Chapter 6.4
Reconsidering IT Impact Assessment in E–Collaboration

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INTRODUCTION

The question of the impact of information and communication technology (ICT) on company performance and its evaluation is a much discussed topic and is often analyzed ex-post after its implementation.

The literature review shows two main research groups using various models making it possible to explore this impact. The first falls under the economic production theory and the information and decision theory, often referring to econometric models (Alpar & Kim, 1990; Due, 1994; Brynjolofson & Hitt, 1993). It raises the question of ICT contribution in terms of efficiency and tries to show the existence of a relation between the investments made in this technology and the operational and financial performance of companies. The second group can be divided into three subgroups. The first subgroup examines performance as a dependent variable centered on ICT success perception (DeLone & McLean, 1992, 2002, 2003; Seddon, 1997). The second considers ICT effects on operational and managerial processes (Crowston & Treacy, 1986; Bakos 1987; Mooney, Gurbaxani, & Kraemer, 1995). Finally, the third bases its research works on contingency models (Henderson & Venkatraman, 1993; Iivari 1992).

Moreover, the permanent evolution of this technology and consequently its diversity of uses are accompanied by new explanatory factors of its impact. This leads to the appearance of new dependent variables that express the potential of a company in terms of strategic flexibility or competitive advantage (Porter & Millar 1985; Bakos & Treacy, 1986). In addition, some research refers to the MIT90 approach that regards the organization as an open system to study the impact of ICT.

In spite of the variety of answers to be found in the literature on the subject, it remains one of the concerns of researchers and managers. Still, one may wonder if it should not be considered ex-ante when defining company strategy, if it should it not be considered in the complex and evolutionary environment of a company, and it it should not take the impact generated by new phenomena such as e-collaboration into account.

The objective of this article is to highlight one of the principal limitations to the ICT success evaluation model recommended by DeLone and McLean, and proposes a new, more global model, whose finality aims at considering the question of the impact of ICT and the various phenomena like e-collaboration that have resulted from e-business.

BACKGROUND

DeLone and McLean (1992) stressed that in 1980, at the time of the first ICIS conference, Peter Keen identified five questions management information systems (MIS) should fit into a coherent field of research. These questions were: (1) what are the disciplines of reference for MIS? (2) Which is the dependent variable? (3) How do MIS establish the cumulative tradition? (4) What is the relation of MIS research with computer science and MIS practice? (5) Which types of journals should MIS researchers publish their results in? Among these five questions, DeLone and McLean were more particularly interested in those relating to the dependent variable. In the introduction of their article, these authors specify that to ensure the contribution of MIS research to the professional world, it was essential to define the measurements of the awaited results accurately. They stressed that it was not very useful to measure the various independent variables, such as the degree of user participation or the investment level in ICT, if the dependent variable could not be measured with the same degree of accuracy. Here, the authors were particularly interested in ICT success in term of effectiveness: ICT produced the awaited effects and results. They recommended a model that was one of the first models to have established a link between multiple levels: the system level, the individual level, and the organization level. In this model success is determined by six categories: the quality of the system, the quality of information, the use of ICT, the satisfaction of the user, the individual, and the organizational impact. The link between the various levels results in the impact (joint or independent) of the quality of the system as well as that of information on the satisfaction of the user and the use of ICT. The latter constitutes a determinant of the impact on the individual, consequently generating an impact on the organization.

Ten years later, DeLone and McLean (2002) carried out a retrospective analysis based on the most significant research publications that apply, validate, challenge, and recommend modifications to improve their model of origin. The authors consequently proposed a renovated version of this model that incorporated the new recommendations. In 2003, a second modification was needed to take the e-commerce context into account. Subsequent to the adjustments brought in 2002 and 2003 to their model of origin, DeLone and McLean (2004) tested its relevance and assessed its success in e-commerce using two case studies.

METHODOLOGY

In order to show the relevance of the proposed new global model, the methodology adopted is based on the review, the analysis, and the criticism of the literature in parallel with the author's former research work on the representation and the modeling of the e-business phenomenon. The literature concerned is mainly that which focuses primarily on DeLone and McLean's research work (1992, 2002, 2003, 2004). Furthermore, it also draws on the research by Seddon and Kiew (1994), Seddon (1997), Etezadi-Amoli and Farhoomand (1996), and Wilkin and Hewett (1999), which uses, applies, and/or criticizes the DeLone and McLean model of origin since its first recommendation. Firstly, a meta-analysis of the major theoretical, conceptual, and empirical research work on DeLone and McLean ICT success models is used; one key limitation that is common to the various versions resulting from the model of

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