

ADVANTAGES AND RISKS RELATED TO USING INFORMATION AND COMMUNICATION TECHNOLOGIES IN THE MODERN COMPANIES

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Abstract

The information technologies presently used in companies are followed by a significant social and economic development, but they also imply, inevitably, the occurrence of several risks that need to be considered once approved. This study has for purpose the identification of the most important risks that each corporation should examine especially with the new electronic business environment and the implementation of various systems type: enterprise resource planning, supply chain management, customer relationship management.

Key words: risk, electronic business, electronic commerce, enterprise resource planning, supply chain management, customer relationship management systems

1 Introduction

Adopting information and communication technologies in the contemporary society generated structural changes and, in time, induced less or more concerns demanding quick solutions. Under these circumstances, in present days, the companies need to estimate the advantages related to the new technologies and, in the same time, to reduce the inherent risks.

Further in this study will be confronted the advantages and the risks associated with the new business entities resulted from the penetration of information technologies in the economic field. The initial analysis is considering the e-commerce and e-business generally and will afterwards detail for each application category in this domain: ERP, CRM and SCM.

2 Advantages and risks related to e-commerce and e-business

The expansion of using the Internet worldwide has led to an impressing evolution of e-commerce and e-business. Presently it appears one of the companies' opportunities to develop itself, to reduce the expenses, to increase the activity's speed, to augment the quality both for the product and services in order to acquire new markets, to become global. Forward are some essential advantages to extent the business by using the Internet. [Avison, D., 2002, 9]:

- The time needed to complete the transactions is shorter;
- The transactional and marketing costs are reduced;

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- The access to global market is easier;
- The communications with clients and suppliers is more fluid and efficient;
- 24/7 availability of the business;
- The clients confront the products and services in an easy way.

If we need to consider the risks, in this case, we can state that for the e-commerce the emission speed of error and threats is much higher confronted to the traditional commerce and business, due to inexistent borders in cyberspace. There are more classifications of e-commerce and e-business risks. For some peoples they can be internal and external, human or machine generated, intended or not. In the next section we examined a Paulina Ratnasingam's classification [Ratnasingam, P., 2003, 48-50], which we filled up with the personal opinion. The identified types of risks are:

1. **Technology related risks.** These are associated with the access to the e-commerce infrastructure. Their presence might cause deviations from the performance targets expected in an electronic exchange „relationship”. For instance both the online seller and his partner may suffer hacker attacks. Here are some of the most famous attack methods used on the Internet:

- *Phishing* – which means „cloning” the e-commerce website and „attract” the buyers, through e-mail messages or other techniques, to the cloned page where they are asked to fill in personal data, passwords or account numbers;
- *Sniffing or „sent” the packages* - is realized through special programs, resident in the network computers of partners. These programs „spy” and „grip” the messages, saving the important ones in a file that will be used afterwards. This type of programs is used by hackers in order to discover usernames and passwords of e-commerce websites users;
- *Scanning* – meaning the study of particular network topologies using commands that are specific to TCP/IP protocol;
- *Denial-of-Service* – this attack consists in flooding a Web server with data packages until this web-server is blocked and refuses the service to authorized users (the Yahoo and Amazon's web servers' cases in February 2000 are very well known).

The security gap resulted from hacker attack may lead to loosing income or „image” for the seller. On the other hand, the informational flow between partners has vulnerable points: internal applications of partner companies, application interface, network connections, mail boxes etc. If these vulnerable points are attacked it might reach to presenting no-updated information or misinformation of clients and, even if the situation interferes for short period of time, they may sue the seller or ask for financial compensations.

2. **Relational risks.** These are diverted from the lack of trust between business partners. Among their causes can be counted:

- The lack of experience and technical knowledge about e-commerce security;
- Opportunist behavior;
- Resistance to changes;
- Ignorance concerning the method to audit the e-commerce activities;
- The uncertainty in the business environment;
- Ignorance concerning the methods to record (archive, storage, check) the electronic transactions etc.

Some examples of risks in this category can be: delay in production process, interrupted cash-flows, profit loss; all these might affect the predicted income and the business continuity.

3. **Generated risks** are referring to:

- Low quality business procedures;
- Environment risks;

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- Lack of policy and standards.

E-commerce and e-business development had contributed to social and economic contribution in many organizations, countries and on global level, as a rule. The utilization of their specific methods and practices must be preceded by feasibility studies necessary to identify possible threats a company may be exposed to, attempt their prevention, because in most of the cases has been proved that risk prevention is less expensive and much more efficient than future solve of problems which may occur. We have also to mention that threats presented in this section of the paper, approaches only some of the problems organization may be confronted with on using practices specific to e-commerce and e-business and, in some situations, has be proved that it grows directly proportional with transactions volume and, for this reason, graduate testing of efficiency of this methods and practices it is recommended.

3 Advantages and risks when using Enterprise Resource Planning Systems

E-business and e-commerce have essentially transformed the business processes in the past decades, but their execution in optimum conditions is not possible without a coherent information system, guarantee trough the Enterprise Resource Planning solutions (ERP).

The advantages that ERP applications involve are multiple and lately enforced in the detriment of the applications partially integrated or non-integrated. The most important among these ERP's benefits are [O'Brien, J., 2006, 262]:

- Efficient and high-quality information;
- Avoidance of data and operations redundancy;
- Shorter the response-time;
- Adaptability;
- Scalability;
- Improved systems maintenance;
- Collaborative dimension;
- Open to electronic business;
- Cost reduction;
- Decision assistance.

The idea of implementing an ERP in a company must be associated with a feasibility study that needs to distinguish not only the advantages but also its risks. Here are some of the potential risks' sources remarked between their drawbacks [Rashid, M., 2002, 6] and personal opinion added on:

1. *The addiction to a single supplier* – in many situations an ERP might be purchased from one supplier and the company gets an addiction to it. In the case when there are more suppliers for the same product must be considered the advantages of the unique supplier confronted to the advantages of multiple suppliers. The first option is offering the opportunity of a long term contract; the second – the possibility to choose the best professional in this field, depending also of the issues involved;

2. *Substantial Costs*. These are fluctuating from few thousands to hundreds of thousands or millions of dollars depending on the size of the company, the activity's type, the geographical extension and the technology level at the moment of installation. The biggest expenses are generated from processes' reconfiguration, after that are coming the expenses for data conversion from the old application to the new one, software costs, training and hardware [O'Brien J., 2006, 10]. One important item that must be also considered is „hidden costs” – unidentified when making the installation decision – for instance the costs for training the personnel, integration, tests, unfinished consulting services, team implementation, post-installation depressions, data analysis, customization;

3. In the case of vertical solutions *the nonconformity between its modules* might appear – the system’s architecture and components do not respect the business processes inside the company, the strategic targets and its culture. The vertical solutions are ERP’s limited flexibility result that directed to the development of specific applications, customized for each company’s activity domain (health, communications, education etc.)

4. *Adaptability* – is becoming a risk when the employees aren’t willing to carefully analyze and understand in order to use the application in a proper manner, or to assume the responsibility that might increase for such a complex solution.

ERPs have substantially changed the methods by which administrative processes, such payroll, accountants payable, inventory, sales and accountants receivable, operate are proceeded and controlled. The changes are the result of moving from manual procedures performed by individuals familiar with both data and the accounting process; to high volume, automated processes performed by individuals unfamiliar with either the data or accounting practices. [Musaji, Y., 2002, 17] An essential condition for optimal implementation and utilization of ERPs is the assurance of rigorous controls, which offer the possibility to discovering errors or fraud with impact on operations. If the controlled system is inadequate the opportunity to identify these threats and risks is reduced, especially in the case of real time, distributed, and database systems. It is imperative, therefore, that these systems are reviewed, as they are being implemented; to ensure that adequate controls and security are design into the ERP system form the outset. [Musaji, Y., 2002, 17]

4 Advantages and risks related to Customer Relationship Management Systems

The success of e-commerce and e-business depends entirely on the company’s capacity to initiate keep and develop the relationship with clients on market fluctuating continuously. The customers’ information management becomes essential in the way that the company is able to reach, any moment, information regarding what it’s selling, to whom, its position in front of the competition, the market trends, how efficient are the selling employees and which the predictions for long or short terms are. At this level the Customer Relationship Management (CRM) solutions are interfering with the purpose to stream the international clients’ relations flow and to support both the e-commerce and e-business and also the traditional economic activity. The expansion of CRM solutions has developed three specific domains: operational CRM, analytical CRM and e-CRM (or collaboration CRM).

Table. 1 Advantages of e-CRM for clients and companies

e-CRM advantages	
- for clients	- for company
Much better time of response	Improves the services offered
The delivered products are satisfying with more precision the customers’ requirements	Avoids the delay when offering products and services to customers
Reduces the costs for purchasing and exploiting the products and services	Reduces the marketing and retail costs
Visualizing the orders’ reports in any moment	Satisfies the customers
Improved technical success	Incomes’ increase
Permanent access to products and services	Productivity increase
Access to larger and various series of products and services and to additional information related	Customer-oriented policy
Access to other customers’ opinion	Access to an extended market of potential clients

Regarding the risks related to using CRM technologies, they may be considered from two points of view: clear and hidden.

1. Are counted as *hidden risks* those that are determined by „unfriendly” events incapable to be anticipated, like:

- Abuses when using certain privileges resulted from tasks division;
- Security system’s gaps hacked through its website;
- Fraud, including stealing credit card information;
- Incorrect data and information;
- Nonconformity with the current legislation;
- Interruptions during the post-transaction assistance services;
- Unavailable website or offering incorrect information;
- Communication system abuses or fraud;

2. *Apparent risks* are evolving when the predictions aren’t accomplished and in consequence the expected benefits aren’t achieved:

- Failure in completing the customers’ requirements;
- Missed marketing campaigns;
- Corrupted customers’ loyalty and market rates decreases;
- Low capacity to take the opportunities in real time;
- Low incomes resulted from the incapacity to anticipate the customers’ needs.

CRM are a complex topic and intersects with marketing, sales, service, finance and logistic departments; additionally, it has a strong strategic component, requiring involvement top management. [Deshmukh, A., 2006, 139] The implementation of such system has a great impact on organization information system because the client can establish their own accounts, change contact information and view these accounts, the credit approvals can be automated, the invoice can be automatically generated and payment can be made online. In the same time, the organization has to do everything to develop and apply efficient controls for each internal and external components involved in business process.

In these conditions, similar to e-commerce, e-business and ERP systems, the decision of implementing a CRM system must be preceded by feasibility studies necessary to distinguish what risks and advantages are brought to the organization in accordance with the activity field and the market the organization makes transactions on.

5 Advantages and risks related to Supply Chain Management systems

The most substantial benefits generated from e-business transactions are depending on the companies’ capacity to augment the supply and sales process efficiency through Supply Chain Management applications.

Here are the principal advantages of using an SCM application [Beckmann, H., 2004, 190-191]:

- Increases the precision in predicting the supply from 25 to 80%;
- Reduces the supply cost with about 60% by operating virtual business;
- Reduces with about 50% the time dedicated to transactions;
- Increases the customers’ satisfaction by reducing the delivery time from 50% to 25%;
- Gain strategically advantages from collaboration with companies in the same activity domain, and others from 3% to 25%;
- Augments the profit with about 30% by amelioration of value added chains;
- Augments the annual income with about 55%, divides the market between the actors from different domains through interactive systems, and improves the customers’ relations by using e-commerce policy.

As mentioned before, the SCM systems are complex and they are integrating company's multiple subsystems. Under these circumstances, the risks during installation and application are inevitable. They can be grouped in three main categories: normative, strategic and operational. [Hertel, J., 2005, 16-17]. Further there is presented this classification with the identified risks for each class:

1. *The normative aspects* are risks generators because:
 - Education and cultural differences are causing various interpretations;
 - The actors involved obviously have a diversity of opinions;
 - The panoramic view is missing;
 - The trust between business partners is sufficient.
2. *The strategic aspects* are risks generators because:
 - The goals and motivations are incompatible;
 - External business is generating risks, like:
 - Technical risks – the issue that the knowledge in the company need to be maintained, and, in the same time, the efficient management of external activities and the assurance that the supplier are using proper technologies and solutions are mandatory. A balance between these two demands is difficult to achieve.
 - Commercial risks – are the result of the inherent insecurity regarding the costs resulting from business externalization;
 - Contractual risks – are determined by the possibility of inexistent provisions in the contracts with suppliers, the impossibility to cover all the company's needs and to establish the resources and targets required might appear;
 - Performance risks – might result from the suppliers' incapacity to accomplish the contracts' requirements.
3. *Operational aspects* are generating risks like:
 - Communication difficulties trough system's interfaces;
 - Different interpretations among partners regarding the quality standards and the productivity concept;
 - Business partners' different points of view concerning the business opportunities (for instance: externalize the market might be considered the best solution for a partner and a non considerable one for the other partner);
 - Incompatibility to notice the data from different systems;
 - Delay in delivering or updating information.

In short, management of supply chain involves a range of complex decisions, strategic to operational, which revolve around the right product, right price, right cost, right quality, right quantity, right location and right customer. [Deshmukh, A., 2006, 233] Like in the case of any information technology, implementation of a SCM system must be preceded by studies regarding its opportunity and efficiency and while is used it is necessary to establish and follow strict and complete control policies to avoid possible risk appearance regarding aspects directly connected to information technology usage and economic ones. In practice, has been proved that advantages offered by SCM systems deserve the assumption of risks which may occur in their implementation and usage.

6 Conclusions

In the contemporary society the words of „law” are: globalization, integration and virtual, all determined by using information technologies at various levels. The globalization is conditioned by the uniformity of economic, legal and financial standards and regulations

that can be accomplished through communication and international agreements. The communication is realized in a significant proportion in the virtual environment, including the use of information technologies. Under these circumstances, the installation of ERP systems, able to satisfy various requirements from information users, offered by companies and communicating in real time with the business partners through systems like SCM or CRM, completing transactions due to facilities generated from the electronic environment are a „sine qua non” condition for the companies interested to expand, or only to survive on a competition market. In these conditions, studies for identifying the best business practices and the best systems, offering the maximum efficiency to manage the resources and to improve the information flow, should be conducted for each company. These studies must return a detailed image for advantages and risks related to using such applications.

In this paper we tried to synthesize some aspects companies may confront with when they decide to implement SCM, ERP and CRM and to use e-commerce and e-business practices in completing transactions. It is obvious, in this conditions, that inherent financial risks of economic life are supplemented by information technology ones. In this way, becomes necessary that every implementation process of an information system to be preceded by an exhaustive and detailed risks analysis which have to begin with the study of the organization's strategic plan, recognizing the role that technology plays, and identifying critical points of existing system. Allowing for most of the cases, while operating, risks which weren't initially predicted may appear, one of the measures recommended to any organization, with straight impact in their economic activities, is the rise of internal controls strictness which has the possibility to prevent risks. Also, methods used in auditing, especially on risk assessment stage, may have a major contribution on avoiding possible threats.

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