission for Europe (ECE). This standardization work undertaken by the UN committees has been reinforced on the regional, national and industry levels with the objective of promoting EDI adoption and use. The efforts made by the Organization for Data Exchange and Tele-Transmission in Europe (ODETTE) and its French partner on the national level in the automotive industry Groupement pour l’Amélioration des Liaisons dans l’Industrie Automobile (GALIA) are two significant examples of the importance that the promotion of EDI use has acquired (www.odette.org; www.galia.com). EDI use has been promoted also through the development of value-added networks and the improvement of their speed, reliability, safety and coverage. Initially used on a national scale, these networks have been enlarged and their structure adapted to the markets structure in order to support the extension of supply chains on the regional and international scales. The European Network eXchange (ENX), for example, has emerged in June 2000 as a result of the aggregation of several national networks projects (www.enxo.com). However, in spite of all the promotional efforts we have mentioned above, there remain a significant number of companies, especially small-sized suppliers, who have not yet adopted EDI to communicate logistics data with their customers.

The development of Web-based EDI systems was expected to increase considerably EDI adoption and use due to the low investment that these systems require.

Though Web-based EDI technology has been present on the French market since 1998, it has only recently drawn the attention of industrial buyers. We note that GALIA’s recommendation about Web-based EDI systems was published in March 2000 and its ODETTE equivalent in 2002, and a number of Web-based EDI service providers have recently been certified as conforming with GALIA and ODETTE standards. Based on these developments, a number of car manufacturers in Europe have launched “100% EDI-connected suppliers” programs. They expected that the Web-based EDI technology would help them to achieve their objective (www.galia.com).

Our study has been conducted with the cooperation of one of these manufacturers. Our VM aims to extend EDI adoption and use to all its suppliers of assembly parts. Although they provide only about 10% of the assembly parts flow, the suppliers that this project concerns represent about 30% (approximately 1000 suppliers) of the total number of our VM’s suppliers. To inform them of its project, the VM sent letters to suppliers. These letters contained details about the objectives of the project, time delays, price information and technical features of the EDI or Web-based EDI systems that could be adopted. Suppliers to whom letters were sent did not react as positively as expected. So, before using coercive measures towards these suppliers, we worked to help the VM to understand their reaction to the project and to study how to influence their decision regarding the request for EDI connections.

3. Theoretical framework and propositions

Literature relevant to our study includes research about the adoption of inter-organizational information systems in general, EDI systems in particular. In this literature, we can identify three groups of factors affecting EDI adoption by an organization:

- organizational readiness and the familiarity of the organization with IT;
- dependence relationship between the organization and its trading partner;
- The expected benefits of EDI adoption and use.

3.1. Organizational readiness and familiarity with IT

Prior research highlighted that EDI adoption is largely affected by the organizational readiness expressed in terms of financial and technical capacities (Iacovou et al., 1995; Chau and Hui, 2001). Following these authors, we have adopted three variables to express suppliers’ organizational readiness. The first one is the size of the supplier’s organization. The second is having an already installed EDI system in use with some other customers. The third variable is the use by the supplier of an Information Management System (IMS) to manage operational processes such as production planning and Material Resource Planning (MRP) systems.

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