# E-Business Issues, Challenges and Opportunities for SMEs:
## Driving Competitiveness

Maria Manuela Cruz-Cunha
*Polytechnic Insitute of Cavado and Ave, Portugal*

João Varajão
*University of Trás-os-Montes e Alto Douro, Portugal*

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# Chapter 19
# Constrains Associated to E-Business Evolution

**Elisabete Paulo Morais**
*Instituto Politécnico do Bragança, Portugal*

**José Adriano Pires**
*Instituto Politécnico do Bragança, Portugal*

**Ramiro Gonçalves**
*Universidade de Trás-os-Montes e Alto Douro, Portugal*

## ABSTRACT

*Technological advance of the last decades created an atmosphere in which the organizations are forced to look actively for new options for the cost reduction, in addition to, simultaneously, seeking to compete more effectively in their markets. This context requires focused, swift, more flexible and more competitive organizations which are forced, many times, to implement radical changes in the way they conduct business, employ people and use technology. Despite the recognition and the attention given to electronic business (or e-business) over the last years, this type of business hasn't yet achieved a desirable maturity stage. This problem, current and stated over the last years, demands research efforts so that a solution can be found to solve it. In this chapter, the authors explore a range of constraints which are suggested by the literature to influence e-business evolution, so that organizations could be better equipped in anticipating any difficulties while in progress through their e-business initiatives.*

## INTRODUCTION

New economy, new tools, new rules. Few concepts have revolutionized business more profoundly than e-business. To compete effectively in the e-business world, a company must structurally transform its internal foundation. This structural change requires a company to develop an inno-vative e-business strategy, focusing on speed to market and breakthrough execution (Kalakota and Robinson, 2001).

Since the introduction of computer technology into organizations in the 1960s, there have been numerous attempts to develop models of Information Systems/Information Technology (IS/IT) maturity (Nolan, 1973; Gibson and Nolan, 1974; Nolan, 1979; McFarlan et al., 1983; Earl, 1989; Hirschheim, 1996; Galliers and Sutherland, 1991;

Auer, 1995; Zachman et al., 1997; Khandelwal and Ferguson, 1999). All of these models are premised on the idea that organizations pass through stages of maturity with respect to the way they use and manage IS/IT to support and facilitate business activities, processes and operations.

New maturity models, better adapted to the realities of e-business, have been developed by other researchers and practitioners. Recent research on growth stages and e-business has shown the usefulness of these models in describing the company position in terms of e-business development and of its possible development in the future (McKay et al. 2000; Earl 2000; Prananto et al. 2001; Rayport and Jaworsky 2002; Rao et al. 2003).

Achieving a high level of maturity of e-business is desirable, meaning that the e-business would be deeply embedded in all aspects of the organization, as with all business partners. Therefore, it is crucial for an organization to identify potential constraints to e-business in order to minimize the risk derived from its e-business initiative. The objective of this chapter is to explore the constraints that could act as a barrier to the development of e-business. Environmental, organizational and technological constraints were identified.

## E-BUSINESS AND MATURITY MODELS

The terminology involved within the field of Information Communication Technology (ICT) usage on the Internet is vast and contradictory. Two frequently used terms are e-commerce and e-business.

Kalakota and Whinston (1996) define electronic commerce as the "… buying and selling of information, products and services via computer networks". Laudon and Travel (2006) define electronic commerce as the "use of the Internet and the Web to transact business". Sewell and McCarthey (2001) identify e-business as business facilitated by ICT. Others argue that e-business en-

compasses the entire world of internal and external electronically based activities, including electronic commerce (Kalakota and Robinson, 2003). In the scope of this chapter, electronic commerce will be regarded as a subset of e-business.

Based on various types of trading partners, there are many categories of e-business, for example: Business to Business (B2B), Business to Consumer (B2C), Consumer to Business (C2B), Business to Government (B2G), Consumer to Consumer (C2C), Pear to Pear (P2P), Government to Citizen (G2C), Citizen to Government (C2G) and Business to Employee (B2E). Without the use of face to face operations, all e-business transactions are performed electronically by using computer and communication networks.

The rules of business game are being rewritten to become the rules of e-business, as listed in Table 1.

In (Morais et al., 2007) was used a comparative framework to evaluate e-business stages of growth models. This comparative framework contained the following eight elements (Jones et al., 2006): perspective, development, emphasis, verification, barriers, focus, source and stages. Eight maturity models (KPMG, Grant's Model, McKay's Model, Earl's Model, SOG-e, Rayport and Jaworski's Model, Rao's Model and Chan and Swatman's Model) were compared.

After comparing the models, the authors concluded that none of the models considers constraints on development and strategic development within the framework, but it is obvious that enterprise growth is inhibited by barriers to development such as limited skills and finance.

## CONSTRAINTS TO E-BUSINESS EVOLUTION

After conducting an exploratory study, we identified a set of constraints, which were then grouped into organizational, technological and environment constraints.

*Table 1. Ten rules of e-business (adapted by (Kalakota and Robinson, 2001))*

| | |
|---|---|
| **Rule 1** | Technology is no longer an afterthought in forming business strategy but rather the cause and driver. |
| **Rule 2** | The ability to streamline the structure of information and to influence and control its flow is a dramatically more powerful and cost effective service than is that of moving and manufacturing physical products. |
| **Rule 3** | Inability to overthrow the dominant, outdated business design often leads to business failure. |
| **Rule 4** | Using e-commerce, companies can listen to their customers and became "the cheapest", "the most familiar", or "the best". |
| **Rule 5** | Do not use technology just to create the product. Use technology to innovate, entertain, and enhance the entire experience surrounding the product: from selecting and ordering to receiving and service. |
| **Rule 6** | The business design of the future increasingly uses reconfigurable e-business models to best meet customers' needs. |
| **Rule 7** | The goal of new business designs is for companies to create flexible outsourcing alliances that not only off-load costs but also make costumers ecstatic. |
| **Rule 8** | For urgent e-business projects, it is easy to minimize application infrastructure needs and to focus on the glitzy front-end applications. The oversight can be costly in move ways than one. |
| **Rule 9** | The ability to plan an e-business infrastructure course swiftly and to implement it ruthlessly are key to success. Ruthless execution is the norm. |
| **Rule 10** | The tough task management is to align business strategies, processes, and applications quickly, correctly, and all at once. Strong leadership is imperative. |

Thus, from the analysis of literature, we set up the following conceptual model which graphically emphasizes the relations between their variables (dimensions) presented in Figure 1.

Various factors that inhibit the e-business development were identified, and were consequently grouped in technological, organizational and environmental constraints. In the next sections, these factors will be described in detail.

## Technological Constraints

The following technological constraints were identified.

### Inadequate Technology

There are several constraints that affect the e-business maturity of an organization, one being the existing technology (or nonexistent) in the organization. One can explain this type of constraint based on the evidence that there is in fact some inadequate technology, that is, the technology that does not back up the necessary tools for e-business.

According to Gouveia and Gaio (2004) one of the characteristics of the information society is the intensive use of ICT which assumes a mediating role.

The e-business fulfils its potential when the IT transforms processes, products and business methods.

IT companies are the generators of the e-business technology which enables e-business activities to take place. Therefore the success of these activities would depend on the success of the e-business technology products and services provided by the IT companies.

Obviously, without the technology and the technical talent, no company is going to get its e-business plan off the ground. And in this regard, companies often face considerable challenges.

Lientz and Rea (2001) presented nine principles for the implementation of an e-business, which condense the original position that an organization must have to start its own business electronically. In these principles, they mention that the balance of the infrastructure to support e-business is crucial. Many technologies, even if relevant, do not reach their potential automatically. A new technology

*Figure 1. The conceptual model*
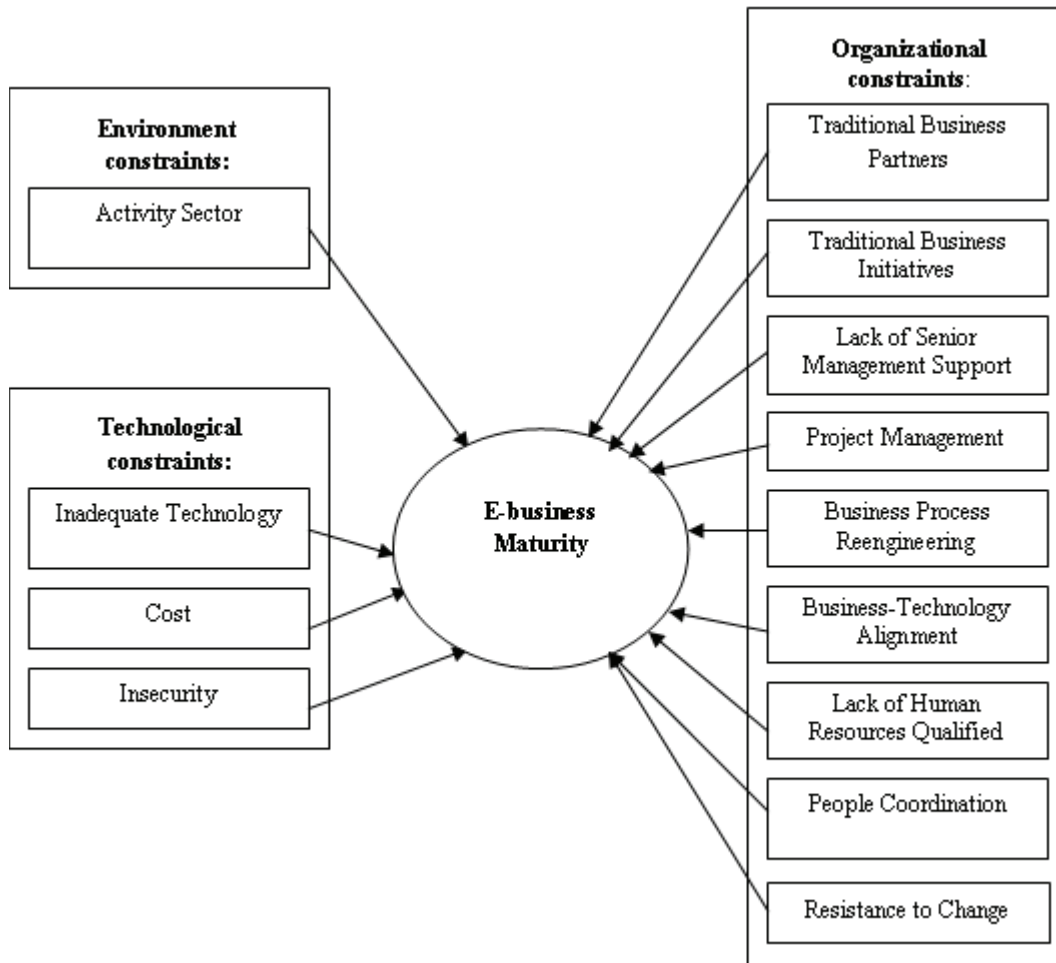


can create imbalance in the organization by not integrating easily.

The technology is, of course, the enabler of e-business (Bakry and Bakry, 2001), as such, the inadequate technology can be a constraint to the development of e-business.

## Cost of E-Business Solutions

The contemporary history is permanently marked by technological advances. The development of information technologies, including Internet and everything that relates to hardware and software,

has changed the model that was designed in the past for different economic activities.

Investments in IT / IS involve considerable intangible costs difficult to identify. The problem becomes even more complex when we try to evaluate, in a financial perspective, all the benefits of investments in IT / IS (Serrano and Caldeira, 2001).

O'Brien (2003) lists five levels that describe how companies can design and use IT:

- **Strategy:** The IT / IS are seen as differentiated, supporting the processing of transactions, decision making and collaboration;

- **Offensive:** The IT / IS are seen more as a point of influence than differential;
- **Defence:** growth of the IT / SI is controlled at a rate lower than the growth of business and investment in technology keeping up with the general behaviour of the sector.
- **Justified by the cost:** it maintains a strict control on IT / IS, there is no general plan of the spread of technology. Applications and platforms are ageing.
- **Held:** IT / IS are seen as an expense and administration is not prepared to invest in IT / IS.

The cost of technology is enormous (Grover et al., 1998, Legris et al., 2003), so this could be one of the constraints of the e-business and it is expected that the maturity will be adversely affected by the cost of solutions for e-business.

## Insecurity

There are six key dimensions to e-business security: integrity, non-repudiation, authenticity; confidentiality; privacy and availability (Laudon and Traver, 2006).

Integrity refers to the ability to ensure that information displayed on a web site, or transmitted or received over the Internet, has not been altered in any way by any unauthorized part.

Non-repudiation refers to the ability to ensure that e-business participants do not deny their online actions.

Authenticity refers to the ability to recognize the identity of a person or entity with whom you are dealing with on the Internet.

Confidentiality refers to the ability to ensure that messages and data are available only to those who are authorized to view them. Confidentiality is sometimes confused with privacy, which refers to the ability to control the use of information a customer provides about himself or herself to an e-business merchant.

Security is one aspect of the utmost importance, if not the most important in relation to e-business. It is important to the user since he is provided with data and financial implications and it is also important to the entity that provides the service because it must ensure the credibility of the data sent, as well as ensure the confidentiality of information relating to their customers.

Availability refers to the ability to ensure that an e-business site continues to function as intended.

huge success factor in any business initiative is the electronic security (Worner, 2002). The uncertainty regarding the security aspects, the lack of trust in virtual relationships may affect the success of e-business (Liu, 2000; Neus, 2000; Trappey and Trappey, 2000; Chepaitis, 2002), influencing negatively its development.

## Organizational Constraints

The following organizational constraints were identified.

## Conflicts with Traditional Business Partners

In a scenario simultaneously cooperative and competitive, suppliers and customers, although they have very substantial powers, are considered business partners in the stabilization of a network of companies taking into account the interest they have in the joint creation of value (logical supply chain).

In times of change in the strong markets and globalization, which easily copy products / services and solutions, one should promote not only parts of the value but the value as a whole, integrating solutions for creating products / services more difficult to imitate. Supply chains are thus, increasingly, temporal training, which depend on the desirability of a given network of partners, typically large and complex. These chains also depend on the market services needs,

whose demands, as we know, change according the circumstances.

The e-business offers an environment with great potential for collaboration within and between the organizations. Cooperation strategies are extremely important to the success of e-business, such as working with other companies to help gain competitive advantage within an industry. A strategy of cooperation typically involves a strategic alliance through the value chain of partners. This can be achieved through consortia or e-marketplaces (Ray, 2003).

If the traditional business partners do not adhere to this new way of doing business, conflicts with it could be a constraint to the development of e-business. One of the first steps in the development of e-business is to improve relations with key traditional business partners (Eisenmann, 2007).

## Conflicts with Traditional Business and E-Business

The e-business use electronic means to reinvent the practice of traditional business. There are three types of approaches (Gouveia, 2006):

- The e-business as a separate activity. It is the establishment of a new business. If there is a traditional organization to sponsor the initiative, the new organization inherits most of the activities of business. Therefore the analysis of current activities is crucial to define the new activities and make improvements in the processes involved;
- The e-business is implemented over the traditional business, replacing it. Adopting this strategy, there is the e-business in the core of current work. As a result, some of the current activities of business will be reused;
- The e-business is integrated with regular business. In this case, usually there is a fixed intervention term and human and ma-

terial resources already determined. This is the most common for an existing organization so that it synchronizes its activities taking into account the coexistence of traditional business and e-business. This approach requires more effort to implement, support and manage.

Porter (2001) considers a mistake the fact that a company with a history of success in the real world do not take advantage of its brand and its other assets to become stronger in the digital world. In defining a strategy based on e-business, it is essential to define how it will manage the conflict between the online business and offline business (or traditional). For this, it will prevent the new channel (online) to compete directly with the businesses already established in the same group of customers (the cannibalization effect). As such, the existence of conflicts between these two channels may be a constraint to the development of e-business.

## Lack of Senior Management Support

The main problem that caused the failure of many initiatives in e-commerce was the apparent lack of support from top management as a lack of general understanding of the fundamental characteristics that constitute an environment of success for e-commerce (Schmid et al, 2001).

The participation and support of top management to the efforts of IS / IT have been highlighted as important factors for successful planning and implementation of IS in organizations (Kannabiran and Ranganathan, 2004).

The role of top management is related to the knowledge and understanding that this has on the strategic potential of IT, its involvement in IT initiatives and providing resources for IT.

The support of top management has been identified as a factor positively associated with the success of strategic IS planning, and essen-

tial, given the importance and strategic nature of technological IS (Kearns, 2006).

The vision of the company is the point of departure in developing a strategy and should reflect the company's strategic intent and define what it wants for the future. The top management must be involved in its definition to ensure that it is followed and implemented. According to Ware et al. (1998) the definition, development and implementation of a strategy for e-business includes seven stages, in which one of them is communication of vision from the top management to encourage the initiatives of the Internet. The support of top management is generally accepted as being critical to the success of e-business. This is because the leader of the company is usually the main decision maker because of the influence it has on the allocation of key resources (Lertwongsatien and Wongpinungwatana, 2003, Martin and Matlay, 2003; Rai and Patnaykuni, 1996, Thong and Yap, 1995). Sorenson (2000) also found a positive association between a participatory leadership and performance of the leading e-business. The lack of support from top management can influence in a negative way the stage of maturity of e-business.

## E-Business Project Management

The project management has been consolidating itself as a key activity in any organization, whether their goals are economic, financial, social or political. The integral parts of any project, including human resources and/or materials, the cost, time available and activities to develop, need to be managed as efficiently and effectively as possible. The e-business projects, as all other projects of the organization, need to be assessed and monitored (Grembergen and Amelinckx, 2002).

The planning and implementation of e-business differs from traditional planning in the following aspects (Gouveia, 2006):

- **Scope:** the scope of an e-business project is the organization itself. Influence its sys-

tems, its activities, altering the processes that are critical;
- **Policies:** the implementation of e-business projects are of greater political sensitivity, and generally behaving more risk than a traditional project;
- **Coordination:** the e-business implementation requires more human resources, which involves more coordination for the reason that of the possibility of increased confusion of roles and responsibilities of employees;
- **Subprojects:** by their own characteristics of e-business, its implementation is complex since that involves a number of interdependent sub-projects, which must be conducted in parallel and in an integrated way.

We believe that a poor management of projects of e-business can be act as a constraint to the development of e-business.

## Business Process Reengineering

In the globalized world in which the companies are inserted, the changes appear to be increasingly complex, characterized by increasing demands for speed, quality, low cost, flexibility and customer satisfaction.

In this context, to ensure high levels of business competitiveness, companies have to act quickly and flexibly, in a pro-active attitude, innovating their services, processes and technology, focused on customer needs and market. The reengineering of business processes promotes the realization of competitive advantage and creates value by improving organizational processes, using the full potential of IT to improve the performance of an organization.

Despite differences in definition, vision, concepts and methodologies of reengineering approach, by different authors, mainly Davenport (1993) and Hammer and Champy (1993) could

be said that reengineering is the junction of three sciences (Joia,1994):

- Organization and Methods, which is linked to the mapping and monitoring the performance of the process;
- IT, which is the technological component;
- Management of change, which has the task of dealing with the organization, its culture and its professionals;

The e-business should be seen less and less as a phenomenon of online business and more as a change in the redesign of the organization (Wang, 2000).

We believe that the reengineering of business processes, although it is fundamental in an e-business project, may be a constraint to this evolution.

## Business-Technology Alignment

The evolution of technologies and its requirements has forced the development of own resources, to ensure greater alignment between the needs of business and what the technological infrastructure can provide. Thus, the expansion in the use of new channels of information such as Internet, Intranet and Extranet is required to incorporate new equipment and new solutions. Since standard protocols for communication, through the firewall to reach the URL (Uniform Resource Locator), the whole technology of the telecommunications infrastructure has suffered during this last decade a rapid and continuous change.

Kearns and Lederer (2000) define strategic alignment of IT as a link between the company's business plan and the plan for IT. The strategic alignment between IT/IS and the business is one of the critical success factors for organizations to obtain the benefits and satisfactory performance for its business (Moura, 2004).

According to (Kearns and Lederer, 2000) the alignment between IT and the business plan is necessary to achieve the objectives of the business and capitalize the use of IT, helping and ensuring that investments in IT are used properly to support these goals and increase competitive advantage through the use of IT.

In some companies the bad alignment of business and IT strategy is weak because there is a small relationship between the business' processes planning and IT planning (King and Teo, 2000). A poor alignment between technology and business could adversely affect the maturity of e-business.

## Lack of Human Resources Qualified

In the Knowledge Society, human resources are the most important asset of companies and organizations.

Competition for attracting skilled human resources, base of the knowledge economy, tends to aggravate the inequalities between developed and developing countries, the migration of students, many of whom completed their courses, not returning to their countries of origin.

The new market conditions and operation of organizations require an increase level of qualification of its employees, for one side can move from a system in intensive work to a knowledge-intensive system that allows optimum use of IT recently acquired or updated processes of change, and secondly, to extend the range of activities undertaken by the same developer to allow a functional flexibility that adjusts rapidly to changing skills needed for a competitive organizational performance.

In a context of high competition, uncertainty and constant change, the ability of organizations to learn and innovate, to interact and cooperate it is very important. The role of human resources has a preponderant role. The availability of qualified human resources supports the company's competitiveness, the adoption of new technologies and new forms of organization, innovation and productivity.

The report led by Wim Kok (2004), in which the European Council of 2004 used to establish priorities in employment, indicates as priorities the increased adaptability of workers and investment in human capital and education and training to lifelong learning, among others.

According to the OECD report, the lack of qualified human resources is a barrier to the development of e-business (OECD, 1999), especially when there is lack of experience and knowledge in the e-business (Mehrtens et al., 2001).

## People Coordination

The prospects for development are always a concern (and hence also constitute one of the interests) of who conducts a business. The case of e-business is no exception. It is also necessary to consider more factors associated with the nature of e-business, including aspects related to technology and technological developments and new services and applications of ICT, whose innovations occur at a speed up. It is clear that this concern is not new, efforts to forecast the potential of a business were (and are) a central concern of their responsible, for more specific to the business is. Thus, the various attempts to predict the ways to take advantage of ICT in the context of human activity and business are limited and require an additional effort at all responsible for the design, the entrepreneurs and other introducers of e-business.

A business model is a mediated construction between technologies and business (Chesbrough and Rosenbloom, 2002), such as, a poor coordination between the heads of these two areas may be a constraint to the development of e-business in the organization.

## Resistance to Change

Several studies have emerged in recent decades to capture, analyze and understand the phenomenon of organizational change. The review of these studies shows the attitude of resistance to change,

considered as natural and inevitable (Kurtz and Duncan, 1998) and popularized as a major barrier to implementation of change processes (Braver, 1995).

The popularization of the concept of resistance to change as a major barrier in implementation of change processes and innovations have been disseminated to overcome many forms of overcome it. Although using different terminology, several authors have suggested various strategies to deal with general resistance to change (Iskatt and Liebowitz, 1996; Boyle, 1995; Poe and Viator, 1990). One way or another, all these formulas can be summarized in six broad strategies outlined by Kotter and Schlesinger (1979) to overcome resistance to change: a) education and communication, b) participation and involvement, c) facilitation and support d) negotiation and agreement, e) handling and cooperation f) explicit and/or implied coercion.

Innovation is one of the main drivers of a firm's competitive advantage. Innovation, however, has often a disruptive effect on the organization, because it is associated to or induces organizational change and adaptation. A new technology, a new product, or a new marketing method often imply the reshaping of relevant resources and expertise, the change of established norms and routines, and the rapid obsolescence of accumulated learning (Tushman and Anderson, 1986).

Resistance to change is inevitable, even when it represents growth and development. Managers should be prepared to deal with resistance to change (Fine, 1986).

## Environment Constraints

The following environment constraints were identified.

## Activity Sector

The business model is the main guarantor of the mission of the organization, because it identifies

how to act within their environment, making it one of the main instruments of the strategic evaluation of the business. The definition of business model results from an integrated observation of the value chain of the organization with their value system, which characterizes the sector in which the organization belongs. The value chain, define the fundamental processes of business, while the value system is to make the characterization of the industry, not only in regard to relationships between the various value chains that make up that activity sector, but also with regard to competitive influences that affect the performance of each. The value chain can vary from company to company, depending on the specifics of your industry.

According to Porter (1985), each firm belongs to a generic value chain of the industry in which it operates and may seek position itself in one or more stages in the chain that believes that competitive advantage to create more value than its competitors, should not break the business model of the structure of the business in which it is inserted.

It has been proven in literature that the characteristics of each activity sector influence the adoption of e-business (Kwon and Zmud, 1987; Mehrtens et al., 2001, Raymond, 2001), with benefits for companies that take it (Premkumar and Roberts, 1999; Saxowski et al., 2002).

It is expected that the e-business maturity may be affected (positively or negatively) by the intrinsic characteristics of each activity sector.

## The Most Problematic Constraints

A study was conducted with the objective to identify the constraints associated to e-business development. This study, oriented to the biggest Portuguese companies, concluded that the most problematic constraints were *conflict with traditional business and e-business initiatives*, *conflict with traditional trading partners* and *reengineering business processes*. The less problematic is the *lack of senior management support* (Morais et al, 2009a; Morais et al, 2009b).

The same study carried out in Small and Medium Enterprises (SME) (Santos, 2009), verified that for this type of companies the most problematic constraints are *inadequate technology*, c*ost of e-business solutions* and e-*business project management*, despite many of the constraints associated with change being also considerable.

The constraints associated with change are normally the most problematic. Gibbs et al. (2003) conclude that for many European countries, cultural resistance to change and innovation are at the root of resistance to e-business.

## Solutions and Recommendations

Although there are constraints more problematic than others, the studies found that since 2005 the constraints have become less problematic (Morais et al, 2009a; Morais et al, 2009b; Santos, 2009).

Each organization has its specific features and as such its own difficulties. However, the studies found that the most common way of solving the constraints outlined in the previous sections are the listed in the table below (Morais, 2009; Santos, 2009).

## FUTURE RESEARCH DIRECTIONS

Despite the recognition and the attention given to e-business over the last years, this type of business hasn't yet achieved a desirable maturity stage. This problem, current and stated over the last years, demands research efforts so that a solution can be found to solve it.

As future work the perspective is the achievement of new studies, in companies of different size, and also by activity sector, since this variable may lead to quite different results.

The development of a maturity model for e-business which includes the constraints associated with each of the stages of the model and how to overcome them will also be useful for organizations to be able to avoid any difficulties.

*Table 2. Ways of solving the constraints*

| Constraint | Ways of solving the constraint |
|---|---|
| **Inadequate Technology** | • Technological updating<br>• Migration to other technological platforms |
| **Cost of e-business solutions** | • Own investment |
| **Insecurity** | • Use of security protocols<br>• Systems for data protection<br>• Implementation of security services |
| **Conflicts with traditional business partners** | • Integration with the value chain of business partners |
| **Conflicts with traditional business and e-business** | • E-business integrated with the regular business |
| **Lack of Senior Management Support** | • E-business seen as an opportunity |
| **E-business Project Management** | • creation of a multidisciplinary team to manage projects |
| **Business Process Reengineering** | • Analysis and management of business processes<br>• Motivation of employees to the need to do reengineering |
| **Business-Technology Alignment** | • Awareness among employees about the importance of alignment between technology and business<br>• involvement of the technology responsible when creating a new model / business process |
| **Lack of Human Resources Qualified** | • Training of employees<br>• Recruitment |
| **People Coordination** | • Awareness among employees about the importance of both<br>• Training of employees |
| **Resistance to change** | • Involvement and awareness of employees throughout the process<br>• Training of employees |

## CONCLUSION

The use of ICT is not guaranteed to improve productivity, reducing costs and innovation. The organizations' success is related to a correct management of IS (Varajão, 2002) as well as with a proper management of ICT projects.

Since ICT is relatively recent, if compared, for example, with construction, management of projects in this area has evolved significantly over recent decades. Despite this progress, there are still quite significant levels in the failure of ICT projects (Rijo, 2008).

To contribute to the success of e-business initiatives, possible constraints to their development were identified. These constraints were grouped into technological, organizational and environment constraints.

It was thus possible to identify and characterize thirteen constraints associated with the development of e-business: Inadequate Technology; Cost of e-business solutions; Insecurity; Conflicts with traditional business partners; Conflicts with traditional business and e-business; Lack of senior management support; E-business project management; Business process reengineering; Business-Technology alignment; Lack of human resources qualified; People coordination; Resistance to change and the Activity sector.

The conceptual model (Figure 1) was validated through the construction of hypotheses, where each constraint has been tested to verify their influence in the maturity of e-business (Morais, 2009).

Of the thirteen constraints identified only the constraint *cost of e-business* and *insecurity* did not affect the maturity. Probably, because there are

constraints that are present in all maturity stages of e-business (Morais, 2009).

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