



IT Governance in the e-Business Era

Saida Harguem¹, Karim Ben Boubaker² and Imen Ameur³

1 Faculty of Management, Canadian University Dubai, UAE.

2 Faculty of Business Administration, Laval University, Canada.

3 Hult International Business School, Boston, USA.

Received: September 15, 2022, Revised October 07, Published: October 15, 2022

ARTICLE INFO

Keywords:

IT Governance;
IT Functional Structure;
IT Organization;
Relational Mechanism

ABSTRACT

In the context of e-businesses, Information Technologies (IT) are not only a simple support to companies' businesses, but they often constitute an integral part of their main activities. IT Governance practices are also evolving to fulfill the e-business environment's requirements. A conceptual framework is developed through a literature review, presenting a synthesis of various dimensions (structure, processes, and mechanisms) structuring IT Governance in the era of the e-business.

1. INTRODUCTION

Internet-based information technology (IT) has transformed today's business world. Indeed, the explosion in the use of the Internet has played an essential role in the expansion of e-business by promoting the company's openness to its environment, thus multiplying business opportunities. IT is no longer a simple support for a company's business activities in this electronic business context but is often an integral part of its principal activity. To face this business environment as attractive as it is threatening, companies are called upon to continually reinvent themselves and develop their capacities to take advantage of the full potential of technological innovations and thus maintain a competitive position in an increasingly competitive environment. One of the significant characteristics of this environment is the virtual fusion of technology and business. Indeed, the essential nature of IT in the conduct of business has paved the way for new alternative business models, often referred to as electronic business models. The effects of this change in the business environment are being felt in the IT function and its role in maximizing the value of IT for the business. Thus, driving these new business models requires companies to focus on their organizational capabilities to derive the maximum value from IT. IT Governance refers to those organizational capabilities put in place to maximize the value of IT to the organization.

This article provides a portrait of IT Governance in today's business environment. Through a literature review, we develop a conceptual framework that synthesizes the

different dimensions (structure, process, and relational mechanisms) surrounding IT Governance while declining the trends emerging through these practices in the e-business era.

2. THE REQUIREMENTS OF THE E-BUSINESS ERA

E-business is now a business reality that has become essential for most companies. It refers to using a wide range of technological solutions internally and in its relationships with its customers, suppliers, and business partners. The advent of the Internet has played an essential role in expanding e-business by promoting its openness to its environment, thus multiplying its business opportunities. Electronic commerce and e-business are often used interchangeably (Ngai, 2002). Nevertheless, e-business is much more than an electronic medium for the transactional activities of the organization. It is a complex merger between IT and business (Patel, 2002). Nowadays, e-business models such as B2B, B2C, B2E, or even B2G have multiplied to affect all components of the company's value chain. The electronic business environment is often characterized by time and cost compression associated with product and service design cycles (El Sawy, 1999). In addition, this environment presents a rapid evolution of technological innovations. In addition, there are increasingly demanding clients whose loyalty is volatile (D'Aveni, 1999). This business context shows a clear predominance of informational products and services offer. These elements are accompanied by increased competition, a perpetual definition of organizational and industry boundaries, and market volatility (D'Aveni, 1999,

El Sawy, 1999). In this context where technology has become inseparable from business, organizations are called upon to renew themselves and change how they perceive and use technologies.

Consequently, the role of the IT function in organizations has changed, even becoming more complex. The study of the structure of the IT function of the organization has long been of interest to information system researchers, and it is also referred to as the IT organization. Traditionally, the IT function was seen as a homogeneous entity whose boundaries are clearly defined within the organization and whose role is to support its activity. Today, new data from the electronic economy is transforming the IT function and changing its structure.

In what follows, we will present the IT function and its transformation in recent years.

3. THE IT FUNCTION TRANSFORMATION

Several researchers have been interested in the IT function and its contribution to the digital age. Earl (2001) provided a portrait of the IT function based on testimonies and perceptions of organizations gradually engaging in e-commerce activities. The authors highlight the evolution of the IT function's role from supporting business activity to that of a strategic partner for the company. The digital age has brought new responsibilities to the IT function and back to the rank of the business builder (McNurlin, 2001; Agarwal, 2002). This evolution in the role of the IT function acts on the practices of Governance and management of IT (Earl, 2001), in other words, on all the management efforts associated with planning, organization, control, leading the introduction and use of IT in organizations (Boynton, 1987). To understand these changes, various studies have thus attempted to draw a portrait of IT functions in organizations, focusing on the organizational capacities that they must develop and on the management practices to be diversified to take advantage of the full potential of IT in the e-business era. For example, El Sawy (1999) presented a guide for developing an IT architecture and infrastructure suitable for innovative companies in electronic economies. They thus offer us a detailed description of the work carried out by Marshall Industries and its IT function in implementing this enterprise architecture. This description is drawn around the strategy, structure, compensation mechanisms, and processes. The authors conclude that four distinctive practices in the management and design of IT infrastructure can be identified through the study of Marshall industries. Organizations should learn from them to achieve a similar transformation.

Borrowing the same conceptual framework as El Sawy (1999) and Clark (1997) were interested in better understanding how an IT function could transform to be more flexible. Gomolski (2001) asserts, "Flexibility is what really counts when it comes to organizing for e-business." From this perspective, Clark (1997) studied the transformation of the IT function at Bell Atlantic, which took place around the concept of centers of excellence. Thus, a detailed description of the components of the center of excellence (strategy, structure, process, individual skills, and compensation system) is presented and makes it possible to highlight the performance gains obtained by the IT function by this new structure.

In another study, Cross (1997) described the transformations of the IT function of the British Petroleum company in response to significant changes in its business environment. The IT function has changed its mission, activities, structure, and expertise. Thus, the new IT function took charge of infrastructure planning and process control, resorted to selective outsourcing, aligned itself with industry technological standards, became more centralized, valued business learning for its IT professionals, and emphasized teamwork.

Thus, the emergence of the electronic economy is pushing organizations to improve the structure of their IT function through reflection on new Governance practices. In this context, Sambamurthy (2000) raises the importance of diversifying approaches and techniques in defining an innovative structure of the IT function to meet the demands of the digital age. Therefore, the choice of a mode of Governance (centralized, decentralized, or federal) of the IT function represents a limited perspective for conveying a global portrait of the IT Governance mechanisms likely to meet the new demands of the world of IT business. As De Haes (2004) advocated, a multidimensional vision of IT Governance would better reflect the organizational reality of the IT function in the contemporary business world. Such a multidimensional view is expressed through the combination of structures, processes, and relational mechanisms, which gives way to a global IT Governance framework.

Following the recommendations of De Haes (2004), we present a conceptual framework intended to synthesize the different dimensions of IT Governance in force in the e-business era.

4. IT GOVERNANCE: A HOLISTIC VIEW

IT Governance is a hot topic in business today. Academic and professional research points to many definitions and descriptions of the concept of IT Governance (Webb, 2006). Each definition covers one or more aspects of Governance and is generally formulated to respond to a

particular research interest (Webb, 2006; Brown, 2005). A single and standard definition of this concept thus proves challenging to formulate (Brown, 2005). Nonetheless, most research agrees that implementing an IT Governance framework aims to ensure better IT strategic alignment to maximize its value to the organization (Webb, 2006; De Haes, 2006). This was confirmed in a recent study (PriceWaterHouseCoopers, 2006) with several CIOs (Chief Information Officers) from various locations worldwide. IT Governance is thus seen as how the company can capitalize on its IT investments (PriceWaterHouseCoopers, 2006).

In this article, we borrow the definition from the IT Governance Institute, which states that "IT Governance is the responsibility of the board of directors and executive management. It is an integral part of enterprise Governance, and it consists of the leadership and organizational structures and processes that ensure that the organization's IT sustains and extends the organization's strategies and objectives" (IT Governance Institute, 2003). This definition presents a holistic view of aspects of IT Governance. Thus, IT Governance refers not only to the organizational structures which are at the base of the definition of a structural framework for the IT function, through the distribution of responsibilities in the decision-making surrounding IT activities (Sambamurthy, 1999) but also to the relational processes and mechanisms that support the structure of the IT function put in place (De Haes, 2004). Governance's structure and process dimensions have often been treated separately in the literature. A large proportion of IT Governance research has looked at the structure by identifying structural arrangements that an IT function can have (Sambamurthy, 1999; Weill, 2005). The professional literature has focused on identifying the processes by which a global IT Governance framework is applied (IT Governance Institute, 2003). This was done by defining best practices, such as ITIL (Information Technology Infrastructure Library), for better management of IT in organizations (Weil, 2007; Larsen, 2006; Niessink, 2001). Compared to the academic literature, organizations like the IT Governance Institute or ISACA (Information Systems Audit and Control Association) have a head start in this area. These organizations regularly produce studies and reports illustrating references, control processes, or methods to implement successful IT Governance. Thus, very little research will consider IT Governance holistically (Van Grembergen, 2004). This holistic view makes it possible to draw a complete portrait of the various dimensions to be considered in implementing a global IT Governance framework.

In what follows, we present in more detail the dimensions of IT Governance that form our conceptual framework while declining the orientation these elements

take in the contemporary business environment characterized by solid e-business activity.

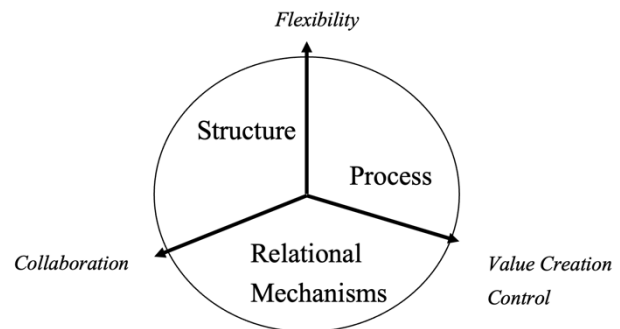


Figure 1: Conceptual framework for IT Governance in the e-business era

The conceptual framework presented in Figure 1 conveys a holistic view of IT Governance. Thus, IT Governance is not only about the structural arrangements relating to the IT function of the organization, but it also refers to the relational processes and mechanisms that are put in place to better use the organization's IT. In the era of e-business, establishing an IT function structure is intended to be more flexible (Sambamurthy, 2000). Moreover, IT Governance in this contemporary business context must relate to control processes and promoting IT processes that generate value for the organization. By identifying control processes, a global IT Governance framework makes it possible to monitor the IT strategy regularly and report on its adequacy with its business needs. In addition, IT Governance must promote IT processes that create value for the company in an era where IT is a source of differentiation and innovation for the organization. In addition, it is important to consider the relational mechanisms in place to allow cohesion and harmonious implementation of all IT Governance initiatives. These relationship mechanisms are essential in the age of e-business, and their implementation promotes better collaboration between businesspeople, IT managers, and other stakeholders (i.e., external partners and vendors). In what follows, we describe the components of this conceptual framework in more detail.

5. IT GOVERNANCE CHARACTERISTICS

5.1 Structure

The study of structure dominates IT Governance research, particularly in academia (Weill, 2004; Sambamurthy, 1999; Brown, 1997; Brown, 1994). The structural dimension refers to identifying the structural arrangements of the IT function. In other words, the way the IT function is organized, including the definition of roles and responsibilities in decision-making on IT activities and their location across the organization (Weill, 2004;

Sambamurthy, 1999). Research in this context has focused on the one hand on defining IT activities (areas of IT decisions) and, on the other hand in, identifying the modes of Governance assigned to these activities. The structural aspect of IT Governance thus revolves around these two dimensions: IT decision areas and IT Governance modes. These two dimensions are specified below.

5.2 Decision Areas

Different researchers have focused on identifying the critical activities of the IT function and have proposed different classifications. These activities correspond to the IT Governance framework's IT decision areas. Among these, Sambamurthy (1999) grouped the decision areas under three categories: decisions relating to the management of the IT infrastructure, decisions relating to the management of the use of IT, and those relating to the management of IT infrastructure. IT project (see Table 1). In a more recent study, Weill (2005) structured the decision domains relating to the IT function around five elements: the guiding principles for IT (IT principles), decisions at the level of the technological architecture (IT architecture), decisions at the level of technological investment and priorities (prioritization and investment decisions), decisions at the level of technological infrastructure (IT infrastructure) and decisions at the level of technological applications for business needs (Business application needs). According to Weill (2005), the five decision domains are interrelated. The guiding principles for IT can be found upstream, and they take a structuring role and give the direction to follow for subsequent decisions.

Papers	Decision Areas	Scope
Sambamurthy (1999)	IT Infrastructure Management	<ul style="list-style-type: none"> Decision on the status of hardware and software equipment, computer networks, and data architecture and their annual upgrade. Support for corporate standards for the acquisition and deployment of IT assets.
	IT Usage Management	<ul style="list-style-type: none"> Determine priority investments for technology applications, short- and long-term system planning, budget planning, and daily delivery of operations and services

	Project Management	<ul style="list-style-type: none"> Knowledge of IT infrastructure capabilities. Knowledge of system development and deployment
Weill (2005)	Guiding principles for ICT	<ul style="list-style-type: none"> Identify ICT business objectives. Structuring roles for other areas of decision-making.
	Decisions at the technological architecture level	<ul style="list-style-type: none"> Translate guiding principles into standards for integration and standardization. Establish the procedure to support business needs.
	Decisions on technology investment and priorities.	<ul style="list-style-type: none"> Determine how much and what technology investments need to be made
	Technology infrastructure decisions.	<ul style="list-style-type: none"> Determine which technology services to centralize and which to share to take advantage of the organization's technology capabilities.
	Decisions at the technology application level for business needs.	<ul style="list-style-type: none"> Specify business needs when purchasing or deploying technology applications internally.

Table 1: IT Governance Decision Areas

5.3 IT Governance Modes

The distribution of decision areas relating to the IT function constitutes an active part of the Governance structure. In other words, it specifies who makes these decisions and how? Different research has observed several IT Governance modes in the organization (see Table 2). Brown (1997) states, "There is no universal best IS Governance structure." Sambamurthy (1999) underlines the emergence of three primary forms of IT Governance: the centralized mode of Governance, the decentralized mode of Governance (which may include variations), and the federal mode of Governance. The variations observed in the decentralized mode depend on the distribution of IT responsibilities among the organization's IT management actors: the IT function, the various business units, and senior management.

Another illustration of the modes of Governance is given by Weill (2005). The authors borrow political archetypes to describe how the domains of decisions are distributed among the actors involved in the management of IT. Six forms of Governance are identified and range from highly centralized to highly decentralized.

Papers	Governance Modes	Specifications
Sambamurthy (1999)	Centralized mode of Governance	<ul style="list-style-type: none"> Centralized decision-making at IS management level (Corporate IS).
	Modes of decentralized Governance	<ul style="list-style-type: none"> Shared decision-making between IS divisions (Divisional IS) and business managers (Line management)
	Federal mode of Governance	<ul style="list-style-type: none"> Shared decision-making between IS management (Corporate IS), IS divisions (Divisional IS), and business managers (Line management)
Weill (2005)	<i>Business monarchy</i>	<ul style="list-style-type: none"> Centralized decision-making at the senior management level.
	<i>federal system</i>	<ul style="list-style-type: none"> Collaborative decision-making between the different management units and the IT department representatives.
	<i>IT duopoly</i>	<ul style="list-style-type: none"> Decision-making between two parties: IT managers on the one hand and a group of managers on the other.
	<i>Feudal system</i>	<ul style="list-style-type: none"> Separate decision-making according to the needs of each management unit.
	<i>Anarchy system</i>	<ul style="list-style-type: none"> Most decentralized decision-making where each user group does its own IT planning.

Table 2: Summary of IT Governance Modes

The managers defining IT Governance can combine different Governance modes for each decision-making area (Weill, 2005). The various arrangements made thus reflect the IT Governance structure chosen.

Although there are differences between Weill's (2005) and Sambamurthy's (1999) conceptions regarding the definitions they give to the domains of IT decisions and modes of IT Governance, the fact remains that the two conceptions have fundamental similarities. Indeed, the two

studies cover the areas of decisions relating to the management of technology infrastructure and the management of the use of technology. Likewise, they expose the existence of a continuum of modes of Governance, ranging from highly centralized to highly decentralized. The influence justifies the absence of a single IT Governance arrangement for all organizations that several contingency factors may have on the choice of IT Governance arrangements borrowed by the organization (Brown, 1994).

In the era of e-business, companies tend to pursue business objectives that are often difficult to reconcile (offering more personalized and better-quality products and services while minimizing the costs, risks, and time they incur. associated). To this is added the simultaneous influence of multiple contingency factors (Sambamurthy, 1999). In this context, the adoption of a federal mode of Governance predominates in defining a Governance structure that is intended to be more flexible (Brown, 1997; Sambamurthy, 1999; Weill, 2005). The federal mode makes it possible to benefit from the best of both worlds, namely the advantages of the centralized mode's standardization and the decentralized mode's flexibility (Simson E. M. V., 1990). However, establishing such a model of Governance is not without difficulty. According to Peterson (2003), the problem lies in reconciling at the level of the IT organization between a corporate vision of the business and the specific interests of the business units. Therefore, many researchers advocate IT capacity development to consolidate the federal model in defining the IT Governance structure (Sambamurthy, 2000; Peterson, 2003). Among these means, we recommend the implementation of so-called "hybrid" roles that combine business-oriented responsibilities and technical skills. Integration roles are also envisaged to liaise between the various partners (internal and external) to pursue business activities (Gomolski, 2001). Some companies like Bell Atlantic (Clark, 1997) have adopted a Governance structure based on the centers of excellence model. This type of structure creates competence centers in response to customer requests. It effectively multiplies new skills through a portfolio of projects by the constitution and rapid dissolution of a team of specialists (Rivard, 2001).

Beyond defining IT activities and responsibilities, establishing an IT Governance structure must be supported by initiating processes that allow its viability. In the following, we expose the most dominant processes in a global IT Governance framework.

5.4 The Processes

IT Governance is also a process in which the IT strategy derives the IT processes, which obtain resources necessary to execute their responsibilities ' (IT Governance Institute,

2003). We can classify the processes under two categories, namely: control processes and value creation processes.

5.5 Control Processes

A comprehensive IT Governance framework encompasses control processes that organizations use to monitor the implementation of their IT strategy and adjust it to business objectives as needed (see Table 3). These control processes can correspond, for example, to implementing a balanced scorecard or Balanced Scorecard. Initially designed by Kaplan (1992), this strategic control instrument allows organizational performance to be broken down from four perspectives (financial, customer, internal process, and organizational learning), thus adapting to today's business context. This strategic planning and control system has been adapted and applied at the level of the IT function and its processes (Van Grembergen, 2003). In this context, it constitutes a vehicle through which elements of IT management are reported to the board level. Its objective is to consolidate the adoption of consensus among the main stakeholders of the organization on the strategic objectives of IT. It is also a formal way to demonstrate the contributions and added value of IT to the organization and communicate the associated capabilities and risks. The IT Governance Institute considers the Balanced Scorecard one of the most effective ways to measure alignment between IT and corporate affairs (IT Governance Institute, 2003).

The COBIT method (Control Objectives for Information and related technology) is also part of the control processes. Initiated by the ISACA (Information Systems Audit and Control Association) in 1996 and supported by the IT Governance Institute (ITGI, 2000), this method is a reference model for IT Governance. It is a detailed control framework, including best practices in IT management, maturity models to assist in benchmarking, a list of key success factors, and performance indicators to help managers control and manage IT risks (Larsen, 2006). From a more operational perspective, the ITIL (Information Technology Infrastructure Library) approach consists of a series of modules that aim to provide recommendations to ensure quality IT service to the users and customers of the organization.

This library explicitly defines a set of processes necessary for providing information technology services and provides rules of best practices for better IT management. This approach is broken down into seven main modules: support service, delivery service, security management, IT infrastructure management, application management, planning for service implementation, and business perspective. It aims to ensure the implementation of IT services that are best suited to the organization's business needs (Niessink, 2000). This approach is now a world

reference in terms of standards for IT services management.

Process	Specifications
IT Balanced Scorecard	<ul style="list-style-type: none"> • Combines tangible (financial) and intangible (example: level of customer satisfaction) performance measures. • Based on a system of key success factors. • Measurement of alignment between IT and business.
COBIT Method	<ul style="list-style-type: none"> • IT Governance Best Practices Guide • IT process-oriented • Valuation of IT • Audit Guide • IT control practices • A reference framework for IT Governance
ITIL	<ul style="list-style-type: none"> • Oriented towards IT service to internal and external clients of the organization. • Enhancement of IT through the implementation of better-quality IT services. • Incident management. • IT Governance support. • Based on service agreements or SLA (Service Level Agreement).
Strategic Alignment Maturity Model	<ul style="list-style-type: none"> • Benchmarking tool. • IT Governance support. • Based on a point system.
Service Level Agreements (SLA)	<ul style="list-style-type: none"> • Oriented to business needs of the organization • Framework structuring the negotiations and agreements between the IT service provider (the IT function) and the users and clients of the organization.

Table 3: Examples of Control Processes for IT Governance

In addition, strategic alignment maturity models are often used as a tool to support IT Governance. These models estimate the alignment of the organization's IT strategy with its business strategy. In an IT Governance context, these models are used in a more encompassing framework, such as COBIT, for example (IT Governance Institute, 2000), to estimate the level of maturity of the established IT organization. More specifically, it is a Benchmarking

tool allowing organizations, using indicators, to position themselves over time or to compare themselves with other organizations and estimate their alignment with standards and best practices in the management of TI (Lutfman, 2000).

Establishing SLA (Service Level Agreement) service contracts is also used in companies as a control tool. More specifically, these are service-level contractual agreements that the stakeholders (service provider and customer) sign based on negotiation on a set of parameters to which the service guarantees will relate. In an IT Governance context, the proper conduct of these service contracts between the IT function and the rest of the organization is often supported by a service-level management process inherent in the ITIL repository. This process makes it possible to build SLAs based on objective measurement criteria and dictates the procedure to be followed in case of an incident.

All these control processes can be combined into overall IT Governance. It is recommended that their use be adapted to the context of each organization (IT Governance Institute, 2003). Organizations often use COBIT as an integrating framework for these control tools.

5.6 Value Creation Processes

In the age of e-business, the IT function is also in charge of the value creation processes for the organization. Different researchers have adopted this perspective in describing the IT organization. Among these, Agarwal (2002) emphasizes the role of innovation and value creation that the IT function can have in organizations today. From this perspective, the Governance of the IT function must revolve around the management of eight IT processes that generate value for the organization. Fundamental IT processes related to infrastructure, human capital, and external partner management. Primary processes enable the translation of strategic IT needs into applications, the delivery of IT solutions, and IT procurement. Two other processes support and allow the IT function to execute them: strategic planning and financial management. Agrawal R. (2002) recommends that the arrangement of these processes follow each organization's specific needs. The researchers thus evoke the importance of thinking about the Governance of the IT function through the identification and management of value creation processes for the organization. Other researchers also advocate value creation by studying the IT function's critical capacities to improve its competitiveness through IT (Ross, 1996). In this context, the Governance of the IT function must allow the development of three human, technological, and relational assets. The quality of these assets will dictate the quality

of three critical IT processes for the organization: IT planning, application delivery, and support. Managing these processes well will influence the organization's ability to deploy IT strategically.

This research emphasizes the importance of developing essential IT skills that generate value for the organization. A significant concern for a business context increasingly oriented towards e-business and where technology must fully play its role in creating value.

5.7 Relational Mechanism

These mechanisms provide a backdrop for all IT Governance processes and structures, and they are more critical in the era of e-business. The IT function must collaborate with the rest of the organization to define an IT strategy co-evolution with corporate affairs (Agarwal, 2002).

Thus, the success or failure of an organization in its use of IT does not depend solely on the IT function. Business managers have a crucial role to play in this context because they are the ones who give the strategic direction to translate the business vision into systems capable of supporting the organization in its activities. However, the relationship between the IT function and the organization has long been conflicting (Coughlan, 2005). Discrepancies between business and IT managers are often due to a lack of knowledge sharing on both sides (Nelson, 1996). A collaborative relationship and good communication between IT and business managers is essential in establishing an overall IT Governance framework (Peterson, 2003). Establishing relational mechanisms facilitating the sharing and transfer of knowledge between IT and business managers is a significant concern for IT Governance. These mechanisms vary between the constitution of committees or executive groups supporting the overall IT Governance structure and establishing more relational mechanisms promoting continuous knowledge sharing between the different parties. The establishment of committees is often the formal aspect of the coordination mechanisms defined within an IT Governance framework. The contribution of its committees to overall IT Governance processes varies depending on whether they have an advisory function or formal decision-making authority (Peterson, 2003). The CIO's (Chief Information Officer) participation in the management committee is often a crucial element in the mutual understanding of the objectives of IT Governance (IT Governance Institute, 2003; Turban, 2002), thus facilitating their monitoring.

In addition to the constitution of committees, the establishment of mechanisms promoting the development of relational integration capacities is also required. In this context, various studies recommend using mechanisms

such as job rotation (work of IT managers in business units and work of business managers in the IT function) or co-workers. -locations of business and IT people on the organization's critical activities, the definition of continuing education programs, and the establishment of compensation systems (Luftman, 2000; Ross, 1996; Weill, 1998). These mechanisms are generally defined voluntarily and vary from organization to organization. They aim to encourage sharing and collaborative behavior between businesspeople and IT managers and thus ensure a close relationship between the IT function and the rest of the organization.

6. CONCLUSION

This article has proposed a conceptual framework explaining the trends surrounding IT Governance practices in today's business world. Through this conceptual framework, we illustrate a holistic view of IT Governance. This vision reflects the definition of structural arrangements relating to the IT function of the organization but also the identification of control and value creation processes for the organization. In addition, this vision emphasizes relational mechanisms, which support an IT function structure that wants to be more flexible in the era of e-business.

References

- [1] AGARWAL, R., SAMBAMURTHY, V., 2002, 'Principles and Models for Organizing the IT Function,' *MIS Quarterly Executives*, 1, 1, 1-16.
- [2] BROWN, C. V., 1997, 'Examining the Emergence of Hybrid IS Governance Solutions: Evidence from a single case site,' *Information Systems Research*, 8, 1, 69-94.
- [3] BROWN, C. V., MAGILL, S. L., 1994, 'Alignment of the IS Function with the Enterprise: Toward a model of Antecedents,' *MIS Quarterly*, 18, 4, 371-403.
- [4] BROWN, A. E., GRANT, G. G., 2005, 'Framing the Frameworks: A review of IT Governance Research,' *Communications of the AIS*, 15, 696-712.
- [5] BOYTON, A. C., ZMUD, R. W., 1987, 'Information Technology Planning in the 1990s: Directions for Practice and Research,' *MIS Quarterly*, 11, 1, 59-71.
- [6] COUGHLAN, J., LYCETT, M., MACREDIE, R. D., 2005, 'Understanding the Business-IT Relationship,' *International Journal of Information Management*, 25, 4, 303-319.
- [7] CLARK, C. E., CAVANAUGH, N. C., BROWN, C. V., SAMBAMURTY, V., 1997, 'Building Change-Readiness Capabilities in the IS Organization: Insights from the Bell Atlantic Experience,' *MIS Quarterly*, 21, 4, 425-455.
- [8] CROSS, J., EARL, M. J., SAMPLER, J., 1997, 'Transformation of the IT function at British Petroleum,' *MIS Quarterly*, 21, 4, 401-423.
- [9] D'AVENI, R. A., 1999, 'Strategic supremacy through disruption and dominance,' *Sloan Management Review*, 40, 3, 127-135.
- [10] DE HAES, S., VAN GREMBERGEN, W., 2004, 'IT Governance And its mechanisms,' *Information Systems Control Journal*, 1, 1-7
- [11] DE HAES, S., VAN GREMBERGEN, W., 2006, 'Information Technology Governance Best Practices in Belgian Organisations,' *HICSS*, 1, 1-9
- [12] EARL, M., KHAN, B., 2001, 'E-commerce is changing the face of IT,' *MIT Sloan Management Review*, 43, 1, 64-72.
- [13] EL SAWY, O. A., MALHOTRA, A., GOSAIN, S., YOUNG, K., M., 1999, 'IT-Intensive Value Innovation in the Electronic Economy: Insights from Marshall Industries,' *MIS Quarterly*, 23, 3, 305-335.
- [14] GOMOLSKI, B., 2001, 'Flexibility is what really counts when it comes to organizing for e-business,' *InfoWorld*, 23, 17, 94.
- [15] IT GOVERNANCE INSTITUTE, 2003, *Broad Briefing on IT Governance*, www.itgi.org
- [16] IT GOVERNANCE INSTITUTE, 2000, *Cobit: Governance, Control, and Audit for Information and Related Technology*, www.itgi.org
- [17] KAPLAN, R. S., NORTON, D. P., 1992, 'The balanced scorecard: Measures that drive performance,' *Harvard Business Review*, 70, 1, 71-79.
- [18] LARSEN, M. H., PEDERSEN, M. K., ANDERSEN, K. V., 2006, 'IT Governance: Reviewing 17 IT Governance Tools and Analysing the case of Novozymes A/S', *HICSS*, 1-11.
- [19] LUTFMAN, J., 2000, 'Assessing Business-IT Alignment maturity,' *Communication of AIS*, 4, 14, 1-51.
- [20] MCNURLIN, B., C., SPRAGUE, R., H., 2001, *The Top IS Job, Information System Management in Practice*, Prentice-Hall.
- [21] NGAI, E. W. T., WAT, F. K. T., 2002, 'A Literature Review and Classification of Electronic Commerce Research,' *Information and Management*, 39, 415-429.
- [22] NIESSINK, F., VAN VLIET, H., 2001, 'Measurement Program Success Factors revisited,' *Information and Software Technology*, 43, 10, 617-628.
- [23] NELSON, K. M., COOPRIDER, J. G., 1996 'The contribution of Shared Knowledge to IS Group Performance,' *MIS Quarterly*, 16, 2, 409-429.
- [24] PricewaterhouseCoopers, 2006, *IT Governance in Practice: insight from leading CIO's*, PriceWaterhouseCoopers Report.
- [25] PATEL, N., 2002, 'Emergent forms of IT Governance to support global e-business models,' *Journal of Information technology Theory and Application*, 4, 2, 33-49.
- [26] PETERSON, R. R., 2003, 'Information strategies and tactics for Information Technology Governance,' *Strategies for information technology Governance*, Idea Group Publishing, Pennsylvania, USA.
- [27] RIVARD, S., 2001, 'La structure du département TI: le défi de la flexibilité, rapport bourgogne, CIRANO.
- [28] ROSS, J. W., BEATH, CM, GOODHUE, DL, 1996, 'Develop long-term competitiveness through IT assets. ', *Sloan Management Review*, 38, 1, 31-42.
- [29] SAMBAMURTHY, V., ZMUD, R. W., 1999, 'Arrangements for information technology Governance: a theory of multiple contingencies,' *MIS Quarterly*, 23, 2, 261-290.
- [30] SIMSON, E., M., V., 1990, 'The centrally decentralized IS organization,' *Harvard Business Review*, 68, 4, 158-160.
- [31] TURBAN, E., MCLEAN, E., WETHERBE, J., 2002, *Information Technology for Management: Transforming Business in the Digital Economy*, 3rd edition, John Wiley and Sons Inc., New York.
- [32] VAN GREMBERGEN, W., SAULL, R., DE HAES, S., 2003, 'Linking the IT balanced scorecard to the business objectives at a major Canadian financial group,' in VAN GREMBERGEN, W. (Ed.), *Strategies for Information Technologies Governance*, Hershey, PA: Idea Group Publishing
- [33] WEILL, N., 2007, 'ITIL Goes Strategic; The new update to the IT Infrastructure Library could help you improve IT-business alignment and change your focus from firefighting to service delivery,' *CIO*, 20, 12, 1-9.
- [34] WEBB, P., POLLARD, C., RIDLEY, G., 2006, 'Attempting to define IT Governance: Wisdom or Folly?', *HICSS*, 1-9.

- [35] WEILL, P., ROSS, J., 2005, 'A Matrixed Approach to designing IT Governance,' *MIT Sloan Management Review*, 46, 2, 26-34.
- [36] WEILL, P., ROSS, J., 2004, *IT Governance: How Top Performers Manage IT Decision Rights for Superior Results*, Watertown, MA: Harvard Business School Press.
- [37] WEILL, P., BROADBENT, M., 1998, *Leveraging the New Infrastructure: How Market Leaders Capitalize on Information Technology*, Boston, MA: Harvard Business School Press.