

Chapter 8

The Multidimensional Business Value of Information Systems Interoperability

Euripidis Loukis
University of Aegean, Greece

Yannis Charalabidis
University of Aegean, Greece

Vasiliki Diamantopoulou
University of Aegean, Greece

ABSTRACT

The creation of complete scientific foundations in the IS interoperability domain necessitates not only the development of mature and widely applicable interoperability architectures, methods, and standards, but also the systematic investigation of the business value they generate. This chapter initially analyses the theoretical foundations of the multi-dimensional business value of IS interoperability and then reviews the quite limited empirical literature on it. Next, it presents an empirical study of the business value generated by the adoption of three main types of IS interoperability standards: industry-specific, proprietary, and XML-horizontal ones. It is based on a large dataset from 14065 European firms (from 25 countries and 10 sectors) collected through the e-Business Watch Survey of the European Commission. It is concluded that all three types of IS interoperability standards increase considerably the positive impact of firm's ICT infrastructure on two important performance dimensions: business processes performance and innovation. However, the effects of these three types of standards differ significantly: the adoption of industry-specific IS interoperability standards has the highest positive impacts, while proprietary and XML-horizontal ones have similar lower impacts. Furthermore, it is concluded that the industry-specific and the proprietary interoperability standards also have positive impacts even at the level of firm's financial performance.

DOI: 10.4018/978-1-4666-8111-8.ch008

INTRODUCTION

The creation of complete scientific foundations in the information systems (IS) interoperability domain necessitates not only the development of mature and widely applicable interoperability architectures, methods and standards, but also the systematic investigation of the business value they generate (Legner & Lebreton, 2007; Lampathaki et al., 2012; Jardim-Goncalves et al., 2012). Since big investments are made for the development of various interoperability technologies, and then for their implementation at firm level, it is necessary to study the resulting business benefits and value. This is going to be quite useful for providing guidance to the technological IS interoperability research, in order to focus on the most valuable directions, and also to the individual firms for making more informed decisions concerning their IS interoperability related investments, taking into account not only technical, but also business value factors as well. Furthermore, it will assist firms in maximizing the value they derive from these investments.

IS interoperability, defined by IEEE as the ‘ability of two or more systems or components to exchange information and to use the information that has been exchanged’ (IEEE, 1990), has been regarded for long time as highly beneficial. In this direction there has been theoretical literature analyzing the business value of IS interoperability, however there is limited empirical literature on it, as explained in more detail later in the following section. Only a very small number of empirical studies have been conducted concerning the business value of IS interoperability, and all of them are based on small datasets. Therefore more empirical research is required concerning all the dimensions of the business value that IS interoperability generates, in order to assess their importance and magnitude in ‘real life’ and also identify ways of increasing them.

This chapter initially analyses the theoretical foundations of the multi-dimensional business

value of IS interoperability, based on a review of relevant theoretical literature, and also of literature in the area of business networks, and then reviews the limited empirical literature in this area. Next it presents an empirical study of the effects of adopting three different types of IS interoperability standards on:

1. The impact of firm’s information and communication technologies (ICT) infrastructure on two important performance dimensions: business processes performance and innovation, and
2. On firm’s financial performance.

It is based on a large dataset collected from 14065 European firms (from 25 countries and 10 sectors) through the e-Business Watch Survey of the European Commission. In particular, this empirical study is focusing on three main types of IS interoperability standards (Nurmilaakso, 2008a, 2008b; Lampathaki et al., 2009):

- The industry-specific (or vertical) standards, which are usually created by industry associations or sectoral standardization bodies, in order to enable the electronic exchange of important business documents (e.g. quotations, orders, shipment notes, invoices, payment notes) between firms of a specific industry, their suppliers, customers and business partners. As a typical example we can mention the health sector specific standards published and maintained by organizations like the Clinical Data Interchange Standards Consortium (CDISC) (see <http://www.cdisc.org/>). Such industry-specific standards usually are ‘tailored’ to meet the needs of the firms of the specific sector, so they have exactly the whole needed “depth and breadth”: they include all the range of the required documents and elements of them, and at the same time they do not carry additional el-

17 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage:

www.igi-global.com/chapter/the-multidimensional-business-value-of-information-systems-interopability/125290

Related Content

Standardization in China: Electric Vehicle Technology as Driver for Change in China's Automotive Standardization

Sabrina Weithmann (2016). *International Journal of Standardization Research* (pp. 20-32).

www.irma-international.org/article/standardization-in-china/176445

Developing Country Perspectives Software: Intellectual Property and Open Source

Xiaobai Shen (2005). *International Journal of IT Standards and Standardization Research* (pp. 21-43).

www.irma-international.org/article/developing-country-perspectives-software/2562

On Engagement With ICT Standards and Their Implementations in Open Source Software Projects: Experiences and Insights From the Multimedia Field

Jonas Gamalielsson and Björn Lundell (2021). *International Journal of Standardization Research* (pp. 1-28).

www.irma-international.org/article/on-engagement-with-ict-standards-and-their-implementations-in-open-source-software-projects/287102

Born Global Market Dominators: Insight into a Unique Class of Young Companies and Their Environment

Simone Wurster, Knut Blind and Sebastian Fischer (2014). *International Journal of IT Standards and Standardization Research* (pp. 1-16).

www.irma-international.org/article/born-global-market-dominators/111332

ICT Policies in Developing Countries: Objectives, Issues and Influencing Factors

Enowwor Laura Ogbah (2011). *Handbook of Research on Information Communication Technology Policy: Trends, Issues and Advancements* (pp. 306-318).

www.irma-international.org/chapter/ict-policies-developing-countries/45392