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Emerging Industrial eMarkets: The Case of Covisint in Europe

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Abstract

Electronic marketplaces are a popular phenomenon, both for academics and for practitioners. During the last two to four years we have seen several e-marketplaces trying to find their niches. One of the most discussed e-marketplace, especially in the business press, is Covisint, the "big" e-marketplace of the car industry. Because Covisint is so well known, it has become an example and a model for other industries. By taking a closer look at Covisint, we intend to gain insights that can contribute to knowledge about the emergent field of industrial e-marketplaces.

1. Introduction

As part of the "dot.com" evolution of the late 20th and early 21th century we have seen an e-marketplace hype and many companies have or have had plans of:

1. Being a partner in an electronic marketplace.

2. Buying or selling at an e-marketplace.

3. Starting an independent e-marketplace.

The best known and the most often written about industrial e-marketplace today in business press is probably Covisint (with the outstanding example of Enron), an electronic marketplace in the car industry. Academic literature on Covisint is limited (Baldi and Borgman 2001, Chorafas 2001, Helper and MacDufie 2000). Other e-marketplaces in the automotive industry are Endorsia (supplier-biased e-marketplace) and Supplyon (supplier-biased e-marketplace). Volkswagen and BMW have started private exchange platforms in 2000. Several other industries have been and are looking at Covisint as a model for how to organise an electronic marketplace for an industry.¹ In this paper the following questions asked are; how is Covisint being adopted and assimilated, how does Covisint work and what kinds of problems does Covisint face. By taking a closer look at Covisint, focusing on European activities, we can hopefully gain insights about the emergent field of industrial electronic marketplaces.

Several researchers have conducted research on business-to-business electronic marketplaces (Malone and Yates 1989, Bakos 1991a, Bakos 1991b, Bailey and Bakos 1997, Bakos 1998, Segev, Gebauer and Färber 1999, Kaplan and Sawhney 2000, Wise and Morrison 2000 and Lucking-Reiley and Spulber 2001). Several of them have written about the e-marketplace concept, about characteristics and differences between different kinds of electronic marketplaces. Segev have conducted interesting research on electronic procurement (Segev, Gebauer and Färber, 2000).

Bakos (1991a) have investigated the pre-requirements of establishing a marketplace, and looked at the strategic implications of electronic markets. We find this interesting because this, the issue of strategic implications is what our empirical data indicates that practitioner's wonder about when they discuss electronic marketplaces.²

Bakos outlines five characteristics of electronic market systems that explain, from an economic perspective, the strategic potential and the impact of the structure and efficiency of markets. In the section on strategic potential of Covisint below, we will look at Covisint using Bakos five characteristics of an electronic market system. These are; reduced cost, network externalities, switching costs, economies of scale and scope and uncertainty. We are well aware of the theoretical limitations of Bakos' article with regards to a focus on search costs.

We will also investigate Covisint through the success factors described by Segev, Gebauer and Färber (1999). In the article Segev bring up critical success factors for electronic marketplaces that are relevant in our discussion on the e-marketplace Covisint. Segev' analysis of success factors succeeds Bakos in that usage is presumed. The first success factor is the ability of the marketplace to attract a

¹ Interviews with four large global companies in different industries winter 2001/2002

² Interviews with eight large global companies in different industries winter 2001/2002

sufficiently large number of participants, i. e., buyers and sellers. The second success factor concerns the marketplace needing to balance the interests and objectives of those market actors. The third factor is technical, electronic marketplaces have to be designed in a way that supports a large number of users in a high transaction-volume web-based environment. The last factor is the ability to integrate and manage catalogue content. This factor has stalled and/or prohibited substantial e-market initiatives at a number of multinational firms.³

To some extent, especially with regards to the points of network externalities and reduced cost, and the ability attracting users and balancing user interests, the two frameworks are overlapping. We do not believe that this is problematic, rather that it reinforces the importance of these.

To gain an understanding of what is happening with Covisint, we have interviewed actors involved in Covisint and the car industry. The actors interviewed are; one customer and partner of Covisint⁴, one potential customer and partner⁵, one big supplier⁶ and Covisint themselves.

The paper is structured as follows: We start with a brief introduction to the e-marketplace concept, after which a description of Covisint and the development of Covisint to date is presented. We then analyze Covisint and the impact of Covisint on the industry using Bakos five characteristics and Segev's success factors. To conclude we summarize lessons learned by the Covisint case and discuss the results.

2. Electronic Marketplaces B2B

2.1 Definitions

There exists a number of different definitions of what an electronic marketplace is.

“An electronic market represents a virtual place where buyers and sellers meet to exchange goods and services. Either side of the market – buyers and sellers or their representatives can host it as well as third parties.” (Segev, Gebauer and Färber, 1999)

“Electronic Markets in the broader sense may be understood as information systems supporting one or more phases and functions of coordination within market systems.” (Schmid, 1993)

³ Interviews with eight large global companies in different industries winter 2001/2002

⁴ European Project manager e-procurement and European purchasing manager

⁵ Global Purchasing manager

⁶ Global eBusiness manager

“An electronic market is an inter-organizational information system that fosters market based exchanges between agents in all transaction phases.” Bakos (1997)

2.2 How to Categorise Electronic Marketplaces?

One way of categorising electronic marketplaces is by determining whom the buyers are and what kind of products are bought and sold on the electronic marketplace (Barratt and Rosdahl, 2002).

The main factor of a *vertical marketplace* is that it only operates within one specific industry, both buyers and sellers come from the same industry to exchange products (for example steel, paper, chemical etc.). On vertical marketplaces production-related products (direct material) are bought and sold.

Horisontal marketplaces are categorised as operating with cross-industry buyers. The horizontal e-marketplace sells non-production-related products (indirect material).

Procurement activities are often divided into direct, production-related procurement and indirect, non-production-related procurement (Zenz, 1994). Researchers conducting research on e-procurement also divide between direct- and indirect procurement (Segev, Gebauer and Färber, 2000). However, research shows that companies have problems with seeing what are indirect goods and services and what are direct, there is confusion regarding what is indirect material and what is not, and which products and services are suitable for e-procurement and which are not (Arbin, 2002).

For different companies an e-marketplaces can be both a vertikal and a horisontal. Covisint can be said to be both a vertikal and an horisontal e-marketplace. On Covisint buyers can buy both non-production related and production related products.

An important characteristic of an electronic marketplace is its bias. There are *buyer-biased* e-marketplaces, *seller-biased* e-marketplaces and *neutral* e-marketplaces. When a marketplace favor buyers it is said to be buyer-biased. When it is favouring sellers it is said to be a seller-biased marketplace. Neutral marketplaces, are according to Kaplan and Sawhney the true market makers because they are equally attractive to buyers and sellers (Kaplan and Sawhney, 2000). Buyers or sellers do not establish these marketplaces, they are set up by an independent company. The independent company brings together buyers and sellers. (Barratt and Rosdahl, 2002)

Covisint can be said to be a buyer-biased e-marketplace and Endorsia can be said to be a supplier-biased e-marketplace.

3. History and Status of Covisint

On February 25, 2000, DaimlerChrysler, Ford Motor Company and General Motors jointly announced plans to combine efforts and form a single global business-to-business supplier exchange. The companies brought together their individual e-business initiatives to ease the burdens of the suppliers.⁷ The idea was to create one exchange and to decide on one common technology standard for the industry. The new organisation was temporarily named NewCo. The goal was to create a single automotive exchange handling \$300 billions in annual procurement. The Exchange was going to be based on technologies from Commerce One and Oracle.

In March 2000, the planning team, including executives from DaimlerChrysler, Ford's Auto-Xchange and GM's TradeXchange, moves into its temporary headquarters in Detroit. On April 14, 2000, French automaker Renault S.A. and Nissan of Japan join the NewCo planning initiative. Renault and Nissan lead the development of the European and Asian operations respectively. In May 2000 the partners choose the name Covisint and in June, supplier Delphi Automotive, a GM spin-off, hops on board.

In July the Federal Trade Commission review of Covisint begins a review in which Covisint receives clearance on September 11. The review come to the conclusion that Covisint is not a case for further investigation. Covisint launches the exchange on September 29. Its initial suite of software tools includes auctions, catalogues, quote management and collaboration.

In October, Covisint Europe sets up headquarters in Amsterdam and in November Fords' Auto-Xchange and GMs' TradeXchange begin their integration into Covisint. One hundred thousand users are expected to be connected at Ford to Covisint by the end of 2002. In December Covisint becomes a legal entity, the organisation is a multi-member joint venture known officially as Covisint, with DaimlerChrysler, Ford Motor Company, Nissan, Renault, Commerce One and Oracle as members.

Covisint initially had problems finding a chairman, but on April 18 2001 Kevin English was named CEO. English came to Covisint from a position as managing director and CEO of e-commerce at investment banking firm Credit Suisse First Boston and was previously CEO of financial news Web site, TheStreet.com. In May 2001, Covisint Europe begins operations in Amsterdam and PSA Peugeot Citroen joins. In July 2001, Covisint opened the Asia-Pacific office in Tokyo.

Today (January/February 2002) Covisint claims that they can see "successful usage" across the automotive industry during the year 2001.⁸ The figures of usage presented below are for Covisint worldwide. When asked about usage in Europe, Covisint claims that there is little or no activity.⁹ Covisint have no supplier

⁷ Covisint information material

⁸ Marketing Manager, Covisint Europe

⁹ Marketing Manager, Covisint Europe

catalogue connected in Europe. There have been a few auctions in Europe, but nothing else.

Figures of usage:

Auctions

More than 1 400 events.

Over \$51 billion in transactions.

Catalogues

More than 200 Catalogues.

More than 95 000 transactions.

Covisint offers services in the following areas: collaboration, procurement, supply chain management and portals. There is no activity on collaboration, supply chain management and portals in Europe. The only area where some activity can be seen is in procurement. Procurement is a difficult area for Covisint, especially the catalogue service. This problem relates to cost levied by Covisint on suppliers and lack of technical know-how at Covisint and suppliers.¹⁰

The revenue model for Covisint catalogue service is as follows:

The suppliers pay Covisint 1% on turnover at Covisint plus a yearly subscription fee on \$9000.

Covisint claims that they support each customer's unique procurement process needs for both production and non-production material.

Covisint offers catalogues, auctions, quote manager and asset control, and provides tools and services to convert product information (supplier information) into an electronic catalogue. With the Covisint buyer auction tool, a buyer can establish an on-line event, invite participating suppliers to submit bids and conduct the auction in a matter of hours. Covisint quote manager provides an environment to enhance the communication between buyers and potential suppliers. Quote manager is an electronic document management, analysis and collaboration tool that supports the automotive sourcing process. Below we analyse Covisint focusing primarily on the procurement service.

¹⁰ Interviews with Covisint, suppliers and customers/owners

4. Analysis

In the analysis, five theoretical marketplace characteristics are used. These characteristics are based on Bakos (1991a).

1. Reduced cost.
2. Network externalities.
3. Switching costs.
4. Economies of scale and scope.
5. Uncertainty.

4.1 Reduced Cost

The first theoretical characteristic is potentially reduced costs, for both the customer and the supplier. The customer-reduced cost theoretically comes from a simpler search process, the reduced cost for the supplier comes from a simpler search process for potential customers. Bakos believes cost reduction is likely to affect the “monopoly power” of the suppliers. Bakos claims that the cost reductions will have implications for the efficiency of the industry in terms of search costs experienced by buyers and their ability to locate appropriate sellers.

4.2 The Covisint Case and Reduced Cost

The partners of Covisint are arguing the case of reduced costs, both when talking to participants and when talking to potential suppliers. The buyers (Ford, GM, DaimlerChrysler, Renault, Nissan and Peugeot-Citroen) at Covisint are large companies with frame agreements, and their main purpose when using the catalogue service at Covisint is to navigate and control purchases made by their own organizations. Through increased volumes, they can negotiate better prices with their suppliers and achieve lower purchasing prices (Arbin, 2002). By steering their own organization to buy only from predetermined suppliers, the buying company gets better control over purchases, and can discover price discrimination on different markets. The search cost for finding products is hence reduced for the buyer, the employees in the organization do not have to spend time searching for the right product, since they are only allowed to order products through the catalogue hosted by Covisint. Because of the predetermined frame agreements, the possibility for a supplier to find new customers through the marketplace is low.

By using the auction function in Covisint, buyers have the theoretical possibility of comparing prices, and suppliers have the theoretical possibility of reaching new customers. This is mainly an advantage for new suppliers since they might find

outlets for their products. Existing suppliers are not positive towards auctions and claim that they lead to price pressure and in the long run to lower quality in products.

On the questions of the industry becoming more efficient with Covisint and if cost reductions are likely to affect "the power" of the supplier, the jury is still out. Looking at the empirical data, no change can be detected for users when negotiating prices and finding suppliers. Even so, the buyers' ability to locate sellers may increase, but the buying companies using Covisint do only have access to their own catalogues with their own pre-negotiated prices, which means that transparency will not be increased.

From the case we can see that focus for Covisint itself is to reduce customer cost, and that suppliers have difficulties in seeing how they can reduce their cost through Covisint. What we also can see is a struggle for power over pricing which might be indicative of the emergent state of Covisint.

4.3 Network Externalities

The second theoretical characteristic is network externalities, in short that the benefits realized by individual participants in an electronic market increase as more organizations join the system.

4.4 The Covisint Case and Network Externalities

To increase the number of suppliers (buyers already in place) has been a problem for Covisint. Without supplier participation Covisint can not function. Because of the current state of a non-existent reduction of supplier costs, suppliers are not that interested in joining Covisint.

The situation can be described as a stand-off between buyers who have invested money in the marketplace, and suppliers who think it is unfair to pay a middleman that they have not generated and over which they have no control.¹¹

In the autumn 2001, Ford and GM decided that they have to be tuff on their suppliers not joining Covisint, indicating that suppliers have to join or otherwise risk loosing business. Recently Ford backed down. Suppliers do not have to pay the transaction fee on 1 %, for now. The suppliers have so far been using the tactic of having their catalogue on Fords own supplier network in order not to pay transaction fees.

Not all buyers in the car industry are interested in joining Covisint. One factor for a buyer to consider when joining Covisint is supplier strategy. The potential customer/partner may have many sub-contractors, and they may believe that

¹¹ This information comes from an interview in November 2001 with one of the owners (a customer) of Covisint

Covisint will cost too much for their sub-contractors. The potential customer interviewed has chosen to have their own e-procurement system to control purchasing in order to get lower prices from their suppliers. The eBusiness manager of the potential customer interviewed says that they want a good long-term relationship with their suppliers. They do not want to force the supplier to join Covisint, which brings extra costs for the supplier; both direct costs (the transaction and the subscription fee), and indirect costs (the cost of creating and managing the electronic catalogue). The company has a “win-win” perspective on the relationship between them and their suppliers, and has decided not to use auctions in order to lower prices.

To date (February 2002) there is no big supplier connected to the catalogue service in Europe, but several suppliers have participated in the auction service.

4.5 Switching Costs

The third theoretical characteristic is switching costs. Electronic markets can impose significant switching costs on their participants due to large investments in hardware, software, employee training and organisational transformations.

4.6 The Covisint Case and Switching Costs

In the Covisint case there is potentially substantial switching costs, both for the buyer and for the supplier. The owners of Covisint have invested approximately \$300 million, a large incentive to get Covisint working and to stay with Covisint as a marketplace. For the owners of Covisint, Covisint will hypothetically accord the large switching costs locking them into their own creation.

For a supplier there are switching costs, in terms of having to create an electronic catalogue according to the soft- and hardware standards of Covisint. Because there are no database standards for product information in the car industry, it is difficult for the supplier to use Covisint's catalogue system in order to communicate with other marketplaces and customers. The interviewed supplier has several different technical solutions for different customers. A problem for them is that the marketplace and the different customers require different technological solutions and tailor-made systems for every customer is considered costly.

4.7 Economies of Scale and Scope

The fourth theoretical characteristic is economies of scale and scope. Electronic market systems typically require large capital investments and offer potential substantial economies of scale and scope. A marketplace usually incurs large system development and maintenance costs, and when transactions increase there will be relatively small incremental costs for each additional transaction. (Bakos, 1991) Technological and organisational resources and expertise acquired during the

development and operation of one system may be transferable to other systems, resulting in economies of scope.

4.8 The Covisint Case and Economies of Scale and Scope

Covisint's owners have in April 2001, spent a combined \$170 million on their electronic marketplace, including \$50 million of consulting services. The site now costs at \$12million a month. The partners expect to spend up to \$350 million before break-even, which they hope will be by the end of 2002. The business plan called for \$186 millions in revenue in 2001. Covisint pulled in approximately \$15 million. (The figures include both Europe and the US.) Web buying and online supply-chain management was envisioned saving \$1,500 to \$3,600 per vehicle, savings of up to \$1.6 billion in profits for Ford, GM and DaimlerChrysler each.

The owners of Covisint want to increase the number of transactions placed in the organisation internal electronic catalogue system. A large obstacle for buying companies implementing e-procurement is the need to change behaviour of the people making purchases in an organisation, to start buying products electronically instead of using the phone and fax. It is easy to underestimate the time it takes to implement an e-procurement system.

4.9 Uncertainty

The fifth theoretical characteristic is uncertainty regarding the benefits of joining an e-marketplace. Occasionally this uncertainty remains after an organisation joins the system. This uncertainty can affect the strategic behaviour of buyers and sellers by inducing them to adopt a "wait and see" strategy.

4.10 The Covisint Case and Uncertainty

Uncertainty surrounds Covisint. We have not yet seen a successful industrial e-marketplace. The buyers seem more certain about Covisint than the suppliers. Covisint do have a problem with the "wait and see" strategy that most suppliers have adopted.

5. Conclusions: Strategic Potential and Critical Success Factors

5.1 Strategic Potential

The above used five economic characteristics hypothetically determine the strategic potential of electronic marketplaces. When analyzing Covisint according to the characteristics we see that Covisint is facing several problems.

5.2 Reduced Cost

Covisint is focusing on reducing costs. For a marketplace to work there must be incentives for both buyers and suppliers. Baldi and Borgman (2001) claim that the Covisint example shows that consortium-based exchanges will face problems unless both buyer and seller see value in joining the exchange. In theory the supplier costs will be reduced (Chorafas, 2001), but the empirical evidence shows that Covisint has positioned themselves as an intermediary generating more costs than value for the supplier.

5.3 Network Externalities

The lack of participating organizations on the supplier side is closely connected with the reduced cost problem. It seems crucial for Covisint that they get suppliers “on board”, in order to get out of a sub critical mass situation.

5.4 Switching Costs

Covisint has succeeded in creating switching costs for its creators via sizeable investments in hardware, software, employee training and organizational transformations. It might be difficult for a competing e-marketplace to lure existing customers and suppliers away from Covisint.

5.5 Economies of Scale and Scope and Uncertainty

Today we get the distinct impression that Covisint is in a “learning phase”, and it will probably take some time before they will be able to obtain economies of scale and scope. The problem of potential buyers and suppliers “wait and see” strategy remains.

5.6 Critical Success Factors

The analysis below is conducted by using the success factors by Segev et al., introduced in Segev et al. (1999). The “success factors” have as far as the authors can see not been defined with regards to non-successful or non-effective factors. But to compliment Bakos prerequisites, the success factors are in our opinion worth using.

5.7 Ability to Attract a Large Number of Participants

Segev claims that the viability of the market place most depends on the ability to attract a sufficiently large number of participants on either side of the market. In the case of Covisint, it has succeeded in attracting participants on the buying side, but not on the selling side.

5.8 The Need to Balance Interests and Objectives

Covisint has not yet managed to balance the interests and objectives of all market players. Covisint is clearly a buyer-biased electronic marketplace.

5.9 Technical Knowledge and Expertise

Suppliers complain about the lack of technical knowledge and technical ability at Covisint. According to suppliers Covisint still has a lot to learn when it comes to technical issues as integration.

5.10 Integration and Management of Catalogue Content

Covisint offer suppliers content service, for a price. Many suppliers have their own electronic catalogues which they manage themselves. In order to integrate with Covisint they have to customize it.

The conclusion is that Covisint is facing several problems. Two of them seem especially fundamental:

- The "unbalanced" business model, i. e., the lack of reduced costs for suppliers would seem to be a substantial impediment for attracting suppliers and would seem to keep the market systems in a potentially permanent sub critical state.
- The lack of the technical readiness and ability of Covisint i. e., Covisint is apparently not in an operational state, and if Covisint can not technically integrate the catalogues, customer can not buy through Covisint, and if customers can not buy the marketplace does not exist.

Covisint in Europe is not being adopted with the exception of the auction service. Covisint does not seem to work. In order to work and in order to overcome its current problems, it would seem that they need to develop technological abilities and change the revenue model. At present we fail to see how Covisint generates value in the market place.

6. Discussion

The purpose of markets and market systems, electronic or otherwise embodied, is to bring the buyer and the seller, the customer and supplier, together into a shared venue. The outstanding feature of Covisint to date is the lack of supplier interest in joining the marketplace, which Covisint are providing.

One of the more curious actions of Covisint, maybe an overlap from car industry history in which hierarchical relations were primary, is the push strategy that are implemented towards potential marketplace actors; a strategy that on occasion apparently borders on a shotgun wedding approach for generating a solution to a non-existent problem. Given what Covisint and others are purportedly interested in achieving, a more market-based industry in which both short-term transactions and long-term relationships are driving evolution, the word counter-productive would seem a mild description of recent events.

The car industry has used EDI (Electronic Data Interchange) for decades and there exist small number of electronic marketplaces among car industry actors. Since Covisint has yet to deliver an operational marketplace, for instance no functional ordering system for real-time transaction exists, it is difficult to understand how (a) the venture will ever get out of a sub-critical mass situation and that (b) the wants and needs Covisint should generate more than cursory interest.

The car industry is of course like other industries in that new technology holds promise of various benefits and drawbacks. Electronic market systems certainly has the potential of shifting the market balance from seller to buyer, and an effort on the scale of Covisint would seem to have the potential of becoming a significant part of the infrastructure of the car industry. If this materialises is however another issue.

References

- Arbin, K. (2002) E-procurement in Industry. The 11th International Annual IPSERA Conference, Twente, Holland.
- Bailey, J. and Bakos, Y. (1997) An Exploratory Study of the Emerging Role of Electronic Intermediaries. *International Journal of Electronic Commerce*, vol. 1, no. 3, pp. 7-20.

- Bakos, J. (1997) Reducing Buyer Search Costs: Implications for Electronic Markets. *Management Science*, Vol. 17 (12).
- Bakos, Y. (1991a) A Strategic Analysis of Electronic Marketplaces. *MIS Quarterly*, vol. 15, no. 3, pp. 295-310.
- Bakos, Y. (1991b) Information Links and Electronic Marketplaces: The Role of Interorganizational Information Systems in Vertical Markets. *Journal of Management Information Systems*, vol. 8, no. 2.
- Bakos, Y. (1998) The Emerging Role of Electronic Marketplaces on the Internet. *Communications of the ACM*, vol. 41, nr. 8, pp. 35-42.
- Baldi, S. and Borgman, P. (2001) Consortium-based B2B E-Marketplaces – A Case Study in the Automotive Industry. The 14th Bled Electronic Commerce Conference, Bled, Slovenia, June 25-26, 2001.
- Barratt, M. and Rosdahl, K. (2002) Exploring business-to-business marketsites. *European Journal of Purchasing & Supply Management*, vol. 8, nr. 2, pp. 111-122.
- Chorafas, D. N. (2001) The Internet Supply Chain. Impact on Accounting and Logistics: Antony Rowe Ltd, Chippenham, Wiltshire.
- Helper, S. and MacDufie, J. P. (2000) E-evolving the Auto Industry: E-Commerce Effects on Consumer and Supplier Relationships. Proceedings *The E-Business Transformation: Sector Developments and Policy Implications*, Case-Western Reserve University, Washington D. C., April 24, 2000.
- Kaplan, S. and Sawhney, M. (2000) E-hubs: the new B2B marketplaces. *Harvard Business Review*, vol. 78, Issue 3, pp. 97-104.
- Lucking-Reiley, D. and Spulber, D. (2001) Business-to-Business Electronic Commerce. *Journal of Economic Perspectives*, vol. 15, no. 1, pp. 55-68.
- Malone, T. W. and Yates, J. (1989) The logic of electronic markets. *Harvard Business Review*, May-June 1989, pp. 166-170.
- Schmid, B. F. (1993) Electronic Markets. *Electronic Markets*, no. 9-10, pp. 3-4.
- Segev, A., Gebauer, J. and Färber F. (1999) Internet-based Electronic Markets. *Electronic Markets*, vol. 9, no. 3, pp. 138-146.
- Segev, A. Gebauer, J. and Färber, F. (2000) The Market for Internet-based procurement Systems. CITM Research Report, WP1040; Part 1: Fisher Center for Information Technology and Marketplace Transformation, Haas School of Business, University of California, Berkeley.
- Wise, R. and Morrison, D. (2000) Beyond the exchange: the future of B2B. *Harvard Business Review*, vol. 78, issue 6, pp. 86-97.
- Zenz, G. J. (1994) *Purchasing and the management of materials*. John Wiley & Sons, Inc., New York.