

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

THESIS SUMMARY

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CONTENTS *(relates to the full version of the thesis)*

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

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.

Thus, the **Chapter I – Why does IT governance need to be reconceptualized?** – discusses the need for getting a wider view about the IT governance concept.

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 (Boynnton, et al., 1994), IT function (Agarwal and Sambamurthy, 2002), and the role of IT (Sambamurthy, et al., 2003; Kaarst-Brown, 2005).

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).

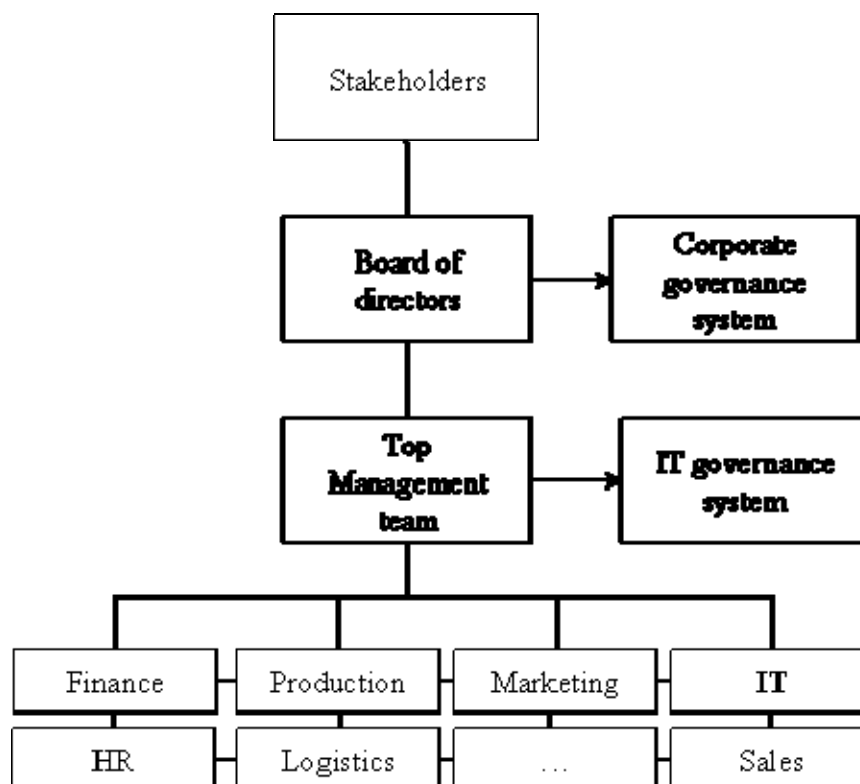
The relation between IT management and each of these stakeholder categories represents a different perspective of analysis, respectively: strategic or vertical perspective, lateral or partnership perspective, service or user perspective. These perspectives refer to an intra-organizational view. IT governance 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.

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.



In the **Chapter 2 – Corporate governance: theoretical lens and models – I** explore the literature for corporate governance definitions 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 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.

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.

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).

Table summarizes the main dimensions of corporate governance concept.

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,	Blair, 1995; O'Sullivan, 2000b; Macey, 1997

	who controls them, how the control is exercised	
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

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).

In the **Chapter 3 – IT governance: theoretical lens and models** – I explore the literature for IT governance definitions and models.

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): 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.

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.

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).

Table 2 – 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

Although this strong relation between both the concepts, some differences exist. 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.

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:

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

In the **Chapter 4 – IT governance reconceptualization and framework – I** propose a reconceptualization and a framework for IT governance.

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.

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, thus 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 1 depicts the three main types of business-IT alignment relationships, and to which I refer in my IT governance framework.

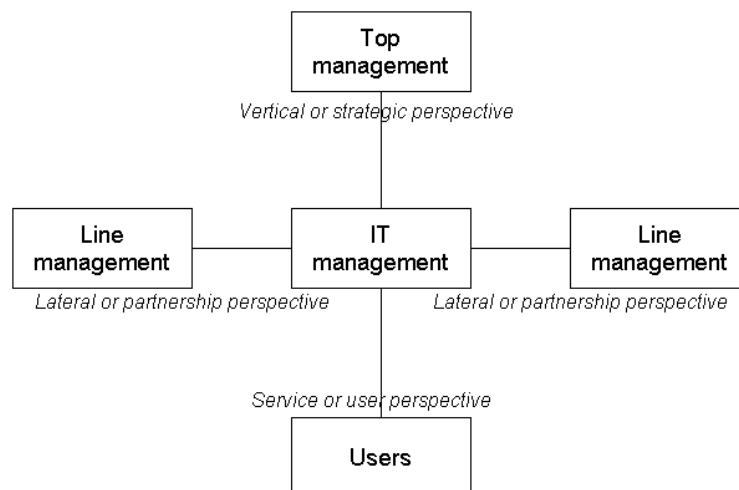


Figure 1 – Types of business-IT alignment relationships

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.

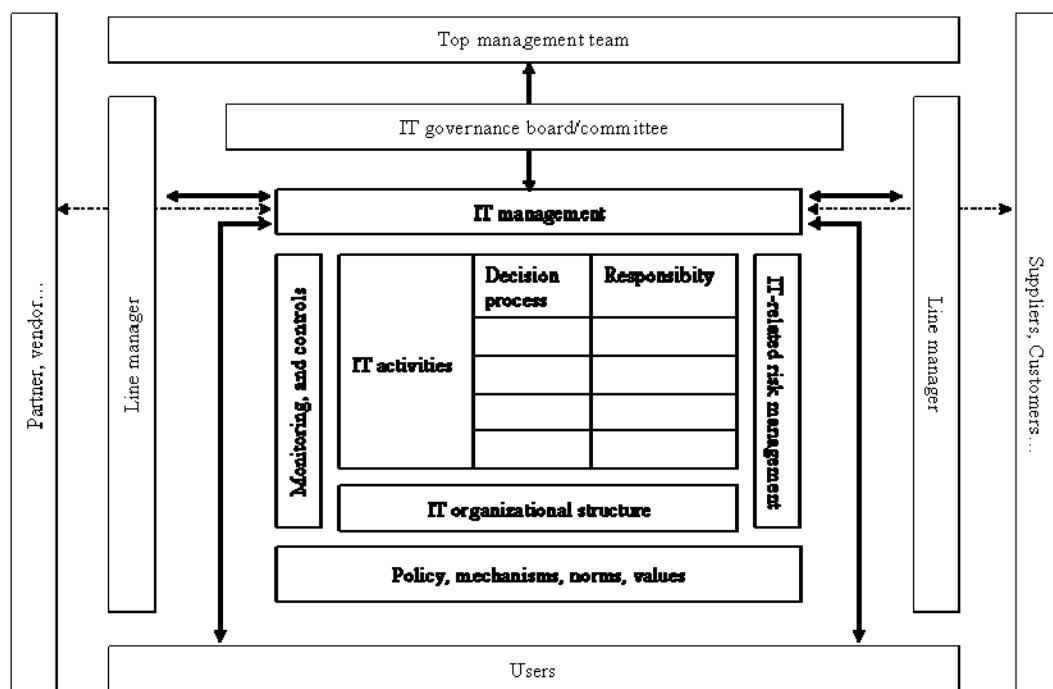


Figure 2 - IT governance framework

Based on all the theories and researches above described, 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 (Smaltz et al., 2006).

Consistent with these statements, the **Chapter 5 – The antecedents factors’ of the IT involvement into TMT: a research model** – a research model is proposed. The research model focuses on the analysis of antecedents of the IT involvement into TMT.

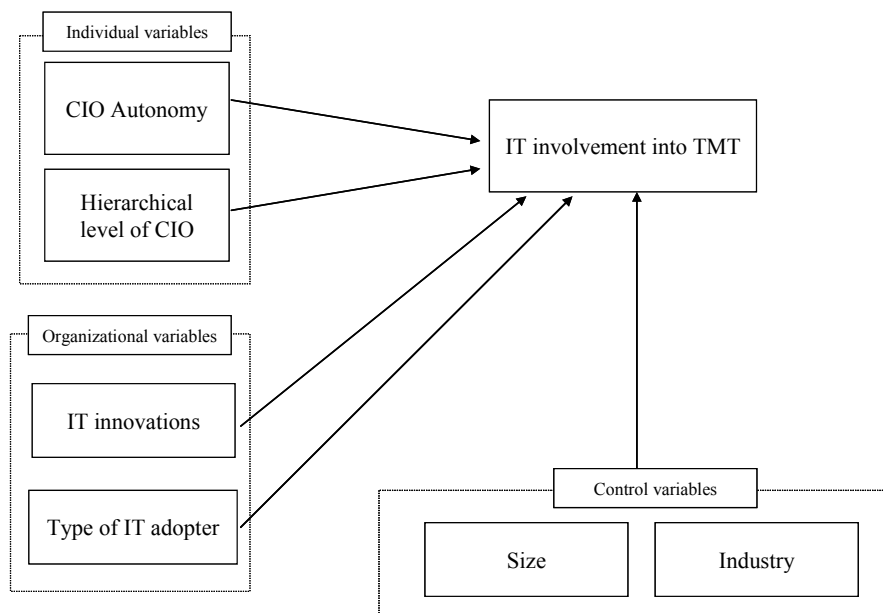


Figure 3 - Research model

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
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

The domain of the research is the diffusion and adoption process of Voice over IP (VoIP) by Italian firms. Data were gathered between June and July 2006 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, and it was tested on a sub-sample of 50 firms.

A total of 1361 CIOs, or responsible for IT decisions, were interviewed. 436 questionnaires were excluded due to the high number of missing data. Analyses have been performed on 925 organizations' 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.

The **Chapter 6 – Analyses and results** – presents the findings of the data analysis. Consistent with all the analyses and results described in the full version of this work, 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.

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**	
		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**	
		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

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.

Correlations

Are you an adopter?	Company industry			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	

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.

**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

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.

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

		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

		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.

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.

Correlations

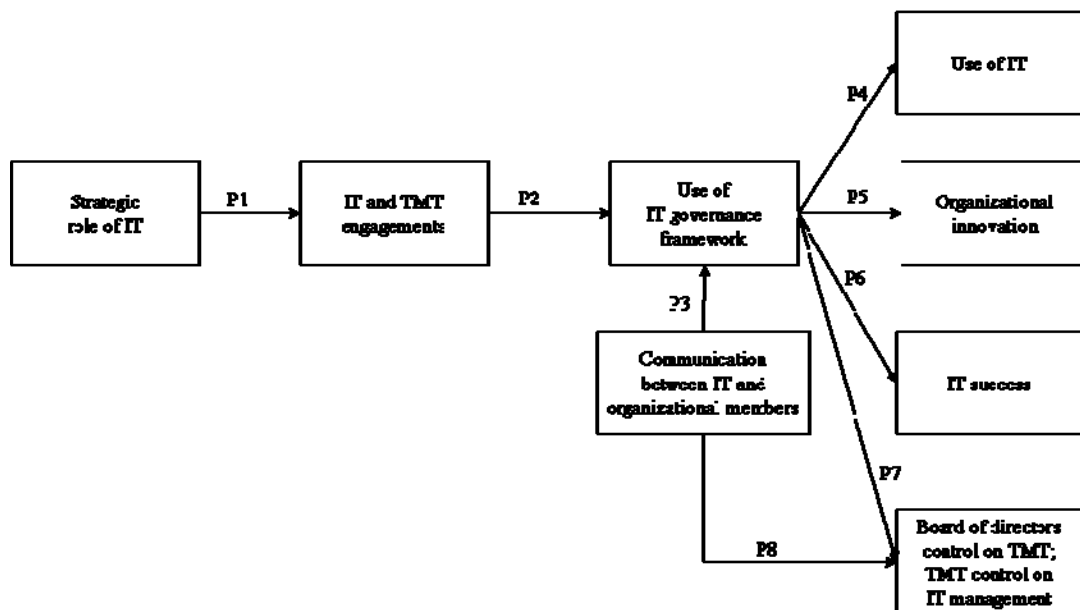
		When do you decide to adopt the VoIP system?	Is IT involved into TMT?
When do you decide to adopt the VoIP system?	Pearson Correlation	1	-,099
	Sig. (2-tailed)		,072
	N	328	328
Is IT involved into TMT?	Pearson Correlation	-,099	1
	Sig. (2-tailed)	,072	
	N	328	328

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

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 **Chapter 7 – Conclusions and directions for further research –**, and some other research propositions are intended to be directions for further researchers.



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

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

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

Based on the considerations discussed in the previous chapters, 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.

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

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

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

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 influences IT as support system for the evaluation of organizational units' 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 performances.

Moreover, IT governance framework also relates to the social dimension of management control systems.

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

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