

Electronically Developed Paradigm for Channel of Distribution Management

JAMES E. RICKS
Department of Marketing
Southeast Missouri State University
Cape Girardeau, Missouri 63701
UNITED STATES

Abstract: - A new paradigm for distribution management based on an electronic internet conference from October 31, 1995 to May 18, 1997 is developed in this paper. Other studies are also reviewed. This conference was sponsored by the Journal of Business and Industrial Marketing on the world-wide web. The growing importance of ADC and EDI in logistics and distribution is considered as well as the need for movement toward an additional power relations paradigm. The growing importance and ubiquitousness of ADC and EDI are major factors in channel management that require additional conceptual consideration in business pedagogy. Establishment of Electronic Data Interchange linkages with the Automatic Data Collection of individual member firms of the supply chain offers significant potential for the transformation of their relationship, with significant benefits and responsibilities for all participants. Only minimal human input between channel members is required. This paper presents a model to explore some of the new effects upon channel relationships.

Keywords: - supply chain, electronic data interchange, automatic data collection, Internet Logistics

1 Introduction

The world-wide web was used to survey those interested in distribution in regards to the global input of Automatic Data Collection and Electronic Data Interchange. Electronic Data Interchange (EDI) is defined as the electronic exchange of business transactions between companies from one computer to another, using an accepted standard format [9]. EDI is often mistaken for other communications methods, such as electronic mail. When EDI is confused with these other communications methods, its full potential is not realized [13]. It is important to understand that for the exchange to be truly EDI, the process must go from one system to the other with no manual intervention [12]. Automatic Data Collection is defined as collecting data by the firm without human input or with minimal effort. Scanning devices to read products and meters are normally used.

Electronic data interchange combined with automatic data collection is poised to change channel relationships profoundly. EDI promises to replace paper business transactions with electronic communications. In that displacement more than just information will be effected. In recent years the growth of EDI has been significant [8].

Logistics has evolved since the 1970s to include strategic coordination of traditional corporate cost centers such as purchasing, manufacturing, transportation, and warehousing. Functional synergies within the firm are developed to more efficiently fulfill channel members requirements. Over the last decade, such coordination has expanded beyond the single firm to inter-firm integration within the supply chain.

2 Problem Formation

Will the existence of EDI alter the power perceptions as surveyed on the Internet? It is hypothesized that the following trends will be observed.

- H1 The higher the level of uniqueness of the EDI-Inventory system for a channel of distribution the higher the political exit cost for channel members.
- H2 The more unique and individualized the EDI-Inventory system the more power the channel leader will possess over other channel members.
- H3 EDI-Inventory system will provide consumers with more value for their purchases. The distribution system will become more efficient as EDI expands. As EDI-ADC expands consumers will demand this level of value and service of all firms.

- H4 Retailers will be inclined to join channels with manufacturers who can deliver more computerized custom-made products efficiently than manufacturers who cannot customize.
- H5 Major retailers will encourage the development of common EDI-Inventory control systems or software to accomplish the same goals so that the exit cost of changing suppliers will be lower.
- H6 Computerization will lead to more product proliferation with an increase in custom-made products.

2.1 Procedural Recommendations for Electronic Studies

A large audience commented upon a few papers but did not input new concepts but responded to those already listed.

1. The purpose should be to showcase works to a wide audience, normally wider than most journal readership, amongst interested parties in both academia (students as well as faculty) and amongst industry executives. Therefore Internet promotions are recommended.
2. The convener should assume the role master of ceremonies or moderator, more forcefully-introducing topics, drawing attention to areas of controversy, and specifically inviting responses from the speakers.
3. At the end of the conference period the convener will write up the conference, summarizing the points and synthesizing the new knowledge.

Analysis of Internet postings can be considered a form of qualitative research. Qualitative research can be defined as a body of procedures which produce descriptive data, the subjects own written or spoken words and observable behavior. This conference allowed subjects to input written comments from a global audience on a particular topic. Recently, due to cost considerations, a realization developed that big samples don't necessarily produce accurate findings, thus qualitative research has re-emerged. In fact, one article suggested that the reason for the success of Japanese companies may be partly attributable to their use of more qualitative research techniques [14].

2.1.1 The Literature on Supply Chain Integration

The increased accent on managerial application has placed emphasis again on the input of the social sciences. Therefore non-economic paradigms have been accentuated. However the paradigms which should guide development of marketing theory must entail both economic and non-

economic concepts. Many large companies, such as WalMart, are demanding that their suppliers implement an EDI system or lose their business [7]. President Clinton has made it mandatory that by 1997 all government purchases be made by using EDI [10].

EDI has excellent just-in-time capabilities because it is much faster than the traditional paper documentation method and can be programmed to replenish inventory levels automatically [1]. Upper Deck Company, a manufacturer of sports trading cards, decided to set up an EDI system with its major retailers in order to establish a more precise JIT system. Sports trading cards are sold primarily during the specific sports season; therefore, it would not be profitable for Upper Deck to warehouse their products. Upper Deck must accurately match supply with demand. Before installing EDI, matching supply to demand was difficult. The company would send out several paper forms to the retailer and wait for them to be sent back. The amount of cards manufactured was then based on the retailer's demand forecasts. This process usually took about two weeks and it was not always accurate. Now that the company has moved to an electronic system, the turnaround time on the flow of information from the retailers is much faster. Now Upper Deck can use the customer's current information that is based on actual sales, not forecasts. With this system, everything is shipped the same day that it is made and the amount manufactured is more precisely matched with the amount demanded [3].

Some argue that a key factor in the decline of U.S. competitiveness in the international marketplace has been the lack of emphasis on intangible benefits such as supplier relations.

Pressure is being applied to firms to join the ADC-EDI technologies fully or lose clients. The drive toward Just-In-Time manufacturing and inventory is forcing more firms to require EDI from all those that supply or buy from them. Firms not already possessing an electronically fully developed and implemented systems are threatened with extinction. For some retailers and wholesalers as well as medium to small manufacturers this requirement for EDI is a coming crisis.

Any new development of channel marketing theory must contain both economic and non-economic concepts. Relationships can be considered within the economic political paradigm concept. The paradigm is an excellent tool to structure teaching lessons regarding channel management.

Allowing other channel members access to electronic data makes each firm more dependent upon the other and

more committed to them and the power distribution within the system of distribution. The concept of areas of linkage relates well with the most current business thinking. For example, firms are attempting to segregate services that add value to customers. They determine which competencies distinguish that service and link it to customers. Allowing channel partners electronic access, fits well with the concepts of re-engineering or process engineering of customer services. ADC allows firms to track product information throughout the channels of distribution all the way to raw material assembling and thereby measure more carefully value added. There are several factors that should be considered and ECR is one. Efficient Consumer Response is an example of value added services for customers linked by ADC and EDI. ECR is a series of business practices that utilize data sharing and cooperation between groceries and food distributors, wholesalers and producers to reduce distribution costs . An ECR program can encompass any or all of the following emerging business concepts: contiguous replenishment (CRP), direct store delivery (DSD), cross docking, category management, vendor-managed inventory and activity-based costing. However ECR is more than new terminology for old distribution ideas. It is assimilation of data capture, information technology and unparalleled cooperation between trading partners.

The data allows for ECR to create a demand-driven supply chain and eliminate expenses by reducing inventories and improving delivery efficiency [5]. In a few years most firms will be forced to become part of an ADC-EDI system to be competitive. Business schools need to make this knowledge part of distribution management pedagogy including the organizational cost of such arrangements. Britt (2000) stated that the trend to use Internet connections to retail customers has given them more power. Loyalty to the company is also a positive result of this electronic connection.

3 Problem Solution

A sample of 1498 individuals posted comments on the conference web site and a unknown number of others read all or portions of the Internet conference. Generally, respondents felt that EDI and ADC were valuable tools that would become more and more a necessity to be a player in the world marketplace. In the year 2005 America is going to shift to European UCC BAR CODE system EAN-13. Both large and small businesses are going to have to adopt to these electronic changes. This system will be more

usable for firms of all sizes. The improvement in global communications standards and processing should cause more efficient distribution and lower prices for consumers. Comment posted regarding the lead paper with the six hypotheses are as follows:

The promise that electronic technology will replace paper business transactions they believe is a bit premature. My statement about the extinction of paper documents was perceived as a bit hyperbolic. Some complained about scanner reading errors due probably to poorly printed labels and felt that this was the primary weakness of ADC. A request was made for comments regarding the six hypotheses of the lead paper. A summation of findings follows:

Results indicate that with regard to hypothesis one, 93% agree and only 7% disagreed that it was true. Of those responding to hypothesis two, 75% agreed, while 25% disagreed. Hypothesis three was unanimously accepted by all respondents. There were only 3.5% who disagreed with hypothesis four; all others agreed. Hypothesis five was accepted by 86% while 14% disagreed. Respondents to hypothesis six revealed that 93% were in agreement, only 3.5% disagreed while another 3.5% were unsure. Some felt that hypothesis two was not true because advances in technology will allow for greater interchangeableness of systems and connectivity of different systems and software. Some felt that a truly unique system would make usage more complicated. And harder for customers and channel members to utilize and benefit from the individualized system. A standard EDI system similar to other channels of distribution would be recommended. Also, the higher cost of exiting the system would hinder those from joining a channel with very unique EDI systems. Others had a qualified yes for Hypothesis two if the compatibility of the unique systems really worked well. Some felt that custom-made products would greatly proliferate because of the increased information flow created by EDI/ADC. Some indicated that it would take a long time for the third hypothesis to take effect in the marketplace. Demand for higher levels of product services would take a number of years to fulfillment. Thematic responses to the major issues of the conference are insightful. The first theme was the theoretical value of electronic data interchange and how it should be conceptualized into marketing science. Respondents suggested that JIT firms have a stronger commitment to EDI and that customers were forcing implementation of EDI. Further they stated that ADC was greatly beneficial to both retailers and wholesalers. Warehouse managers are active users of EDI and it has been a driving force for greater efficiency and accuracy.

Theme 2 was a discussion of procedures for developing EDI/ADC. Three technology paradigms were given in the papers. Research and development, production innovation and customer-driven or market-driven paradigms are seen as applicable to ADC/EDI implementation. A fourth new paradigm was placed before the conference. It is asserted that these three traditional paradigms contribute to, but do not fully describe, the role of technology in a firm. The new or proposed fourth paradigm is the competitive strategy paradigm. Technology is used to gain or enhance a strategic competitive advantage. EDI/ADC was found by respondents as an essential component of the fourth paradigm. They thought the fourth paradigm informative for managing technology and agreed with the competitive strategy approach.

The third theme was the managerial implication of EDI/ADC in evaluating the impact of EDI on five small to medium sized manufacturers in grocery and textile industries. It was found that EDI became only a protection against loss of competitive advantage rather than the advantage many would have expected. Most manufacturers had to make radical changes to their systems to match the retailers= system to gain any real advantage. Administrative cost reductions from EDI were small while inventory savings from EDI were significant. Comments seem to indicate that EDI should not just be considered a new technology but a basis for a close retailer-supplier relationships founded on operational and organizational changes by both parties.

Theme four involves operation management, information management issues and EDI. The conference input indicates that the more frequent information flows into and out of JIT firms the more valuable EDI is to the firms. Respondents felt that a natural correlation existed between JIT inventory management and EDI. Factors considered were the firms= profile, the degree of implementation, the number of trading partners added in a year and factors (some political) influencing the EDI implementation decision. Theme five was channel management issues related to transportation and the less developed countries of the world. A push is on to develop distribution functions in these countries. It was perceived that development of EDI/ADC and other technologies would be beneficial. However some responded that it will be very hard for the less developed countries to implement the full EDI/ADC technologies all at once. They do not have the resources.

Theme six involved the topic of error reduction and EDI/ADC. Had EDI/ADC truly reduced errors in the

system and if so to what extent? People assume that the little or no human input that ADC gives a system would correspond to a lower error rates.

4 Conclusion

A model was developed. Figure one is a full drawing of the model including a short summation of the three hypothesis which received the highest support and acceptance from the global respondents to the electronic conference. The hypothesis with unanimous support which was number 3, is listed first, next is hypothesis four with second highest level of support. Hypothesis one is the third item on the model with the third highest level of acceptance. The political realities of the channel members, the outer ring of the model, is a limiting factor. Managers will resist changes therefore the political realities of the varying channel members must be considered. Thus the political economic paradigm must be considered an environmental limiting factor. The channels of distribution can best be linked for efficiency among members externally by EDI and internally by ADC. See Figures 1. This sharing and linking of data should heavily influence conditions for the exit cost. Pressure from competitors and customers for faster order cycles and customization of products will act as a bond to encourage close channel cooperation when EDI/ADC are working effectively. Also when unique EDI/ADC systems raise the cost of exiting the system they act as a bond to strengthen the channel relationships.

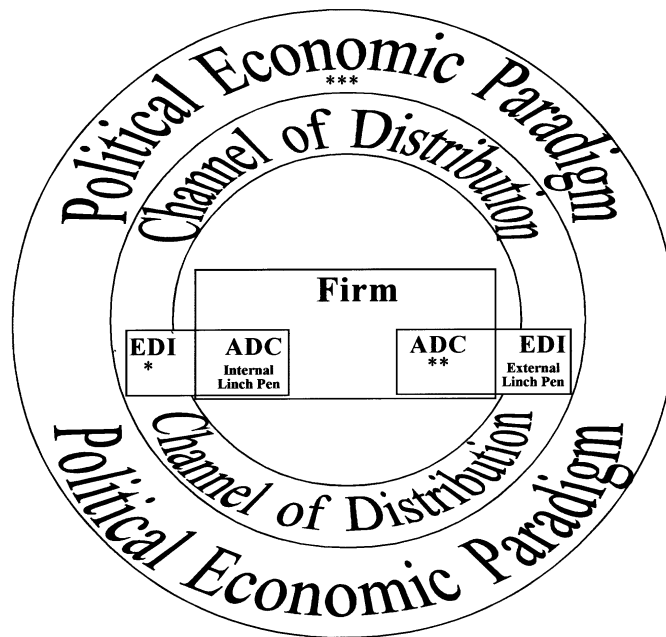
Once the system is running properly and efficiently, the business can expand the system. EDI conversion should start with a narrow focus to diminish political resistance and expanded as workers adjust to the new systems. Additional trading partners and transaction sets can be acquired to improve and strengthen the system [6]. The firm=s Ahigh-tech communications@ capability can be used as a marketing and promotional selling point. This will help the channel members realize great economy of scale and many other EDI benefits. These benefits can be used to attract other channel members and hold them in the system.

Marketing theory has been moving in the direction of more channel cooperation, relationship marketing and a need for special alliances like the Japanese keiretsu. Leenders (1988) in his book on Reverse Marketing described the advantages of greater cooperation and integration of suppliers into a major system. Electronic Data Interchange will energize these new and improved channel structures and alliances. Therefore we need to develop and investigate the EDI effects further.

Although some aspects of this model are supported by some past theory and some past empirical research, the relationships proposed in this model demand further

empirical examination. Further, the conceptualization and proposed hypothesis in this model demand further anecdotal analysis relative to distribution issues.

Fig. 1, The Electronic Data Interchange Linkage Model



- * The higher the levels of EDI/ADC and ordering efficiency=The higher levels of consumer expectations and demand for value and service of all firms.
- ** The higher the levels of EDI/ADC inventory =The higher demands for customizing retail products.
- *** The higher the level of uniqueness of the EDI/ADC-Inventory system= The higher the level of the political exit cost for channel members.

References:

- [1] Ali, M.F., Electronic Data InterchangeBA Management Primer, *CMA Magazine*, Vol. 68, June, 1994, p. 16.
- [2] Arndt, The Political Economy Paradigm: Foundation for Theory Building in Marketing, *Journal of Marketing*, Fall, 1983, pp. 44-54.
- [3] Auguston, K., How EDI Helps us Clear the Dock Every Day, *Modern Materials Handling*, Vol. 50, 1995, pp. 46-47.
- [4] Britt, Phillip, Power to the People, *Consumer Relationship Management*, July, 2000, pp. 78-82.
- [5] Burnell, John, Grocery Industry Feeling Deja Vu, *Automatic I.D. News*, April, 1995, pp. 52-54.
- [6] Cannon, E., *EDI Guide: A Step by Step Approach*. New York: Van Nostrand Reinhold. Ann Arbor, MI: University of Michigan Institute for Social Research, 1993.
- [7] Dyson, E., Friendly Invoices, *Forbes*, Vol. 50, December 21, 1992, p. 308.
- [8] Hill, Ned and Michael Swenson, Sales Technology Applications: The Impact of Electronic Data Interchange on the Sales Function, *The Journal of Personal Selling and Sales Management*, Vol. XIV, No. 4, 1994, pp. 79-84.
- [9] Jenkins, G., Understanding Electronic Commerce, *CMA Magazine*, Vol. 68, No. 6, 1994, p. 11.
- [10] Kessler, A., Fire Your Purchasing Managers, *Forbes*, Vol. 154, October 10, 1994, p. 33.
- [11] Leenders, Michiel and David Blenkhorn, *Reverse Marketing the New Buyer Supplier Relationship*. New York: The Free Press, 1988.
- [12] Porter, R., The Basics of Electronic Data Interchange, *Purchasing*, September 13, 1990, pp. 26-28.
- [13] Quinn, F.J., Why you Should Know About EDI, *Traffic Management*, July, 1991, pp. 45-48.
- [14] Trachtenberg, Jeff A., Listening, the Old-Fashioned Way, *Forbes*, October 5, 1987, pp. 202-204.