

EXPLANATORY MODEL FOR E-COMMERCE INITIATIVES

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ABSTRACT

E-Commerce is now a worldwide phenomenon, with multiple impacts on the success and evolution of organizations in a large variety of industries, due to its unique features. These both challenge and revolutionize traditional business reasoning. Recognizing the importance of a profound and comprehensive realization of the multiple aspects that facilitate and determine e-commerce, in this paper we present an explanatory theoretical model for e-commerce initiatives, developed under a qualitative Grounded Theory approach [Strauss & Corbin, 1990]. The conducted work led to the identification and description of factors influencing organizations' adoption and exploitation of e-commerce.

KEYWORDS

e-commerce, e-business, model

1. INTRODUCTION

The technological progress of the past few decades originated an environment where organizations are forced to actively seek new options for more effectively compete in their markets. In a context of fast and permanent evolution, the Internet has an absolutely central role, as an important channel for communication and trade of goods and services. The reason for this is that frequently business initiatives and e-commerce initiatives allow the complete transformation of the way in which businesses are run, at various levels and scope.

Now used by millions of people and organizations worldwide, the Internet places within the reach of virtually any business, from gigantic multinational corporations to micro-businesses, the simplified access to

new markets, the seizing of new customers, the establishment of relations with new suppliers, the undersigning of new alliances and partnerships, and the exploitation of new products and services, all without physical, geographical or time barriers, which are commonly imposed on “conventional” business practice.

Although information technologies, and particularly the Internet, are effectively recognized as powerful tools, essential for the survival and evolution of any organization, just by adopting them there is no warranty of positive results or competitive advantages. There is no direct relationship between their adoption and return on investment; the latter depends on how the available technologies are used [Li, 1995; Strassmann, 1997].

E-commerce initiatives (EC) pose no exception to this reality. In spite of the attention devoted to EC in the past few years, the results from investments haven't exactly matched expectations; in some cases, they actually proved most disappointing. For the most part, the recurrent problems in EC initiatives are due to the fact that many organizations, overly eager to replicate profits reported in the media, are drawn into a wave of enthusiasm, without systematically considering the advantages and disadvantages regarding the various possible scenarios for action.

E-commerce is not a solution for each and every organization. If the EC process is ill driven, it can even create more problems than the available business benefits. Like in many other practices, when badly used, it can be a financial and strategic disaster, thus it is not an option to take lightly. Several risks are associated with EC, and the lack of their understanding may easily compromise any potential benefits.

The decision process of an e-commerce initiative is quite complex. There are several fundamental aspects, which an organization must consider before defining a route. Whatever the options of the organization, they must be considered carefully and wisely. They must also employ a broad knowledge of the various underlying implications.

This paper presents an explanation for the reality of EC initiatives, by forwarding a model that identifies a set of factors involved in the process of embracing, implementing and using e-commerce. The model we propose is the result of a Grounded Theory study, during which we closely analyzed six recent e-commerce initiatives.

2. CURRENT PERSPECTIVE ON E-COMMERCE

There are countless definitions of e-commerce, which furthermore have varied in time [ITS, 1996; Scherckenbach, 1997; Price Waterhouse, 1998; Ernest & Young, 1999]. The most commonly-accepted definition views e-commerce as the buying or selling of goods/services by use of electronic data networks, such as the Internet; transactions can be between companies, between companies and consumers, or between the public sector and the private sector [EU, 2004]. EC is a component of e-business, which in turn is defined by IBM as “a safe, flexible, and integrated proposal for distribution of distinct business values, through a combination of systems and processes that run the main business operations, using the simplicity and reach made possible by Internet technologies” [Amor, 2000].

The period between the years 1995 and 2000 was one of the most euphoric periods in the history of world commerce. It was also a time when the fundamental concepts of EC were developed and explored. Thousands of .com companies were launched, backed by over 125 billion US dollars of venture capital – one of the greatest expansions of venture capital in world history [PriceWaterhouseCoopers, 2002].

For these companies, EC represented an extraordinary opportunity to gain many times the normal return on investment, much more than the capital costs. The international crash of stock exchanges, which began on March 2000, and the subsequent economical slowdown, raised several questions regarding the long term benefits of ICT and of the Internet. It also temporarily reduced the level of available investment capital (venture or otherwise) for infrastructure, and effectively represented a turning point in the views on EC.

The disillusion that occurred in 2000 and 2001, due to the failure of many .com companies, seems to have given way in the following years to a more positive perspective on the impact of the Internet on business performance [UNCTAD, 2003]. However, this renewed trust in the ability of technology to improve business operations presents itself in several different fashions, unlike the single, overly optimistic vision of revolutionary change, which was prevalent at the end of the 1990s.

Currently, EC keeps growing at a furious pace, regarding the number clients and revenue figures. And in spite of the many EC visions developed in the period between 1995 and 2000 that haven't been fulfilled, sales

keep growing yearly. Not just that, but consumers learned to use the Web as a powerful source of information on products that they eventually purchase through other channels, such as traditional companies.

3. EXPLANATORY MODEL FOR E-COMMERCE INITIATIVES

The turbulence, the constant change in the business envelope, and the specificity of each particular organization, render unviable the formulation of universal prescriptions for EC initiatives. Thus, the EC strategy must be defined according to each company's situation. Nevertheless, all cases go more or less through the same problems and critical issues [UERN, 2002]. According to Ludescher and Usrey [Ludescher & Usrey, 2000], "should there be a model identifying the critical elements in EC initiatives, it would help businesses extract the maximum number of advantages from those initiatives".

Aiming to contribute to the better understanding of the several factors that are relevant to the success of embracing, developing and using EC, in this paper we put forward an explanatory theoretical model of e-commerce initiatives. This model, presented in figure 1, aims to identify the direct and indirect influences, which sets of input factors, process factors, and output factors exert on EC initiatives.

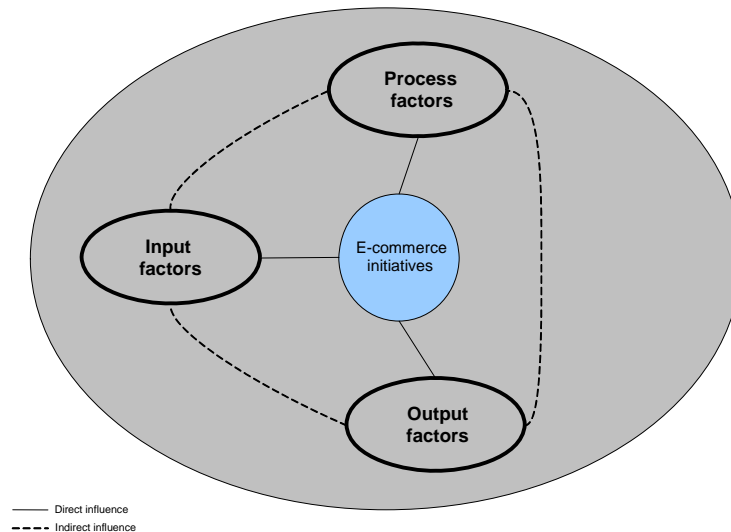


Figure 1. Explanatory Model of e-commerce initiatives.

Input factors are the set of elements that are relevant and exert their influence regarding the input of EC initiatives. Process factors are elements that are relevant in the process of developing the business and the technological solutions, in the EC context. Output factors are elements resulting from the process of EC development and exploitation, under the perspective of its impact throughout the several organizational levels and the business encompassing environment.

The model presented here is, basically, a practical way to articulate those various aspects of reality, both theoretical and experience-based, which are accepted and recognized as relevant to the study and practice of EC. The analysis of the six cases studied included several personal interviews and an exhaustive review of literature, both current and academically established, regarding the fields of information systems and technology, e-commerce, and management. Those interviews were subsequently codified and processed, leading to different model versions. We have deemed this work complete after achieving an acceptable corroboration level for each factor. In the model, the sets of factors detailed in Table 1 are identified.

Table 1. Input factors, process factors, and output factors in e-commerce initiatives.

Input Factors	<ul style="list-style-type: none"> • Business model • Kinds of products/services • Business vision • Business facilitators and inhibitors • Business objectives • Business strategies • Internal organizational short-term trends • External organizational short-term trends • EC motivations • Strengths, weaknesses, opportunities, threats, and obstacles regarding EC • EC solutions • Logistics • Target audience • Partnerships • Investment and financing
Process Factors	<ul style="list-style-type: none"> • Management commitment • Adequate business structure for EC initiatives • Structure • Approach and method • Lifecycle of the solution • Project management • Critical success factors • Exploitation of the EC solution • Features of the EC solution • Technological solution • Process facilitators and inhibitors
Output Factors	<ul style="list-style-type: none"> • Strategic impacts • Tactical impacts • Operational impacts • Impacts on the encompassing environment • Crosswise impacts on the internal environment

The various mentioned factors are those which strongly determine and drive EC, according to the observed practice. Obviously, in face of a specific case, the relative importance of these factors must be considered; it could happen that other factors reveal themselves more relevant, under specific circumstances. Therefore, our standing is that the Explanatory Model of EC Initiatives must be seen as a set of reference factors for EC, not as a strict model.

The identification of each factor accounted for its various relevant aspects that were of foremost importance in the studied cases (typically, any given factor is broader in reach than its description; the studied cases highlighted the central points).

4. CONCLUSION

EC challenged and still challenges much of traditional business reasoning. The unique dimensions of EC technologies (ubiquity; global reach; universal standards; richness; interactivity; customization, and information density), suggest new, varied potentials for running the business [Varian, 2000].

Aiming to contribute to improve the success levels of EC investments, we have proposed an explanatory model for e-commerce initiatives in organizations. The model we presented takes it that there are three kinds of factors (input, process, and output) exerting direct influence over EC initiatives and we must also emphasize the internal indirect influence among themselves. The specific influences of each factor on the EC activity, as well as the influences among each other, have not been expressed in this model. The high number and complexity of such influences renders their exhaustive identification exceedingly hard (or likely, even impossible).

The great diversity of options and the multiple cases of success and failure tell us that success would be achievable by an adequate combination of these various factors.

There is no "right" way or universal motive to commit to a EC initiative. Even if there was, it would likely change in the course of time, due to business demands, politics, or technology itself. Organizations must commit to EC initiatives according to the set of their circumstantial factors, *i.e.*, in line with the aspects which determine and allow the success of the company's decision.

Basically, the model set forth is a practical way to articulate details of theoretical and experimental reality – details that are commonly accepted and seen as relevant to the study and practice of e-commerce. This model is expected to provide organizations with an instrument allowing them to, for instance: support and promote the laying out of action plans and strategies for e-commerce initiatives; identify risks and organizational implications of the various types of e-commerce initiatives; and attain better return on investment.

REFERENCES

- Amor, D., *The e-business (r)evolution*, Hewlett-Packard Professional Books (2000).
- Bauer, C. and Scharl, A., "Quantitative Evaluation of Web Site Content and Structure", *Internet Research: ElectronicNetworking Applications and Policy*, 10 (1) 31-43 (2000).
- Crosby, P., *Quality Is Free: The Art of Making Quality Certain*, McGraw-Hill, New York (1994).
- Ernest and Young, "eCommerce in New Zealand – First Annual Study Results", Wellington, United Nations Center for Facilitation of Procedures and Practices for Acquisition, Commerce and Transport (1999).
- EU, European Union, <http://www.ukonlineforbusiness.gov.uk/cms/template/popup-content2.jsp?id=310439> (accessed on January 5th, 2004).
- <http://www.pwcmoneytree.com/moneytree/nav.jsp?page=historical> (accessed on March 15th, 2003).
- Institute for Telecommunication Sciences, Federal Standard 1037C: Glossary of Telecommunications Terms, Boulder, National Telecommunications and Information Administration (1996).
- KPMG, *Electronic Commerce Research Report*, London, UK (1997).
- Li, F., *The Geography of Business Information*, Wiley (1995).
- Ludescher, G. and M. Usrey, "Towards an ECMM (E-Commerce Maturity Model)", *Proceedings of the First International Research Conference on Organizational Excellence in the Third Millennium*, Estes Park, Colorado State University (2000).
- McKay, J., "E-Business Maturity: the SOG-e Model", *Proceedings of the 11th Australian Conference on Information Systems*, QUT (2000).
- Paulk, M., Weber, C., Curtis, B. and M. Chrissis, *The Capability Maturity Model: Guidelines for Improving the Software Process*, Addison-Wesley (1995).
- Price WaterHouse Coopers, "MoneyTree Survey 2002",
- Price Waterhouse, *Technology Forecast 1998*, Price Waterhouse, California, (1998).
- Rogers, D., "The Challenge of Fifth Generation R&D", *Research Technology Management*, July-August, pp. 33-41 (1996).
- Scheckenbach, R., *Semantische Geschaeftsprozessintegration*, Gabler Verlag, Deutscher Universitaets – Verlag, Wiesbaden (1997).
- Strassmann, P., *The Squandered Computer – Evaluating the Business Alignment of Information Technologies*, Information Economics Press (1997).
- Strauss, A., and J. Corbin, *Basics of qualitative research*, Thousand Oaks, CA: Sage (1990)
- UERN, Microsite project – Estudo Norte.Com, study developed for the União das Associações Empresariais da Região Norte, cofinanced by the Programa Operacional da Região Norte (ON, operational programme for the Northern region), Measure 1.4 (December, 2002) <http://www.uern.pt/microsite> (accessed on January 10th, 2004).
- UNCTAD, *E-Commerce And Development Report 2003*, United Nations Conference on Trade and Development, (2003).
- Varian, R., "When Commerce Moves On, Competition Can Work in Strange Ways." *New York Times* (August, 2000).
- Willcocks, L., "Formulating and Achieving Business Internet Strategy", *Electronic Commerce: Strategies to Improve* (1999).