

Analysis of Internal Control System on E-Commerce

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Abstract— The evolution that one can see in e-commerce, with the internet playing the main role as the best way to implement information and communication channels, to make the electronic transactions more effective, linking extranets and extending intranets to a commercial partnership environment has produced impact on what regards internal control. According to the specific characteristics of the Internet, the path taken by a transaction is not easily predictable nor is it possible to assure the security of all systems that participate in an electronic commercial transaction performance. Taking in consideration what has been said above, it is impossible to guarantee a safe electronic commercial transaction environment, by using only technological components (firewalls, for instance). Therefore, we have to conclude the need for the implementation of risk based internal control systems, which take in consideration the new internal control pattern, when commercial transactions are to be made electronically.

Index Terms— Ecommerce control, Control System Ecommerce.

I. INTRODUCTION

E-commerce or electronic commerce, is the process of buying and selling goods over the Internet. Other than buying and selling, many people use Internet as a source of information to compare prices or look at the latest products on offer before making a purchase online or at a traditional store. E- Business is sometimes used as another term for the same process. More often, though, it is used to define a broader process of how the Internet is changing the way companies do business, of the way they relate to their customers and suppliers, and of the way they think about such functions as marketing and logistics.

II. E-COMMERCE BUSINESS MODEL & PROCESS

A business model, that aims to use and leverage the unique qualities of the Internet and the World Wide Web. E-Commerce business models integrate the internet, digital communications and IT applications that enable the process of buying and selling. E-commerce business models are:

1. B2C (Business to Consumer)
2. B2B (Business to Business)
3. B2G (Business to Government)

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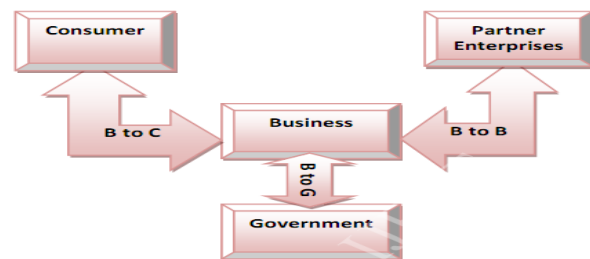


Fig. 1. Models of e-commerce

In this paper we shall consider that e-commerce consists of the act of rendering effective a commercial transaction, one that links two entities (customer and supplier), using the Internet as a technological platform to establish the information and communication channel between those two entities. An electronic commercial transaction has the same significance as the traditional commercial transaction, consisting of the satisfaction of a set of needs in exchange of equal value (Kornelius 1999), with the difference of using new communication and information technologies to make itself effective.

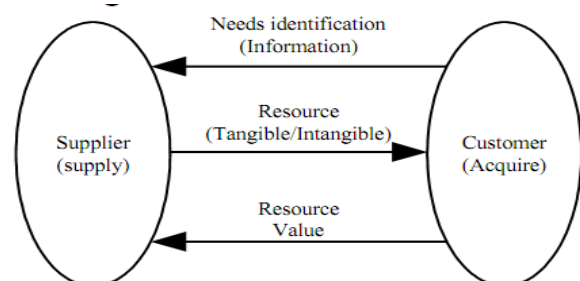


Fig-2. A commercial transaction consists of the satisfaction of a set of needs in exchange of an equal value.

When two entities establish electronic commercial transactions among themselves, their information systems, plus the business processes that each of the entities perform separately, are no longer isolated, obviously. This is the result of the influence that each of the information systems and business processes of one of the entities has over its congeners of the other entity. Simultaneously, the systems that render effective a channel of communication and information among two entities no longer function separately, working instead with the systems and internal business processes of each of the intervening entities. Besides what has been previously mentioned, every commercial transaction, both in the traditional format or performed using electronic mechanisms should contemplate the following items:

- Authentication** - guarantee of the legal entity, singular or plural, with whom we are working;
- Integrity** - guarantee that the contents of the communication between both parts is not modified;
- Confidentiality** - guarantee that no one, non-authorized, either intentionally or not, has access to the contents of the communication

III. INTERNAL CONTROL

It is commonly designated by internal control system the set of rules, policies and procedures (control mechanisms), involved in the management of business risk (Pathak 2003). A control mechanism helps an operational process to reach its aim without being, necessarily, part of the process, figure 2 (O'Connel 1999). These mechanisms are resources that, if used adequately by the processes, perform the management of the risks associated to the processes and systems.

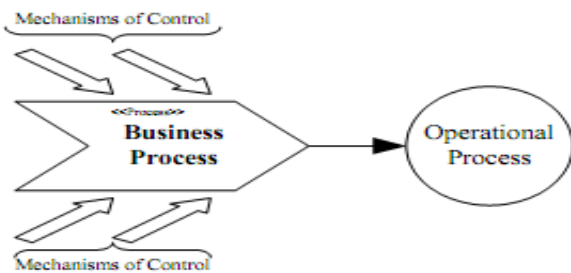


Fig-3: The main business and support processes use control mechanisms external to the process.

One says that a control is internal when it corresponds to a mechanism specifically connected to an entity or negotiated by two or more entities for common usage. This control can be an excellent tool to achieve an organization aims. However, its implementation should be supported by a coherent and consistent framework (Curtis and Wu 2000).

The open nature of the internet makes the entities, involved in internet based electronic commercial process, vulnerable to intentional or no-intentional attacks. Thus, the implementation of internal control systems is vital, which will have as an aim the management of the inherent risks to inter-organizational systems that support real-time electronic transactions (Pathak 2003), based on the Net.

The implementation of an inter-organizational control system is not common, due to the inexistence of a manager of the internet, which would establish the universal laws to be equally applied by all intervening entities. The potential existence of such one entity would largely restrain the creativity of the Net users, which gives the Net its incredible richness.

The single nature of electronic commercial transactions, transverse both to the intra-organizational environment and the inter-organizational environment, is responsible for the non-restriction of the internal control system. Thus, it is applied not only to the intra-organizational control but also to the inter-organizational control, as one can see in figure 3. The intra-organizational control, when dealt with separately in the traditional commercial transactions, is extended in order to include the inter-organizational controls, which were taken in consideration separately in the traditionally transactions.

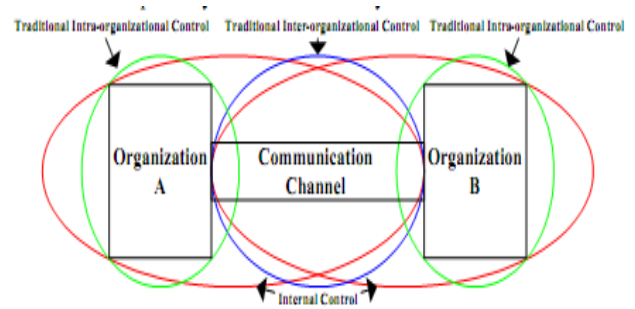


Fig-4: The internal control, when in an electronic commerce environment, includes the intra-organizational and inter-organizational control, both existing in a traditional commercial transaction perspective.

Should the organizations think of cleaving to electronic commerce strategies, two main principles of internal control should be taken in consideration: the type of controls in the e-commerce sphere of action and the availability of the mentioned organizations on what regards having a specific framework which will help them in the implementation of an adequate internal control system (Osborne 1999).

The adoption of a coherent and consistent framework that supports the effective implementation of an internal control system, based on the risk associated with the business processes and with the involved information systems, in the e-commerce sphere of action, should take in consideration the need to extend the intra-organizational environment of each of the involved entities to the inter-organizational environment (information and communication channel) that already exists between the above mentioned entities. This will be easily obtained among organizations that have already installed a coherent and consistent internal control system, supported by the same framework or not, with well defined internal control criteria

Here are the five components of internal controls:

- Control environment:** This term refers to the attitude of the company, management, and staff regarding internal controls. Do they take internal controls seriously, or do they ignore them? Your client's environment isn't very good if, during your interviews with management and staff, you see a lack of effective controls or notice that previous audits show many errors.
- Risk assessment:** In a nutshell, you should evaluate whether management has identified its riskiest areas and implemented controls to prevent or detect errors or fraud that could result in material misstatements. For example, has management considered the risk of unrecorded revenue or expense transactions?
- Control activities:** These are the policies and procedures that help ensure that management's directives are carried out. One example is a policy that all company checks for amounts more than \$5,000 require two signatures.
- Information and communication:** You have to understand management's information technology, accounting, and communication systems and processes. This includes internal controls to safeguard assets, maintain accounting records, and back up data. For example, to safeguard assets, does the client tag all computers with identifying stickers and periodically take a

count to make sure all computers are present? Regarding the accounting system, is it computerized or manual? If it's computerized, are authorization levels set for employees so they can access only their piece of the accounting puzzle? For data, are backups done frequently and kept off-site in case of fire?

•Monitoring: This component involves understanding how management monitors its controls — and how effective the monitoring is. The best internal controls are worthless if the company doesn't monitor them and make changes when they aren't working. For example, if management discovers that tagged computers are missing, it has to set better controls in place. The client may need to establish a policy that no computer gear leaves the facility without managerial approval.

E-Commerce Internal Control Segregation of Duties Checklist

- 1) Are responsibilities for collection and deposit preparation functions adequately segregated from those for recording cash receipts and general ledger entries?
- 2) Are responsibilities for cash receipts functions adequately segregated from those for cash disbursements?
- 3) Are responsibilities for disbursement preparation and disbursement approval functions adequately segregated from those for recording or entering cash disbursements information on the general ledger?
- 4) Are responsibilities for the disbursement approval function adequately segregated from those for the disbursement, voucher preparation, and purchasing functions?
- 5) Are responsibilities for entries in the cash receipt and disbursement records adequately segregated from those for general ledger entries?
- 6) Are responsibilities for preparing and approving bank account reconciliations adequately segregated from those for other cash receipt or disbursement functions?
- 7) If EDP is used, is the segregation of duties principle maintained within processing activities?

Financial Reporting Segregation of Duties

- 1) Are responsibilities for the final review and approval of financial reports adequately segregated from those for the preparation of the reports?
- 2) Are responsibilities for maintaining the general ledger adequately segregated from those for maintaining subsidiary ledgers?
- 3) Are responsibilities for maintaining the general ledger adequately segregated from those for the custody of assets?
- 4) Are the responsibilities for preparation and approval functions adequately segregated from those for journal entries?
- 5) If EDP is used, is the principle of segregation of duties maintained within processing activities?

Electronic Data Processing Segregation of Duties

- 1) Is the EDP department independent from the accounting and operating departments for which it processes data?
- 2) Are duties within the data-processing function as adequately segregated as follows:
 - a) Systems development (design and programming)?

b) Technical support (maintenance of systems software)?

c) Operations?

3) In smaller and mini-computer installations with limited opportunities for segregation of duties, do procedures for user departments provide the following controls:

a) Utilization of batch or other input controls?

b) Control of master file changes?

c) Balance master files between processing cycles?

4) Do personnel policies of the EDP function include such procedures as reference checks, security statements, rotation of duties, and terminated-employee security measures?

Monitoring Internal Control Systems and IT

Monitoring Internal Control Systems and IT provides useful guidance and tools for enterprises interested in applying information technology to support and sustain the monitoring of internal control. Guidance is provided for the design and operation of monitoring activities over existing IT controls; however, customization of the provided approaches reflecting the specific circumstances of each enterprise are required.

The main goals/aims of this publication are to:

•Complement and expand on the 2009 COSO Guidance on Monitoring of Internal Controls

•Emphasize the monitoring of application and IT general controls

•Discuss the use of automation (tools) for increased efficiency and effectiveness of monitoring processes.

The shift from conceptual elaboration on the concepts and applications for monitoring provides the following help for the professional and the enterprise to implement monitoring:

•Diverse examples

•Case studies

•Practical tools

This publication will be helpful for:

•Executives/senior management—by providing an executive overview and suggested questions to determine whether the monitoring of internal controls is adequately addressed

•Business process owners—by describing how to monitor key IT application controls and how to automate monitoring processes

•IT professionals—by supplying templates and tools that can be leveraged when developing and implementing a monitoring project.

IV. CONCLUSION

The evolution of e-commerce, using a public network like the internet as a technological infra-structure to support the implementation of the information and communication channel, has produced a huge impact on what concerns the implementation of internal control systems and the information systems' auditing practices, when the commercial transactions are done electronically. In the present paper we suggest that, should an organization decide to implement any electronic commerce model that will implement its information and communication channel through the internet, it should extend its intra-organizational internal control system to its inter-organizational control. The execution of this enlargement is not common and its feasibility is strongly related to the previous implementation of the intra-organizational control, based on a reliable

framework, which will assure the coherence and the stability in the implementation of a risk based internal control system. The extension of the intra-organizational internal control to the inter-organizational control will allow the implementation of a risk based real-time auditing system, using the software agents' technology. This auditing system shall be involved in the core and support processes of any organization that chose electronic commercial transactions, taking advantages from the markets globalization and the internet ubiquity. As a future work attempt, there is still the need of designing the internal control system architecture that we have, in the present paper suggested.

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