IT Governance Patterns in the Portuguese Financial Industry

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Abstract

Information Technology (IT) has been used in large organizations since the 1950s for internal and external purposes. The pervasive use of technology in organizations has created a critical dependency on IT that calls for a specific focus on IT Governance (ITG). However, determining the right ITG mechanisms remains a complex endeavor. In this paper we propose to perform an exploratory research and analyze several ITG case studies to elicit possible ITG mechanisms patterns. Then, we performed six interviews in Portuguese financial services organizations and compare the results. Our goal is to build some theories (ITG mechanisms patterns), which we believe will guide financial services organizations about the advisable ITG mechanisms given their specific context. We also intend to elicit conclusions regarding the most relevant ITG mechanisms for Portuguese financial services organizations. The research methodology adopted was Design Science Research (DSR). We finish our work with limitations, contribution and future work.

1. Introduction

Information Technology (IT) has become crucial to the support, sustainability and growth of the business [1][2]. IT not only has the potential to support existing business strategies, but also to shape new strategies [3][4]. In this mindset, IT becomes a success factor for survival and prosperity and an opportunity to differentiate and to achieve competitive advantage [5].

This pervasive use of technology has created a critical dependency on IT that calls for a specific focus on IT Governance (ITG) [6][7].

Nowadays, good ITG is no longer a "nice to have", but a "must have" [8] and can contribute to higher returns on assets at a time when businesses are increasing their technology investment [9].

Indeed, Gartner states that ITG was recognized as a CIO top-10 issue for more than five years and has risen in priority between 2007 and 2009 [10].

A mixture of various structures, processes and relational mechanisms [11] exists. It is known that enterprises with effective ITG have actively implemented a set of ITG mechanisms that encourage behaviors consistent with the organization's mission, strategy, values, norms, and culture [12].

When designing ITG, it is important to recognize that it is contingent upon a variety of sometimes conflicting internal and external factors. Determining the right mechanisms for each organization is therefore a complex endeavor [7].

Recent studies have focused on some ITG problems as the inconsistencies and incongruities about the ITG mechanisms [13] or the lack of consensus about ITG definition [8]. However, less research can be found on how organizations can effectively implement ITG [14].

Therefore, we propose to analyze several ITG case studies (CSs) and elicit some ITG mechanisms patterns. Such patterns enable the solution of "real world" problems because they capture and allow for the reuse of experiences of best practice in a specific professional domain [15]. The patterns are composed by one or more ITG practices.

These patterns cannot be seen as a cookbook that must be strictly followed by organizations when implementing ITG. They should be seen as guidance about which can be the most relevant ITG mechanisms to implement given a specific organizational context.

It should be noted that the main motivation for this paper was provided by De Haes and Grembergen [14] who suggested that further researchers should study the ITG mechanisms implementation in different contexts.

The article has the following structure (section): Introduction (1), Research Methodology (2), Related Work (3), Case Studies Analysis (4), Evaluation (5), Lessons Learned (6), and finally Conclusion (7).

2. Research Methodology

The research methodology used in this paper was Design Science Research (DSR). We decided to use this research methodology for two main reasons: first, this study focus on ITG which is highly related with information systems (IS) domain and DSR began

IEEE computer society

Table 1. Research methodology

BUILD		EVALUATE
Constructs definitions	Model Construction	Evaluation
- Domain definition - ITG Mechanisms - ITG Factors	- Integrate constructs and define ITG patterns	- Interviews - Literature Review - Comparison

growing in popularity for use in scholarly investigations in IS [16]; second, ITG current solutions has been pointed as too complex [8] and DSR is suitable to capture the complexity of the topic [17].

From the four artifacts produced by DSR (constructs, models, methods and instantiations) we will focus on constructs and models. Constructs are necessary to describe certain aspects of a problem domain and allow the development of the research project's terminology [17] while models use constructs to represent a real world situation, the design problem and the solution space [18].

Therefore, the constructs that we propose are the domain definition, the ITG mechanisms and the ITG Factors identification. The model we propose is the definition of financial ITG patterns taking into account the integration of the constructs.

As advised by March and Smith [19], the research methodology applied is divided according to the two processes of DSR in IS: build and evaluate. Our approach can be seen in Table 1.

In order to identify the ITG mechanisms and factors we will perform an extensive literature review (LR) by analyzing the most relevant researches in the field. In order to elicit the financial patterns we will then analyze several published ITG case studies.

At the beginning of a LR it is recommended to start with a conception of the topic and a definition of key terms in order to derive meaningful search terms [20].

We have started by looking into journals' articles. We have also looked into some of the most known communities, as IEEE and ACM, where we searched for terms as "IT Governance", "IT Governance mechanisms", "IT case study", and finally "IT Governance factors". In these processes we enhanced the queries by adding synonyms or abbreviations.

3. Related Work

An effective review creates a firm foundation for advancing knowledge. It makes theory development easier, closes areas where there is a plethora of research, and uncovers areas where research is needed [21]. Therefore, in this section we are going to present the state of the art of the main issues of our research.

In this section we describe our proposal which is composed by three artefacts: ITG factors, ITG mechanism and ITG mechanisms patterns. The factors were used to capture the context of the organizations while the mechanisms were used to assess the ITG implementation in the organization. Finally, the patterns were created based on similar approaches founded in the data elicited from the several CSs.

3.1. ITG Factors

Determining the right ITG mechanisms is a complex endeavor and it should be recognized that what strategically works for one company does not necessarily work for another [22]. This means that some factors may influence the successfulness of ITG implementation. Therefore, it is necessary to look in the literature for such factors.

Among the literature we found three suitable studies [12][23][24] that we will explain in the next paragraphs.

The first approach is provided by Pereira and Mira da Silva [8] and the identified factors are: Culture, Ethic, Industry, IT Strategy, Maturity, Regional Differences, Size, Structure and Trust.

The second approach can be seen in Sambamurthy and Zmud study [24] and the factors provided are: Overall Governance mode, Firm size, Diversification mode, Diversification breadth, Exploitation strategy for scope economies and Line IT knowledge.

The third approach is provided by Weil [12] who found these factors: Strategic and performance goals, Organizational structure, Governance experience, Size and diversity and Industry and regional differences.

After analyzing all the approaches, we decided to use the first approach since it not only encompasses several factors presented in the other two researches but it is also the most recent one. Plus, other recent research [25] used the same approach and detailed further the nine ITG factors.

For space limitations we are not able to present a summary of ITG factors. Therefore, we forward the readers to the original article [25].

3.2. ITG Mechanisms

ITG can be deployed using a mixture of various structures, processes and relational mechanisms [11].

The Structure Mechanisms can be defined as the organizational units and roles, responsible for making IT decisions. Some examples of such mechanisms are committees, executive teams and business/ IT relationship managers [26][27].

The Processes Mechanisms are formal processes for ensuring that daily behaviors are consistent with IT policies and provide input back to decisions. These mechanisms include IT investment proposal, architecture exception processes, Strategic Information System Planning, chargebacks, among others [26][27].

Finally, the Relational Mechanisms complete the ITG framework and are paramount for attaining and sustaining business-IT alignment, even when the appropriate structures and processes are in place. For attaining and sustaining business-IT alignment, mechanisms like announcements, advocates, channels and education efforts are used [6][28][29].

We looked into several ITG mechanisms researches. The most detailed ones regarding ITG mechanisms are [13][26][27][30]. However, after a deep analysis we believe that the Almeida's study [13] is the most complete one, since it is grounded on an extensive LR, tries to solve some inconsistencies among the ITG mechanisms and provides a complete list of ITG mechanisms. Plus, it is the most recent study (2012) and all the other mentioned researches are included in his LR references.

Therefore, we decided to adopt the list of ITG mechanisms (46) provided by this research. It should be noted that all the mechanisms are general to any organizations' context.

Unfortunately, due to space limitations, we cannot provide the definition of all the mechanisms, therefore, we forward the readers to the original article [13].

3.3. ITG Patterns

So far, few papers have focused on any kind of ITG patterns elicitation. After an extensive LR we found only two researches about it.

The first useful approach is provided by Weill and Ross [27]. This research addressed large enterprises and a wide range of industries. In this research, the authors want to understand how the different domains of ITG (in this case, IT principles, IT architecture, IT infrastructure, Business applications needs and IT investment and prioritization) are governed.

In other words, this study tries to depict the styles of governance (from a more decentralized to a more centralized style) used by top performers to decide what major IT decisions must be made.

The other approach is provided by De Haes and Grembergen [14].This approach provides a minimum baseline of ITG practices that organizations at least should have. The researchers focused on Belgian financial services organizations with headcounts ranging from 100 to more than 1000 employees.

It becomes clear that this is a topic that requires further investigation and we did it in the next sections.

4. Case Studies Analysis

After the identification of the ITG factors and mechanisms, we have selected 50 CSs published in scientific conferences proceedings, journals and books. It was not an easy task to find 50 CSs. Besides few ITG CSs among the literature, many of them lack a lot of crucial information. The CSs were selected according to the ITG information richness. Therefore, several CSs were dropped during the selection process.

For space limitation and since our focus will be the financial industry, we only provide the references of the Financial CSs: 1, 2, 3 and 4 from [26]; 7 [31]; 8 [32]; 14 [33]; 20, 22, 24 and 28 from [34]; [31] [35].

All the information gathered from the 50 CSs regarding both the ITG mechanisms and the ITG factors can be seen in Table 2 and Table 3.

In Table 2 we adopt the following simbology: if the mechanism does not exist, the cell is empty; when the mechanism is partially implemented or there is some evidence that it is used, the cell is filled with "◖"; when the mechanism is totally implemented, we use "●".

Regarding Table 3, we use "X" to indicate by which factors each organization is characterized. When all the cells regarding a certain ITG factor are empty, it means there was no evidence of it.

We must also clarify that we decided to call "Gulf" to the following group of countries: Bahrain, Kuwait, Oman, Qatar, Saudi Arabia and the United Arab Emirates.

All the patterns were manually elicited by the authors without the help of any specific algorithm or any other method. As a result, the authors had to be very careful about unclear mechanisms references.

It should be noted that in Table 3 we are not considering the information about ethic, maturity and trust since there were several gaps in the analyzed ITG CSs regarding these factors. Such gap of information forced us to exclude these factors from the patterns' elicitation. Moreover, since we will evaluate the patterns with interviews in Portuguese organization we also excluded the regional differences factor because none Portuguese CS were found among the literature.

The elicited patterns can be seen in Table 4. For space limitations, only the patterns able to be validated by our interviews were leveraged.

A brief explanation of how the patterns were elicited from each CS is also advisable. For example, this sentence (CS1 [26]): "Service level agreements (SLAs) are put in place to guarantee that every piece of the IT puzzle knows exactly its role and responsibility in particular situations", we understand that they are considering the "Service Level Agreement" mechanism.

Table 2. ITG mechanisms

		ITG Mechanisms	Case Studies
			1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50

Structure

#	ITG Mechanisms	Case Studies (1–50)
1	Integration of governance /alignment tasks in roles and responsibilities	● ‹ ● ● ● ● · · · · ● ● · · · · ● · ● · · · · · ● ‹ ‹ · · · ‹ ‹ · · · · ● ● ● ● ● ●
2	IT strategy committee	● · ● · ● · · · · · · · ● ● ● ● · ● · ● · · · · · · · · · · · · · · · · · ●
3	IT steering Committee	● ● ● ● ● · ● ● ● · ● · ● · ‹ ● · ● ● ● ● · ● ● ● ● ● ● ● ● · · · · · ‹ ‹ ‹ ● ● ●
4	CIO on Board	· · ● · ● · · · · · · ● ● · · · ● · ● · · · · · · · · · · · · ● ●
5	IT councils	● ● ● · · · · ● · · · · · · ● · ● · ● ● ‹ · ● · · · · · · ● · ● · ●
6	IT leadership councils	· ● · · ● · ● · ● · · ● · ● · · · ● · ● · · · ● ● · · ● · · · · ● · ●
7	E-business advisory board	· · · · · · · · · · · · · · ● · · · · · · · · · · · · · · · · · ●
8	E-business task force	‹ · · · ●
9	IT project steering committee	● ● · ● ● · · ● ● · · · · · ● · ● · · ● ● ● · · · ‹ · ‹ · ● · · ● ● ● · ●
10	IT organization structure	● ● ● ● ● ● ● · ● · · ●
11	IT expertise at level of board of directors	‹ · ● · ● · · ‹ · · ● · · ‹ ● ‹ ● ● ● · ●
12	IT audit committee at level of board of directors	‹ · · ‹ ‹
13	CIO on executive committee/CIO reporting to CEO and/or COO	● ● · ● · ● ● · · ● · · ● · · ● · ● · · · ● ● ● · ● ● ● · · ● ● · · · ● · ● ● ● ● ●
14	ITG function/officer	· · ● ● · ● · · · ●
15	Security/Compliance/Risk officer	· · · · · · ● · · ● · ‹
16	Architecture steering committee	· · · · ● · · ● · · ● ● · ● · · ● · ● ● ● ● ● ● · ● · ● ●
17	IT investment committee or capital improvement	· · · · · · · · · · · · ● · · · · ● ● ● ● ● · ● ●
18	Business/IT relationship managers	● ● ● · · ● ● ● · · ● ● · · ● · ● · ● ● ● ● ● ● · ● ● ● ● ● · · · · · · · ●

Process

#	ITG Mechanisms	Case Studies (1–50)
19	IT performance measurement	● · ‹ · ● ● ● ● ● · · ● · · ● · ● ● · · ● · ● · · ● · ● · · · · · ●
20	Strategic Information System Planning	‹ ● ● ● ● ● · ‹ ● ● · ● · ● ● ● ● ● ● ● ● · · ● · · · · · · · ● ● ● ‹ ‹ ‹ ‹ ‹ ●
21	Frameworks ITG	● ● ● ● · ‹ · ● ● ● ● ‹ ● ● · · ● ● · · · · ● · · · · · ●
22	Service Level Agreement	● · ● ● · ● · ‹ · · · ● · ● · · ● · ● · · · ● ● · · · · ● ●
23	Portfolio management	● ● ● ● ● ● ● ● ● ● · ● ● ● · · ● ● ● ● ● · ● · ● ● ● ● ● ● ● ● ●
24	Project Governance/Management methodologies	· · · · · · · · · · · · · · · ● ‹ ● ● ● ● ● ● ● ● ● ● ● ● · · · · ‹
25	Chargeback	● · ‹ ● · ● · · · · ● · · ● · ● · ● · ● · · · ● · · · · ‹
26	ITG assurance and self-assessment	
27	IT budget control and reporting	● ● ● ● ● ● ● ● · ● · ● ● ● ● · ● ● ● · ● · · · ●
28	Project Tracking	● ● ● ● ● · ● ● ● ● · ● ● ● · ● ● ● ● · ● ● · ● · ● ● ● ‹ · ● ‹ · · · ● ● ● ● ● ●
29	ITG Maturity Models	● ● ● ● ● ● · ● ● · ● · · ●
30	Demand management	· · · · ● · · · · · · · ● ●
31	Architectural exception process	· · · · ● · · · · · · · ‹ · · · ● · ‹ · ● · ● · ● · ‹ ‹ ● ●
32	Benefit management and reporting	· ● · · ● · ● · · · · · · · ● · · ● · ● · ‹ ‹ · ● ● · · ● ●

Relational

#	ITG Mechanisms	Case Studies (1–50)
33	Partnership rewards and incentives	· · ● ● ● · · ● · · · ● · ● · · · · · · ● ● · · · · ‹
34	Business/IT collocation	● · ● ● · · · · · · · · · · · · · · · · · · · ● ●
35	Shared understanding of business/IT objectives	● ‹ ● ‹ ● ● · · ‹ ‹ · ● ● ● · ● · · ● · ● · ● ● ‹ · ● · ● · · ● ● · ● ● ● ● ● ●
36	Cross-functional business/IT training	● ‹ · ‹ · · · · · ● · · · · ‹ · · · · · · ● ● ● ● ● ●
37	Cross-functional business/IT job rotation	● ‹ ‹ · ● ● · · · · · · · · · · · ● ● ● ● ●
38	ITG awareness campaigns	● ● ● ● ● ‹ · ● · ● ● · ● · ● ● · · ● ● · ● · · · · · · · · ● · ● ● · ‹
39	Corporate internal communication addressing on a regular basis	● ● · ● · · ● · · · ‹
40	IT leadership	· ● · · ● · · ● ● ● ● · ● · ● ● ● · ‹
41	Informal meeting between business/IT executive/senior management	‹ · · ● · · · · · · · · · · · · · · ‹ · · · · ● ● ● ● ● ●
42	Executive/Senior management give the good example	● · · · · · · · · · · · · ● · · · ‹
43	Business/IT account management	● ● ● · ● · · · · · · · ● ● · ● · ● ● ● · ● ● ● ● ● · · · ●
44	Knowledge management (on ITG)	● ‹ · ● · ● · ● · ● · ● · · ● · ● · · ● · · · · · ●
45	Senior management announcements	· · · · · · · · ● ● · ● · · · ‹
46	Office of CIO or ITG	· · ● ● · ● · · · · ● ● · · · · ●

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Table 3. ITG factors

ITG Factors		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
Industry	Airline														X	X	X																																		
	Automotive															X					X																														
	Chemical					X																																													
	Education															X	X	X	X																																
	Financial/ Banking/ Insurance	X	X	X	X		X	X						X					X		X		X				X			X																					
	Government																								X																					X	X	X	X	X	X
	Healthcare / Healthcare Services											X																												X	X	X	X	X	X	X					
	Infrastructure Services																															X																			
	Intergovernmental																											X																							
	Pharmaceutical Laboratories																																	X	X	X	X	X													
	Retail																									X																									
	Steel Producer							X																								X																			
	Telecommunications																														X																				
	Transport																															X																			
	Utility									X																		X																							
Size	Large	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X		X	X	X	X	X	X	X	X	X	X				X	X
	SME																																X													X	X	X			
Structure	Centralized		X			X	X									X		X						X	X			X					X													X	X	X	X	X	
	Decentralized																																																		X
	Federal	X		X	X		X			X				X		X	X		X	X			X	X	X	X			X	X	X		X		X	X	X	X	X	X	X	X	X	X	X	X					
Culture	The contest model			X		X				X					X	X	X				X	X			X	X		X	X		X																				
	The organization as a family								X								X	X																																	
	The network model													X																																					
	The pyramidal organization											X	X	X	X																X			X	X	X	X	X	X	X	X	X	X	X							
	The Solar system	X	X	X	X		X																																												
	The well-oiled machine														X																X																			X
Strategy	IT for comprehensiveness													X																	X																				
	IT for efficiency	X	X	X	X	X	X	X	X	X			X	X	X		X		X	X	X	X		X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X				
	IT for flexibility	X		X	X			X					X	X			X	X			X	X	X	X	X			X		X		X	X	X		X	X	X	X			X	X	X	X	X	X	X			

Another example is (CS15 [36]): "The main purpose of the portfolio management is to identify those project proposals, which should be accomplished and are finally stated as approved", which clearly shows us that the "Portfolio Management" mechanism was implemented.

Table 4. ITG mechanisms patterns elicited

1	Large enterprises with "Centralized" Structure use the following mechanisms: 10.
2	Large enterprises with "The Pyramidal Organization" Culture and "IT for flexibility" Strategy use the following mechanisms: 3, 10, 23 and 24.
3	Large enterprises with "The Pyramidal Organization" Culture and "IT for Flexibility and IT for Efficiency" Strategy use the following mechanisms: 10, 16, 23, 24 and 31.
4	Large enterprises with "The Pyramidal organization" Culture and "IT for Efficiency" Strategy use the following mechanisms: 23.
5	Large enterprises with "IT for Flexibility" Strategy use the following mechanisms: 3 and 10.
6	Large enterprises with "IT for Efficiency" Strategy use the following mechanisms: 23.

These patterns cannot be seen as a cookbook that must be strictly followed by financial organizations when implementing ITG. On the contrary, they should be seen as guidance about which can be the most relevant ITG mechanisms to implement given a specific organizational context.

5. Evaluation

We performed an exhaustive LR since a review of prior, relevant literature is an essential feature of any academic project. An effective review creates a firm foundation for advancing knowledge. It makes theory development easier, closes areas where there is a plethora of research, and uncovers areas where research is needed [21].

Plus, to review articles is critical to strengthen IS as a field of study. When proposing a new study or a new theory, researchers should ensure the validity of the study and reliability of the results by making use of quality literature to serve as the foundation of their research.

From the previous CSs analysis, we elicited a set of ITG mechanisms patterns compatible with financial organizations. In order to elicit the patterns we focused only in CSs from financial organizations. The elicited patterns can be seen as our theory.

In order to validate our artifacts, besides the complete LR, we also performed six qualitative interviews in six Portuguese financial organizations. The interviewees were IT experts with several years of experience on IT (Table 5). We used semi-structured interviews.

Information about the interviewees and their organizations can be seen in Table 5. We must state that these six financial services organizations represent more than 80% of the Portuguese market.

In spite of not having a great number of interviews, we decided to use a qualitative approach instead a quantitative one and as we can see the interviewees have a lot of experience in the IT area. The interviews were conducted by two of the authors over a period of one month. Each session lasted from 1 to 2 hours and was transcribed into digital data for analysis (Table 6).

To support and lead the interviews, we designed a questionnaire with both open-response questions and close-response questions (about the ITG factors (Table 5) and the ITG mechanisms (Table 6)). Furthermore, clarifications regarding the various concepts used by the respondents were sought during the conversation, so that later these descriptions can be examined and matched to the more standard designations.

In Table 6 we present the data collected from the six interviews (columns) performed. Each main column has 3 sub-columns which correspond to a specific question of the questionnaire. The "U" portrays the ITG mechanisms used in the organization. The "E" represents how effective the mechanism under the interviewees' viewpoint (from 0, not effective at all, until 5, highly effective). Finally, the "D" represents how difficult is the implementation of the mechanisms according the interviewees' viewpoint (from 0, not difficult at all, until 5, extremely difficult).

A fourth and last question was also present on the questionnaire. We asked the interviewees to choose the ten most important mechanisms. These choices are represented by grey cells over the columns.

Yet, the last two columns of Table 6 are the sum of the "E" columns and the sum of the "D" columns.

These numbers will be important because we decided to order the lines regarding the difference between the effectiveness and the difficulty which we believe will reflect somehow the relevance of the mechanisms. The first criterion was sum "E" minus sum "D" where the largest difference wins. When difference was equal the major sum "E" prevails. When equal sum "E" also exists we decided to choose the most used mechanism to prevail. We also identify with red color the mechanisms used by all the organizations.

Moreover, we have also evaluated our research by comparing the most relevant mechanisms used by Portuguese financial services with the minimum baseline mechanisms proposed by De Haes and Grembergen [14] for Belgian financial services.

Table 5. Interviewees' information

	Experience	Size	Structure	Regional Differences	Culture	Strategy
1	27 years	Large	Centralized	Portugal	The pyramidal organization	IT for Flexibility
2	30 years	Large	Centralized	Portugal	The pyramidal organization	IT for Efficiency
3	26 years	Large	Centralized	Portugal	The pyramidal organization	IT for Efficiency
4	30 years	Large	Centralized	Portugal	The pyramidal organization	IT for Efficiency
5	35 years	Large	Centralized	Portugal	The pyramidal organization	IT for Efficiency IT for Flexibility
6	17 years	Large	Centralized	Portugal	The pyramidal organization	IT for Efficiency IT for Flexibility

Table 6. Interviews

	1			2			3			4			5			6			Sum	
Structure Mechanisms	U	E	D	U	E	D	U	E	D	U	E	D	U	E	D	U	E	D	E	D
IT organization structure	●	5	1	●	5	3	●	5	1	●	5	1	●	5	4	●	5	1	30	11
IT councils	●	5	2	●	5	1	●	4	4	●	5	3	●	5	4	●	5	4	29	18
IT strategy committee	●	5	3	●	5	5	●	4	5	●	5	1	●	5	3	●	5	3	29	20
IT project steering committee	●	5	1	●	5	5	●	4	1	●	5	4	●	4	2	●	4	4	27	17
IT steering Committee	●	5	2	●	5	5	●	4	4	●	5	1	●	4	3	●	4	3	27	18
CIO on executive committee/CIO reporting to CEO and/or COO	●	3	1		0	1	●	5	1	●	5	3		2	4	●	5	1	20	11
Business/IT relationship managers	●	4	3	●	5	5	●	4	3	●	5	3	●	5	4	●	5	2	28	20
IT leadership councils	●	5	1	●	3	5	●	3	3	●	5	3	●	4	3	●	5	3	25	18
Integration of governance/alignment tasks in roles & responsibilities		2	1	●	4	3	●	4	1	●	4	3	●	4	3		4	4	22	15
Security/Compliance/Risk officer	●	5	4	●	5	4	●	4	5	●	5	3	●	5	3	●	4	3	28	22
IT expertise at level of board of directors	●	3	1		1	5	●	4	2	●	5	1	◖	3	4	◖	4	3	20	16
IT investment committee or capital improvement	●	5	2		0	5	◖	4	1	●	5	3	●	5	5	◖	3	3	22	19
IT audit committee at level of board of directors	◖	4	3	◖	0	1	●	4	3		4	4	●	4	4	●	4	2	20	17
CIO on Board		4	4		0	5	●	5	4	●	5	1		3	4	●	5	2	22	20
E-business advisory board	●	5	2	●	5	4		1	2		3	4	●	4	2		1	3	19	17
Architecture steering committee	◖	4	4	●	3	5	●	4	4	◖	5	4	●	5	3	●	4	4	25	24
E-business task force		0	3		0	1		1	2	●	3	4	●	5	3	●	4	2	13	15
ITG function/officer		3	4	●	5	5		2	4		4	4	●	4	4		1	1	19	22
Processes Mechanisms	AVERAGE																		23.6	17.7
Demand management	●	4	4	●	5	3	●	4	3	●	5	3	●	5	3	●	4	2	27	18
Project Tracking	●	4	3	●	5	5	●	5	4	●	5	3	●	5	4	●	4	3	28	22
IT budget control and reporting	●	4	3	●	5	5	●	5	3	●	4	3	●	5	4	●	4	4	27	22
Portfolio management	●	5	4	●	5	5	◖	4	5	●	5	2	●	4	3	●	5	5	28	24
Benefits Management and Reporting	◖	4	4		5	5	●	5	3	◖	5	4	●	5	3	◖	3	4	27	23
ITG assurance and self-assessment	●	2	2	●	5	5	●	4	3	●	4	3	●	5	3	●	4	4	24	20
Frameworks ITG	●	5	4	●	5	5	●	5	4	●	5	4	◖	3	4	◖	4	5	27	26
Project governance/management methodologies	●	4	4	●	5	5	●	3	5	●	5	3	●	5	4	●	4	4	26	25
Service Level Agreement	●	4	3	●	3	5	●	5	5	◖	4	4	●	5	5	◖	5	4	26	26
ITG Maturity Models	●	2	4	●	3	3	●	4	3	●	5	4		4	3	●	3	4	21	21
Strategic Information System Planning		4	5	●	3	5	●	3	5	●	5	2	●	5	4	●	4	4	24	25
IT Performance Measurement (E.g. IT BSC)		3	4		1	4	●	3	5	●	4	3	●	4	4	●	5	4	20	24
Chargeback	●	3	3		1	5	◖	5	5	●	4	2		4	4		3	5	20	24
Architectural exception process	◖	4	4	●	3	5	●	4	3	●	3	2		1	5	●	4	4	19	23
Relational Mechanisms	AVERAGE																		24.6	23.1
Informal meeting between business and IT executive/senior management	●	3	2		3	3	●	3	0	●	4	0	●	4	3	●	4	2	21	10
Executive/Senior management give the good example	●	4	3	◖	5	5	●	4	2	◖	5	3	●	5	3	●	4	4	27	20
Business/IT account management	●	3	4	●	5	5	●	4	3	●	5	2	●	5	4	●	4	2	26	20
IT leadership	●	4	4	●	5	5	●	5	2	●	5	3		2	2	●	4	3	25	19
Senior management announcements	●	4	1	●	4	5		3	3		4	4	●	5	4	●	4	2	24	19
Partnership rewards and incentives		2	4	●	5	5		5	5	●	5	2	●	4	3	●	5	3	26	22
Office of CIO or ITG	●	3	2	●	5	5		2	4		4	4	●	5	3	●	4	2	23	20
Knowledge management (on ITG)		3	4	●	4	4	●	4	3		4	3	◖	4	3	●	4	4	23	21
Corporate internal communication addressing on a regular basis	●	3	3	●	3	3	●	4	3	●	5	3	●	2	4		4	2	21	20
Shared understanding of business/IT objectives	●	4	3	●	3	5	●	4	4	●	5	3	◖	3	4	◖	4	4	23	23
Cross-functional business/IT training	●	4	2	◖	2	4	●	5	4		2	3		4	4	●	4	4	21	21
Business/IT collocation		2	2		0	5	●	4	3		4	4		2	4	●	4	4	16	22
ITG awareness campaigns		2	3		0	5		5	5		4	3		2	2		3	4	16	22
Cross-functional business/IT job rotation		1	4		2	5		4	5		3	4		2	4	●	4	4	16	26
AVERAGE																			22.0	20.4

Table 7. ITG mechanisms comparison

Minimum baseline [14]	Interviews	Sum "E" minus Sum "D"
IT strategy committee	IT strategy committee	IT strategy committee
IT project steering committee	IT project steering committee	IT project steering committee
CIO on board	CIO on Board	
Portfolio management	Portfolio management	
IT budget control and reporting	IT budget control and reporting	
IT leadership	IT leadership	
IT steering committee		IT steering Committee
CIO reporting to CEO and/or COO		CIO reporting to CEO and/or COO
	Business/IT relationship managers	Business/IT relationship managers
	IT organization structure	IT organization structure
Project gov./mang. methodologies	Service Level Agreement	Demand management
Strategic information systems planning	Partnership rewards and incentives	IT councils
	Frameworks ITG	Executive/Senior management give the good example
		Informal meeting between business and IT executive/senior management

At Table 4 we present the six patterns that were elicited from Table 2 and Table 3 in order to be compared with the interviews' results.

After the comparison we realized that the following patterns were confirmed by the interviews: 1, 2, 3, 5, and 6, only pattern 3 wasn´t confirmed since organization 5 does not have any evidences of architectural exception process mechanism implementation. During the comparison we considered the "◖" as a positive match.

In Table 7 we can see the comparison between De Haes and Grembergen minimum baseline [14], the chosen mechanisms of the interviewees and the most relevant mechanisms according the sum "E" minus sum "D". Cells in grey represent a match between at least two of them. All the mechanisms in the grey cells are what we believe to be the minimum baseline mechanisms for financial services.

6. Lessons Learned

From the IT CSs analysis (Table 2 and Table 3) it is clear that a lot of information is missing. This is a problem already identified and under study [25]. However, a lot of information regarding the mechanisms was elicited. Some mechanisms appear to be more used like "IT Organization Structure", "Portfolio Management", "IT steering Committee" or even "Business/IT relationship Managers".

Regarding the factors several points must be stated:

- Unfortunately giving the few or none IT CSs performed in Portugal we do not have many information to manage about regional differences
- Almost all the analyzed organizations are large. This make sense because large organizations are more available to be targeted of a CS
- The majority of the CSs are Federal

- Few CSs use IT for Comprehensiveness as IT strategy

Interviews were very productive. A lot of useful information was collected. From the average numbers we can understand that structure mechanisms seem to be easier to implement and the processes mechanisms more effective when implemented.

Maybe following this tendency structure mechanisms are the most common among all the organizations interviewed followed by process mechanisms and then by relational mechanisms.

Each organization had to choose the 10 most important mechanisms. From a universe of 60 possible choices (10 per interview), 28 (46.7%) were structure mechanisms while 24 (40%) were process mechanisms and 8 (13.3%) were relational mechanisms. Moreover, only one relational mechanism is fully used by all the organizations.

After the CSs analysis, it becomes clear that there are a set of ITG mechanisms which are comprehensively implemented by organizations. So far six ITG mechanisms patterns were elicited, each according to a specific organizational context characterized by the selected factors.

Mechanisms 3, 10 and 23 are the most common among the elicited patterns.

7. Conclusion

The aim of this paper is to elicit some ITG mechanisms patterns for financial services industry through IT CSs reading and analysis as well as the identification of the minimum baseline mechanisms for Portuguese financial services. These conclusions are organized according these two main goals.

Regarding the patterns, the global evaluation is positive. From six possible patterns, presented in

Table 4, five were confirmed (pattern 3 wasn't) by the interviews after analyze Table 5 and Table 6.

Regarding the minimum baseline mechanisms several conclusions can be withdraw. First, there are six common mechanisms between Belgian and Portuguese financial services organizations. Two of the common mechanisms have a great effectiveness/difficulty ratio.

Another four mechanisms with a good effectiveness/difficulty ratio were selected by Belgian or Portuguese financial services organizations.

Few mechanisms (9) remain without any match. So far we cannot conclude anything about them with rigor but they must certainly be studied in the future.

The Structure mechanisms are seen as being the easiest mechanisms to implement in both studies. This appears to be a pattern between Belgian and Portuguese financial services organizations must be further explored by future researchers.

Finally, there are some differences regarding the perceived effectiveness between our study and De Haes and Grembergen [14] study. In our study the processes mechanisms are seen as the most effective mechanisms to implement while in De Haes and Grembergen [14] study the structure mechanisms have this characteristic. However, the difference is not substantial. Such difference may be related with the context behind the organizations interviewed.

To summarize, we can state that there are many similarities between the different organizations, even taking into account they are from different countries. This situation can be due to the fact that financial services sector was the first industry to use IT and as such is already more matured in these domains. This situation allows that good practices in govern IT in this sector are widespread all over the world

We cannot also forget the legal aspects related to this sector, increasingly targeted and controlled by Governments and other Entities. This situation requires that certain standards must be followed.

We are aware that few information about the organizations and the interviewees are provided. However, the scope of this study is Portugal financial services organizations. By one side Portugal is a small country and is easy to identify the organization when all the information is provided. On the other side, financial services organizations are very cautious about their information and therefore we had to exclude some information to fulfill the required confidentiality of the data collected.

Of course our research has some limitations as well. The chosen factors are not static and other factors can be considered in the future as well. Plus, ethic, maturity and trust should be further detailed for a more comprehensive analysis. Finally, despite the difficulty to find good IT CSs among the literature, and more CSs may be considered in the future.

Another limitation is the information collected from the IT CSs. Given the problem already identified on the field [25] about the lack of rigor among IT CSs that inhibit the generalization. It must be stated that the information collected is under authors' interpretation.

While this research for validity reasons is focused on the Portuguese financial services sector only, and despite the comparison with De Haes and Grembergen work in Belgic [14] it can be expected that many conclusions might apply to other sectors and factors. Future research, focusing on other sectors and factors could support this assumption.

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