



Chapter X

Economics of EDI Investments

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INTRODUCTION

Electronic data interchange (EDI) technology gives organizations an opportunity to exchange their information and messages electronically, instead of with paper documents, and leads to a new way of doing business known as electronic commerce (EC). The benefits of EDI include less delay in data handling and labour savings in the areas of data transcription, controls, and error investigation and correction. As a result implementation of EDI improves the following:

- the internal operations of a firm by reducing the process-cycle time,
- responsiveness to customers,
- trading partner relationships, and
- the ability to compete, both domestically and internationally.

The documentation requirements and their distribution in either local or international trade add a significant amount to cost of trade. So EDI implementation may save considerable expenses from this sector. The volume of documents that are potentially convertible to EDI usually creates economies of scale, which drives the conversion process.

Most of the EDI-related works found in the literature emphasize the strategic opportunities and organization-specific critical success factors that determine the potential benefits of an EDI implementation (Hoogeweegen and Wagenaar, 1996). Not many authors stressed the actual cost-benefit analysis for EDI project implementation based on the argument that its actual implementation is often a matter of power between the competitors. However, to show the feasibility of an EDI project implementation, like any other project, it should include a cost-benefit analysis as it is easily understood by senior management in the process of their planning decisions. EDI investment analysis is more difficult than many other investment decisions, because the costs and benefits are hard to identify and quantify, and the intangible factors are likely to be significant. We assume that the goal of developing

an EDI system in an organization is mainly to increase its net worth. The overall increase of the organization's net worth is measurable. But it is difficult to quantify benefits such as technological experiences and confidence gained by the organization due to adaptation of an initial EDI system that would help to further develop, update and expand other systems in the future and increase its benefits on a continuous basis. This makes new technologies like EDI somewhat different from the conventional projects where continuous improvement or expansion within the project is almost nonexistent. Investment in an initial EDI project can have a significant impact also on the value of future projects. Without the initial exploratory project, the future projects may not even be justifiable (Dos Santos, 1991). This impact (which may not be true for conventional projects) and many EDI technology-specific factors (such as level of technology, system response time, computer expertise required, user friendliness, acceptance to the users, operational complexity, ease of maintenance, accuracy of output produced and ease of system upgrading, etc.) are not easy to quantify. These unquantifiable costs and benefits of EDI projects demand integration of different other factors in the traditional investment analysis. Another major difference of an EDI investment from a traditional IT investment is that EDI should be multi-organizational with the following characteristics, which are part of feasibility analysis:

- EDI is a technology infrastructure that spans multiple independent organizations. As such, EDI investment is meaningful only when trading partners are willing to participate in it.
- The costs and benefits involved in the EDI investment are seldom equally distributed over the participating organization.
- EDI assumes a minimal level of IT maturity among the partners and requires a rather formal way of conducting business.
- In many countries, EDI messages have not yet received the same legal status as their paper counterparts.

So in principle, though the evaluation of EDI investments are quite similar to any other IT investment, several important differences, as indicated above, are necessary to be incorporated in the analysis process for a more accurate feasibility output.

In different literatures there are approaches, in a scattered manner, which may be used in EDI investment evaluation and is necessary to be presented to the EDI/IT forum for the following reasons.

- give an idea how they are different from the conventional projects and
- make popular EDI/IT investment analysis tools easily available to the users.

This chapter is an approach to compile the description and procedure of a few popular investments analysis tools so that the EDI practitioners have an overview to be able to choose the right tools for their organizations. In addition, few possible new parameters have been discussed for inclusion in future research in this area. Since the cost-benefit analysis is recognized by many researchers as a strong factor (though not the only factor) for EDI investment analysis, a few methods for cost-benefit analysis are also highlighted in this chapter for integrating into EDI investment evaluation. The objectives of these integrations are to obtain more accurate information on the following:

- whether or not to invest for an EDI project;
- the expected rate of return on EDI investment; and
- analysis in order to find "*the best*" EDI project.

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