

A Literature Review of Electronic Data Interchange as Business Communication for Manufacturing

Ms. Neha Deepak Jalkote

Student, Master of Computer Application

Late Bhausaheb Hiray S S Trust's Hiray Institute of Computer Application, Mumbai, India

Abstract: *In today's dynamic economy, manufacturers must minimise product development cycle time and improve product quality, according to this article. This study looks at a variety of EDI usage and implementation aspects, as well as their impact on a company's efficiency, productivity, and competitiveness. Many businesses are using interorganizational systems to create tighter interactions with their business partners in order to overcome such challenges. In order to succeed in a highly competitive climate, businesses must work closely with their suppliers and customers. We investigate how EDI implementation activities and usage effect a firm's performance in this article. EDI implementation strategy, EDI adoption, EDI integration, EDI in supply chain, and EDI in small and medium firms are among the topics covered in the papers (SMEs). The findings of this literature review should aid the growth of EDI research, particularly the use of EDI in production outsourcing as a supply chain activity.*

Keywords: EDI : Electronic Data Interchange , Communication , Business SME'S – Small-to-medium enterprise

I. INTRODUCTION

There is general agreement that the introduction of electronic communication throughout the supply chain has significantly altered how firms work over the past 20 years [1]. Having a competitive supply chain is essential for a company to be able to compete successfully in the modern global market. The ability to interact with their business partner quickly and accurately is essential for a competitive supply chain.

In the subject of communication, there are many different types of interactions between businesses and their surroundings is anticipated to be the most common way for businesses in various sectors to communicate.

EDI technology has an impact on management and business processes between and within firms, which in turn has an impact on strategic competitive advantage and the production of economic value [4]. In order to succeed in the competitive environment, EDI systems are crucial [5, 6]. In fact, studies have demonstrated that using EDI can aid businesses in forming partnerships and exchanging crucial information [7, 8].

Through an enhancement in coordination and communication systems, a rise in transaction processing efficiency, and facilitation of linked systems (such as production and marketing), EDI adds value to channel relationships [9]. The coordination of initiatives and objectives within and/or between businesses can be facilitated using EDI as a type of lateral communication [10]. Additionally, EDI symbolises an effort to control the interdependence of organisations by fostering stronger ties both inside and among them [11].

Otherwise, industry 4.0 development is currently promoting the usage of many technologies in several domains. Industry 4.0 is a relationship that results in a productive combination that is now present. One illustration of industry 4.0 is the usage of EDI technology in the manufacturing sector. In keeping with the effects of Industry 4.0, which can boost production efficiency and competitiveness, the electronic business document interchange technology is able to connect organisational communications with the external world more efficiently and effectively. The practical usage of EDI communication, despite this enthusiasm and years of industry-wide development work, is still quite limited [12].

Even with the current public pressure and all the advantages that EDI adoption offers, the adoption of this technology is still in the minority [13]. By integrating EDI into supply chain operations to gain a competitive edge, EDI technology research can be developed. Outsourcing is one of the supply chain management processes [14], and studies on the use of EDI in production outsourcing are relatively infrequent.

A company/manufacturer and an external supplier enter into a contract or operational arrangement known as outsourcing, whereby the latter will provide the former with a set of goods or services that would otherwise be carried out internally

within the company [15, 16]. How manufacturing organisations design, produce, and distribute goods to their consumers has been significantly impacted by the outsourcing of production tasks or processes to external suppliers [17]. Many organisations nowadays are turning more and more to outsourcing their manufacturing, especially when the tasks involved are resource-intensive or need for quickly evolving process technologies. According to the definition given above, effective communication and a strong working relationship with the supplier are necessary for production outsourcing.

II. LITERATURE REVIEW

The EDI literature is large, and it is still expanding. Many empirical investigations are descriptive, whereas others of the published studies are theoretical or conceptual. That is, they concentrate on the current state of EDI usage and provide summary information on the profiles of EDI users or the benefits gained as a result of EDI usage when compared to nonusers. Only a few research have developed statistical models to objectively analyse the numerous links that the data reveal about EDI usage. We give a concentrated evaluation of works that seek to create empirical models to investigate various correlations in EDI usage in this section. The academic journal articles in the ScienceDirect, ProQuest scholarly journal, Emerald journal, Scopus, and Google Scholar databases were analysed for this literature study. The scope of journals as literature material was defined by the subject areas of industrial and manufacturing engineering, decision science, management, and economics. From 1990 to 2017, the journals' search employed keywords that included the terms 'electronic data interchange' in the title, abstract, and keywords. The literature research also reveals that all previous investigations use either linear models like linear regression and structural equation modelling or parametric nonlinear models like logistic regression. Although linear models are easy to construct and to understand, they are not always the best choice for describing all types of interactions in real data. Few research have attempted to guarantee that the underlying relationships are actually linear, and that the pre-specified model's shape or assumption corresponds to the underlying data generation process.

III. OBJECTIVE AND SCOPE

The purpose of electronic data interchange (EDI) is to achieve the highest level of process automation possible while minimising manual and paper-based business transactions. EDI is used to send order information between retailers and manufacturers, among other things. The purpose of electronic data interchange (EDI) is to achieve the highest level of process automation possible while minimising manual and paper-based business transactions. EDI is used to send order information between retailers and manufacturers, among other things. In addition, EDI is employed in the invoicing process, allowing for the electronic transfer of invoices in real time, which can then be examined and processed. Suppliers, warehouses, retailing, and other supply chain components can all benefit from EDI. Boost your productivity. EDI enables businesses to save money by decreasing personnel or redeploying employees to higher-value duties, all while increasing efficiency and minimising errors. EDI is alive and well, and it will continue to play an important role in business for many years to come. However, the actual future of multi-party supply chain collaboration rests in combining and expanding B2B integration with disruptive technologies such as IoT, blockchain, and AI.

IV. RESEARCH METHODOLOGY

Academic journal articles were examined for this literature review using the ScienceDirect, ProQuest Scholarly Journal, Emerald Journal, Scopus, and Google Scholar databases. The breadth of journals as literary material was determined using the subjects of industrial and manufacturing engineering, decision science, management, and economics. From 1990 to 2017, the terms "electronic data interchange" that appeared in the title, abstract, and keywords were used in the journals search.

In the initial search, 150 results covering journal articles and conference proceedings were found.

Additionally, each publication was scrutinised to ensure that it contained information that was relevant to EDI from the standpoint of this study's objectives.

There are some activities required for implementing EDI, including analysis, testing and implementation, and approaches such as prototyping. These activities are helpful when introducing new systems or developing new applications for a company [25]. They define two major parts of EDI implementation process. The first part consists of a feasibility study

to determine whether to proceed with EDI. The second part, the implementation itself, is performed only if the results of the feasibility study indicate EDI as beneficial for the company.

The majority of EDI adoption research has concentrated on the three primary factors—perceived organisational resources, perceived benefits of the technology, and influences of the external environment on the organization—that lead to EDI adoption. According to various research, the main drivers of EDI adoption were cost of implementation, competitive advantage, compatibility with the existing system, impact of business partners, competitive pressure, market position, perceived benefits, knowledge of EDI, and firm IT prowess.

V. CONCLUSION

A technology used to exchange information and data between enterprises is referred to as EDI, one of the electronic communication methods. Implementing EDI can have a substantial impact on all company functions as well as on interactions with exchange partners. This literature review study demonstrated the value of EDI in achieving corporate strategic goals and in assisting with the implementation of business strategies like cost and differentiation strategies.

Additionally, there is also a need for greater research on EDI in other areas that are rarely discussed and examined, particularly when it comes to the use of EDI in production outsourcing, when an external supplier establishes a relationship with a manufacturer or firm. In addition, the factory needs to link EDI to its manufacturing planning system or other business operations, such as quality, product design, and product engineering, and spread the implementation to new clients and suppliers in order to reap the full benefits of EDI technology. The majority of EDI literature, however, hardly ever discusses the connection between EDI and its factory planning system. The number of journals has not included all the publications linked to electronic data interchange due to the restricted access to journal sources.

REFERENCES

- [1] Vlachos I.P., Adoption of electronic data interchange by agribusiness organizations, *Journal of International Food & Agribusiness Marketing*, 16, 1, 19–42, 2004.
- [2] Watts C., Hogan Patrick T., Treleven M., Issues influencing use of electronic data interchange technology, *American Journal of Business*, 13, 2, 7–14, 1998.
- [3] Picot A., Neuburger R., Niggel J., Management perspectives of electronic data interchange systems, *International Journal of Information Management*, 13, 243–246, 1993.
- [4] Vlosky R.P., Smith P.M., Wilson D.T., Electronic data interchange implementation strategies: a case study, *Journal of Business & Industrial Marketing*, 9, 4, 5–18, 1994.
- [5] Hammer M., The super efficient company, *Harvard Business Review*, 79, 8, 82–91, 2001.
- [6] Subramani M.R., How do suppliers benefit from IT use in supply chain relationships?, *MIS Quarterly*, 28, 1, 45–73, 2004.
- [7] Grover V., Teng J., Fiedler K., Investigating the role of information technology in building buyersupplier relationships, *Journal of the AIS*, 3, 217– 45, 2003.
- [8] Son J.Y., Narasimhan S., Riggins F.J., Effects of relational factors and channel climate on EDI usage in the customer-supplier relationship, *Journal of Management Information Systems*, 22, 1, 321– 53, 2005.
- [9] O'Callaghan R., Kaufmann P.J., Konsynski B.R., Adoption correlates and share effects of electronic data interchange in marketing channels, *Journal of Marketing*, 56, 45–56, 1992.
- [10] Torrington D., Hall L., *Personnel management: a new approach*, London: Prentice Hall, 1991.
- [11] Grimaldi A., At last an EDI explosion, *Transport and Distribution*, 31, 6, 33, 1990.
- [12] Hellman J.L., Gadde L.E., Information technology and the efficiency of materials supply: the implementation of EDI in the Swedish construction industry, *European Journal of Purchasing & Supply Management*, 2, 4, 221–228, 1996.
- [13] Vesela L., Factors affecting the adoption of electronic data interchange, *Acta Universitatis Agriculturae et Silviculturae Mendelianae Brunensis*, 65, 6, 2123–2130, 2017.