

**IT GOVERNANCE:
A FRAMEWORK PROPOSAL, AND
AN EMPIRICAL STUDY**

Leonardo Caporarello

Supervisor: Prof. Domenico Bodega

**A thesis submitted for the degree of
The XX Doctor of Philosophy in
Management Information Systems at
LUISS University
Rome (Italy)**

January 2008

Acknowledgments

The work that has gone into this thesis has been intense and rich of ideas for present and future research. The interaction I had with my supervisors, colleagues and friends was very useful for this work.

Moreover, my experience as visiting research scholar at the Michigan State University was really precious.

I feel very privileged to have worked with my supervisors – Professors Ferdinando Pennarola (Bocconi University) and Domenico Bodega (Catholic University) – and Professor Vallabh Sambamurthy (Michigan State University). To each of them I owe a great debt of gratitude for their patience, inspiration and friendship. They have taught me a great deal about the field of Management Information Systems by sharing with me the pleasure of discovery, study and examination that are the heart of research.

The Institute of Organization and Information Systems at the Bocconi University, the Research Center on Information Systems at the Luiss University, and the Department of Accounting and Information Systems at the Michigan State University have provided an excellent environment for my research activity.

I would also like to thank Professors Marco De Marco e Alessandro D’Atri for their friendship and for all the guidelines, suggestions, and support they gave to me either to my PhD program or my future academic career.

I want to thank Massimo and Stefano, you are a very great colleagues and friends of mine.

Thanks also to my family who have been understanding and supportive of my academic studies.

In particular, I would like to thank my wonderful Simona for her patience and to have encouraged me so much over the years.

Many other persons gave to me a sort of support. To all of them, I would like to say: thank you.

CONTENTS

Acknowledgments	ii
Introduction	5
Chapter 1 - Why does IT governance need to be reconceptualized?.....	8
Chapter 2 - Corporate governance: theoretical lens and models.....	12
Chapter 3 - IT governance: theoretical lens and models.....	21
3.1 - IT organizational role and function	26
3.2 - Alignment between business and IT	30
Chapter 4 - IT governance reconceptualization and framework.....	37
4.1 - Vertical or strategic perspective.....	43
4.2 - Lateral or partnership perspective.....	44
4.3 - Service or users perspective.....	45
Chapter 5 - The antecedents factors' of the IT involvement into TMT: a research model	47
5.1 Operationalization of variables	51
5.2 Research methodology	54
5.3 Research context and sample	56

Chapter 6 - Analyses and results	59
6.1 Characteristics of the sample.....	59
Chapter 7 - Conclusions and directions for further research.....	91
References	108

Introduction

The role of IT is considered as “strategic”, and it is able to support current business strategies and also to shape new business strategies.

Increasing attention has been given by business management to the topic of IT management, and to the emerging concept of IT governance.

Moreover, the literature about the IT governance concept is limited and fragmented.

Thus, a clear and organic approach to the IT governance literature is needed.

There are at least two factors that drove me in this work.

The first factor which influences this work is represented by the courses and seminars I took during my PhD program, the participation to conferences, and the discussions with professors and colleagues about the relevance of IT – and of the IT function – in contributing to the business value.

The second factor is represented by the visiting research scholar experience I had at the Michigan State University.

In fact, I spent the first semester of my third year of the PhD program in USA at the Michigan State University.

During this research experience, I had the opportunity to explore and study in depth the IT management and governance literature and empirical findings.

All these above considerations were the starting point for this work of thesis, which is structured in the following chapters.

The first chapter discusses the relevance of this work, and the reasons underpinning the need to reconceptualize IT governance.

The second chapter presents a review of the concept and the main accepted models of corporate governance. The third chapter presents a review of the theoretical lens and modeling approaches proposed in the IT literature for IT governance, and its relations with corporate governance. The fourth chapter proposes a reconceptualization of and a framework for IT governance. Both the reconceptualization and the framework intend

to provide understanding of accumulated knowledge about IT governance through a broad literature review, to provide a new lens of analysis of IT governance, to identify gaps in knowledge. Considering some of these gaps in knowledge, the fifth chapter presents a research model for exploring the antecedents factors' of the IT involvement into Top management team. This model is empirically tested and the results are presented in the chapter six. Seventh chapter discusses and presents some propositions for further research, and concludes this work.

Chapter I

Why does IT governance need to be reconceptualized?

In today's business environment every organization engages in the use of information technology (IT).

The role of IT in organizations have significantly changed since 1970s. IT has evolved from its traditional "back office" role toward a "strategic" role being able to support current business strategies and also to shape new business strategies (Keen, 1991; Venkatraman, 1991). Nowadays, most of the managers agree with the necessity to consider IT as an "organizational strategic player" (Boynton et al., 1994; Orlikowski and Barley, 2001; Sambamurthy, 2000; Venkatraman and Henderson, 1998). As organization's strategy changes over time, IT too has to change.

The advantages of IT can be gained through the effective management of IT, i.e. planning for, acquisition of, and implementation of an organization's portfolio of IT (Cash, et al., 1988; Cooper and Zmud, 1990; Kraemer, et al., 1989; Zmud, 1984).

Recently, increasing attention has given by business management to the topic of IT management, and to the emerging concept of IT governance.

The literature about IT governance is limited and fragmented in several approaches.

Weill (2004) defines IT governance by providing a contrast to IT management. He states that "IT governance is not about what specific decisions are made. That is management. Rather, governance is about systematically determining who makes each type of decision (a decision right), who has input to a decision (an input right) and how these people (or groups) are held accountable for their role".

Many other articles in the IT literature discuss and theorize the concept of IT governance, using different lens of analysis such as business and IT alignment (Armstrong and Sambamurthy, 1999; Bakos and Treacy, 1986; Henderson and Venkatraman, 1992; Lederer and Mendelow, 1987; Lederer and Sethi, 1988; Luftman, et al., 1999; Reich and Benbasat, 1996; Smaltz, et al., 2006; Tavakolian, 1989), relationship

between Chief Executive Officer and Chief Information Officer (Feeny, et al., 1992), IT management and IT use (Boynton, et al., 1994), IT function (Agarwal and Sambamurthy, 2002), and the role of IT (Sambamurthy, et al., 2003; Kaarst-Brown, 2005).

The purpose of this review is to add knowledge accumulation and creation in the IT academic discipline by summarizing the actual literature about IT governance and suggesting how to better understand this concept.

Specifically, the goal of this review is twofold. First, to reconceptualize and propose a framework for IT governance based in theory and informed by existing IT governance research. Second, to use the framework to guide further works by developing some research propositions.

IT governance reflects the broader corporate governance principles (Weill and Ross; 2004).

According to the finance model, which is the dominant model in the late 20th century, corporate governance goal is to align actions and choices of managers with the interests of stakeholders (Hawley and Williams, 1996; Letza, et al., 2004; Shleifer and Vishny, 1997). Reflecting this corporate governance concept, IT governance goal could be to align actions and choices of IT managers with the interests of stakeholders. In this case, IT governance stakeholders are at least of three categories: Corporate board and Top management team (TMT), business management, and users. Top management team includes top managers, as the Chief Executive Officer (CEO), the Chief Financial Officer (CFO), the Chief Operating Officer (COO), and other senior business executives (Armstrong and Sambamurthy, 1999).

The relation between IT management and each of these stakeholder categories represents a different perspective of analysis, respectively: strategic or vertical perspective, lateral or partnership perspective, service or user perspective. These perspectives refer to an intra-organizational view. IT governance has also to take into consideration inter-organizational relationships, such as the relationships among organizations, vendors, consultants, external partners (Henderson and Venkatraman, 1993).

It's not clear whether IT governance is a matter of the IT responsible or the Top management, as explicitly noted by some authors (IT Governance Institute, 2003; Van Grembergen, 2002).

In my view, IT governance must be established by TMT (Figure 1).

The analysis of definitions of IT governance put in evidence as IT governance mostly concerns the issue of IT decision-making rights and processes. My framework also concerns other issues, such as: communication, i.e. communication either vertical or lateral supports information and knowledge sharing, and the shared understanding between different organizational members; monitoring and assessment, i.e. that such activities allow to understand and measure the success of certain IT decisions, and consequently to feed business and IT plan review processes.

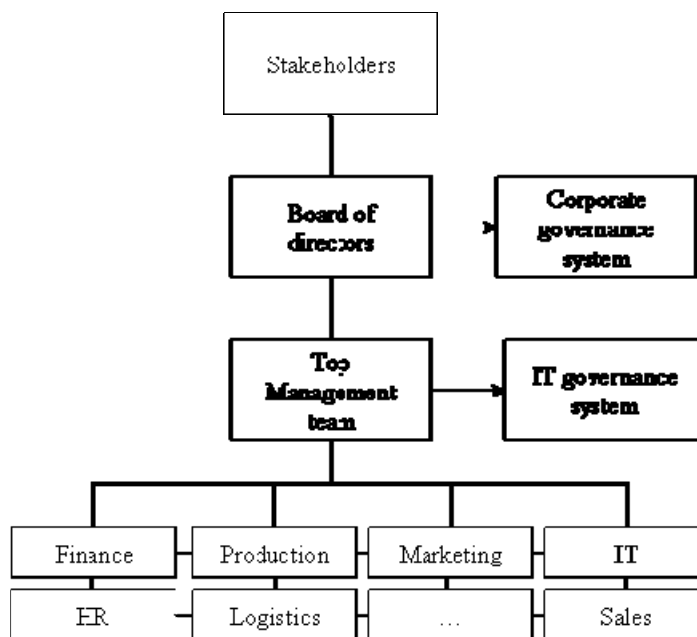


Figure 1 - Corporate governance and IT governance systems

Chapter 2

Corporate governance: theoretical lens and models

IT governance refers to the main concept of corporate governance principles (Weill, Ross, 2004). Thus, understanding of underpinning of corporate governance could help to understand why IT governance is a topic with such increasingly relevance either for academics or for organizations and professionals.

There is much debate focused on corporate governance over the past decades, because of power of management is enhanced, shareholders' difficulty to manage with the managers' interest, a number of privatization and deregulation, a number of some financial scandals, intense competitive pressures and so on (Deakin and Hughes, 1997).

From the economic standpoint, organizations participate to the economic development through their capacity to create and distribute revenues.

This capacity is related to the organizational strategy, which has profound effects on the organization performance. Thus, the ways in which organizations are governed to enhance performance become essential.

From the literature analysis emerges the main concern of corporate governance, which is the alignment of interests among organizational stakeholders, in order to achieve the organization performance.

Table I summarizes the main dimensions of corporate governance concept.

A corporate governance system has to address each of these key dimensions in terms of who makes decision about them, what kind of control to implement, and who exercises the control.

Monks and Minnow (2004) classify three functional groups that constitute a corporate system: shareholders (who provide initial capital), workers (who provide labor), and managers (who provide the skills to achieve the corporate goals, namely to maximize profits).

The relation between shareholders and managers is not new in the literature. In fact, Berle and Means (1932) posit the question about the potential distinction of organizational ownership and management. Earlier, Smith in 1776 (1937) noted that managers could not be expected to operate with such vigilance and regard with other people's money as they are with their own.

Moreover, there is a lot of literature, which relates to the agency theory (Eisenhardt, 1989; Jensen and Meckling, 1976), that present and discuss the relation between owners and managers. The agency theory is based on the conflict that arises from the agency relationship. The agency relationship is defined as “a contract under which one or more persons (the principal(s)) engage another person (the agent) to perform some service on their behalf which involves delegating some decision-making authority to the agent” (Jensen and Meckling, 1976). Indeed, the nature of this relationship is dynamic (Mintzberg, 1990). Conflicts in this relation can occur in case of management's actions are based in the self-interest of managers who tend to go beyond optimal levels. In this way managers expect to improve and increase their compensation, promotion or management power (Jensen, 1986; Marris, 1963). In order to limit these conflicts and to guarantee the organizational success, mechanisms of control and monitoring must be implemented (Fama and Jensen, 1983).

Managers are not able to maximize, at the same time, multiple objectives, like profits, market share, and growth in revenue. In fact, it isn't possible to maximize in more than one dimension at the same time unless the dimensions are monotone transformations of one another (Jensen, 2002). Managers then should be strongly aligned with shareholders' interests in order to understand and balance organizational expected performances.

This view is consistent with the traditional shareholder model (Freeman, 1984; Friedman and Miles, 2002; Hawley and Williams, 1996; O'Sullivan, 2000).

At this point, corporate governance can be intended as the set of mechanisms and processes by which organizations are governed (Macey, 1997), directed and controlled (Cadbury, 1992). Specifically, corporate governance concerns the institutions that

influence the way organizations, from one side, allocate resources and returns (Child and Rodrigues, 2004; O'Sullivan, 2000) and, from another side, align shareholder and management interests (Core et al., 2003; Grandori, 2004, 1997).

That means corporate governance plays a pivot role because of its influence on how organization makes decisions about investments, employment, outcomes, and so on.

Recently, numerous legislative actions, compliance laws and regulatory processes were established in order to contrast that agency issue.

Management's responsibility is not only versus owners but a broader set of individuals or groups that held an interest in the organization (Wren, 1994).

Thus, corporate governance doesn't refer only to shareholders but to various economic actors – such as directors, managers, employees, customers, suppliers, government – who may have direct or indirect interests in an organization. This view is consistent with the stakeholder model (Freeman, 1984; Friedman and Miles, 2002; Hawley and Williams, 1996; O'Sullivan, 2000). This model moves from the shareholder model and includes the stakeholders' interests in the definition of organizational strategy and of decision-making processes.

Moreover, the boundaries of organizations have become flexible and are continuously redefined because of unavoidable multiple interactions with other economic actors (i.e. customers, suppliers, competitors). The nature of firm is not fixed but is changing (Zingales, 2000). This is a relevant aspect of the modern business environment that must be taken into account in the business management.

Indeed, according to the open systems model, organizations are viewed as highly interdependent with their environment (Scott, 1987).

Thus, the stakeholder model allows a better understanding of the dynamic and turbulent environment in which organizations operate (Zingales, 2000).

From another point of view, stakeholders' interests are diverse and sometimes conflicting. Then, organization has to balance all stakeholders' interests and provide strategic directions and prioritization for organizational goals.

Shareholder and stakeholder are not the only two models proposed in the literature.

Based on the classifications of Hawley and Williams (1996), and Blair (1995), Table 2 figure out the main four models of corporate governance, which are:

- the finance model (which is the dominant one),
- the stakeholder model,
- the stewardship model, and
- the political model.

Each of these models offers some mechanisms of internal or external forces and monitoring useful to resolve the agency problem, involve stakeholders, concern with long-term market value, reduce the managerial power for their own interests. Even if these four models don't include all corporate governance and control studies (Turnbull, 1997), they represent the most common thinking way about corporate governance.

Analyzing the corporate governance literature emerges clearly as much of the attention is focused on the financial perspective of the phenomenon (Cadbury Committee, 1992; Deaking and Hughes, 1997; OECD, 1999; Shleifer and Vishny, 1997), therefore about the agency problem.

Table I – Dimensions of Corporate governance concept

Main dimensions defining Corporate governance		
<i>Dimensions</i>	<i>Definition:</i> <i>Corporate governance...</i>	<i>Supporting literature</i>
Organization's strategy and structure	...refers to the set of legal, cultural, and institutional arrangements that determine what organizations can do, who controls them, how the control is exercised	Blair, 1995; O'Sullivan, 2000b; Macey, 1997
Interests' alignment	... is a set of complementary mechanisms and processes to align management and stakeholders' interests	Core et al., 2003; Friedman and Miles, 2002; Grandori, 2004, 1997; Hart, 1995; Hawley and Williams, 1996; Kakabadse and Kakabadse, 2001; Letza, et al., 2004; Macey, 1997; O'Sullivan, 2000; Shleifer and Vishny
Performance/return	... concerns the institutions that influence the way organizations, improve performance, allocate resources and distribute returns	Cadbury, 1992; Child and Rodrigues, 2004; O'Sullivan, 2000, 2000b; OECD, 1999; Mueller, 1981; Shleifer and Vishny, 1997
Accountability	...is a set of structures and processes to assure accountability and improving performance	Cadbury Committee, 1992; Deakin and Hughes, 1997; Macey, 1997
Risks	... refers to the set of legal, cultural, and institutional arrangements that also determine how the risks from the activities are managed	Blair, 1995

Table 2 - Main models of corporate governance

Summary of the main corporate governance models		
<i>Model</i>	<i>Purpose</i>	<i>Supporting literature</i>
Finance	Alignment of owners and management interests	Jensen and Meckling, 1976; Manne, 1965
Stakeholder	Many economic actors (i.e. shareholders, employees, customers, suppliers) can have interests in an organization. Organization, as 'socially responsible', should mediate these interests.	Freeman, 1984; Blair, 1995
Stewardship	Management is motivated by achievement and responsibility needs. Management works diligently and should be fully empowered	Donaldson and Davis, 1994
Political	The performance-governance issues are located squarely in a broader political context. Political does not necessarily imply a government role, merely that it is non-market. Management is controlled on a micro level political approach	Pound, 1992, 1993; Turnbull, 1997

Many researches propose different mechanisms in order to mitigate the agency problem, namely to economize the transaction costs associated with the separation of ownership and control, and in general the specialization of organizational functions (Williamson, 1984); such mechanisms are: compensation contracts for management (Hart, 1995; Jensen and Murphy, 1990; Lewellen et al., 1987; Murphy, 1985), boards of

directors (Deakin and Hughes, 1997; Eisenberg, et al., 1998; Fama, 1980; Fama and Jensen, 1983; Williamson, 1983, 1984), proxy fights (Hart, 1995), large shareholders (Demsetz and Lehn, 1985), corporate financial structure (Diamond, 1991; Myers, 1977; Ross, 1977). These mechanisms should be considered as a complementary set, in fact Demirag et al. (2000) note that an effective corporate governance system depends on the interactions among them.

Much of attention has given to the structure and functioning of board of directors or the rights and interests of shareholders in decision making processes.

Blair (1995) calls for a broader concept of corporate governance that refers to the set of legal, cultural, and institutional arrangements that determine what organizations can do, who controls them, how that control is exercised, and how the risks and returns are allocated. Later, O’Sullivan (2000b), according to Blair (1995), states corporate governance system defines who makes investment decisions, what types of investments they make, and how returns are distributed.

Thus, several factors influence the mode of corporate governance (Table 3). That implies it isn’t possible to define a universal corporate governance model.

Corporate governance concept has changed over time to a broader view; nowadays it involves the entire process of managing a business (Grant, 2003).

Table 3 - Factors that influence corporate governance

Internal and external factors	
<i>Internal</i>	<i>External</i>
stakeholders	government
strategy	legislation
structure	competitive context
principles, culture, norms, values	other external economic actors (i.e. potential suppliers and customers)

Summarizing, corporate governance concerns the structures and processes among stakeholders (i.e. shareholders, board of directors, top and business management, employees, and customers) with the objective to assure accountability and improve organizational performance (Cadbury Committee, 1992; Dunlop, 1998; Ho, 2005; OECD, 1999; Shleifer and Vishny, 1997).

Chapter 3

IT governance: theoretical lens and models

The dynamic economic environment helps to create an economic imperative for information technology (Benjamin, et al., 1984). The role of IT and the impact of IT on organizations have significantly changed since 1970s. The IT structure has changed from a centralized approach, to a decentralized, to a sort of recentralization during last decade in contemporary of the network economy dawns. This change of IT structure has to be not considered as a redesigning issue, instead as the evolution of a phenomenon that is pervasive through the whole organization (Rockart, 1988).

Nowadays, most of the managers agree with the necessity to consider IT as an “organizational strategic player” (Boynton et al., 1994; Rockart, 1988; Sambamurthy, 2000; Venkatraman and Henderson, 1998; Willcocks, et al., 1997).

Also from the resource approach, IT is considered a critical organizational resource (Boynton, 1993; Boynton and Zmud, 1987; Boynton, et al., 1993; Cash, et al., 1988).

Thus, while it still remain difficult to demonstrate the IT value in terms that business understands (Luftman, 2003), the capacity of IT to create business value is widely accepted as relevant from operational to strategic decisions making processes (Lederer and Mendelow, 1987).

In fact, it’s definitively recognized that IT has moved from its “back office” role toward a “strategic” role, acquiring the potential to shape new business strategies (Henderson and Venkatraman, 1993; Keen, 1991; Venkatraman, 1991; Willcocks, et al., 1997).

As the business environment continuously changes, then the question of how leading and governing IT emerges and become even more important (Brown, 1997; Sambamurthy and Zmud, 1999).

The concept of IT governance emerged the late 1990s when Brown (1997) and Sambamurthy and Zmud (1999) wrote about the “IT governance arrangement and framework”. They said that IT governance arrangements represent “an organization’s IT-related authority patterns”.

Analyzing the literature for the IT governance definitions, the following dimensions are found (Table 4): IT decision rights and control, responsibility and accountability, structure and processes, and risk.

Most of the researches refer to IT governance concept mainly as the locus of IT-decisions rights, controls and responsibility. The focus is not on location and distribution of IT resources themselves, rather the location and distribution of the managerial responsibilities and control, which then influence IT resources (Boynton et al., 1992).

One of the most cited IT governance definition states that IT governance is a “framework for decision rights and accountabilities to encourage desirable behavior in the use of IT” (Weill, 2004). Desirable behavior is one that is consistent with the organization's mission, strategy, values, norms and culture.

IT governance is different from IT management. The earlier concerns the definition of who makes each type of decision, who has input to a decision, and how these people (or groups of people) are responsible for their role. The later concerns what specific decisions are made (Weill, 2004).

Decision making rights and responsibility can be assigned either among all stakeholders or to a specific category of organization's members, such as senior management (Brown and Magill, 1998; ITGI, 2003; Peterson, 2004; Sambamurthy and Zmud, 1999; Weill, 2004).

Consequently, it becomes important to define appropriate mechanisms for controlling effectiveness of IT decisions (Cadbury Committee, 2002; ITGI, 2003; Kakabadse and Kakabadse, 2001; Sambamurthy and Zmud, 1999; Segars and Grover, 1999; Weill, 2004).

The alignment issue often presents risks that must be mitigated. Thus, IT governance must also consider a program for IT-related decisions' risks mitigation (ITGI, 2003; Luftman, 2003).

Summarizing, IT governance's objective is to define structures, processes, and mechanisms to define decision making rights and responsibility about main IT issues, to

control and monitor the effectiveness of such decisions, and to mitigate IT-related risks in order to achieve organization’s objectives.

Table 4 – Dimensions of IT governance concept

Main dimensions defining IT governance		
<i>Key concepts</i>	<i>Definition:IT Governance...</i>	<i>Supporting literature</i>
IT-decision rights and control	...concerns location, distribution, and pattern of decision rights that will influence how IT resources are used by organization	Boynton, et al., 1992; Brown and Magill, 1998; Cadbury Committee, 2002; Peterson, 2004; Sambamurthy and Zmud 1999; Weill, 2004
Responsibility and accountability	...concerns the definition of responsibilities and accountability to encourage desirable behavior in the use of IT	Brown and Magill, 1994; Luftman, 2003; Sambamurthy and Zmud 1999; Weill, 2004
Structure and processes	...concern IT-related structures or architectures implemented to successfully accomplish activities in response to organizational objectives	Cadbury Committee, 2002; Kakabadse and Kakabadse, 2001; ITGI, 2003; Sambamurthy and Zmud, 1999; Segars and Grover, 1999; Weill, 2004
Risk	...concerns the delivery of business value, and the mitigation of IT-related risks	ITGI, 2003; Luftman, 2003

As this definition reflects the corporate governance principles, it appears clear the linkage between IT governance and the broad concept of corporate governance (Weill, 2004).

Although this strong relation between both the concepts, some differences exist. Table 5 presents the common dimensions for both IT and corporate governance. While all IT

governance dimensions are included in the corporate governance concept, it is not true the vice versa. Interests' alignment among stakeholders and the objective of performance are not formally considered in the IT governance concept.

Table 5 – Comparison of Corporate and IT governance dimensions

Dimensions for Corporate and IT governance concepts				
	<i>IT Governance</i>			
<i>Corporate governance</i>	IT-decision rights and control	Responsibility and accountability	Structure and processes	Risk
Organization's strategy and structure	X		X	
Interests' alignment				
Performance				
Accountability		X		
Risk				X

IT governance literature is limited and narrowed on specific dimension of analysis. In fact, apart the few contribution in the literature that refers explicitly to IT governance concept, there are numerous researches that offer different lenses of analysis of IT governance, which can be grouped in two main streams (see Table 6 for references):

- IT organizational role and function,
- Alignment between business and IT.

Table 6 – Main lenses of analysis of IT governance not considered in its definition

Two main lenses	
<i>Lens of analysis</i>	<i>Supporting literature</i>
IT organizational role and function	Agarwal and Sambamurthy, 2002; Armstrong and Sambamurthy, 1999; Bakos and Treacy, 1986; Barua and Mukhopadhyay, 2000; Bharadwaj, 2000; Bharadwaj, et al., 1999; Bharadwaj, et al, 2001; Benjamin, et al., 1985; Broadbent and Kitzis, 2005; Brown and Magill, 1994, 1998; Brown and Sambamurthy, 1999; Cash, et al., 1988; Cohen and Levinthal, 1990; Doll, 1985; Earl and Feeny, 1994; Feeny, et al., 1992; Grover, et al., 1993; Henderson, 1990; Hitt and Brynjolfsson, 1996; Kaarst-Brown, 2005; Kettinger, et al., 1994; Ives and Olson, 1981; Luftman, 2003; McFarlan, et al., 1983; Mintzberg, 1971, 1980; Rockart, 1988; Rockart, et al., 1996; Ross and Feeny, 2000; Sambamurthy, et al., 2003; Schein, 1992; Seddon, et al., 2002; Smaltz, et al., 2006; Stephens et al., 1992; Synnott and Gruber, 1981; Venkatraman, 1997; Zmud, 1988
Alignment between business and IT	Adams, 1972; Agarwal and Sambamurthy, 2002; Armstrong and Sambamurthy, 1999; Baets, 1992; Boynton, et al., 1994; Brancheau, et al., 1987, 1996; Brown and Magill, 1994; Brown and Sambamurthy, 1999; Chan, et al., 1997; Earl, 1983, 1989, 1993; Henderson and Venkatraman, 1992, 1993, 1996; Keen, 1991; Ives, et al., 1993; Lederer and Mendelow, 1987; Lederer and Sethi, 1988; Luftman, 1996; Luftman and Brier, 1999; Luftman, et al., 1999; McKenney, et al., 1995; McLean and Soden, 1977; Reich and Benbasat, 1996; Rockart, 1988; Smaltz, et al., 2006; Synnott, 1987; Tavakolian, 1989; Watson and Brancheau, 1991

3.1 - IT organizational role and function

The evolution of the role of IT began many years ago (Brown and Sambamurthy, 1999; Benjamin, et al., 1985; Ives and Olson, 1981).

Also the label of IT responsible has evolved. Synnott and Gruber (1981) coined the term Chief Information Officer (CIO), similar to the label used for other senior managers (CxO).

It is demonstrated that CIO is not a functional role, but executive (Smaltz, et al., 2006; Stephens et al., 1992). Prior works suggest several roles for CIOs, such as business strategist, informed buyer of IT, infrastructure builder, and organizational architect (Earl and Feeny, 1994; Rockart, et al., 1996; Ross and Feeny, 2000). Then, CIOs interact with other internal and external parties (i.e. other functional members, vendors, and partners).

Moreover, the relationships of CIO with business or line managers is another relevant factor that influence success of IT function in an organization (Boynton, et al., 1994; Cohen and Levinthal, 1990; Henderson, 1990).

Indeed, the integration of IT with other organization key activities allows organization to be more agile, which means being able to adapt quickly to internal and external changing requirements (Agarwal and Sambamurthy, 2002).

For that reasons, CIOs should have some managerial characteristics (see Table 7), like to be a leader, entrepreneur, spokesperson, resource allocator, negotiator, monitor, and so on (Grover, et al., 1993; Mintzberg, 1971, 1980).

Hence, it is recognized the strategic role of IT, where strategic role is defined as the IT capacity to change an organization's product or the way the organization competes in the industry (Cash, et al., 1988; McFarlan, et al., 1983; Rockart, 1988; Zmud, 1988).

The strategic role of IT can influence organization in different ways (Schein, 1992; Armstrong and Sambamurthy, 1999) which can be synthesized as follow:

- automating: IT can contribute to reduce firm's inefficiencies, improve quality, and save money through the use of routines for operationalized tasks;

- informing up: IT can be considered as agent of control, then can contribute to consolidate power and control by top management team; TMT can timely access to information what will enable them to make decisions quickly;
- informing down: IT can be considered as an agent of autonomy and empowerment; IT empowers organization's employees through the distribution of relevant information and knowledge;
- transforming: IT can effectively influence organizational boundaries, organization structures, interorganizational relationships, management processes and so on.

From the economic and financial standpoints, it is much discussed the business value of IT and its impacts on organization performances (Barua and Mukhopadhyay, 2000; Bharadwaj, 2000; Bharadwaj, et al., 1999; Bharadwaj, et al, 2001; Hitt and Brynjolfsson, 1996, Kettinger, et al., 1994; Seddon, et al., 2002; Venkatraman, 1997).

From all these considerations, IT can be considered an organization responsibility, not only an IT responsibility (Doll, 1985; Luftman, 2003).

As organizations are influenced by environment, IT too is influenced by environmental variables, such as country, industry, firm-level (Grover, et al., 1993; Rockart, et al., 1996; Stephens, et al., 1992).

The IT literature offers two dimensions of analysis of IT role and function (see Table 8). The first dimension is based on the allocation of decision-making authority. The second dimension concerns the participation or support level of IT to the business.

According to the first dimension, there are three IT function models (Brown, 1997; Brown and Magill, 1994; Davenport, et al., 1992; Olson and Chervany, 1980; Sambamurthy and Zmud, 1999; Weill, 2004; Weill and Broadbent, 1998):

- centralized, where all decision-making authority is in a central IT organizational function,
- decentralized, where all decisions-making authority is within each business unit or process,
- hybrid or federal, that is the dominant model, where a centralized IT group provides core IT activities and business units are allowed to control some of the IT activities.

The second dimension of analysis of IT role and function is based on the contribution level of IT to the business, in order to: co-lead, along with the business, the organizational innovation; provide and deliver assets and resources for business innovation; provide scalable resources for the business activities. The first view, which underlie the IT interaction with business environment, considers IT as a business *partner*; the second view, that assume IT as provider of assets, services, and resources to support the organizational innovation, considers IT as *platform*; the third view, that assume IT as provider of resources for organization, considers IT as a set of *scalable* resources (Agarwal and Sambamurthy, 2002).

Nevertheless, in the 21st century the role of IT is still debated in literature (Broadbent and Kitzis, 2005; Smaltz, et al., 2006). One of the CIO major problems is a lower status of their role than other organizational executive's role (Kaarst-Brown, 2005).

While in literature there are limited empirical researches exploring CIOs role and effectiveness in organizations, there are several contributions that identify the main reasons for the low status of CIO, such as personality conflicts, a lack of corporate technology vision, a poor alignment between organization and IT goals, a lack of business knowledge by IT personnel, a lack of IT knowledge by organization personnel, a low communication either with the Top management or with business peers, organizational culture, resistance to change among both IT and organization members, lack of instruments to measure IT benefits (Bakos and Treacy, 1986; Kaarst-Brown, 2005).

Moreover, the CIO's status is influenced by some relevant elements: resource delegation authority, expenditure authority, careful use of language, being perceived as a user of IT (Stephens, et al., 1992).

Table 7 - Mintzberg's Managerial roles

Managerial roles		
Role Type	Role	Description
Interpersonal	Figurehead	Outline future organizational goals to employees at company meetings; open a new corporate headquarters building; state the organization's ethical guidelines and the principles of behavior employees are to follow in their dealings with customers and suppliers.
	Leader	Provide an example for employees to follow; give direct commands and orders to subordinates; make decisions concerning the use of human and technical resources; mobilize employee support for specific organizational goals.
	Liaison	Coordinate the work of managers in different departments; establish alliances between different organizations to share resources to produce new goods and services.
Informational	Monitor	Evaluate the performance of managers in different functions and take corrective action to improve their performance; watch for changes occurring in the external and internal environments that may affect the organization in the future.
	Disseminator	Inform employees about changes taking place in the external and internal environments that will affect them and the organization; communicate to employees the organization's vision and purpose.
	Spokesperson	Launch a national advertising campaign to promote new goods and services; give a speech to inform the local community about the organization's future intentions.
Decisional	Entrepreneur	Commit organizational resources to develop innovative goods and services; decide to expand internationally to obtain new customers for the organization's products.
	Disturbance Handler	Move quickly to take corrective action to deal with unexpected problems facing the organization from the external environment, such as a crisis like an oil spill, or from the internal environment, such as producing faulty goods or services.
	Resource Allocator	Allocate organizational resources among different functions and departments of the organization; set budgets and salaries of middle and first-level managers.
	Negotiator	Work with suppliers, distributors, and labor unions to reach agreements about the quality and price of input, technical and human resources; work with other organizations to establish agreements to pool resources to work on joint projects.

Table 8 – Two dimensions of analysis of IT role and function

Dimensions	Supporting literature
Locus of decision-making authority: centralized, decentralized, hybrid or federal	Brown, 1997; Brown and Magill, 1994; Davenport, et al., 1992; Olson and Chervany, 1980; Sambamurthy and Zmud, 1999; Weill, 2004; Weill and Broadbent, 1998
Contribution level of IT to the business: IT as business partner, IT as platform, IT as a set of scalable resources	Agarwal and Sambamurthy, 2002

3.2 - Alignment between business and IT

Although the IT status in organization is still not clear, TMT expects strategic value from IT, as it represents an organizational critical resource (Bakos and Treacy, 1986; Boynton, 1993; Feeny and Wilcocks, 1998; Peterson, 2004; Willcocks, et al., 1997). TMT also recognized cannot lead organization without depending on IT (Rockart, 1988). One contribution states that “the successful implementation of an MIS depends on the active and informed participation of executive management” (Adams, 1972).

In fact, the role of senior management and its IT-literate level represent two essential elements for the IT use and innovation success in organizations (Boynton, et al., 1994; Earl, 1989; Keen, 1991; McKenney, et al., 1995; Synnott, 1987). As Keen (1991) stated, “IT success generally reflects an effective relationship between business managers and Information Services managers and their staffs”.

Thus, the importance of the linkage between business and IT emerges (Adams, 1972; Earl, 1983, 1993; Henderson and Venkatraman, 1993, 1996; Ives, et al., 1993; Luftman and Brier, 1999; McLean and Soden, 1977; Rockart, 1988; Watson and Brancheau, 1991).

The term of ‘alignment’ can represent a static concept, instead I intend a dynamic relation.

Luftman et al. (1999) define alignment as the implementation and use of “IT in an appropriate and timely way, in harmony with business strategies, goals and needs”.

Following I use the word ‘alignment’ in terms of ‘co-evolution’, which means “the capabilities of the IT function and the rest of the business develop iteratively and reciprocally over time” (Agarwal and Sambamurthy, 2002). There is much debate in literature about the concept of IT alignment, and of its contribution to organization performance. Previous studies found a positive relationship between business-IT alignment and organization performance. Nevertheless, organizations struggle to achieve alignment (Baets, 1992; Brancheau, et al., 1987; Brancheau, et al., 1996; Chan, et al., 1997; Earl, 1983, 1993; Henderson and Venkatraman, 1993; Luftman, 1996).

A recent work introduced the concept of engagement between IT and TMT (Smaltz, et al., 2006). That work defines IT and TMT engagements as the interactions between IT management and TMT.

The discussion about the alignment between business and IT can be viewed from many dimensions (see Table 9).

The first dimension explores the factors or domains that constitute the business-IT alignment.

They arise from the analysis of business-IT alignment based on two aspects: strategy and structure. The combination of these aspects with business and IT determines four factors or domains of the business-IT alignment. These factors are: business strategy, IT strategy, organizational infrastructure, and IT infrastructure.

Relations among these factors have been studied in literature. In particular, two of them are the most explored. The first concerns the alignment between business and IT strategies (Burn, 1993; Burn and Szeto, 2000; Chan, et al., 1997; Henderson and Venkatraman, 1993, 1996; Luftman, et al., 1999; Segars and Grover, 1999; Tavakolian, 1989). The second relation concerns the alignment between organization and IT

infrastructures (Armstrong and Sambamurthy, 1999; Miller, et al., 1991; Raymond, et al., 1995). The first relation is more discussed in literature than the second relation.

In fact, IT strategy has been overlooked likely because it has been an organizational function in response to the business strategy. As IT becomes a key element for the business strategies, IT strategy acquires more attention by senior management.

According to Henderson and Venkatraman (1993) IT strategy can adopt the same focus of business strategy.

Business strategy addresses both external and internal issues. The former concerns the position of organization in the market. The internal domain concerns the organizational structure and processes, which are necessary to achieve the organizational goals. At the same way, IT strategy has to address external and internal issues (Brown and Magill, 1994). The internal issues of IT strategy concern the position of organization in the IT marketplace, while the external issues concern the IT structure and processes, and their management.

Then, a strategic alignment can occur in terms of external alignment between business and IT (named strategic integration), of internal alignment between business and IT (named operational integration), of a combination of external and internal alignment between business and IT. This perspective refers to the model of Strategic Alignment introduced by Henderson and Venkatraman (1993).

According to this model, the concept of strategic alignment is viewed differently than the traditional view of business-IT alignment in which “IT must be linked to business strategy”. The model proposes different form of alignment, then organization must select the most appropriate to allow IT to contribute and achieve the organization’s objectives.

For that, organizations must be able to manage both alignments between business strategy and infrastructure, and between business and IT. That also allows organizations to respond quickly to innovations in a dynamic environment (Hackney, et al., 2000; Henderson and Venkatraman, 1993; Schwager, et al., 2000).

Recently, two other domains are proposed to extend this model: environmental uncertainty and business performance (Bergeron et al., 2001).

Although the strategic alignment between business and IT is much discussed, it still remain the greatest difficulty IT management has to face to (Henderson and Venkatraman, 1992; Lederer and Mendelow, 1986; Luftman, 1996, 2003; Rathnam, et al., 2004; Watson and Brancheau, 1991).

The second dimension of analysis of the business-IT alignment concerns the process of achieving such alignment, which has two perspectives. According to Reich and Benbasat (1996), these two perspectives are labeled: intellectual and social. The first perspective focuses on the methods and mechanisms used to align business with IT, and the mode of IT governance, which are for example: IT committee, communication between business and IT management, connections between business and IT planning, formalized IT strategy plans, centralized or decentralized or hybrid IT structure (Boynton, et al., 1992; Brown and Magill, 1994; Lederer and Mendelow, 1986; Reich and Benbasat, 2000; Sambamurthy and Zmud, 1999; Tavakolian, 1989; Teo and King, 1996; Weill and Broadbent, 1998).

The second perspective focuses on the social side of the business-IT alignment, which refers to who (individuals, or groups of individuals) is involved in that processes and in what ways (Benjamin, et al. 1984; King, 1978; Luftman, 2003; Reich and Benbasat, 1996; Rockart, et al., 1996). Relationships among those who are involved in the business-IT alignment are explored. Reich and Benbasat (2000) identify five main influencing factors: shared domain knowledge between business and IT executives, IT implementation success, communication between business and IT executives, connections between business and IT planning processes, and strategic business plans.

Prior works support the Reich and Benbasat (2000) findings, such as the importance of alignment between top management and IT management (Boynton, et al., 1994; Earl, 1989; Keen, 1991; Luftman, 2003). Specifically, a successful business-IT alignment requires the IT management knowledge about the top management's objectives as well as the top management understanding of IT potential (Benjamin, et al. 1984; King, 1978; Lederer and Mendelow, 1987; Lederer and Sethi, 1988; Luftman, 2003; McLean and Soden, 1977; Rockart, et al., 1996).

Luftman et al. (1999) conducted a research, based on interviews with executives, to study the enablers and inhibitors' factors of business-IT alignment. They found basically that IT management needs to actively participate to the business, in this way IT management will be able to better understand business issues, to design the IT strategy that fit with the business strategy, and to get the right commitment to be accepted by organization as value-added function. Their results also support the need for a close relationship between top management and IT management. The top six enabler factors are: senior executive support for IT, IT involved in strategy development, IT understands the business, business-IT partnership, well prioritized IT projects, and IT demonstrates leadership. The top six inhibitor factors are: IT/business lack close relationships, IT does not prioritize well, IT fails to meet its commitments, IT does not understand business, senior executives do not support IT, and IT management lacks leadership.

The third dimension of analysis concerns the effectiveness of the business-IT alignment. The question is to define what variables measure, and what methodology use to evaluate the effectiveness of alignment.

Chan, et al. (1997) measure the alignment at the strategic level, and its effects on organizational performance. In particular, they used the Venkatraman's (1989) Strobe instrument and then developed an instrument to measure four constructs: business strategy, Information systems (IS) strategy, IS effectiveness, and business performance.

Regard to the methodology of measurement, in literature there are two main approaches: matching and moderation (Hoffman, et al., 1992). The matching approach is based on the difference between two measures. The moderation approach is based on the interaction between the two measures. The latest approach found more support in the literature than the matching approach (Chan, et al., 1997; Hoffman, et al., 1992). The moderation approach is considered less ambiguous and widely applicable than the matching approach.

Table 9 - Three dimensions of analysis of IT alignment

Dimensions		Supporting literature
Factors or Domains		
	Strategy	Brown and Magill, 1994; Burn, 1993; Burn and Szeto, 2000; Chan, et al., 1997; Hackney, et al., 2000; Henderson and Venkatraman, 1992, 1993, 1996; Lederer and Mendelow, 1986; Luftman, 1996, 2003; Luftman, et al., 1999; Rathnam, et al., 2004; Schwager, et al., 2000; Segars and Grover, 1999; Tavakolian, 1989; Watson and Brancheau, 1991
	Infrastructure	Armstrong and Sambamurthy, 1999; Miller, et al., 1991; Raymond, et al., 1995
Process		
	Intellectual	Boynnton, et al., 1992; Brown and Magill, 1994; Lederer and Mendelow, 1986; Reich and Benbasat, 1996, 2000; Sambamurthy and Zmud, 1999; Tavakolian, 1989; Teo and King, 1996; Weill and Broadbent, 1998
	Social	Benjamin, et al. 1984; Earl, 1989; Keen, 1991; King, 1978; Lederer and Mendelow, 1987; Lederer and Sethi, 1988; Luftman, 2003; Luftman et al., 1999; McLean and Soden, 1977; Reich and Benbasat, 1996; Rockart, et al., 1996
Effectiveness		
	What to measure	Chan, et al., 1997; Venkatraman, 1989
	How to measure	Chan, et al., 1997; Hoffman, et al., 1992

Chapter 4

IT governance reconceptualization and framework

As organizations have to face to a dynamic and uncertain environment, they have even more the necessity to control their management activity. For that, a set of structures, procedures, norms, responsibilities to align interests' of organization's members are defined. That is the corporate governance (Cadbury Committee, 1992; Dunlop, 1998; Ho, 2005; OECD, 1999; Shleifer and Vishny, 1997).

IT can support and enable organizations to react and answer to the changing conditions, either internal or external to the organization itself, and allows organizations to achieve the performance expected. IT is a strategic and critical resource for any kind of organization (Willcocks, et al., 1997). Consequently, IT must be appropriately governed. A set of structures, procedures, norms, responsibilities for IT management must be defined (Boynton, et al., 1992; Brown and Magill, 1998; Cadbury Committee, 2002; Peterson, 2004; Sambamurthy and Zmud 1999; Weill, 2004). That is the IT governance. The reconceptualization of IT governance proposed is based both on corporate governance principles, and on different definitions and lens of analysis of IT governance.

First, one of the major concerns of corporate and IT governance is the distribution of responsibilities. While top management is responsible towards stakeholders' performance, IT management is responsible towards the top management (see Figure 1).

This situation is defined in the corporate governance literature as double agency problem. It occurs when there are two levels of accountability and control relationships, and then two levels of agents (Child and Rodrigues, 2004).

As discussed in the organizational design literature, the distribution of responsibilities requires coordination and integration for achieving organizational objectives (Daft, 1998; Mintzberg, 1979).

Second, in the current literature another relevant concern of IT governance is the allocation of IT decision rights. Such allocation of IT decision rights is not sufficient to avoid the need for effective internal and external collaboration (Brown, 1999; Peterson, 1998).

Thus, the role of IT and its alignment with business represent two key-dimensions for IT governance system.

Based on its role, IT function interacts with both internal (intra-organizational perspective) and external actors (inter-organizational perspective).

The intra-organizational perspective is widely discussed in literature (Adams, 1972; Earl, 1983, 1993; Henderson and Venkatraman, 1993, 1996; Ives, et al., 1993; Luftman and Brier, 1999; McLean and Soden, 1977; Rockart, 1988; Watson and Brancheau, 1991). For that reason, I mainly focus on this perspective.

The categories of organization’s members which IT interacts with are: top management, line or business management, and users. For a successful IT contribution to the business, the alignment between IT and these categories of members must be taken into account by IT governance concept (Reich and Benbasat, 1996).

Figure 2 depicts the three main types of business-IT alignment relationships which are

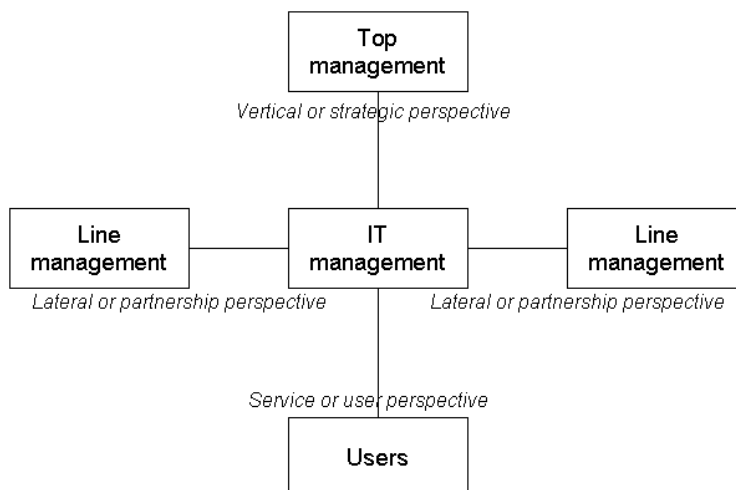


Figure 2 – Types of business-IT alignment relationships

described in the next paragraphs, and to which I refer in my IT governance framework; these relationships are between: IT and top management, defined as the ‘vertical or strategic’ perspective; IT and line or business management, defined as ‘lateral or partnership’ perspective; IT and users, defined as ‘service or user’ perspective.

Analyzing the two dimensions – role of IT and alignment between IT and business – is possible to derive the definition of the set of objectives, structures, mechanisms, processes, norms and values in order to determine how IT contribute to the business value and how to manage IT resources.

Then, I identify six dimensions that constitute the IT governance (Table 10): IT organizational role and function, alignment between business and IT, IT-decision rights and control, responsibility and accountability, structure and processes, risk management.

Considering all the six dimensions, appropriately combined, can help to reduce or solve the double agency problem mentioned above.

Formally, I reconceptualize IT governance as a system of organizational arrangements – like structures, processes, and mechanisms – established by the top management, which objectives are to:

- align IT and organization’s strategy and objectives,
- define decision making rights and responsibility about main IT issues,
- control and monitor the effectiveness of such decisions,
- mitigate IT-related risks, and
- contribute to design of and to achieve the organization performance.

To successfully accomplish its goals, IT governance system must be based on the relationships between IT members and both internal (top management, line management, users) and external (i.e. vendors, partners, suppliers, customers) actors.

Table 10 - Dimensions of IT governance

Reconceptualization of IT governance	
<i>Dimensions</i>	<i>Supporting literature</i>
IT organizational role and function	Agarwal and Sambamurthy, 2002; Brown and Magill, 1998; Feeny, et al., 1992; Kaarst-Brown, 2005; Rockart, 1988; Sambamurthy, et al., 2003
Alignment between business and IT	Armstrong and Sambamurthy, 1999; Brown and Magill, 1994; Brown and Sambamurthy, 1999; Henderson and Venkatraman, 1992, 1993; Lederer and Mendelow, 1987; Lederer and Sethi, 1988; Luftman, et al., 1999; Reich and Benbasat, 1996; Tavakolian, 1989
IT-decision rights and control	Boynton, et al., 1992; Brown and Magill, 1998; Cadbury Committee, 2002; Peterson, 2004; Sambamurthy and Zmud 1999; Weill, 2004
Responsibility and accountability	Brown and Magill, 1994; Luftman, 2003; Sambamurthy and Zmud 1999; Weill, 2004
Structure and processes	Cadbury Committee, 2002; Kakabadse and Kakabadse, 2001; ITGI, 2003; Sambamurthy and Zmud, 1999; Segars and Grover, 1999; Weill, 2004
Risk management	ITGI, 2003; Luftman, 2003

Table 5 has shown the first comparison between both dimensions of corporate and IT governance. Reconceptualizing IT governance, I compare again both dimensions of corporate and IT governance (Table 11). Consistent with my reconceptualization, the two concepts of corporate and IT governance are strictly related, and the differences shown in Table 5 are filled out.

Table II - Comparison of Corporate and IT governance dimensions

Dimensions of Corporate and IT governance						
	IT Governance					
Corporate governance	IT role and function	Alignment between business and IT	IT-decision rights and control	Responsibility and accountability	Structure and processes	Risk
Organization's strategy and structure			X		X	
Interests' alignment		X				
Performance	X	X				
Accountability				X		
Risk						X

Moreover, following the reconceptualization, this work intends also to propose a reference framework for IT governance system. Figure 3 depicts the framework, which includes eight dimensions and the relationships between internal and external organizational members and actors. The IT governance board or committee is considered the key-structure of IT governance system, and it reflects the strategic role of IT in organization. The IT governance board/committee, together with the top management team, defines the organizational arrangements to achieve and maintain the alignment (bold arrows in the framework) among IT, top management, line management and users. As I said, the strategy aspect of alignment between IT and business is much discussed in IT literature (Burn, 1993; Burn and Szeto, 2000; Chan, et al., 1997; Henderson and Venkatraman, 1993, 1996; Luftman, et al., 1999; Segars and Grover, 1999; Tavakolian, 1989). Thus, one of the main of such alignment is the formulation of IT strategy, which has to be consistent with the organizational strategy.

Indeed, the relationships of alignment refer to the vertical, lateral and service perspectives mentioned above, and described below.

Moreover, as stated in the reconceptualization of IT governance, to be successful IT must also govern relationships with external actors, such as customers, suppliers, vendors, and consultants (dashed arrows in the framework).

IT governance board/committee oversees the definition of the following activities:

- IT management team
- IT management objectives
- IT organizational structure
- IT activities
- IT-decision rights and responsibilities
- a system to monitor and control IT activities
- management of IT-activity related risks
- organizational arrangements to accomplish its goals

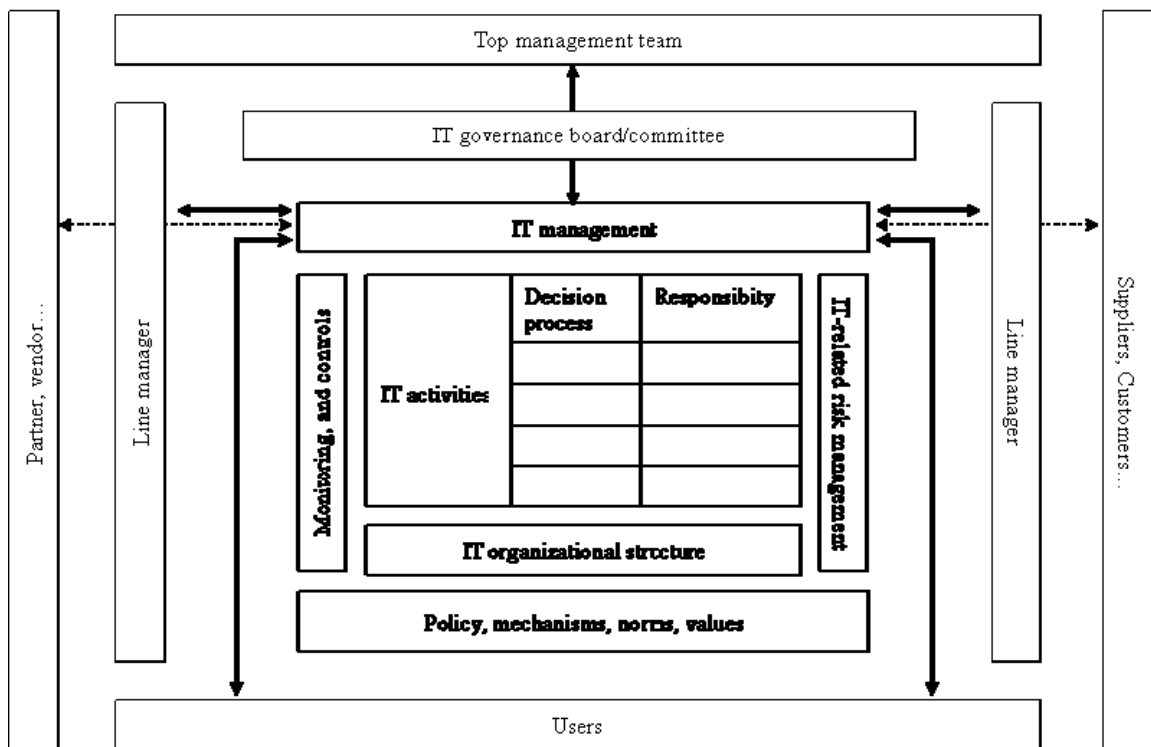


Figure 3 - IT governance framework

4.1 - Vertical or strategic perspective

The relation between top management and IT management is a relevant issue since 1988 when Rockart said that “the deployment of information technology is far too important to be left to information technologists”. Indeed, the author defines IT as a “strategic weapon”. As Keen (1991) said, “the dialog is needed most right at the top”. Thus, the participation of top management in the IT critical issues becomes essential. According to Jarvenpaa and Ives (1991), involvement can be considered as a psychological state, and participation as the behavior and activities performed. In this work, I use the two words as synonymous and I refer to them in terms of psychological state.

Top management involvement in IT issues is critical for top management support and the shared knowledge about business and IT between top and IT management (Boynton, et al., 1994; Lederer and Mendelow, 1989). Indeed, this participation is also relevant for a competitive use of IT and the successful implementation of IT-based strategies (Jarvenpaa and Ives, 1991).

A key driver of such top management involvement is the sharing of objectives between the top management and IT management. In fact, a successful business-IT alignment requires the IT management knowledge about the top management’s objectives as well as the top management understanding of IT potential. There are some works in literature that found and demonstrated relevance of that such alignment (Benjamin, et al. 1984; Boynton, et al., 1994; Earl, 1989; Feeny, et al., 1992; Keen, 1991; King, 1978; Lederer and Mendelow, 1987; Lederer and Sethi, 1988; Luftman, 2003; McLean and Soden, 1977; Reich and Benbasat, 2000; Rockart, et al., 1996).

4.2 - Lateral or partnership perspective

The second kind of relationship is named 'lateral' or 'partnership' (Henderson, 1990), and refers to IT management and line management relations. These relations are organization design innovations that first were discussed in the organization theory literature in the 1960s (Mintzberg, 1979). According to Mintzberg (1979), the lateral mechanisms should encourage liaison contacts between individuals with the objective to coordinate the work of two units.

Luftman (1996) states that the degree of personal relationship between IT and non-IT executives is a major factor influencing alignment.

Since 1980s a numerous of merger operations, the competitive and dynamic environment, the technology pervasiveness, and the many interactions between organizations and external actors, are some of the reasons that underlie the more increasing line managers participation in the IT management responsibilities (Boynton, et al., 1992). Thus, an appropriate management of IT resources can support and solve business and strategic challenges that organizations have to face to.

As for the vertical relation, the shared knowledge about business and IT potential is also relevant in the relation between IT and line management.

Prior works have studied how IT management shares understanding and knowledge around IT issues with other line management (Applegate and Elam, 1992; Earl, 1993; Feeny, et al., 1992).

According to the Reich and Benbasat model (2000), the shared knowledge between IT and line managers is one of the two antecedents of communication and connection between them, which determine line-IT management alignment level.

Moreover, the lateral alignment has a direct effect on the organization's ability to effectively use IT (Cohen and Levinthal, 1990).

4.3 - Service or users perspective

Both vertical and lateral perspectives discussed above influence the use of IT. A wider systematic approach to this issue is required. According to the stakeholder model, IT and non-IT users can have interests in an organization. Specifically for IT, users can have interests in the use of IT. IT use is defined as the application of IT within an organization at the different levels: from operational to strategic (Ives and Jarvenpaa, 1991).

For that, the view of users must be taken into account.

Thus, IT governance should concern not only governing and leading of IT, also give directions for the management of use of IT (Dixon and John, 1989). For example, IT governance has to determine how to involve users (IT and non-IT) in the IT project life cycle, from the design phase to the effective use by final users (Rau, 2004).

Then, a dialogue between users and IT management should be established (Subramani, et al., 1995; Zmud, 1988).

Moreover, one of the two most used metric for evaluating IT effectiveness is user satisfaction. The second one is system use (Ginzberg, 1979). The IT literature has given much more attention to the user satisfaction than the system use (Davis, 1989; Ives, et al., 1983; Robey, 1979; Venkatraman, 1997; Weill and Broadbent, 1998; Weill and Olson, 1989; Willcocks and Lester, 1996; Willcocks, et al., 1997).

These considerations allow us to posit the relevance of the interaction between IT management and organization users.

Chapter 5

The antecedents factors' of the IT involvement into TMT: a research model

As discussed in the previous chapters, the role of IT and the impact of IT on organizations have significantly changed since 1970s. IT has evolved from its traditional “back office” role toward a “strategic” role being able to support current business strategies and also to shape new business strategies (Keen, 1991; Venkatraman, 1991).

Most of the managers agree with the necessity to consider IT as an “organizational strategic player” (Boynton et al., 1994; Orlikowski and Barley, 2001; Sambamurthy, 2000; Venkatraman and Henderson, 1998). As organization’s strategy changes over time, IT too has to change.

The IT structure has changed from a centralized approach, to a decentralized, to a sort of recentralization during last decade in contemporary of the network economy dawns. Thus, IT management activities are disaggregated in basic activities, and specific decision rights for these activities are configured (Agarwal and Sambamurthy, 2002).

Therefore, CIOs play a central role in visioning, guiding, and implementing their firm’s IT management practices and capabilities – e.g. the integration of IT planning with business planning, education of managers about IT and its role in the business, development of informal working relationships among senior business and line managers, development of a reliable IT infrastructure (Broadbent and Weill, 1997; Feeny and Willcocks, 1998; Sambamurthy and Zmud, 1992). According to previous studies, CIOs should be effective in a variety of roles, such as business strategist, infrastructure builder, organizational architect, and an informed buyer of IT services (Earl and Feeny, 1994; Rockart et al., 1996; Ross et al, 1996; Ross and Feeny, 2000). The effectiveness of these roles depends upon the organizational context (Broadbent and Weil, 1997; Grover et al., 1993). Moreover, CIOs should be effective either in demand-side leadership or in

supply-side leadership (Broadbent and Kitzis, 2005). The CIO roles’ expectations are summarized in Table 12.

In this context, the Top management team (TMT) is considered the appropriated unit of analysis for examining strategic choice and firm performance (Hambrick and Mason, 1984).

As described in the paragraph 4.1, the IT involvement into TMT refers to the vertical or strategic perspective, as depicted in the IT governance framework (Figure 3).

Top management involvement in IT issues is critical for top management support and the shared knowledge about business and IT between top and IT management (Boynton, et al., 1994; Lederer and Mendelow, 1989). Moreover, such as involvement is also relevant for a competitive use of IT and the successful implementation of IT-based strategies (Jarvenpaa and Ives, 1991).

There are some works in literature that found and demonstrated relevance of that such alignment (Benjamin, et al. 1984; Boynton, et al., 1994; Earl, 1989; Feeny, et al., 1992; Keen, 1991; King, 1978; Lederer and Mendelow, 1987; Lederer and Sethi, 1988; Luftman, 2003; McLean and Soden, 1977; Reich and Benbasat, 2000; Rockart, et al., 1996).

Table 12 - CIO Role expectations (Smaltz et al., 2006)

CIO Role expectations	
<i>Role expectations</i>	<i>Supporting literature</i>
Keep key systems operational	Stephens et al., 1992; Feeny and Willcocks, 1998; Gibson, 2003
Establish and maintain an IT department that is responsive to user requests/problems	Stephens et al., 1992; Feeny and Willcocks, 1998; Broadbent and Kitzis, 2005
Establish electronic linkages throughout the organization	Broadbent and Weill, 1997; Feeny and Willcocks, 1998; Sambamurthy and Zmud, 1992

Establish electronic linkages to external entities (insurance payers, suppliers and so on)	Broadbent and Weill, 1997; Feeny and Willcocks, 1998; Sambamurthy and Zmud, 1992
Direct efforts to build an integrated delivery system	Kim and Michelman, 1990
Build and maintain an IT staff with skill sets that match your current and planned technology base	Sambamurthy and Zmud, 1992; Stephens et al., 1992; Agarwal and Ferratt, 2001
Champion computer literacy throughout the organization	Sambamurthy and Zmud, 1992; Stephens et al., 1992
Provide insight to the top management team / executive staff on new emerging technologies	Sambamurthy and Zmud, 1992; Armstrong and Sambamurthy, 1999; Feeny and Willcocks, 1998; Broadbent and Kitzis, 2005
Assist top management team to improve it computer literacy	Lutchen, 2004
Migrate organization from legacy, departmental applications to cross-departmental, integrated applications	Feeny and Willcocks, 1998
Develop-acquire computer-based patient record capability throughout the enterprise	Danielson, et al., 1998
Provide executive oversight for all IT contracts with external vendors	Lacity and Hirscheim, 1993; Earl and Feeny, 1994; Feeny and Willcocks, 1998; Lutchen, 2004; Broadbent and Kitzis, 2005
Negotiate with vendor IT organizations on new external contract proposals	Lacity and Hirscheim, 1993; Earl and Feeny, 1994; Lutchen, 2004; Broadbent and Kitzis, 2005

Develop and implement a strategic IT plan that aligns with the organization’s strategic business plan	Sambamurthy and Zmud, 1992; Ross, et al., 1996; Chan, et al., 1997
Develop and maintain metrics that reflect the value of IT to the organization	Lutchen, 2004; Broadbent and Kitzis, 2005
Direct IT-enables business process reengineering/restructuring	Sambamurthy and Zmud, 1992
Interact often with non-IT managers throughout the organization	Ross, et al., 1996; Feeny and Willcocks, 1998; Lutchen, 2004; Broadbent and Kitzis, 2005
Be intimately involved in business strategic planning and decisions	Sambamurthy and Zmud, 1992; Broadbent and Weill, 1997; Lutchen, 2004; Broadbent and Kitzis, 2005
Provide oversight for quality assurance of organizational data	Glaser, 2002
Ensure confidentiality and security of organizational data	Glaser, 2002

According to all the above considerations, it is possible argue the following:

- the IT involvement into TMT as a significant antecedent of CIO role effectiveness (Smaltz et al., 2006),
- the IT involvement into TMT depends upon individual and organizational variables,
- the demographic factors are proxies for the individual capabilities of the CIO (Armstrong and Sambamurthy, 1999),
- the interactions between the CIO and the TMT and the characteristics of the CIO are considered as important determinants of their perceived role effectiveness (see Table 12) (Smaltz et al., 2006).

Consistent with these statements, a research model is proposed. The research model focuses on the analysis of antecedents of the IT involvement into TMT.

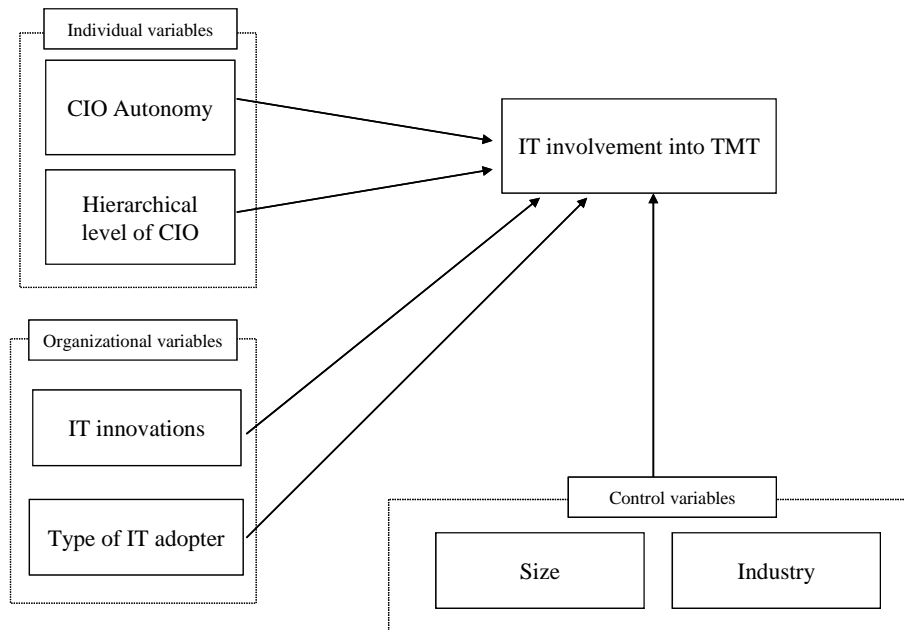


Figure 4 - Research model

5.1 Operationalization of variables

The operationalization of the model, as depicted in Figure 4, is described as follow.

IT involvement into TMT

Rockart et al. (1996) argue that in order to achieve two-way strategic alignment of the IT unit and the business unit, the CIO must be either a formal or at least an informal member of the TMT.

The literature mainly favors the CIO membership into TMT as it provides the CIO with regular opportunities for involvement with other top managers and be perceived as being effective in addressing the firm's salient IT management and use challenges.

Respondents were asked whether they participate in the following organizational boards and committees: board of directors, executive board, strategic committee, budget committee.

Each of the four sub-constructs was assessed with a dummy measure: 1 = yes, 0 = no.

Individual variables

The strategic role of IT can influence organization in different ways (Armstrong and Sambamurthy, 1999; Schein, 1992), such as automating, informing up, informing down, and transforming. The reporting level of CIO can influence perceived authority and power to influence the actions of the TMT (Hambrick and Mason, 1984; Kaarst-Brown, 2005). Raghunathan and Raghunathan (1989) found that the CIO's rank significantly influenced the CIO's role in the organization.

Thus, it is possible to formulate the following research hypotheses:

- *H1: Higher levels of CIO autonomy will be positively related to IT involvement into TMT*

- *H2: Higher reporting level of CIO will be positively related to the IT involvement into TMT*

The CIO autonomy was operationalized as a formative construct formed by five sub-constructs: the CIO autonomy level to define the IT resource management policy, the CIO autonomy level to use the IT budget, the CIO autonomy level to defines the IT infrastructure and IT strategy, the CIO autonomy level to decide about consulting and training services, the CIO autonomy level to decide about the IT outsourcing management (Broadbent and Kitzis, 2005; Broadbent and Weill, 1993). The two sub-constructs were measured through a seven-point scale (1= zero extent; 7=100 percent extent).

For CIO's hierarchical level, respondents were asked to indicate the number of reporting

levels between them and their CEO. The CIO was asked to indicate if he/she had a direct reporting relationship with the CEO or if such as relationship was one level removed from the CEO (Smaltz et al., 2006).

Organizational variables

Some studies point out that organizations adopt innovations to improve their performance (Fichman, 2004). These studies are consistent with an efficiency-choice perspective (Tan and Fichman, 2002; Abrahamson, 1991). Users may play an important role in influencing the adoption process of innovations (Kettinger and Lee, 2002). Thus CIO can play a pivotal role in such as adoption process of innovations.

Indeed, as mentioned above, the IT involvement into TMT provides the CIO with the opportunity to be effective in addressing the firm's salient IT management and use challenges. Saloner and Shepard (1995) underscore that the propensity to adopt an innovation is positively related to the perceived benefits.

Then, the number of adopted IT innovations (e.g. ERP systems, CRM systems, SCM systems) can be related to the TMT interest in the IT issues (Boynton, et al., 1994; Lederer and Mendelow, 1989). Moreover, also the status of organization as IT innovation adopter can be related to the IT involvement into TMT. The adoption stage (Rogers, 2003) can also be related to the IT involvement into TMT. For example, organizations that use to be early adopter can have a different IT involvement level into TMT compared with the IT involvement level into TMT of organizations that don't use to be early adopter.

At this point, it is possible to formulate the following research hypotheses:

- *H3: Higher number of IT innovations is positively related to the IT involvement into TMT*

- *H4: Higher stage of the innovation adoption process is positively related to the IT involvement into TMT*

Respondents were asked whether they already adopted the following three IT innovations: ERP systems, CRM systems, SCM systems.

Each of the three sub-constructs was assessed with a dummy measure: 1 = yes, 0 = no.

The stage of the innovation adoption process is measured upon the Voice-over-IP innovation adoption, which is in our country at an early stage of adoption. Respondents were asked whether they already adopted such as innovation or whether they intended to adopt it.

Control variables

The individual and organizational antecedents of the IT involvement into TMT can change upon two variables: size and industry. For that reason, analyses also consider these two variables as control variables.

The organization size was measured using the total number of employees.

The industry has been identified on the basis of the Italian industry code (SIC code).

5.2 Research methodology

The empirical methodologies used for testing the research questions are both quantitative and qualitative.

Two are the main philosophical research approaches: positivist and interpretative.

The positivist philosophical approach posits that an objective and physical world exists independently of humans' knowledge of it (Orlikowski and Baroudi, 1991).

The interpretivist philosophical approach posits that reality is subjective, then it is interpreted by humans' as social actors and based on their beliefs and value systems (Orlikowski and Baroudi, 1991).

Analyzing the definitions proposed in literature, a research design is “the arrangement of conditions for the data collection and analysis in a manner that aims to combine relevance to the research purpose with economy in procedure” (Selltiz, et al., 1976).

Table 13 lists the main dimensions of the research design (Emory, 1980).

Table 13 - Dimensions of research design

Exploratory	vs	Explanatory
Descriptive	vs	Causal
Case	vs	Statistical
Field	vs	Laboratory/Simulation
Cross-sectional	vs	Longitudinal
Observational	vs	Survey
Experimental	vs	Ex-post facto

There are many works in IT literature about the relevance of qualitative (i.e. case study) and quantitative (i.e. survey) research methods (Benbasat, 1984; Benbasat et al, 1987; Boland and Hirschheim, 1987; Franz and Robey, 1987; Galliers, 1991; Kaplan and Duchon, 1988; Kraemer and Dutton, 1991; Lee, 1991; Mumford, 1991; Mumford et al, 1985; Nissen et al, 1991b; Orlikowski and Baroudi, 1991; Visala, 1991).

The research design I used in this work is the survey.

The survey research is a quantitative method that requires standardized information from and/or about the subject being studied which could be individuals, groups, organizations and so on. The survey method has at least three characteristics (Glock, 1967; Pinsonneault and Kraemer, 1993):

1. the purpose is to produce quantitative descriptions of some aspects of the analyzed population. Survey analyses may be concerned with relationships between variables or with projecting findings descriptively to a specific population,
2. respondents are required to answer structured and predefined questions. Their answer constitute the data to be analyzed,
3. data are generally collected about a sample of the population. Data are collected in such a way to generalize the findings to the population.

5.3 Research context and sample

The domain of the research is the diffusion and adoption process of Voice over IP (VoIP) by Italian firms. VoIP is a collection of hardware, software and network infrastructures for voice communications using Internet Protocol. It can be considered a new communication technology. According to Rogers (1986, p. 2) a communication technology is “the hardware equipment, organizational structures, and social values by which individuals collect, process, and exchange information with other individuals”. In particular, VoIP represents an emerging communication technology that can be a source of competitive advantage and/or a trigger for organizational change.

In Italy, VoIP has already involved two of the five adopter categories proposed by Rogers (2003), i.e. innovators and early adopters. This characteristic allows a better analysis of diffusion phenomenon and a more precise test of the research model.

Data were collected between June and July 2006. Data were gathered through computer-assisted telephonic interviews (CATI method) based on a structured questionnaire (Singleton and Straits, 1999). The telephonic interview method allows clarifying or restating questions that respondent does not at first understand (Singleton and Straits, 1999).

The questionnaire was developed using a multi-stage iterative procedure. First, an initial set of items was constructed drawing upon prior work. Next, the questionnaire was tested on a sub-sample of 50 firms. Results of pilot test led to further refinement of the questionnaire.

A total of 1361 CIOs, or responsible for IT decisions, were interviewed. A stratified random sampling was created¹ for representing Italian firms with more than 10 employees. The definition and description of VoIP were communicated to respondents to improve the accuracy of responses. 436 questionnaires were excluded due to the high number of missing data. Analyses have been performed on 925 organizations'

¹ The stratification is based upon: industry (Social and public services, Retailing, Finance, Manufacturing, Defense and Government, Healthcare, Services, Utilities), size, and geographical location.

responses, yielding to a response rate of 68% which is consistent with previous research on adoption (e.g. Teo et al., 2003).

Data were analyzed using the SPSS Statistical package.

Chapter 6

Analyses and results

This chapter presents the main results of the data analysis activity.

Results are structured in paragraphs, and each paragraph is described.

Finally, the last paragraph summarizes the most relevant results for the research hypotheses.

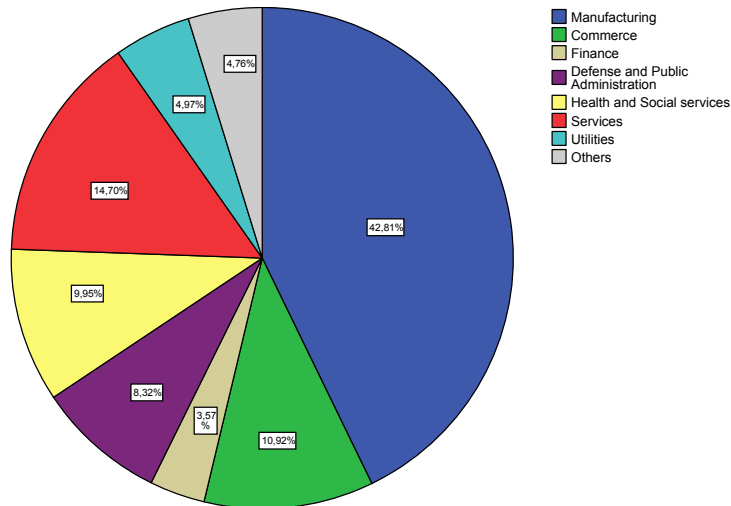
6.1 Characteristics of the sample

Analyzing the dataset by the industry variable, it emerges that the three main industries are: manufacturing (42,8%), Services (14,7%), and Commerce (10,9%).

		Company industry			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Manufacturing	396	42,8	42,8	42,8
	Commerce	101	10,9	10,9	53,7
	Finance	33	3,6	3,6	57,3
	Defense and Public Administration	77	8,3	8,3	65,6
	Health and Social services	92	9,9	9,9	75,6
	Services	136	14,7	14,7	90,3
	Utilities	46	5,0	5,0	95,2
	Others	44	4,8	4,8	100,0
	Total	925	100,0	100,0	

The figure below presents the distribution of companies' respondents by industries.

Company industry

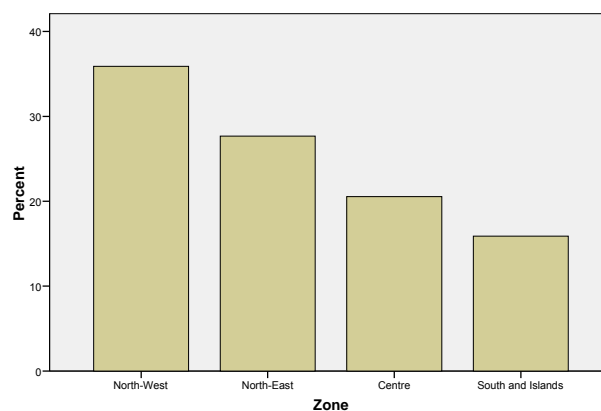


In terms of zone, most of the companies' respondents are located in the North of Italy (63,6%), the centre of Italy is represented by 20,5% respondents, and the South and Islands are represented by 15,9% (see table and figure below).

Zone

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid North-West	332	35,9	35,9	35,9
North-East	256	27,7	27,7	63,6
Centre	190	20,5	20,5	84,1
South and Islands	147	15,9	15,9	100,0
Total	925	100,0	100,0	

Zone



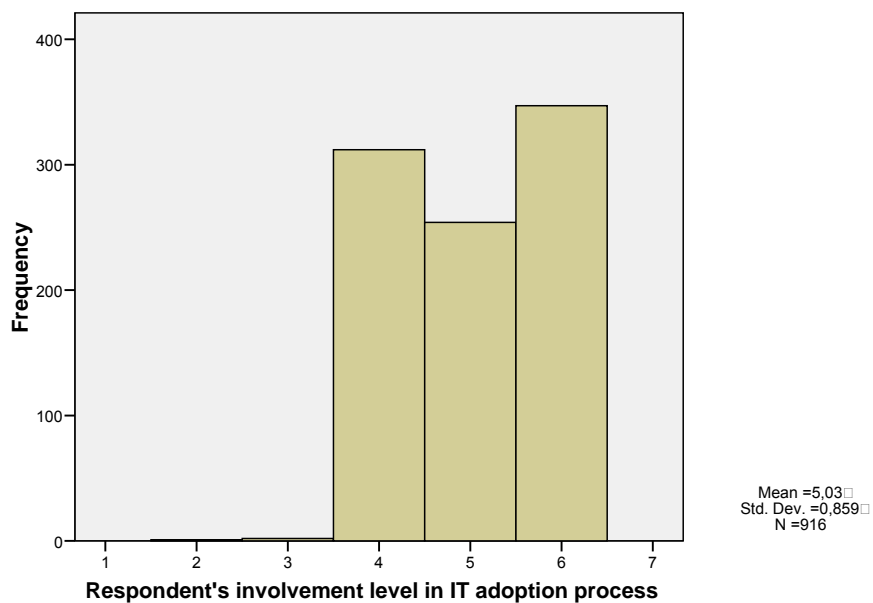
↳ What is the *respondent's involvement level in IT adoption process*?

Most of the respondents state that they are quite well involved in the IT adoption process. In fact, 65,6% of respondents agree/strongly agree with this statement.

Respondent's involvement level in IT adoption process

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	1	,1	,1	,1
	3	2	,2	,2	,3
	4	312	33,7	34,1	34,4
	5	254	27,5	27,7	62,1
	6	347	37,5	37,9	100,0
	Total	916	99,0	100,0	
Missing	System	9	1,0		
Total		925	100,0		

Histogram

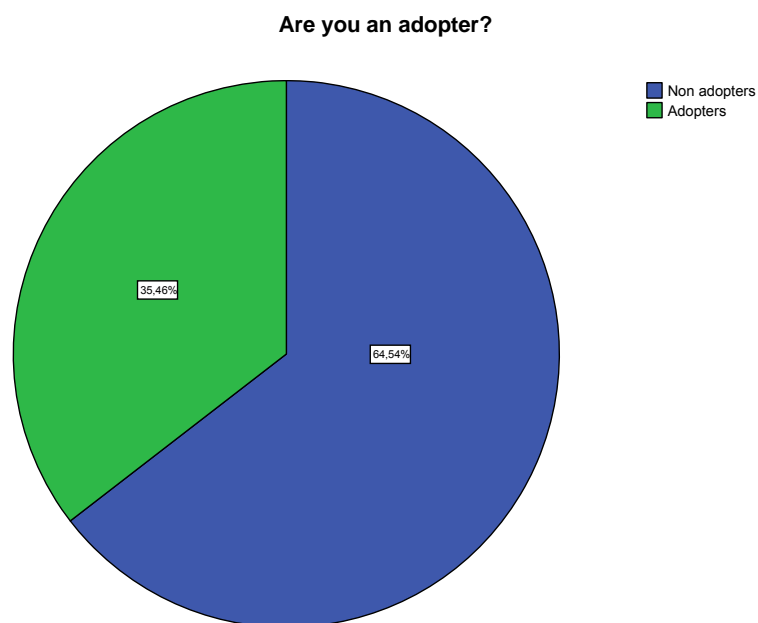


↘ Some of the respondents state their *company is an IT adopter*, while others state their *company is intended to adopt an IT*

In my analysis, the 35,5% of respondents can be considered to be adopters, while the 64,5% of respondents are not-adopters.

Are you an adopter?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Non adopters	597	64,5	64,5	64,5
	Adopters	328	35,5	35,5	100,0
	Total	925	100,0	100,0	

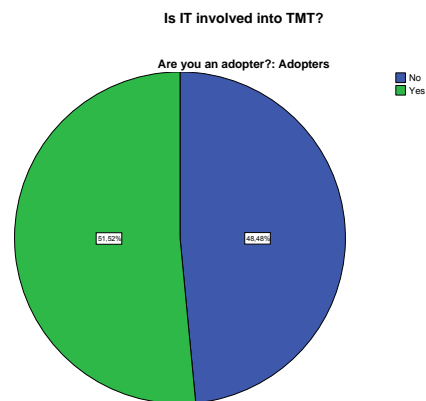
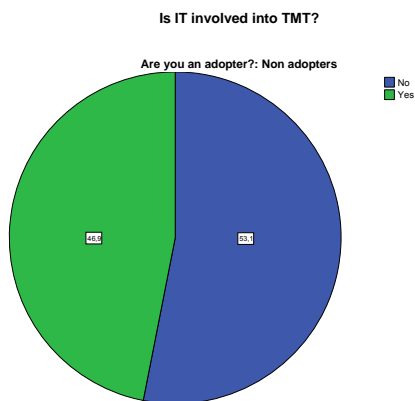


↳ Within all respondents, how many IT responsible are involved in the Top management team?

The percentage of IT responsible involved into Top management team is higher within the adopters' respondents than the IT responsible involved into Top management team which are not-adopters' respondents.

Is IT involved into TMT?

Are you an adopter?			Frequency	Percent	Valid Percent	Cumulative Percent
Non adopters	Valid	No	317	53,1	53,1	53,1
		Yes	280	46,9	46,9	100,0
		Total	597	100,0	100,0	
Adopters	Valid	No	159	48,5	48,5	48,5
		Yes	169	51,5	51,5	100,0
		Total	328	100,0	100,0	



↘ What industries have the most percentage of IT responsible involved in the Top management team?

Three industries (Manufacturing, Finance, Services) have more IT responsible involved into TMT than IT responsible not-involved into TMT. Commerce has an almost the same percentage of IT responsible involved and not-involved into TMT.

In the other industries, the percentage of IT responsible not-involved into TMT is much higher than the percentage of IT responsible involved into TMT.

Is IT involved into TMT?

Company industry			Frequency	Percent	Valid Percent	Cumulative Percent
Manufacturing	Valid	No	181	45,7	45,7	45,7
		Yes	215	54,3	54,3	100,0
		Total	396	100,0	100,0	
Commerce	Valid	No	51	50,5	50,5	50,5
		Yes	50	49,5	49,5	100,0
		Total	101	100,0	100,0	
Finance	Valid	No	15	45,5	45,5	45,5
		Yes	18	54,5	54,5	100,0
		Total	33	100,0	100,0	
Defense and Public Administration	Valid	No	61	79,2	79,2	79,2
		Yes	16	20,8	20,8	100,0
		Total	77	100,0	100,0	
Health and Social services	Valid	No	62	67,4	67,4	67,4
		Yes	30	32,6	32,6	100,0
		Total	92	100,0	100,0	
Services	Valid	No	51	37,5	37,5	37,5
		Yes	85	62,5	62,5	100,0
		Total	136	100,0	100,0	
Utilities	Valid	No	28	60,9	60,9	60,9
		Yes	18	39,1	39,1	100,0
		Total	46	100,0	100,0	
Others	Valid	No	27	61,4	61,4	61,4
		Yes	17	38,6	38,6	100,0
		Total	44	100,0	100,0	

↳ For those who are adopters, what are the main reasons for IT adoption?

The main reason underpinning the decision of IT adoption is the possibility to reduce infrastructural complexity.

Correlations

		Is IT involved into TMT?	Possibility to reduce costs	Possibility to reduce infrastructural complexity	Possibility to provide users with new services	Possibility to improve communication quality (within or external to the company)	Diffusion of VoIP systems at individual level	Suggested by a consultant firm	Suggested by associations	Suggested by media	Suggested by hardware/software vendors	Suggested by Telco firms	Suggested by our suppliers	Suggested by our customers	Suggested by friends and/or other people
Is IT involved into TMT?	Pearson Correlation	1													
	Sig. (2-tailed)														
	N	328													
Possibility to reduce costs	Pearson Correlation		1												
	Sig. (2-tailed)														
	N	324	324												
Possibility to reduce infrastructural complexity	Pearson Correlation			1											
	Sig. (2-tailed)														
	N	322	321	322											
Possibility to provide users with new services	Pearson Correlation				1										
	Sig. (2-tailed)														
	N	317	316	316	317										
Possibility to improve communication quality (within or external to the company)	Pearson Correlation					1									
	Sig. (2-tailed)														
	N	319	318	318	316	319									
Diffusion of VoIP systems at individual level	Pearson Correlation						1								
	Sig. (2-tailed)														
	N	319	318	317	317	317	319								
Suggested by a consultant firm	Pearson Correlation							1							
	Sig. (2-tailed)														
	N	316	315	315	312	314	314	316							
Suggested by associations	Pearson Correlation								1						
	Sig. (2-tailed)														
	N	315	314	314	312	314	314	314	315						
Suggested by media	Pearson Correlation									1					
	Sig. (2-tailed)														
	N	316	315	314	312	314	315	314	315	316					
Suggested by hardware/software vendors	Pearson Correlation										1				
	Sig. (2-tailed)														
	N	315	314	314	312	314	314	314	314	314	315				
Suggested by Telco firms	Pearson Correlation											1			
	Sig. (2-tailed)														
	N	314	313	312	310	312	312	313	313	313	313	314			
Suggested by our suppliers	Pearson Correlation												1		
	Sig. (2-tailed)														
	N	312	311	309	307	309	310	309	310	311	309	312	312		
Suggested by our customers	Pearson Correlation													1	
	Sig. (2-tailed)														
	N	308	307	307	305	307	307	307	308	308	307	306	308	308	307
Suggested by friends and/or other people	Pearson Correlation														1
	Sig. (2-tailed)														
	N	313	312	311	309	311	312	311	312	313	311	310	309	307	313

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

↳ For those who are *not-adopters* (but have an intention to adopt), what are the *main reasons for IT adoption*?

The main reasons underpinning the intention for IT adoption are the possibility to reduce infrastructural complexity, and the diffusion of IT at individual level. Individuals that use IT artifacts can represent an enabler for an institutional intervention for the IT adoption at organizational level.

Correlations

		Is IT involved into TMT?	Possibility to reduce costs	Possibility to reduce infrastructural complexity	Possibility to provide users with new services	Possibility to improve communication quality (within or external to the company)	Diffusion of VoIP systems at individual level	Diffusion of VoIP systems in the economic environment
Is IT involved into TMT?	Pearson Correlation	1	-,012	-,113**	-,077	-,060	-,130**	-,044
	Sig. (2-tailed)		,780	,006	,063	,150	,002	,294
	N	597	584	584	579	575	570	563
Possibility to reduce costs	Pearson Correlation	-,012	1	,131**	,151**	,157**	,173**	,319**
	Sig. (2-tailed)	,780		,002	,000	,000	,000	,000
	N	584	584	579	575	571	567	560
Possibility to reduce infrastructural complexity	Pearson Correlation	-,113**	,131**	1	,484**	,440**	,332**	,281**
	Sig. (2-tailed)	,006	,002		,000	,000	,000	,000
	N	584	579	584	575	572	567	560
Possibility to provide users with new services	Pearson Correlation	-,077	,151**	,484**	1	,539**	,386**	,353**
	Sig. (2-tailed)	,063	,000	,000		,000	,000	,000
	N	579	575	575	579	573	567	561
Possibility to improve communication quality (within or external to the company)	Pearson Correlation	-,060	,157**	,440**	,539**	1	,409**	,362**
	Sig. (2-tailed)	,150	,000	,000	,000		,000	,000
	N	575	571	572	573	575	563	559
Diffusion of VoIP systems at individual level	Pearson Correlation	-,130**	,173**	,332**	,386**	,409**	1	,382**
	Sig. (2-tailed)	,002	,000	,000	,000	,000		,000
	N	570	567	567	567	563	570	553
Diffusion of VoIP systems in the economic environment	Pearson Correlation	-,044	,319**	,281**	,353**	,362**	,382**	1
	Sig. (2-tailed)	,294	,000	,000	,000	,000	,000	
	N	563	560	560	561	559	553	563

** . Correlation is significant at the 0.01 level (2-tailed).

↘ Is there any relationship between *adopters* and *IT responsible involved into TMT*?

A relationship between adopters and IT responsible involved into TMT exists. Although this relationship is statistically significant (as shown in the correlation table), it is not relevant (as shown in the T-test results). T-Test analysis tests the equality of means for variable *IT responsible involved into TMT* in the two groups of adopters and not-adopters).

Correlations

		Are you an adopter?	Is IT involved into TMT?
Are you an adopter?	Pearson Correlation	1	,078*
	Sig. (2-tailed)		,018
	N	925	925
Is IT involved into TMT?	Pearson Correlation	,078*	1
	Sig. (2-tailed)	,018	
	N	925	925

*. Correlation is significant at the 0.05 level (2-tailed).

Group Statistics

Are you an adopter?		N	Mean	Std. Deviation	Std. Error Mean
Is IT involved into TMT?	Non adopters	597	,47	,499	,020
	Adopters	328	,52	,501	,028

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
Is IT involved into TMT?	Equal variances assumed	,640	,424	-1,346	923	,179	-,046	,034	-,114	,021
	Equal variances not assumed			-1,345	672,255	,179	-,046	,034	-,114	,021

↘ Is there any relationship between to be early adopters and to be involved (as IT responsible) into TMT?

As stated above, in my context of analysis the adoption process for VoIP systems is at the early stage. Thus, companies who have already adopted this system can be considered early adopters.

Considering the year of adoption as an indicator for ranking the early adopters, I verify the relationship between this indicator and the IT involvement into TMT.

The correlation table indicates there is no relationship between the two variables.

This result is confirmed by the crosstabulation between the two variables. Moreover, the result doesn't change even analyzing data by organization size and industry.

This is due to the fact that the VoIP system is at the early stage. The same analysis should be repeated cross-time in order to verify the if an influence of IT responsible involved into TMT on the early IT adoption processes exists.

Correlations

		When do you decide to adopt the VoIP system?	Is IT involved into TMT?
When do you decide to adopt the VoIP system?	Pearson Correlation	1	-.099
	Sig. (2-tailed)		,072
	N	328	328
Is IT involved into TMT?	Pearson Correlation	-.099	1
	Sig. (2-tailed)	,072	
	N	328	328

When do you decide to adopt the VoIP system? * Is IT involved into TMT? Crosstabulation

Count

		Is IT involved into TMT?		Total
		No	Yes	
When do you decide to adopt the VoIP system?	1998,00	0	3	3
	1999,00	0	2	2
	2000,00	2	3	5
	2001,00	2	7	9
	2002,00	6	6	12
	2003,00	14	14	28
	2004,00	32	22	54
	2005,00	53	69	122
	2006,00	50	43	93
Total		159	169	328

↘ Is there any relationship between the *organization size* and the *IT responsible involvement into TMT*?

Organization size is analyzed in terms of employees and revenue.

Moreover, the analysis is conducted on adopters and not-adopters sub-samples.

Analyzing the organization size in terms of employees, in both sub-samples the relationship between organization size and IT responsible involvement into TMT exists and it is significant. Indeed, such a relationship is stronger in the case of adopters.

Correlations

Are you an adopter?			Organization size (employees)	Is IT involved into TMT?
Non adopters	Organization size (employees)	Pearson Correlation	1	,099*
		Sig. (2-tailed)		,015
		N	597	597
Is IT involved into TMT?		Pearson Correlation	,099*	1
		Sig. (2-tailed)	,015	
		N	597	597
Adopters	Organization size (employees)	Pearson Correlation	1	,126*
		Sig. (2-tailed)		,022
		N	328	328
Is IT involved into TMT?		Pearson Correlation	,126*	1
		Sig. (2-tailed)	,022	
		N	328	328

*. Correlation is significant at the 0.05 level (2-tailed).

Analyzing the organization size in terms of revenue, the relationship between organization size and IT responsible involvement into TMT exists only in the adopters sample, and it is significant.

Correlations

Are you an adopter?		Is IT involved into TMT?	Organization size (Revenue)
Non adopters	Is IT involved into TMT?	Pearson Correlation	. ^a
		Sig. (2-tailed)	.
		N	0
	Organization size (Revenue)	Pearson Correlation	. ^a
		Sig. (2-tailed)	.
		N	0
Adopters	Is IT involved into TMT?	Pearson Correlation	,240**
		Sig. (2-tailed)	,002
		N	168
	Organization size (Revenue)	Pearson Correlation	,240**
		Sig. (2-tailed)	,002
		N	168

** . Correlation is significant at the 0.01 level (2-tailed).

a. Cannot be computed because at least one of the variables is constant.

Therefore, the IT responsible of large companies (adopters) are more involved into TMT than IT responsible of small companies (adopters).

Analyzing the organization size in terms of employees, such a relationship also exists for the not-adopters companies.

↘ What are *the sponsorship* for the adoption project by the TMT, the support by *the users*, and the users' *involvement level in the project team*?

The sponsorship for this kind of adoption project is high. In fact, about 50% of the respondents strongly agrees with this statement.

The VoIP adoption project is/will be sponsored by TMT

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	25	7,6	8,7	8,7
	2	15	4,6	5,2	13,9
	3	18	5,5	6,3	20,2
	4	27	8,2	9,4	29,6
	5	58	17,7	20,2	49,8
	6	67	20,4	23,3	73,2
	7	77	23,5	26,8	100,0
	Total	287	87,5	100,0	
Missing	System	41	12,5		
	Total	328	100,0		

From another perspective, users' support to the adoption project is medium-high. In fact, about 60% of the respondents state the users' support to the project range from medium (about 25%), high (about 19%) to very high (about 16%).

The VoIP adoption project is/will be supported by company users

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	33	10,1	12,3	12,3
	2	12	3,7	4,5	16,8
	3	30	9,1	11,2	28,0
	4	32	9,8	11,9	39,9
	5	65	19,8	24,3	64,2
	6	52	15,9	19,4	83,6
	7	44	13,4	16,4	100,0
	Total	268	81,7	100,0	
Missing	System	60	18,3		
	Total	328	100,0		

Although the above results, users involvement level in the project team is quite low. In fact, more that 65% of respondents state that users’ involvement level in the adoption team project is low or very low.

Company users are/will be involved in the VoIP project team

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	108	32,9	38,4	38,4
	2	49	14,9	17,4	55,9
	3	30	9,1	10,7	66,5
	4	31	9,5	11,0	77,6
	5	30	9,1	10,7	88,3
	6	13	4,0	4,6	92,9
	7	20	6,1	7,1	100,0
	Total	281	85,7	100,0	
Missing	System	47	14,3		
Total		328	100,0		

Analyzing cross-relationships between sponsorship by TMT, support to the project by users, and users’ involvement in the project team, it emerges the following considerations:

- a. adoption projects which are sponsored by TMT are correlated with both support to the project by users, and users’ involvement level in the project team,
- b. users who are involved in the project team, are also correlated with the support to the project by users.

Correlations

		The VoIP adoption project is/will be sponsored by TMT	Company users are/will be involved in the VoIP project team	The VoIP adoption project is/will be supported by company users
The VoIP adoption project is/will be sponsored by TMT	Pearson Correlation Sig. (2-tailed) N	1 287	,122* ,046 269	,205** ,001 257
Company users are/will be involved in the VoIP project team	Pearson Correlation Sig. (2-tailed) N	,122* ,046 269	1 281	,374** ,000 264
The VoIP adoption project is/will be supported by company users	Pearson Correlation Sig. (2-tailed) N	,205** ,001 257	,374** ,000 264	1 268

*. Correlation is significant at the 0.05 level (2-tailed).

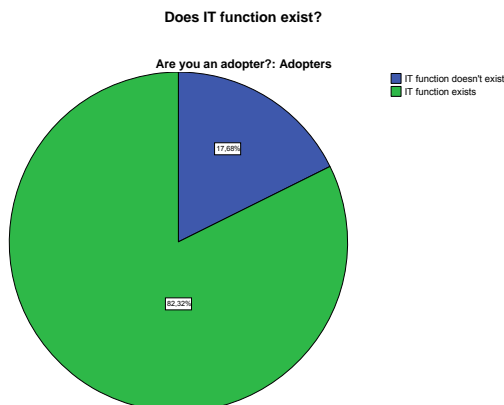
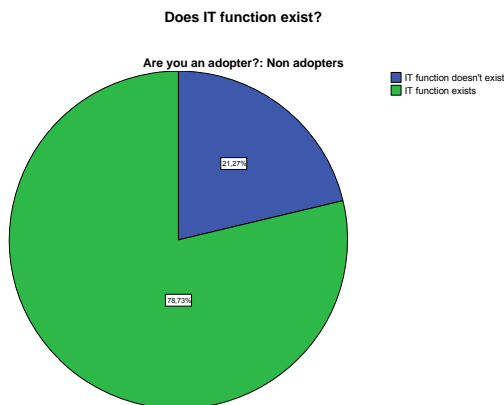
**. Correlation is significant at the 0.01 level (2-tailed).

↳ How many companies have the *IT function*?

Most of the company interviewed have an IT function. This is valid on both sub-samples (adopters and not-adopters).

Does IT function exist?

Are you an adopter?			Frequency	Percent	Valid Percent	Cumulative Percent
Non adopters	Valid	IT function doesn't exist	127	21,3	21,3	21,3
		IT function exists	470	78,7	78,7	100,0
		Total	597	100,0	100,0	
Adopters	Valid	IT function doesn't exist	58	17,7	17,7	17,7
		IT function exists	270	82,3	82,3	100,0
		Total	328	100,0	100,0	



↘ Is there any relationship between *IT function* and the *IT responsible involvement into TMT*?

The analysis is conducted on the adopters sub-sample. The relationship exists, and it is significant.

In the case IT function doesn't exist and IT is involved into TMT can be explained by the fact that IT responsible is represented by a TMT member.

Correlations

		Does IT function exist?	Is IT involved into TMT?
Does IT function exist?	Pearson Correlation	1	,478**
	Sig. (2-tailed)		,000
	N	328	328
Is IT involved into TMT?	Pearson Correlation	,478**	1
	Sig. (2-tailed)	,000	
	N	328	328

** . Correlation is significant at the 0.01 level (2-tailed).

Does IT function exist? * Is IT involved into TMT? Crosstabulation

Count

		Is IT involved into TMT?		Total
		No	Yes	
Does IT function exist?	IT function doesn't exist	58	0	58
	IT function exists	101	169	270
Total		159	169	328

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	74,891 ^b	1	,000		
Continuity Correction ^a	72,406	1	,000		
Likelihood Ratio	97,412	1	,000		
Fisher's Exact Test				,000	,000
Linear-by-Linear Association	74,662	1	,000		
N of Valid Cases	328				

a. Computed only for a 2x2 table

b. 0 cells (.0%) have expected count less than 5. The minimum expected count is 28,12.

↘ What relationship does exist between IT responsible involvement into TMT and the IT responsible hierarchical reporting?

IT responsible who is involved into TMT mainly reports to the CEO, and in some other cases he reports to a second level of TMT member, such as Financial Manager or Organization and HR Manager. Analyzing such a relationship by organization size and industry, results do not significantly change.

Is IT involved into TMT? * IT refers to General Manager Crosstabulation

Count

		IT refers to General Manager		Total
		Yes	No	
Is IT involved into TMT?	No	2	157	159
	Yes	1	168	169
Total		3	325	328

s IT involved into TMT? * IT refers to Organization and/or HR Manager Crosstabulation

Count

		IT refers to Organization and/or HR Manager		Total
		Yes	No	
Is IT involved into TMT?	No	3	156	159
	Yes	10	159	169
Total		13	315	328

Is IT involved into TMT? * IT refers to Administration and Financial Manager Crosstabulation

Count

		IT refers to Administration and Financial Manager		Total
		Yes	No	
Is IT involved into TMT?	No	20	139	159
	Yes	17	152	169
Total		37	291	328

Does *IT responsible involved into TMT* concern about the following *IT issues*?

The analysis is conducted on the adopters sub-sample. Results show a positive and significant relationship between *IT responsible involvement into TMT* and all the *IT issues* listed below.

Correlations

		Is IT involved into TMT?	to define the IT resource management policy	to use the IT budget	to define the IT infrastructure and IT strategy	to decide about consulting and training services	to decide about the IT outsourcing management
Is IT involved into TMT?	Pearson Correlation Sig. (2-tailed) N	1 328	,238** ,000 248	,285** ,000 249	,201** ,001 249	,274** ,000 249	,222** ,000 245
to define the IT resource management policy	Pearson Correlation Sig. (2-tailed) N	,238** ,000 248	1 248	,692** ,000 245	,692** ,000 245	,653** ,000 245	,601** ,000 241
to use the IT budget	Pearson Correlation Sig. (2-tailed) N	,285** ,000 249	,692** ,000 245	1 249	,542** ,000 246	,659** ,000 247	,590** ,000 244
to define the IT infrastructure and IT strategy	Pearson Correlation Sig. (2-tailed) N	,201** ,001 249	,692** ,000 245	,542** ,000 246	1 249	,646** ,000 247	,555** ,000 244
to decide about consulting and training services	Pearson Correlation Sig. (2-tailed) N	,274** ,000 249	,653** ,000 245	,659** ,000 247	,646** ,000 247	1 249	,724** ,000 244
to decide about the IT outsourcing management	Pearson Correlation Sig. (2-tailed) N	,222** ,000 245	,601** ,000 241	,590** ,000 244	,555** ,000 244	,724** ,000 244	1 245

** . Correlation is significant at the 0.01 level (2-tailed).

∇ Is the IT responsible autonomy level correlated with the IT responsible involvement into TMT?

The analysis is conducted on both the sub-samples (adopters and not-adopters).

A relationship between IT responsible involvement into TMT and IT responsible autonomy level exists for both sub-samples. The relationships are positive and significant.

Correlations

Are you an adopter?			Is IT involved into TMT?	IT responsible: average autonomy level
Non adopters	Is IT involved into TMT?	Pearson Correlation	1	,143**
		Sig. (2-tailed)		,002
		N	597	446
	IT responsible: average autonomy level	Pearson Correlation	,143**	1
		Sig. (2-tailed)	,002	
		N	446	446
Adopters	Is IT involved into TMT?	Pearson Correlation	1	,287**
		Sig. (2-tailed)		,000
		N	328	252
	IT responsible: average autonomy level	Pearson Correlation	,287**	1
		Sig. (2-tailed)	,000	
		N	252	252

** . Correlation is significant at the 0.01 level (2-tailed).

For not-adopter organizations the relationship between IT responsible involvement into TMT and IT responsible autonomy level, analyzed by organization size (in terms of employees), shows a significant correlation only for the large companies (>500 employees). While for adopter organizations, such a relationship is significant for two organization's size: 10-49 and 50-99 employees.

In terms of industry, the relationship between IT responsible involvement into TMT and IT responsible autonomy level is significant.

- in case of not-adopter organizations, only for manufacturing industry,
- in case of adopter organizations, for manufacturing and commerce industries

Chapter 6 – Analyses and results

Correlations

Are you an adopter?	Organization size (employees)			Is IT involved into TMT?	IT responsible: average autonomy level
Non adopters	<10	Is IT involved into TMT?	Pearson Correlation	. ^a	. ^a
			Sig. (2-tailed)	.	.
			N	3	1
		IT responsible: average autonomy level	Pearson Correlation	. ^a	. ^a
			Sig. (2-tailed)	.	.
			N	1	1
	10-49	Is IT involved into TMT?	Pearson Correlation	1	-,147
			Sig. (2-tailed)		,406
			N	44	34
		IT responsible: average autonomy level	Pearson Correlation	-,147	1
			Sig. (2-tailed)	,406	
			N	34	34
50-99	Is IT involved into TMT?	Pearson Correlation	1	,130	
		Sig. (2-tailed)		,134	
		N	213	135	
	IT responsible: average autonomy level	Pearson Correlation	,130	1	
		Sig. (2-tailed)	,134		
		N	135	135	
100-499	Is IT involved into TMT?	Pearson Correlation	1	,132	
		Sig. (2-tailed)		,072	
		N	237	186	
	IT responsible: average autonomy level	Pearson Correlation	,132	1	
		Sig. (2-tailed)	,072		
		N	186	186	
>500	Is IT involved into TMT?	Pearson Correlation	1	,210*	
		Sig. (2-tailed)		,046	
		N	100	90	
	IT responsible: average autonomy level	Pearson Correlation	,210*	1	
		Sig. (2-tailed)	,046		
		N	90	90	
Adopters	<10	Is IT involved into TMT?	Pearson Correlation	1	-,570
			Sig. (2-tailed)		,430
			N	8	4
		IT responsible: average autonomy level	Pearson Correlation	-,570	1
			Sig. (2-tailed)	,430	
			N	4	4
	10-49	Is IT involved into TMT?	Pearson Correlation	1	,504**
			Sig. (2-tailed)		,000
			N	99	58
		IT responsible: average autonomy level	Pearson Correlation	,504**	1
			Sig. (2-tailed)	,000	
			N	58	58
	50-99	Is IT involved into TMT?	Pearson Correlation	1	,407**
			Sig. (2-tailed)		,002
			N	63	53
		IT responsible: average autonomy level	Pearson Correlation	,407**	1
			Sig. (2-tailed)	,002	
			N	53	53
100-499	Is IT involved into TMT?	Pearson Correlation	1	,159	
		Sig. (2-tailed)		,119	
		N	115	98	
	IT responsible: average autonomy level	Pearson Correlation	,159	1	
		Sig. (2-tailed)	,119		
		N	98	98	
>500	Is IT involved into TMT?	Pearson Correlation	1	,042	
		Sig. (2-tailed)		,801	
		N	43	39	
	IT responsible: average autonomy level	Pearson Correlation	,042	1	
		Sig. (2-tailed)	,801		
		N	39	39	

*. Correlation is significant at the 0.05 level (2-tailed).

** . Correlation is significant at the 0.01 level (2-tailed).

a. Cannot be computed because at least one of the variables is constant.

Chapter 6 – Analyses and results

Correlations

Are you an adopter?	Company industry	Is IT involved into TMT?		Is IT involved into TMT?	IT responsible: average autonomy level
Non adopters	Manufacturing	Is IT involved into TMT?	Pearson Correlation	1	,197**
			Sig. (2-tailed)		,006
			N	247	195
		IT responsible: average autonomy level	Pearson Correlation	,197**	1
			Sig. (2-tailed)	,006	
			N	195	195
Commerce	Is IT involved into TMT?	Pearson Correlation		1	-,049
		Sig. (2-tailed)			,789
		N	44		33

Adopters	Manufacturing	Is IT involved into TMT?	Pearson Correlation	1	,311**
			Sig. (2-tailed)		,000
			N	149	123
		IT responsible: average autonomy level	Pearson Correlation	,311**	1
			Sig. (2-tailed)	,000	
			N	123	123
Commerce	Is IT involved into TMT?	Pearson Correlation		1	,604**
		Sig. (2-tailed)			,000
		N	57	31	
	IT responsible: average autonomy level	Pearson Correlation	,604**	1	
		Sig. (2-tailed)	,000		
		N	31	31	

↘ Is there a relationship between *IT responsible involvement into TMT* and the *company innovation capacity*?

The company innovation capacity is measured in terms of other IT systems adopted, in particular Enterprise Resource Planning (ERP), Customer Relationship Management (CRM), and Supply Chain Management (SCM) systems.

The analysis is conducted on the adopters sub-sample.

For all the three systems, the relationship between IT responsible involvement into TMT and innovations exists.

Such a relationship is also confirmed by the Independent T-test, which indicates that a mean difference between the two groups (adopters which as IT responsible involved into TMT and adopters which has not IT responsible involved into TMT) exists.

Moreover, results are not influenced by the two control variables: organization size (employees) and industry.

Crosstab

Count		Is IT involved into TMT?		Total
		No	Yes	
My company has adopted an ERP system	No	72	52	124
	Yes	79	109	188
Total		151	161	312

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	7,700 ^b	1	,006		
Continuity Correction ^a	7,071	1	,008		
Likelihood Ratio	7,727	1	,005		
Fisher's Exact Test				,008	,004
Linear-by-Linear Association	7,676	1	,006		
N of Valid Cases	312				

a. Computed only for a 2x2 table

b. 0 cells (,0%) have expected count less than 5. The minimum expected count is 60,01.

Crosstab

Count

		Is IT involved into TMT?		Total
		No	Yes	
My company has adopted a CRM system	No	123	113	236
	Yes	26	49	75
Total		149	162	311

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	6,946 ^b	1	,008		
Continuity Correction ^a	6,264	1	,012		
Likelihood Ratio	7,049	1	,008		
Fisher's Exact Test				,011	,006
Linear-by-Linear Association	6,923	1	,009		
N of Valid Cases	311				

a. Computed only for a 2x2 table

b. 0 cells (,0%) have expected count less than 5. The minimum expected count is 35,93.

Crosstab

Count

		Is IT involved into TMT?		Total
		No	Yes	
My company has adopted a SCM system	No	141	136	277
	Yes	7	21	28
Total		148	157	305

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	6,831 ^b	1	,009		
Continuity Correction ^a	5,833	1	,016		
Likelihood Ratio	7,150	1	,007		
Fisher's Exact Test				,010	,007
Linear-by-Linear Association	6,808	1	,009		
N of Valid Cases	305				

a. Computed only for a 2x2 table

b. 0 cells (.0%) have expected count less than 5. The minimum expected count is 13,59.

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
My company has adopted an ERP system	Equal variances assumed	20,395	.000	-2,801	310	.005	-,154	,055	-,262	-,046
	Equal variances not assumed			-2,795	304,835	.006	-,154	,055	-,262	-,046
My company has adopted a CRM system	Equal variances assumed	29,783	.000	-2,657	309	.008	-,256	,096	-,445	-,066
	Equal variances not assumed			-2,678	305,589	.008	-,256	,096	-,444	-,068
My company has adopted a SCM system	Equal variances assumed	30,402	.000	-2,635	303	.009	-,173	,066	-,302	-,044
	Equal variances not assumed			-2,669	263,675	.008	-,173	,065	-,300	-,045

Consistent with all the above results, the research hypotheses are partially confirmed.

In particular:

H1, H2, and H3 are confirmed, while H4 is not confirmed.

H1: Higher levels of CIO autonomy will be positively related to IT involvement into TMT

The IT responsible involvement into TMT is positively correlated with the IT responsible autonomy level.

This is valid for both the sub-samples: adopters and not-adopters.

For not-adopter organizations the relationship between IT responsible involvement into TMT and IT responsible autonomy level, analyzed by organization size (in terms of employees), shows a significant correlation only for the large companies (>500 employees). While for adopter organizations, such a relationship is significant for two organization's size: 10-49 and 50-99 employees.

In terms of industry, the relationship between IT responsible involvement into TMT and IT responsible autonomy level is significant.

- in case of not-adopter organizations, only for manufacturing industry,
- in case of adopter organizations, for manufacturing and commerce industries.

H2: Higher reporting level of CIO will be positively related to the IT involvement into TMT

Results confirm this hypothesis. Thus, an higher IT responsible reporting level correspond an higher level of IT responsible involvement into TMT.

Analyzing such a relationship by organization size and industry, results do not significantly change.

H3: Higher number of IT innovations is positively related to the IT involvement into TMT

Also this hypothesis is confirmed. The IT responsible involvement into TMT has a positive correlation with the innovation capacity of organization.

Moreover, results are not influenced by the two control variables: organization size (employees) and industry.

H4: Higher stage of the innovation adoption process is positively related to the IT involvement into TMT

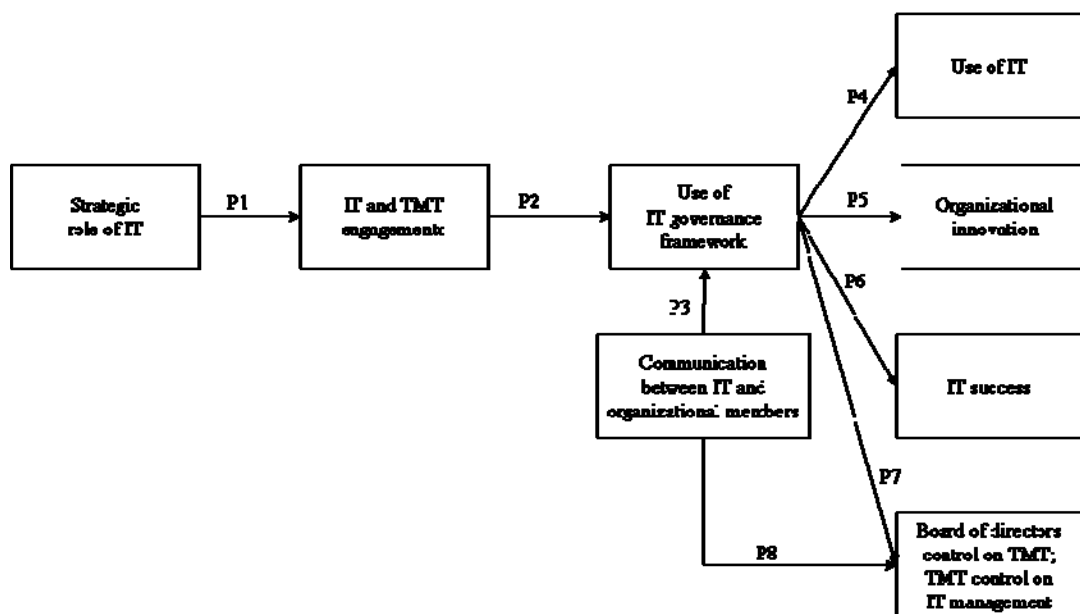
This hypothesis is not confirmed. From the analysis, it doesn't emerge any significant relation between the stage of IT innovation and the IT responsible involvement into TMT.

Moreover, the result doesn't change even analyzing data by organization size and industry.

Chapter 7

Conclusions and directions for further research

The review of the literature on IT governance, control systems, strategic role of IT, and alignment between IT and TMT uncovers a numerous of potential research propositions. Some of these research propositions will be explored in the following, some other research propositions are intended to be directions for further researchers. In this section I will briefly propose some research propositions that aim at increase knowledge about IT governance phenomenon.



Research issues on strategic role of IT, and IT and TMT engagements

The role of IT has been much discussed in IT literature (Earl and Feeny, 1994; Rockart, et al., 1996; Ross and Feeny, 2000; Synnott and Gruber, 1981).

Ives and Olson (1981) asked the question of the role of information systems manager was evolving with the challenging organization's needs. In the 1990s was expected the

integration of the use of IT with the organizational mission and with the management accountabilities (Dixon and Darwin, 1989).

Some researches' findings confirm that the role of IT manager has actually evolved since it was label as data processing manager (Kaarst-Brown, 2005; Ives and Olson, 1981; Stephens, 1992).

Although few empirical researches have been conducted on the evolution of IT role, it is widely recognized that IT plays a strategic role in organization. Strategic role of IT is defined as the IT capacity to change an organization's product or the way the organization competes in the industry (Cash, et al., 1988; McFarlan, et al., 1983; Rockart, 1988; Zmud, 1988).

From the strategic perspective, and according to the main literature, the role of IT is classified as: automating business operating processes, informing up to enhance command and control, informing down to promote decentralization and empowerment, and transforming to reshape organizational activity (Schein, 1992).

From the organizational perspective, three models are proposed in literature for the role of IT: partner model, which views IT as a partner in business innovation; platform model, which views IT as a provider of assets, services, and resources for business innovation; and scalable model, which views IT as provider of scalable and flexible resources for the business (Agarwal and Sambamurthy, 2002).

Consistent with both perspectives, it clearly emerges the relevance to integrate IT manager in the Top management team (TMT) (Armstrong and Sambamurthy, 1999; Benjamin, et al., 1985).

Moreover, the dialog between IT management and TMT represents a means to stimulate motivation and meanings, to understand the business, to maintain in relevance IT efforts, and so forth (Earl and Feeny, 1994).

Smaltz, et al. (2006) define the interactions between IT management and TMT as IT and TMT engagements. Engagements are a set of variety and intensity of interactions between IT management and TMT members (Armstrong and Sambamurthy, 1999;

Smaltz, et al., 2006). As the same authors state, “engagements reflect the opportunity for effective dialog between the CIO and the TMT”.

Nevertheless, recent works put in evidence as the role of IT manager and function is still debated, and there isn't a clear vision about the IT and the TMT engagements (Broadbent and Kitzis, 2005; Kaarst-Brown, 2005; Smaltz, et al., 2006).

In fact, the CIO's status is still considered lower than other business peers (Kaarst-Brown, 2005).

The influence exercised by the role of IT on IT and TMT engagements can be viewed through both strategic and organizational perspectives. Three relations emerge.

First, the automating role of IT relates to the scalable organizational model, where IT provides flexible resources to automate routine's business processes. Second, the informing up and down roles of IT relate to the platform organizational model, where IT participates to the business innovation managing IT services and information through organizational levels, from strategic to operational. Third, the transforming role of IT relates to the partner model, where IT is not only a provider of resources and information but participates to the formulation of business innovations.

Considering these lens of analysis of the role of IT, works to study its influence on the IT and TMT engagements are needed.

In particular, the first relation has a low influence on IT and TMT engagements.

The second relation has a good influence on IT and TMT engagements. The third relation has a strong influence on IT and TMT engagements.

Formally, I propose the following research proposition:

P1: The higher is the strategic role of IT, the higher is the IT and TMT engagements

Research issue on the IT and TMT engagements and the use of IT governance framework

According to my reconceptualization, IT governance must be established by TMT, and IT management has also the responsibility of three kinds of relations defined as vertical, lateral and service. The vertical relation refers to interaction of IT management with TMT, the lateral relation refers to the interaction of IT management with line managers, and the service relation refers to the interaction of IT management with users.

As describe above, IT and TMT engagements consist of a set of variety and intensity of interactions between IT management and TMT (Armstrong and Sambamurthy, 1999; Smaltz, et al., 2006).

Thus, the vertical relation stated in my IT governance reconceptualization is clearly related to the IT and TMT engagements.

There are several works that discuss the use of IT in organizations. In particular, there is a lot of evidence about the influence of institutional factors on the use of IT (Boynton, et al., 1994; DeLone, 1988; Jarvenpaa and Ives, 1991; King, et al., 1994; Leonard-Barton and Deschamps, 1988), such as: training, knowledge management, managerial influence and support.

Among them, the pivotal role of management support for the IT use and innovation success has been much proved in literature (Adams, 1972; Boynton, et al., 1994; Earl, 1983, 1989, 1983; Henderson and Venkatraman, 1993, 1996; Jarvenpaa and Ives, 1991; Keen, 1991; Ives, et al., 1993; Lewis, et al., 2003; Luftman and Brier, 1999; McKenney, et al., 1995; McLean and Soden, 1977; Rockart, 1988; Synnott, 1987; Watson and Brancheau, 1991; Zmud, 1984).

Consequently, the interaction between users and IT management is important (Subramani, et al., 1995; Zmud, 1988).

Thus, the service relation depicted in my IT governance framework is related to the use of IT in the organization.

Considering that IT and TMT engagements influence the use of IT in organizations, and that IT governance framework also intends to discipline relationships among IT

management, TMT, and users, it emerges as IT and TMT engagements influence the use of IT governance framework.

Formally:

P2: The higher is the level of IT and TMT engagements, the higher is its influence on the use of IT governance framework

Research issues on communication and the use of IT governance framework

As IT is pervasive across organizational functions and units, IT management should be able to establish relationships at different organizational levels.

The IT management's interpersonal communication is considered an important skill. In fact, a research found that IT management who succeeded had a good internal and external communication capacity, and those who didn't succeed failed in their communication activity (Brier, 1994).

In particular, referring to the intra-organizational dimension (Earl, 1983, 1993; Henderson and Venkatraman, 1993, 1996; Ives, et al., 1993; Luftman and Brier, 1999; McLean and Soden, 1977; Rockart, 1988; Watson and Brancheau, 1991) IT management communication assumes three different forms: vertical, lateral, and service.

Vertical communication concerns the relationship between IT management and TMT. As Keen (1991) said, "the dialog is needed most right at the top". An effective relationship between IT and business influence the IT success (Keen, 1991).

Prior works found that communication is key enabler the alignment between business and IT (Armstrong and Sambamurthy, 1999; Feeny, et al., 1992; Henderson, 1990; Luftman, 1999, 2003; Reich and Benbasat, 2000).

Lateral communication concerns the relationship between IT management and line management. According to Mintzberg (1979), the lateral mechanisms should encourage liaison contacts between individuals with the objective to coordinate the work of two units. Moreover, the degree of communication between IT and line management is an enabler of their alignment (Luftman, 1996).

Service communication concerns the relationship between IT management and organizational users. Users (IT and non-IT) should be involved in the IT project life cycle, from the design phase to the effective use of IT (Rau, 2004).

Then, a dialogue between users and IT management should be established (Subramani, et al., 1995; Zmud, 1988).

According to my reconceptualization, in order to achieve its goals, IT governance is based on the relationships of IT with external and internal organizational members.

Thus, the different forms of communication influence the use of IT governance framework.

Formally:

P3: The higher is the communication level between IT and organizational members, the higher is the use of IT governance framework

Research issues on the use of IT governance framework and the use of IT

There is much evidence in literature about IT as a critical organizational resource (Boynton, 1993; Boynton, et al., 1993; McFarlan, et al., 1983, Rockart, 1988; Willcocks, et al., 1997).

The extent to which IT is used in organizations varies widely.

IT use is defined as the application of IT within an organization's operational and strategic activities (Ives and Jarvenpaa, 1991).

From the analysis of the literature, four dimensions for the use of IT emerge (Boynton, et al., 1994): cost reduction, management support, strategic planning, competitive thrust.

Cost reduction: IT can be used in order to reduce the cost of organizational activities, such as the costs of coordination, communication, and information processing (Brynjolfsson and Hitt, 2000). Rockart and Short (1989) state that IT serves primarily to “manage organizational interdependence”. IT contributes to reduce the coordination costs of interdependent activities (Malone, et al., 1987; Williamson, 1975, 1985), and serves to improve information processing among organizational members (Burton and Obel, 1984; Galbraith, 1973; 1977).

Management support: as IT has a strategic and critical role in organizations, it emerges as IT is a serious concern of management (Boynton, et al., 1994; Mukhopadhyay, et al., 1995). Porter and Millar (1985) relate IT to the value chain, concluding that the main strategic purpose of IT is to coordinate organizational activities in the chain. Coordination is defined as “the timely and purposeful adjustment of decisions pertaining to values of different aspects, between stakeholders involved in decision making” (Malone and Crowston, 1994).

Strategic planning: the contribution of IT to the organizational strategy formulation, and to financial performances has been much discussed in IT and strategy literatures (Sabherwal and King, 1991; Holland, et al., 1992; Henderson and Venkatraman, 1993; Kettinger et al., 1994). A number of researches state that IT affects organizational strategies, that strategies have IT implications, therefore organizations have to integrate strategic advantages with IT capabilities (Rackoff, et al., 1985; Bakos and Treacy, 1986; Breath and Ives, 1986).

Competitive thrust: IT can support and enable the establishment of competitive advantages such as cost leadership, differentiation, growth, and innovation (Rackoff, et al., 1985). Adopting the resource-based view, IT-related resources can serve as

potential sources of competitive advantage (Grant, 1991). The IT-key resources can be classified as following (Grant, 1995):

- tangible resources, like IT infrastructure,
- IT human resources, like technical and managerial IT skills, and
- intangible IT-enabled resources, like knowledge assets and customer orientation.

According to my reconceptualization, IT governance has six main key dimensions, which concerns: the role of IT in organizations (Agarwal and Sambamurthy, 2002; Brown and Magill, 1998; Feeny, et al., 1992; Kaarst-Brown, 2005), the alignment between IT and business (Armstrong and Sambamurthy, 1999; Brown and Magill, 1994; Brown and Sambamurthy, 1999; Henderson and Venkatraman, 1992, 1993; Lederer and Mendelow, 1987; Reich and Benbasat, 1996), the IT decision rights and controls (Peterson, 2004; Sambamurthy and Zmud 1999; Weill, 2004), the responsibilities for IT-related activity (Sambamurthy and Zmud 1999; Weill, 2004), structures and processes (Sambamurthy and Zmud, 1999; Segars and Grover, 1999; Weill, 2004), and the IT-related risk management (ITGI, 2003; Luftman, 2003).

The following matrix represents direct relations that exist between the dimensions of use of IT and IT governance. The aim of that matrix is to illustrate how IT governance can influence the use of IT in organizations.

The following relations exist:

- the role of IT influences managerial support and strategic planning,
- the alignment between IT and business influence all use of IT's dimensions, except for the competitive thrust,
- IT-decision rights and controls influence organizational cost reduction and competitive thrust,
- responsibilities and accountabilities influence organizational cost reduction, and managerial support,
- structures and processes influence all use of IT's dimensions, except for the strategic planning,

- IT-related risk management influence organizational cost reduction, and strategic planning.

Use of IT IT governance	Cost reduction	Managerial support	Strategic planning	Competitive thrust
Role of IT		X	X	
Alignment between IT and business	X	X	X	
IT-decision rights and controls	X			X
Responsibilities and accountabilities	X	X		
Structures and processes	X	X		X
IT-related risk management	X		X	

Formally, I formulate the following research propositions:

P4a: The higher is the use of IT governance framework, the higher is the use of IT for cost reduction

P4b: The higher is the use of IT governance framework, the higher is the use of IT for managerial support

P4c: The higher is the use of IT governance framework, the higher is the use of IT for strategic planning

P4d: The higher is the use of IT governance framework, the higher is the use of IT for competitive thrust

Research issues on the use of IT governance and the organizational innovation

There are several works that found positive evidence about the influence of IT on organizational productivity and innovation (Bharadwaj, et al., 1999; Hitt and Brynjolfsson, 1996; Siegel and Griliches, 1992).

Thompson (1965) defines organizational innovation as “the generation, acceptance and implementation of new ideas, processes, products and services”.

Then, an innovation may imply a disruption of existing activities, the formulation of new strategies, products, work methods, and technical processes or structures (Kanter, 1983).

Researches on innovation can be classified on (Rayichandra, 2000): innovation adoption, innovation typology, innovation characteristics, innovation process, innovation sources, characteristics of innovative organizations, and correlates/determinants of innovation.

Although a numerous of works are about innovation (Baldrige and Burnham, 1975; Daft, 1978; Damanpour and Evan, 1984; Mohr, 1969), they pertain to the innovation adoption.

Following Daft (1982), Damanpour (1992) defines innovation as “the adoption of an idea or behavior, whether a system, policy, program, device, process, product or service, that is new to the adopting organization”.

Several determinants and moderators’ factors influence the relationship between organization and innovation.

The determinants’ factors can be classified in three levels: individual, organizational, and environmental (Damanpour, 1987; Kim, 1980; Kimberly and Evanisko, 1981).

The moderators’ factors are: type of organization, type of innovation, stage of adoption, scope of innovation (Damanpour, 1991).

IT represents one of the fastest growing innovations in both production and use (Freeman and Perez 1988; King, et al., 1994; Willinger and Luschovitch 1988).

The six dimensions of IT governance are related to the three levels of determinants’ factors that influence the relationship between organization and innovation.

In particular, the role of IT, structures and processes, the IT-related risk management, and the alignment between IT and business are related to the organizational level.

The IT-decision rights and controls, responsibilities and accountabilities are related to the individual level.

Consistent with the inter-organizational perspective, the alignment between IT and business refers to the interaction of IT with external members, like partners, vendors, consultants, suppliers, and customers. Then, the alignment between IT and external business is related to the environmental level.

Thus, the use of IT governance has a direct influence on the organizational innovation.

Formally:

P5: The higher is the use of IT governance framework, the higher is the organizational innovation

Research issues on the use of IT governance and the IT success

There is much debate in IT literature about the IT business value and success. Much of the discussion focuses on the link between IT investments and output measures of value, and productivity. That link is analyzed at both levels of industry and economy (Baily and Chakrabarti, 1988; Bresnahan, 1986; Osterman, 1986), and of the firm (Bender, 1986; Brynjolfsson and Hitt, 1993, 1994; Cron and Sobol, 1983; Turner, 1984; Weill, 1992).

Organizations derive IT business value from the influence of IT on intermediate business processes (Mooney, et al., 1996), such as the management of information processing and quality, control, coordination, and communication, and the measurement of its capacity to success.

Moreover, there is a lot of literature about the IT success evaluation models, as synthesized by DeLone and McLean (1992).

Based on the communication research and the information influence theory (Shannon and Weaver, 1949; Mason, 1978), DeLone and McLean (1992) propose a multidimensional model of IT success. The model encompasses six IT success dimensions: system quality, information quality, use, user satisfaction, individual impact, organizational impact.

Recently the same authors proposed a revised version of the IT success model (DeLone and McLean, 2003). The new version of the model proposes to evaluate IT quality through three dimensions, information quality, system quality, and service quality. Then,

IT quality influences two interrelated dimensions, the use of IT or the intention to use of IT, and the user satisfaction, which in turn determine the IT net benefit.

The IT success in terms of quality, use and net benefit depends on the IT management capacity.

As any business function management, IT management concerns activities like planning, setting IT budgets, allocating resources, business deployment, and monitoring in order to achieve the desired results from IT in terms of quality, user satisfaction, and impacts (Bassellier, et al., 2001; DeLone and McLean, 2003).

In particular, IT management key issues concern decisions about IT principles (Broadbent and Weill, 1997), IT architecture (Keen, 1995; Ross, 2003), IT infrastructure (Keen, 1991; Weill, et al., 2002), IT processes (Boynton, et al., 1992), understanding of business application needs (Earl, 1993), and IT investments (Ross and Beath, 2002).

All these issues are strongly influenced by the alignment between IT management and TMT (Jarvenpaa and Ives, 1991; Kwon & Zmud 1987; Rathnam, et al., 2004; Rockart, 1988; Rockwell, 1968; Weill and Broadbent, 1993).

According to some prior works, the involvement of TMT, together with its IT-literate level, is an enabler of the IT success (Boynton, et al., 1994; Cohen and Levinthal, 1990; Earl, 1989; Keen, 1991; McKenney, et al., 1995; Rockart, et al., 1982; Synnott, 1987).

Alignment between IT management and TMT is an IT governance issue (Armstrong and Sambamurthy, 1999; Bakos and Treacy, 1986; Henderson and Venkatraman, 1992; Lederer and Mendelow, 1987; Lederer and Sethi, 1988; Luftman, et al., 1999; Reich and Benbasat, 1996; Tavakolian, 1989).

Then, the use of IT governance influences IT management, and the IT success.

Formally:

P6: The higher is the use of IT governance framework, the higher is the likelihood of IT success

Research issues on communication, the use of IT governance framework and control activity

IT governance refers to corporate governance principles (Weill and Ross, 2004). The primary goal of corporate governance is the alignment of actions and choices of managers with the interests of stakeholders (Hawley and Williams, 1996; Letza, et al., 2004; Shleifer and Vishny, 1997). This alignment relates to the agency theory, which basically concerns the relationship between owners and managers (Eisenhardt, 1989; Jensen and Meckling, 1976). This is consistent with the shareholder model (Freeman, 1984; Friedman and Miles, 2002; Hawley and Williams, 1996; O’Sullivan, 2000).

According to the stakeholder model, management should align its interests with stakeholders’ interests.

Focusing on the relationship between TMT and IT management, while TMT is responsible towards stakeholders’ interests, IT management is responsible towards the TMT. In the corporate governance literature, this two-relation is defined as double agency problem. It occurs when there are two levels of accountability, and then two levels of agents (Child and Rodrigues, 2004).

In order to limit these conflicts and to guarantee the organizational success, mechanisms of control and monitoring must be implemented (Fama and Jensen, 1983).

Control strategies are considered in agency theory (Jensen and Meckling, 1976) as well as in organizational theory (Ouchi, 1969; Thompson, 1967).

For example, the board of directors is a governance mechanism for representing stakeholders’ interests and monitoring management activity (Hart, 1995; Shleifer and Vishny, 1997).

According to the management control literature, management control is defined as “the process by which managers ensure that resources are obtained and used effectively and efficiently in the accomplishment of the organization's objectives” (Anthony, 1965).

Management control systems refer to manager’s ability to influence employees to behave in order to achieve organizational goals (Flamholtz, et al., 1985; Henderson and Lee, 1992). Management control systems are conceptualized to have two dimensions:

performance evaluation and socialization of organizational members (Ansari, 1977; Eisenhardt, 1985; Govindarajan and Fisher, 1990). The first dimension focuses on the process of measuring, evaluating and rewarding performance.

The second dimension is defined as “the acquisition of values, attitudes, skills and knowledge that promote goal congruence among organizational members” (Siegel, et al., 1991). Thus, it entails social interaction processes among organizational members, i.e. coordination and communication, which, in turn, can contribute to solve the agency problem (Eisenhardt, 1985; Flamholtz, 1983; Govindarajan and Fisher, 1990; Langfield-Smith, 1997; Ouchi, 1979; Yates, 1989).

Then, the communication level among organizational actors influences the control activities.

Formally:

P7a: The higher is the communication level between board members and TMT, the higher is the control of board on TMT

P7b: The higher is the communication level between TMT and IT management, the higher is the control of TMT on IT management

IT governance framework intends to support both dimensions of management control systems.

While IT provides organizational units with several means to control and evaluate their performance, IT governance framework requires the definition of responsibilities, decision-rights and controls, and structures and processes for the IT management (Boynton, et al., 1992; Brown and Magill, 1994; Sambamurthy and Zmud 1999; Weill,

2004). For that, IT governance influences IT as support system for the evaluation of organizational units' performances.

Moreover, IT governance framework also relates to the social dimension of management control systems. IT-decision making rights and controls, responsibility for IT activities, and structures and processes directly influence the way information is gathered and shared among organizational members. Indeed, the alignment of IT with business, through the three forms of vertical, lateral and service, fits with the second controlling mechanism of social dimension, the organizational members interests' alignment.

These considerations support the capacity of IT governance to solve the double agency problem, enabling control systems for both the board on TMT, and the TMT on IT management.

Formally:

P8a: The higher is the use of IT governance framework, the higher is the control of board on TMT

P8b: The higher is the use of IT governance framework, the higher is the control of TMT on IT management

References

- Abrahamson, E. (1991) Managerial fads and fashions: The diffusion and rejection of innovations, *Academy of Management Review* 16, pp. 586-612
- Adams, W. (1972) New Role for Top Management in Computer Applications, *Financial Executive*, pp. 54-56
- Agarwal, R., Ferratt, T. W. (2001) Crafting an HR strategy to meet the need for IT workers, *Communication of the ACM* 44(7), pp. 58–64
- Agarwal, R., Sambamurthy, V. (2002) Principles and models for organizing the IT function, *MIS Quarterly Executive* 1(1), pp. 1-16
- Ansari, S. L. (1977) An integrated approach to control system design, *Accounting, Organizations and Society* 2(2), pp. 101–112
- Anthony, R. N. (1965) *Planning and Control Systems: Framework for Analysis*, Harvard University Press, Boston, MA
- Applegate, L. M., Elam, J. J. (1992) New Information Systems Leaders: A Changing Role in a Changing World, *MIS Quarterly* 16(4), pp. 469-490
- Armstrong, C. P., Sambamurthy, V. (1999) Information Technology Assimilation in Firms: The Influence of Senior Leadership and IT Infrastructure, *Information Systems Research* 10(4), pp. 304-327
- Baets, W. (1992) Aligning information systems with business strategy, *Journal of Strategic Information Systems* 1(4), pp. 205-214
- Baily, M. N., Chakrabarti, A. (1988) “Electronics and White-Collar Productivity”, In Brainard, W. C., Perry, G. L., *Innovation and the Productivity Crisis*, The Brookings Institution, Washington, DC

References

- Baily, M. N., Gordon, R. J. (1988) The Productivity Slowdown, Measurement Issues, and The Explosion of Computer Power, *Brookings Papers on Economic Activity* 2, pp. 347-431
- Bakos, J. Y., Treacy, M. E. (1986). Information Technology and corporate strategy: a research perspective, *MIS Quarterly* 10(2), pp. 107-119
- Baldrige, V., Burnham, R. A. (1975) Organizational innovation: Individual, organizational and environmental impacts, *Administrative Science Quarterly* 20(2), 165–176
- Baraoudi, J. J., Orlikowski, W. J. (1988) A Short Form Measure of User Information Satisfaction: A Psychometric Evaluation and Notes on Use, *Journal of Management Information Systems* 4(4), pp. 44-59
- Barnard, C. (1938) *The functions of the Executive*, Harvard University Press, Cambridge, MA
- Barua, A., Mukhopadhyay, T. (2000) Information Technology and Business Performance, in *Framing the Domains of IT Management: Projecting the Future through the Past*, R. W. Zmud (ed.), Pinnaflex Press, Cincinnati, OH
- Bassellier, G., Reich, B. H., Benbasat, I. (2001) Information Technology Competence of Business Managers: A Definition and Research Model, *Journal of Management Information Systems* 17(4), pp. 159-182
- Benbasat, I. (1984) “An Analysis of Research Methodologies”, In *The Information Systems Research Challenge*, McFarlan, F. W. (Ed.), Harvard Business School Press, Boston, MA
- Benbasat, I., Goldstein, D. K., Mead, M. (1987) The Case Study Research Strategy in Studies of Information Systems, *MIS Quarterly* 11(3), pp. 369-386
- Bender, D. H. (1986) Financial Impact of Information Processing, *Journal of Management Information Systems* 3(2), pp. 22-32
- Benjamin, R. I., Dickinson, C. Jr., Rockart, J. F. (1985) Changing Role of the Corporate Information Systems Officer, *MIS Quarterly* 9(3), pp. 177-188

References

- Benjamin, R. R., Rockart, J. F., Scott Morton, M. S., Wyman, J. (1984) Information Technology: A Strategic Opportunity, *Sloan Management Review* 25(3), pp. 3-10
- Berle, A., Means, G. C. (1932) *The Modern Corporate and Private Property*, MacMillan, New York
- Bharadwaj, A. (2000) A Resource-Based Perspective on Information Technology Capability and Firm Performance: An Empirical Investigation, *MIS Quarterly* 24(1), pp. 169-196
- Bharadwaj, A., Bharadwaj, S., Konsynski, B. (1999) Information Technology Effects on Firm Performance as Measured by Tobin's q, *Management Science* 45(7), pp. 1008-1024
- Bharadwaj, A., Sambamurthy, V., Zmud, R. W. (2001) Linking IT Capabilities to Firm Performance, *Working paper*, University of Maryland
- Blair, M. (1995). *Ownership and Control: Rethinking Corporate Governance for the Twenty-First Century*, Brookings Institution, Washington
- Boland, R. J., Hirschheim, R. A. (Eds.) (1987) *Critical Issues in Information Systems Research*, John Wiley, Chichester, UK
- Boyd, B. K. (1995) CEO Duality and Firm Performance: A Contingency Model, *Strategic Management Journal* 16(4), pp. 301-312
- Boynton, A. C. (1993) Achieving Dynamic Stability through Information Technology, *California Management Review* 35(2), pp. 58-77
- Boynton, A. C., Jacobs, G. C., Zmud, R. W. (1992) Whose Responsibility Is IT Management?, *Sloan Management Review* 33(4), pp. 32-38
- Boynton, A. C., Victor, B., Pine, B. J. (1993) New Competitive Strategies: Challenges to Organizations and Information Technologies, *IBM Systems Journal* 32(1), pp. 40-64
- Boynton, A. C., Zmud, R. W. (1987) Information Technology Planning in the 1990's: Directions for Practice and Research, *MIS Quarterly* 11(1), pp. 58-72

References

- Boynton, A. C., Zmud, R. W., Jacobs, G. C. (1994). The influence of IT management practice on IT use in large organizations, *MIS Quarterly* 18(3), pp. 299-318
- Brancheau, J. C., Janz, B. D., Wetherbe, J. C. (1996) Key Issues in Information Systems Management: 1994-95 SIM Delphi Results, *MIS Quarterly* 20(2), pp. 225-242
- Brancheau, J. C., Schuster, L., March, S. T. (1989) Building and Implementing and Information Architecture, *Database* 19(2), pp. 9-17
- Brancheau, J. C., Wetherbe, J. C. (1987) Key Issues in Information Systems Management, *MIS Quarterly* 11(1), pp. 23-45
- Breath, C. M. (1983) Strategies for Managing MIS Projects: A Transaction Cost Approach, *Proceedings of the 4th International Conference on Information Systems*
- Breath, C. M., Ives, B. (1986) Competitive information systems in support of pricing, *MIS Quarterly* 10(1), pp. 85–96
- Bresnahan, T. F. (1986) Measuring the Spillovers from Technical Advance: Mainframe Computers in Financial Services, *The American Economic Review* 76(4), pp. 742-755
- Brier, T. (1994) So you want to be a CIO, *3X-400 Systems Management* 22(8), pp. 66-69
- Broadbent, M., Kitzis, E. S. (2005) *The New CIO Leader*, Harvard Business School Press, Boston, MA
- Broadbent, M., Weill, P. (1993) Improving Business and Information Strategy Alignment: Learning from the Banking Industry, *IBM Systems Journal* 32(1), pp. 162-179
- Broadbent, M., Weill, P. (1997) Management by Maxim: How business and IT managers can create IT infrastructures, *Sloan Management Review* 38(3), pp. 77-92
- Brooks, Jr., F. P. (1975) *The Mythical Man-Month*, Addison-Wesley, Reading, MA
- Brown, C. V. (1997) Examining the Emergence of Hybrid IS Governance Solutions: Evidence from a Single Case Site, *Information Systems Research* 8(1), pp. 69-94

References

- Brown, C. V., Magill, S. L. (1994) Alignment of the IS Function with the Enterprise: Toward a Model of Antecedents, *MIS Quarterly* 18(4), pp. 371-403
- Brown, C. V., Magill, S. L. (1998) Reconceptualizing the Context-Design Issue for the Information Systems Function, *Organization Science* 9(2), pp. 176-195
- Brown, C. V., Sambamurthy, V. (1999) Repositioning the IT organization to facilitate business transformation, Pinnaflex Press, Cincinnati, OH
- Brynjolfsson, E., Hitt, L. M. (1993) Is Information Systems Spending Productive? New Evidence and New Results, *Proceedings of the 14th International Conference on Information Systems*
- Brynjolfsson, E., Hitt, L. M. (1994) The Three Faces of IT Value: Theory and Evidence, *Proceedings of the 15th International Conference on Information Systems*
- Brynjolfsson, E., Hitt, L. M. (2000) Beyond Computational: Information Technology, Organizational Transformation and Business Performance, *Journal of Economic Perspectives* 14(4), pp. 23-48
- Burn, J. M. (1993) Information-Systems Strategies and the Management of Organizational-Change – A Strategic Alignment Model, *Journal of Information Technology* 8(4), pp. 205-216
- Burn, J. M., Szeto, C. (2000) A comparison of the views of business and IT management on success factors for strategic alignment, *Information and Management* 37(4), pp. 197-216
- Burton, R., Obel, J. (1984) *Designing Efficient Organizations: Modeling and Experimentation*, North-Holland Publishing, New York, NY
- Cadbury Committee (1992). The Report of the Cadbury Committee on the Financial Aspects of Corporate Governance: The Code of Best Practice, *Accountancy*, January, 1993, UK

References

- Cash, J. I., McFarlan, F., and McKenney, J. L. (1988). *Corporate Information Systems Management*, Irwin, Homewood, IL
- Chan, Y. E., Huff, S. L., Barclay, D. W., Copeland, D. G. (1997) Business strategic orientation, information systems strategic orientation and strategic alignment, *Information Systems Research* 8(2), pp. 125-150
- Chen, C. C., Chen, X., Meindl, J. R. (1998) How can cooperation be fostered?: the cultural effects if individualism-collectivism, *Academy of Management Review* 23(2), pp. 285-304
- Child, J., Rodrigues, S. B. (2004) Repairing the Breach of Trust in Corporate Governance, *Corporate Governance* 12(2), pp. 143-152
- Cohen, W. M., Levinthal, D. A. (1990) Absorptive-Capacity - A New Perspective on Learning and Innovation, *Administrative Science Quarterly* 35(1), pp. 128-152
- Cooper, J. R., (1998). A multidimensional approach to the adoption of innovation, *Management Decision* 36(8), pp. 493-502
- Cooper, R., and Zmud, R. W. (1990). Information technology implementation research: a technology diffusion approach, *Management Science* 34(2), pp. 123-139
- Core, J. E., Guay, W. R., Larcker, D. F. (2003). Executive equity compensation and incentives: A survey, *Economic Policy Review – Federal Reserve Bank of New York* 9(1), pp. 27-50
- Cron, W. L., Sobol, M. G. (1983) The Relationship Between Computerization and Performance: A Strategy for Maximizing the Economic Benefits of Computerization, *Information & Management* 6(3), pp. 171-181
- Daft, R. L. (1978) A Dual-Core Model of Organizational Innovation, *Academy of Management Journal* 21(2), pp. 193-210

References

- Daft, R. L. (1982) "Bureaucratic Versus Non Bureaucratic Structure and Process of Innovation and Change", In Bacharach, S. B. (Ed.), *Research in the Sociology of Organizations I*, Jai Press, Greenwich, CT
- Daft, R. L. (1998) *Organization Theory and Design*, 6th ed., South-Western College Publishing, Cincinnati, OH
- Damanpour, F. (1987) The adoption of technological, administrative, and ancillary innovations: Impact of organizational factors, *Journal of Management* 13(4), pp. 675-688
- Damanpour, F. (1991) Organizational Innovation: A Meta-Analysis of Effects of Determinants and Moderators, *Academy of Management Journal* 34(3), pp. 555-590
- Damanpour, F. (1992) Organizational size and innovation, *Organization Studies* 13(3), pp. 375-402
- Damanpour, F., Evan, W. M. (1984) Organizational innovation and performance: The problem of organizational lag, *Administrative Science Quarterly* 29(3), pp. 392-409
- Danielson, R., DeLisi, P., Posner, B. (1998) A CEO's-eye view of the IT function, *Business Horizons* 41(1), pp. 65-74
- Das, T. K., Teng, B. (1998) Between trust and control: developing confidence in partner cooperation in alliances, *Academy Management Review* 23(3), pp. 491-512
- Davenport, T., Eccles, R., Prusak, L. (1992) Information Politics, *Sloan Management Review*, 34(1), pp. 53-62
- Davis, F. D. (1989) Perceived Usefulness, Perceived Ease of use, and User Acceptance of Information Technology, *MIS Quarterly* 13(3), pp. 319-340
- Deakin, S., Hughes, A. (1997). Comparative Corporate Governance: An Interdisciplinary Agenda, *Journal of Law and Society* 24(1), pp. 1-9
- DeLone, W. H. (1988) Determinants of success for computer usage in small business, *MIS Quarterly* 12(1), pp. 51-61

References

- DeLone, W. H., McLean, E. R. (1992) Information Systems Success: The Quest for the Dependent Variable, *Information Systems Research* 3(1), pp. 60-95
- DeLone, W. H., McLean, E. R. (2003) The DeLone and McLean Model of Information Systems Success: A Ten-Year Update, *Journal of Management Information Systems* 19(4), pp. 9-30
- DeLone, W. H., McLean, E. R. (2004) Measuring e-Commerce Success: Applying the DeLone & McLean Information Systems Success Model, *International Journal of Electronic Commerce* 9(1), pp. 31-47
- Demirag, I. S., Sudarsanam, S., Wright, M. (2000). Corporate Governance: Overview and Research Agenda, *British Accounting Review* 32, pp. 341-354
- Demsetz, H. and Lehn, K. (1985). The structure of corporate ownership: Causes and consequences, *Journal of Political Economy* 93, pp. 1155-1177
- Diamond, D. (1991). Monitoring and reputation: the choice between bank loans and directly placed debt, *Journal of Political Economy* 99, pp. 689-721
- Dixon, P. J., Darwin, J. A. (1989) Technology Issues Facing Corporate Management in the 1990s, *MIS Quarterly* 12(3), pp. 247-255
- Dixon, P. J., John, D. A. (1989) Technology Issues Facing Corporate Management in the 1990s, *MIS Quarterly* 13(3), pp. 247-255
- Doll, W. J. (1985) Avenues for Top Management Involvement in Successful MIS Development, *MIS Quarterly* 9(1), pp. 17-35
- Donaldson, T. and Davis, J. H. (1994) Boards and Corporation Performance – Research Challenges the Conventional Wisdom, *Corporate Governance* 2, pp. 151-160
- Dunlop, A. (1998) *Corporate Governance and Control*, CIMA Publishing, London
- Earl, M. J. (1983) *Corporate Information Systems Management*, Irwin, Homewood, IL
- Earl, M. J. (1989) *Management strategies for information technology*, Prentice Hall, London

References

- Earl, M. J. (1993) Experience in Strategic Information Systems Planning, *MIS Quarterly* 17(1), pp. 1-24
- Earl, M. J., Feeny, D. F. (1994) Is your CIO adding value, *Sloan Management Review* 35(3), pp. 11-20
- Eisenberg, T., Sundgren, S., Wells, M. T. (1998) Larger board size and decreasing firm value in small firms, *Journal of Financial Economics* 48, pp. 35-54
- Eisenhardt, K. M. (1985) Control: organizational and economic approaches, *Management Science* 31(2), pp. 134-149
- Eisenhardt, K. M. (1989) Agency Theory: An Assessment and Review, *Academy of Management Review* 14(1), pp. 57-74
- Emory, C. W. (1980) *Business Research Methods*, Richard D. Irwin, Homewood, IL
- Enns, H. G., Huff, S. L., Higgins, C. A. (2003) CIO Lateral Influence Behaviors: Gaining Peers' Commitment to Strategic Information Systems, *MIS Quarterly* 27(1), pp. 155-174
- Etezadi-Amoli, J., Farhoomand, A.F. (1996) A structural model of end user computing satisfaction and user performance, *Information & Management* 30(2), pp. 65-73
- Fama, E. F. (1980) Agency problems and the theory of the firm, *Journal of Law and Economics* 26, pp. 327-349
- Fama, E. F., and Jensen, M. C. (1983) Agency problems and residual claims, *Journal of Law & Economics* 23, pp. 327-349
- Feeny, D. F., Edwards, B. R., Simpson, K. M. (1992) Understanding the CEO/CIO relationship, *MIS Quarterly* 16(4), pp. 435-448
- Feeny, D. F., Willcocks, L. P. (1998) Core IS capabilities for exploiting information technology, *Sloan Management Review* 39(3), pp. 9-22
- Fichman, R. G. (2004) Going beyond the dominant paradigm for information technology innovation research: Emerging concepts and methods, *Journal for the Association of Information Systems* 5, pp. 314-355

References

- Flamholtz, E. (1983) Accounting, Budgeting, and Control Systems in Their Organizational Context: Theoretical and Empirical Perspectives, *Accounting, Organizations, and Society* 8(2/3), pp. 153-169
- Flamholtz, E. G., Das, T. K., Tsui, A. S. (1985) Toward an Integrative Framework of Organizational Control, *Accounting, Organizations and Society* 10(1), pp. 35-50
- Franz, C. R., Robey, D. (1987) "Strategies for Research on Information Systems in Organizations: A Critical Analysis of Research Purpose and Time Frame", In *Critical Issues in Information Systems Research*, Boland, R. J., Hirschheim, R. A. (Eds.), John Wiley, Chichester, UK
- Freeman, C., Perez, C. (1988) "Structural Crises of Adjustment: Business Cycles and Investment Behavior", In Dosi, G., et al., *Technical Change and Economic Theory*, Pinter Publishers, New York
- Freeman, R. E. (1984) *Strategic Management: A stakeholder approach*, Pitman, Boston, MA
- Friedman, A. L., Miles, S. (2002) Developing Stakeholder Theory, *Journal of Management Studies* 39(1), pp. 1-21
- Galbraith, J. (1973) *Designing Complex Organizations*, Addison-Wesley, Reading, MA
- Galbraith, J. (1977) *Organization Design*, Addison-Wesley, Reading, MA
- Galliers, R. D. (1991) "Choosing Appropriate Information Systems Research Approaches: A Revised Taxonomy", In *Information Systems Research: Contemporary Approaches & Emergent Traditions*, Nissen, H. E., Klein, H. K., Hirschheim, R. (Eds.), Elsevier Science Publishers B.V., The Netherlands
- George, J. M. (1992) Extrinsic and intrinsic origins of perceived social loafing in organizations, *Academy Management Journal* 35(1), pp. 191-202
- Gibson, C. (2003) IT-enabled business change: An approach to understanding and managing risk, *MIS Quarterly Executive* 2(2), pp. 104-115

References

- Glaser, J. (2002) *The Strategic Application of Information Technology in Health Care Organizations* (2nd ed.), Jossey-Bass, San Francisco, CA
- Glock, C. Y. (Ed.) (1967) *Survey Research in the Social Sciences*, Russell Sage Foundation, New York
- Goodhue, D. L., Thompson, R. L. (1995) Task-technology fit and individual performance, *MIS Quarterly* 19(2), pp. 213–233
- Govindarajan, V., Fisher, J. (1990) Strategy, control systems, and resource sharing: effects on business-unit performance, *Academy of Management Journal* 33(2), pp. 259-285
- Grandori, A. (2004) “Reframing Corporate Governance: Behavioral Assumptions, Governance Mechanisms, and Institutional Dynamics”. In Grandori, A. (Ed.), *Corporate Governance and Firm Organization: Microfoundations and Structural Forms*, Oxford University Press, Oxford
- Grandori, A. (1997) Governance Structures, Coordination Mechanisms and Cognitive Models, *Journal of Management and Governance*, 1(1), pp. 29-47
- Grant, G. H. (2003) The evolution of corporate governance and its impact on modern corporate America, *Management Decision* 41(9), pp.923-934
- Grant, R. M. (1991) The Resource-based Theory of Competitive Advantage, *California Management Review* 33(3), pp. 114-135
- Grant, R. M. (1995) *Contemporary Strategy Analysis*, Blackwell Publishers Inc., Oxford, UK
- Grover, V., Jeong, S. R., Kettinger, W. J., Lee, C. C. (1993) The chief information officer: a study of managerial roles, *Journal of Management Information Systems* 10(2), pp. 107-130
- Gurbaxani, V., Whang, S. (1991) The impact of information systems on organizations and markets, *Communication of the ACM*, 34(1), pp. 59-73
- Hackney, R., Burn, J., Dhillon, G. (2000) Challenging Assumptions for Strategic Information Systems Planning: Theoretical Perspectives, *Communications for the Association of Information Systems* 3(9), pp. 1-24

References

- Hambrick, D., Mason, P. A. (1984) Upper Echelons: The Organization as a Reflection of Its Top Managers, *Academy of Management Review* 9(2), pp.193-206
- Hart, O. (1995) Corporate Governance - Some Theory and Implications, *Economic Journal* 105(430), pp.678-689
- Hawley, J. P., Williams, A. T. (1996) Corporate governance in the United States: the rise of fiduciary capitalism – a review of the literature. The first prize of Lens 1996 Corporate Governance Paper Competition. Available online at www.lens-library.com/info/competition.html
- Henderson, J. C. (1990) Plugging into Strategic Partnerships: The Critical IS Connection, *Sloan Management Review* 31(3), pp. 7-18
- Henderson, J. C., Rockart, J. F., Sifonis, J. G. (1987) Integrating Management Support Systems Into Strategic Information Systems Planning, *Journal of Management Information Systems* 4(1), pp. 5-24
- Henderson, J. C., Venkatraman, N. (1992) Strategic Alignment: a model for organizational transformation through information technology, in *Transforming Organizations*, Kochan, T. A. and Useem M. (eds), Oxford University Press, Oxford and New York
- Henderson, J. C., Venkatraman, N. (1993) Strategic alignment: Leveraging information technology for transforming organizations, *IBM Systems Journal* 32(1), pp. 4-16
- Henderson, J. C., Venkatraman, N. (1996) Aligning Business and IT Strategies, in J. Luftman, *Competing in the Information Age: Practical Applications of the Strategic Alignment Model*, Oxford University Press, New York, NY
- Henderson, J., Venkatraman, N. (1993) Strategic alignment: Leveraging information technology for transforming organizations, *IBM Systems Journal* 32(1), pp. 4-16

References

- Hitt, L., Brynjolfsson, E. (1996) Productivity, Business Profitability, and Consumer Surplus: Three Different Measures of Information Technology Value, *MIS Quarterly* 20(2), pp. 121-142
- Ho, C. (2005) Corporate Governance and Corporate Competitiveness: an international analysis, *Corporate Governance* 13(2), pp. 211-253
- Hoffman, J. J., Cullen, J. B., Carter, N. M., Hofacker, C. F. (1992) Alternative methods for measuring organization fit: technology, structure and performance, *Journal of Management* 18(1), pp. 45-57
- Holland, C., Lockett, G., Blackman, I. (1992) Planning for electronic data interchange, *Strategic Management Journal* 13(7), pp. 539–550
- IT Governance Institute (2003) *Board briefing on IT governance*, second edition. Available online at www.itgi.org
- Ives, B., Jarvenpaa, S. L. (1991) Applications of Global Information Technology: Key Issues for Management, *MIS Quarterly* 15(1), pp. 33-49
- Ives, B., Jarvenpaa, S. L., Mason, R. (1993) Global Business Drivers: Aligning Information Technology to Global Business Strategy, *IBM Systems Journal* 32(1), pp. 143-161
- Ives, B., Learmonth, G. (1984) The Information System as a Competitive Weapon, *Communication of the ACM* 27(12), pp. 1193-1201
- Ives, B., Olson, M. H. (1981) Manager or Technician? The Nature of the Information Systems Manager's Job, *MIS Quarterly* 5(4), pp. 49-63
- Ives, B., Olson, M. H., Baraoudi, J. J. (1983) Measuring User Information Satisfaction: A Method and Critique, *Communications of the ACM* 26(10), pp. 785-793
- Jarvenpaa, S. L., Ives, B. (1991) Executive Involvement and Participation in the Management of Information Technology, *MIS Quarterly* 15(2), pp. 205-227
- Jensen, M. and Murphy, K. (1990) Performance pay and top management incentives, *Journal of Political Economy* 98(2), pp.225-264

References

- Jensen, M. C. (1986) Agency cost of free cash flow, corporate finance, and take-overs, *American Economic Review* 76(2), pp.323-329
- Jensen, M. C. (2002) Value Maximization, Stakeholder Theory, and the Corporate Objective Function, *Business Ethics Quarterly* 12(2), pp.235-256
- Jensen, M. C., Meckling, W. H. (1976) Theory of the firm: managerial behavior, agency costs and ownership structure, *Journal of Financial Economics* 3, pp.305-360
- Jiang, J. J., Klein, G., Carr, C. L. (2002) Measuring information systems service quality: SERVQUAL from the other side, *MIS Quarterly* 26(2), pp. 145–166
- Johnson, B. M. (1977) *Communication: The Process of Organizing*, Allyn and Bacon, Boston
- Kaarst-Brown, M. L. (2005) Understanding an organization's view of the CIO: the role of assumptions about IT, *MIS Quarterly Executive* 4(2), pp. 287-301
- Kakabadse, A., Kakabadse, N. (2001) *The Geopolitics of Governance*, Palgrave, Hampshire
- Kanter, R. M. (1983) *The change masters*, Unwin Paperbacks, Boston
- Kaplan, B., Duchon, D. (1988) Combining Qualitative and Quantitative Methods in Information Systems Research: A Case Study, *MIS Quarterly* 12(4), pp. 571-586
- Keen, P. G. W. (1991) *Shaping the Future: Business Design Through Information Technology*, Harvard Business School Press, Boston, MA
- Keen, P. G. W. (1995) *Every Manager's Guide to Information Technology* (2nd Ed.), Harvard Business School Press, Boston, MA
- Keider, S. P (1984) Why Systems Development Projects Fail?, *Journal of Information Systems Management* 1(3), pp. 33-38
- Kettinger, W. J., Lee, C. C. (2002) Understanding the is-user divide in it innovation, *Communications of the ACM* 45, pp. 79-84
- Kettinger, W. J., Grover, V., Segars, A., Guha, S. (1994) Strategic Information Systems Revisited: A Study in Sustainability and Performance, *MIS Quarterly* 18(1), pp. 31-58

References

- Kim, L. (1980) Organizational innovation and structure, *Journal of Business Research* 8(2), pp. 225-245
- Kim, K., Michelman, J. (1990) An examination of the factors for the strategic use of information systems in the healthcare industry, *MIS Quarterly* 14(2), pp. 201–215
- Kimberly, J. R., Evanisko, M. (1981) Organizational innovation: The influence of individual, organizational, and contextual factors on hospital adoption of technological and administrative innovations, *Academy of Management Journal* 24(4), pp. 689-713
- King, W. R. (1978) Strategic Planning for Management Information Systems, *MIS Quarterly* 2(1), pp. 27-37
- King, W. R. (1988) How Effective is Your Information Systems Planning?, *Long Range Planning* 21(2), pp. 103-112
- King, J. L., Gurbaxani, V., Kraemer, K. L., McFarlan, F. W., Raman, K. S., Yap, C. S. (1994) The institutional factors in information technology innovation, *Information Systems Research* 5(2), pp. 139-169
- Knight, K. E. (1967) A descriptive model of the intra-firm innovation process, *Journal of Business* 40(4), pp. 478-496
- Koromita, S. S., Parks, C. D. (1995) Interpersonal relations: Mixed-motive interaction, *Annual Review of Psychology* 46, pp. 183-207
- Kraemer, K. L., Dutton, W. H. (1991) "Survey Research in the Study of Management Information Systems", In *The Information Systems Research Challenge: Survey Research Methods - Volume 3*, Kraemer, K. L. (Ed.), Harvard Business School Press, Boston, MA
- Kraemer, K. L., King, J. L., Dunkle, D. E., and Lane, J. P. (1989) *Managing information systems: change and control in organizational computing*. Jossey-Bass, San Francisco, CA
- Kwon, T. H., Zmud, R. W. (1987) "Unifying the Fragmented Models of Information Systems Implementation", In *Critical Issues in Information Systems Research*, Boland Jr., R. J., Hirscheim, R. A. (Eds.), Wiley, New York, NY

References

- Lacity, M., Hirschheim, R. A. (1993) The information systems outsourcing bandwagon, *Sloan Management Review*, pp. 73–86
- Landauer, T. K. (1995) The trouble with computers – usefulness, usability and productivity, MIT Press, Cambridge, MA
- Langfield-Smith, K. (1997) Management control systems and strategy: a critical review, *Accounting, Organizations and Society* 22(2), pp. 207-232
- Laudon, K. C. (1985) Environmental and Institutional Models of Systems Development: A National Criminal History System, *Communication of the ACM* 28(7), pp. 728-740
- Lederer, A. L., Mendelow, A. L. (1986) Issues in Information Systems Planning, *Information and Management* 10(5), pp. 245-254
- Lederer, A. L., Mendelow, A. L. (1987) Information resource planning: overcoming difficulties in identifying top management's objectives, *MIS Quarterly* 11(3), pp. 389-399
- Lederer, A. L., Mendelow, A. L. (1988) Information Systems Planning: Top Management Takes Control, *Business Horizon* 31(3), pp. 73-78
- Lederer, A. L., Mendelow, A. L. (1989) Coordination of information systems plans with business plans, *Journal of Management Information Systems* 6(2), pp. 5-19
- Lederer, A. L., Sethi, V. (1988) The implementation of information systems planning methodologies, *MIS Quarterly* 12(3), pp. 444-461
- Lee, A. S. (1991) Integrating Positivist and Interpretive Approaches to Organizational Research, *Organization Science* 2(4), pp. 342-365
- Leonard-Barton, D., Deschamps, I. (1988) Managerial Influence in the Implementation of New Technology, *Management Science* 34(10), pp. 1252-1265
- Letza, S., Sun, X., Kirkbride, J. (2004) Shareholding versus Stakeholding: a critical review of corporate governance, *Corporate Governance* 12(3), pp.242-262

References

- Lewellen, W., Loderer, C., Martin, K. (1987) Executive compensation and executive incentive problems: An empirical analysis, *Journal of Accounting and Economics* 9, pp.287-310
- Lewis, W., Agarwal, R., Sambamurthy, V. (2003) Sources of Influence on Beliefs about Information Technology Use: An Empirical Study of Knowledge Workers, *MIS Quarterly* 27(4), pp. 657-678
- Licht, G., Moch, D. (1999) Innovation and Information Technology in Services, *The Canadian Journal of Economics* 32(2), pp. 363-383
- Lind, M. R., Zmud, R. W. (1991) The Influence of Convergence in Understanding Between Technology Providers and Users in Information Technology Innovativeness, *Organization Science* 2(2), pp. 195-217
- Littlejohn, S. W. (1996) *Theories of Human Communication* (5th ed.), Wadsworth, New York
- Loveman, G. W. (1994) Assessing the Productivity Impact of Information Technologies, In Allen, T. J., Scott-Morton, M., *Information Technology and the Corporation of the 1990s*, Oxford University Press, New York
- Luftman, J. N. (1996) Applying the strategic alignment model, in *Competing in the Information Age*, Luftman, J. N. (ed), Oxford University Press, Oxford and New York
- Luftman, J. N. (2003) Assessing IT/Business Alignment, *Information Systems Management* 20(4), pp. 9-15
- Luftman, J. N., Brier, T. (1999) Achieving and Sustaining Business-IT Alignment, *California Management Review* 42(1), pp.109-122
- Luftman, J. N., Papp, R., Brier, T. (1999) Enablers and inhibitors of business-IT alignment, *Communications of AIS* 1(11), pp.1-33
- Lutchen, M. D. (2004) *Managing IT as a Business*, Wiley, New York

References

- Macey, J. R. (1997) Institutional Investors and Corporate Monitoring: A Demand-Side Perspective, *Managerial and Decision Economics* 18(7/8), pp.601-610
- Malone, T. W., Crowston, K. C. (1994) The Interdisciplinary Study of Coordination, *ACM Computing Survey* 26(1), pp. 87-119
- Malone, T. W., Yates, J., Benjamin, R. I. (1987) Electronic markets and electronic hierarchies, *Communication of the ACM* 30(6), pp. 484-497
- Manne, H. G. (1965) Mergers and the Market for Corporate Control, *Journal of Political Economy* 75, pp.110-126
- Marris, R. (1963) A model of the “managerial” enterprise, *Quarterly Journal of Economics* 77, pp. 185-209
- Mason, R. O. (1978) Measuring information output: A communication systems approach, *Information and Management* 1(5), pp. 219–234
- McFarlan, F. W., McKenney, J. L., Pyburn, P. (1983) The Information Archipelago – Plotting a Course, *Harvard Business Review* 61(1), pp. 145-156
- McKenney, J. L., Copeland, D., Associates (1995) *Waves of Change: Business Evolution through Information Technology*. Harvard Business School Press, Cambridge, MA
- McLean, E. R., Soden, J. V. (1977) *Strategic Planning for MIS*, Wiley & Sons, New York, NY
- Miller, C. C., Glick, W. H., Wang, Y. D., Huber, G. P. (1991) Understanding technology-structure relationship: theory development and meta-analytical theory testing, *Academy of Management Journal* 34(2), pp. 370-399
- Mintzberg, H. (1971) Managerial Work: Analysis from Observation, *Management Science* 18(2), pp. B97-B110
- Mintzberg, H. (1973) *The Nature of Managerial Work*, Harper and Row, New York, NY
- Mintzberg, H. (1979) *The Structuring of Organizations*, Prentice-Hall, Englewood Cliffs, NJ

References

- Mintzberg, H. (1980) *The Nature of Managerial Work*, Prentice-Hall, Englewood Cliffs, NJ
- Mintzberg, H. (1990) The design school: Reconsidering the basic premises of strategic management, *Strategic Management Journal* 11, pp.171-196
- Mohr, L. (1969) Determinants of innovation in organization, *American Political Science Review* 63(1), pp. 111–126
- Monks, R. A. G., Minow, N. (2004) *Corporate Governance* (3rd ed), Blackwell Publishing, Malden MA
- Mooney, J. G., Gurbaxani, V., Kraemer, K. L. (1996) A Process Oriented Framework for Assessing the Business Value of Information Technology, *The DATA BASE for Advances in Information Systems* 27(2), pp. 68-81
- Mueller, R. K. (1981) *Behind the Board Door*, Grown Publishers, New York, NY
- Mukhopadhyay, T., Kekre, S., Kalathur, S. (1995) Business Value of Information Technology: A study of Electronic Data Interchange, *MIS Quarterly* 19(2), pp. 137-156
- Mumford, E. (1991) “Information Systems Research - Leaking Craft or Visionary Vehicle?”, In *Information Systems Research: Contemporary Approaches & Emergent Traditions*, Nissen, H. E., Klein, H. K., Hirschheim, R. (Eds.), Elsevier Science Publishers B.V., The Netherlands
- Mumford, E., Hirschheim, R., Fitzgerald, G., Wood-Harper, T. (Eds.) (1985) *Research Methods in Information Systems*, North-Holland Publishers, New York
- Murphy, K. (1985) Corporate performance and managerial remuneration: an empirical analysis, *Journal of Accounting and Economics* 7, pp.11-42
- Myers, S. (1977) Determinants of corporate borrowing, *Journal of Financial Economics* 5, pp.147-175
- National Research Council (1994) *Information Technology in the Service Society: A Twenty-First Century Leverage*, National Academy Press, Washington, DC

References

- Nelson, K. M., Coopridge, J. G. (1996) The Contribution of Shared Knowledge to IT Group Performance, *MIS Quarterly* 20(4), pp. 409-432
- Nissen, H. E., Klein, H. K., Hirschheim, R. (1991) "A Pluralist Perspective of the Information Systems Arena", In *Information Systems Research: Contemporary Approaches & Emergent Traditions*, Nissen, H. E., Klein, H. K., Hirschheim, R. (Eds.), Elsevier Science Publishers B.V., The Netherlands
- O'Sullivan, M. (2000) *Contests for Corporate Control: Corporate Governance and Economic Performance in the United States and Germany*, Oxford University Press, Oxford
- O'Sullivan, M. (2000b) The innovative enterprise and corporate governance, *Cambridge Journal of Economics* 24(4), pp. 393-416
- OECD (1999) *Principles of Corporate Governance*, OECD website (www.oecd.org), Paris
- Olson, M. H., Chervany, N. L. (1980) The Relationship Between Organizational Characteristics and the Structure of the Information Services Function, *MIS Quarterly* 4(2), pp. 57-69
- Orlikowski, W. J. (1992) The Duality of Technology: Rethinking the Concept of Technology in Organizations, *Organization Science* 3(3), pp. 398-427
- Orlikowski, W. J., Barley, S. R. (2001) Technology and Institutions: What Can Research on Information Technology and Research on Organizations Learn from Each Other?, *MIS Quarterly* 25(2), pp. 145-165
- Orlikowski, W. J., Baroudi, J. J. (1991) Studying Information Technology in Organizations: Research Approaches and Assumptions, *Information Systems Research* 2(1), pp. 1-28
- Orlikowski, W. J., Cash, D. C. (1993) *Technological Frames: Making Sense of Information Technology in Organizations*, MIT Sloan School Working Paper, Cambridge, MA

References

- Osterman, P. (1986) The Impact of Computers on the Employment of Clerks and Managers, *Industrial and Labor Relations Review* 39(2), pp. 175-186
- Ouchi, W. G. (1977) The Relationship between Organizational Structure and Organizational Control, *Administrative Science Quarterly* 22(1), pp. 95-113
- Ouchi, W. G. (1979) A Conceptual Framework for the Design of Organization Control Mechanisms, *Management Science* 25(9), pp. 833-848
- Ouchi, W. G., Maguire, M. A. (1975) Organizational Control: Two Functions, *Administrative Science Quarterly* 20(4), pp. 559-569
- Parasuraman, A., Zeithaml, V. A., Berry, L. L. (1988) SERVQUAL: A Multiple-item Scale for Measuring Consumer Perceptions of Service Quality, *Journal of Retailing* 64(1), pp. 12-40
- Parasuraman, A., Zeithaml, V. A., Berry, L. L. (1991) Refinement and Reassessment of the SERVQUAL Scale, *Journal of Retailing* 67(4), pp. 420-450
- Parasuraman, A., Zeithaml, V. A., Berry, L. L. (1985) A Conceptual Model of Service Quality and Its Implications for Future Research, *Journal of Marketing* 49(4), pp. 41-50
- Peterson, K. D. (1984) Mechanisms of Administrative Control over Managers in Educational Organizations, *Administrative Science Quarterly* 29(4), pp. 573-597
- Peterson, R. (2004) Crafting Information Technology Governance, *Information Systems Management* 21(4), pp. 7-22
- Picot, A., Ripperger, T., Wolff, B. (1996) The fading boundaries of the firm: the role of information and communication technology, *Journal of Institutional and Theoretical Economics* 152(1), pp. 65-79
- Pinsonneault, A., Kraemer, K. L. (1993) Survey Research Methodology in Management Information Systems: An Assessment, *Journal of Management Information Systems* 10(2), pp. 75-105

References

- Porter, M., Millar, V. (1985) How information gives you competitive advantage, *Harvard Business Review* 65(4), pp. 149–160
- Pound, J. (1992). Beyond Takeovers: Politics Comes to Corporate Control, *Harvard Business Review*, March-April, pp.83-93
- Pound, J. (1993) The Rise of the Political Model of Corporate Governance and Corporate Control, *New York University Law Review* 68, pp. 1003-1071
- Rackoff, N., Wiseman, C., Ullrich, W. (1985) IS is for competitive advantage: Implementation of a planning process, *MIS Quarterly* 9(4), pp. 285–294
- Raghunathan, B., Raghunathan, T. S. (1994) Adaptation of a Planning System Success Model to Information Systems Planning, *Information Systems Research* 5(3), pp. 326-340
- Rathnam, R. G., Johnsen, J., Wen, J. H. (2004) Alignment of business strategy and IT strategy: A case study of a fortune 50 financial services company, *Journal of Computer Information Systems* 45(2), pp. 1-8
- Rau, K. G. (2004) Effective governance of IT: design objectives, roles, and relationships, *Information Systems Management* 21(4), pp. 35-42
- Ravichandran, T. (2000) Redefining organizational innovation: towards theoretical advancements, *The Journal of High Technology Management Research* 10(2), pp. 243-274
- Raymond, L., Pare, G., Bergeron, F. (1995) Matching information technology and organizational businesses, *Information Resources Management Journal* 5(2), pp. 4-16
- Reich, B. H., Benbasat, I. (1990) An Empirical Investigation of Factors Influencing the Success of Customer-Oriented Strategic Systems, *Information Systems Research* 1(3), pp. 325-347
- Reich, B. H., Benbasat, I. (1996) Measuring the Linkage between Business and Information Technology Objectives, *MIS Quarterly* 20(1), pp. 55-81

References

- Reich, B. H., Benbasat, I. (2000) Factors that influence the social dimension of alignment between business and information technology objectives, *MIS Quarterly* 24(1), pp. 81-111
- Robey, D. (1979) User Attitudes and Management Information System Use, *Academy of Management Journal* 22(3), pp. 527-538
- Rockart, J. F. (1988) The Line takes the Leadership – IS Management in a Wired Society, *Sloan Management Review* 29(4), pp.57-64
- Rockart, J. F., Earl, M., Ross, J. (1996) Eight Imperatives for the New IT Organization, *Sloan Management Review* 38(1), pp. 43-55
- Rockart, J., Short, J. (1989) IT in the 1990s: Managing organizational interdependence, *Sloan Management Review* 30(2), pp. 7–17
- Roessner, J. D. (1979) Federal Technology Policy: Innovation and Problem Solving in State and Local Governments, *Policy Analysis* 5(2), pp. 181-200
- Rogers, E. M. (1986) *Communication Technology: The New Media in Society*, The Free Press, New York
- Rogers, E. M. (2003) *Diffusion of innovations*, The Free Press, New York
- Rosenberg, N. (1972) Factors affecting diffusion of technology, *Explorations in Economic History* 10(1), pp. 3-33
- Ross, J. W. (2003) Creating a Strategic IT Architecture Competency: Learning in Stages, *MIS Quarterly Executive* 2(1), pp. 31-43
- Ross, J. W., Beath, C. M. (2002) Beyond the Business Case: New Approaches to IT Investment, *Sloan Management Review* 43(2), pp. 51-59
- Ross, J. W., Feeny, D. (2000) “The evolving role of the CIO”, in R. W. Zmud (ed.) *Framing the Domains of IT Management Research: Glimpsing the Future through the Past*, Cincinnati: Pinnaflex Press

References

- Ross, J. W., Beath, C. M., Goodhue, D. (1996) Develop long-term competitiveness through IT assets, *Sloan Management Review* 38(1), pp. 31-42
- Ross, S. A. (1977). The determination of financial structure: the incentive signaling approach, *Bell Journal of Economics and Management Science* 8, pp. 23-40
- Sabherwal, R., King, W. (1991) Toward a theory of strategic use of information services, *Information and Management* 20(3), pp. 191–212
- Sambamurthy, V. (2000). “Business Strategy in Hypercompetitive Environments: Rethinking the Role of IT Differentiation”, in R. W. Zmud (ed.). *Framing the Domains of IT Management Research: Glimpsing the Future through the Past*, Cincinnati, Pinnaflex Press
- Sambamurthy, V., Bharadwaj, A., Grover, V. (2003). Shaping agility through digital options: reconceptualizing the role of Information Technology in contemporary firms, *MIS Quarterly* 27(2), pp. 237-263
- Sambamurthy, V., Zmud, R. (1992) Managing IT for success: The empowering business partnership, *Financial Executives Research Foundation*, pp. 1-97
- Sambamurthy, V., Zmud, R. W. (1999) Arrangements for Information Technology Governance: A Theory of Multiple Contingencies, *MIS Quarterly* 23(2), pp. 261-290
- Schein, E. H. (1992) The role of the CEO in the management of change: The case of information technology, in T. A. Kochan, M. Useem (eds), *Transforming Organizations*, Oxford University Press, Oxford
- Schmitt, J. W., Kozar, K. A.(1978) Management's Role in Information System Development Failures: A Case Study, *MIS Quarterly* 2(2), pp. 7-16
- Schwager, P. H., Byrd, T. A., Turner, D. E. (2000) Information Technology Infrastructure Capability's Impact on Firm Financial Performance: An Exploratory Study, *Journal of Computer Information Systems* 40(4), pp. 98-105
- Scott, W. R. (1987). “Organizational Effectiveness” in *Organizations: Rational, Natural, and Open Systems*, 2nd ed., Prentice-Hall, Englewood Cliffs, NJ

References

- Seddon, P. B., Graeser, V., Willcocks, L. (2002) Measuring Organizational IS Effectiveness: An Overview and Update of Senior Management Perspectives, *The DATA BASE for Advances in Information Systems* 33(2), pp. 11-28
- Seddon, P. B., Kiew, M. Y. (1994) A partial test and development of the DeLone and McLean model of IS success, *Proceedings of the 15th International Conference on Information Systems*
- Segars, A. H., Grover, V. (1998) Strategic information systems planning success: An investigation of the construct and its measurement, *MIS Quarterly* 22(2), pp. 139-163
- Segars, A. H., Grover, V. (1999) Profiles of Strategic Information Systems Planning, *Information Systems Research* 10(3), pp. 199-232
- Selltiz, C., Wrightsman, L. S., Cook, S. M. (1976) *Research Methods in Social Relations*, 3rd ed., Holt Rhinehart and Winston, New York
- Shannon, C. E., Weaver, W. (1949) *The Mathematical Theory of Communication*, University of Illinois Press, Urbana
- Shleifer, A., Vishny, R. W. (1997). A survey of corporate governance, *The Journal of Finance* 52(2), pp. 737-783
- Siegel, D., Griliches, Z. (1992) Purchased services, outsourcing, computers, and productivity in manufacturing, in *Output Measurement in the Service Sector*, Griliches, Z. (Ed.), The University of Chicago Press, Chicago, IL
- Siegel, P. H., Blank, M. M., Rigsby, J. T. (1991) Socialization of the Accounting Professional: Evidence of the Effect of Educational Structure on Subsequent Auditor Retention and Advancement, *Accounting, Auditing and Accountability Journal* 4(4), pp. 58-70
- Singleton, R. A. J., Straits, B. C. (1999) *Approaches to social research*. Oxford: Oxford University Press

References

- Smaltz, D. H., Sambamurthy, V., Agarwal, R. (2006) The antecedents of CIO role effectiveness in organizations: an empirical study in the healthcare sector, *IEEE Transactions on Engineering Management* 53(2), pp. 207-222
- Smith, A. (1937). *The Wealth of Nations*. Random House, New York
- Stephens, C. S. (1993) Five CIOs at Work: Folklore and Facts Revisited, *Journal of Systems Management* 44(3), pp. 34-40
- Stephens, C., Ledbetter, W., Mitra, A., Ford, F. (1992) Executive or functional manager? The nature of the CIO's job, *MIS Quarterly* 16(4), pp. 449-467
- Strassman, P. A. (1990) *The Business Value of Computers*, Information Economics Press, New Canaan, CN
- Strassman, P. A. (1997) *The Squandered Computer; Evaluating the Business Alignment of Information Technologies*, Information Economics Press, New Canaan, Connecticut
- Subramani, M., Iacono, S., Henderson, J. C. (1995) Bridging the IS-Line Interface: The role of the Relationship Manager, in *Proceedings of the First Americas Conference on Information Systems*, Pittsburg, PA
- Synnott, W. R. (1987) Putting a CIO in charge, *Institutional Investor: Financial Technology Forum Supplement* 21, pp. 47-48
- Synnott, W. R., Gruber, W. H. (1981) *Information Resource Management*, John Wiley & Sons, New York, NY
- Tan, S. S. L., Fichman, M. (2002) *Adoption of web-based transactional banking: Efficiency-choice and neo-institutionalism perspectives*, Paper presented at the Twenty-third International Conference on Information Systems, Barcellona
- Tavakolian, H. (1989) Linking the Information Technology structure with organizational competitive strategy: a survey, *MIS Quarterly* 13(3), pp. 309-317
- Teo, T. S. H., King, W. R. (1996) Assessing the impact of integrating business planning and IS planning, *Information and Management* 30(6), pp. 309-321

References

- Teo, T. S. H., Wong, P. K. (1998) An empirical study of the performance impact of computerization in the retail industry, *Omega - The International Journal of Management Science* 26(5), pp. 611–621
- Teo, H. H., Wei, K. K., Benbasat, I. (2003) Predicting intention to adopt interorganizational linkages: An institutional perspective, *MIS Quarterly* 27, pp. 19-49
- Thompson, J. (1967) *Organizations in Action: Social Sciences Bases of Administrative Theory*, McGraw-Hill, New York, NY
- Thompson, V. A. (1965) Bureaucracy and Innovation, *Administrative Science Quarterly* 10(1), pp. 1-20
- Thong, J. Y. L. (1999) An integrated model of information systems adoption in small businesses, *Journal of Management Information Systems* 15(4), pp. 187-214
- Turnbull, S. (1997) Corporate Governance: Its Scope, Concerns and Theories, *Corporate Governance* 5, pp. 180-205
- Turner, J. A. (1984) Computer-Mediated Work: The Interplay Between Technology and Structured Jobs, *Communications of the ACM* 27(12), pp. 1210-1217
- Utterback, J. M. (1996) *Mastering the Dynamics of Innovation*, Harvard Business School Press, Boston, MA
- Van Grembergen, W. (2002) Introduction to the minitrack IT governance and its mechanisms. *Proceedings of the 35th Hawaii International Conference on System Sciences*, IEEE
- Venkatraman, N. (1989) Strategic orientation of business enterprises – the construct, dimensionality and measurement, *Management Science* 35(8), pp. 942-962
- Venkatraman, N. (1991) Information Technology-Induced Business Reconfiguration: The New Strategic Management Challenge, in *The Corporation of the 1990s*, Scott Morton, M. S. (ed.), Oxford University Press, Oxford

References

- Venkatraman, N. (1997) Beyond Outsourcing: Managing IT Resources as a Value Center, *Sloan Management Review* 38(3), pp. 51-64
- Venkatraman, N. (2000) Five Steps to a dot-com Strategy: How to Find Your Footing on the Web, *Sloan Management Review* 41(3), pp. 15-28
- Venkatraman, N., Henderson, J. (1998) Real Strategies for Virtual Organizing, *Sloan Management Review* 40(1), pp. 33-48
- Visala, S. (1991) "Broadening the Empirical Framework of Information Systems Research", In *Information Systems Research: Contemporary Approaches & Emergent Traditions*, Nissen, H. E., Klein, H. K., Hirschheim, R. (Eds.), Elsevier Science Publishers B.V., The Netherlands
- Vitale, M. R., Ives, B., Beath, C. M. (1986) Linking Information Technology and Corporate Strategy: An Organizational View, *Proceedings of the Seventh International Conference on Information Systems*, San Diego, CA, December 15-17, pp. 265-276
- Wagner, J. A. (1995) Studies of individualism-collectivism: effects on cooperation in groups, *Academy Management Journal* 38(1), pp. 152-172
- Watson, R. T., Brancheau, J. C. (1991) Key Issues in Information Systems Management: An International Perspective, *Information and Management* 20(3), pp. 213-223
- Weill, P. (1992) The Relationship Between Investment in Information Technology and Firm Performance: A Study of the Valve Manufacturing Sector, *Information Systems Research* 3(4), pp. 307-333
- Weill, P. (2004) Don't just lead govern how top-performing firms govern IT, *MIS Quarterly Executive* 3(1), pp. 1-17
- Weill, P., Broadbent, M. (1998) *Leveraging the New Infrastructure: How Market Leaders Capitalize on Information Technology*, Harvard Business School Press, Boston, MA

References

- Weill, P., Olson, M. (1989) Managing investment in information technology: Mini case examples and implications, *MIS Quarterly* 13(1), pp. 3-18
- Weill, P., Ross, J. W. (2004). IT Governance: How Top performers manage IT decision rights for superior results, Harvard Business School Press, Boston, MA
- Weill, P., Subramani, M., Broadbent, M. (2002) Building IT Infrastructure for Strategic Agility, *Sloan Management Review* 44(1), pp. 57-65
- Willcocks, L. P., Feeny, D., Islei, G. (eds) (1997) *Managing IT as Strategic Resource*, McGraw-Hill, Berkshire, UK
- Willcocks, L. P., Lester, S. (1996) The evaluation and management of information systems investments: from feasibility to routine operations, in Willcocks, L. P. (ed), *Investing in Information Systems*, Chapman and Hall, London, pp. 15-36
- Willcocks, L. P., Lester, S. (1999) Information Technology: transformer or sink hole? In Willcocks, L. P., Lester, S. (eds) *Beyond the IT Productivity Paradox*, Wiley, Chichester
- Williamson, O. E. (1975) *Markets and Hierarchies*, The Free Press, New York, NY
- Williamson, O. E. (1983) Organization Form, Residual Claimants, and Corporate-Control, *Journal of Law and Economics* 26(2), pp. 351-366
- Williamson, O. E. (1984) Corporate Governance, *Yale Law Journal* 93(7), pp. 1197-1230
- Williamson, O. E. (1985) *The Economic Institution of Capitalism*, The Free Press, New York, NY
- Willinger, M., Luscovitch, E. (1988) "Towards the Economics of Information-intensive Production Systems: The Case of Advanced Materials", In Dosi, G., et al., *Technical Change and Economic Theory*, Pinter Publishers, New York, NY
- Wixom, B. H., Watson, H. J. (2001) An empirical investigation of the factors affecting data warehousing success, *MIS Quarterly* 25(1), pp. 17-41
- Wren, D. A. (1994) *The Evolution of Management Thought*, 4th ed., John Wiley & Sons, New York, NY

References

Yates, J. (1989) Control through communication: the rise of system in American management, Johns Hopkins University Press, Baltimore, MD

Zaltman, G., Duncan, R., Holbek, J. (1973). *Innovation and Organizations*, Wiley, New York, NY

Zingales, L. (2000). In Search of New Foundations, *The Journal of Finance* 55(4), pp. 1623-1653

Zmud, R. W. (1984) An Examination of 'Push-Pull' Theory Applied to Process Innovation in Knowledge Work, *Management Science* 30(6), pp. 727-738

Zmud, R. W. (1988) Building Relationships Throughout the Corporate Entity, In Elam, J. J., Ginzberg, M., Keen, P. W. G., Zmud, R. W. (eds) *Transforming the IS Organization*, ICIT Press, Washington DC