

Analysing the Relationship Between IT Governance and Business/IT Alignment Maturity

Steven De Haes
University of Antwerp Management School
Steven.dehaes@ua.ac.be

Wim Van Grembergen
University of Antwerp
Wim.vangrembergen@ua.ac.be

Abstract

IT governance is one of these concepts that suddenly emerged and became an important issue in the information technology area. Some organisations started with the implementation of IT governance in order to achieve a better alignment between business and IT. This paper interprets important existing theories, models and practices in the IT governance domain and derives research questions from it. Next, multiple research strategies are triangulated in order to understand how organisations are implementing IT governance in practice and to analyse the relationship between these implementations and business/IT alignment. Major finding is that organisations with more mature IT governance practices likely obtain a higher degree of business/IT alignment maturity.

1. Introduction

In many organisations, information technology (IT) has become crucial in the support, sustainability and growth of the business. This pervasive use of technology has created a critical dependency on IT that calls for a specific focus on IT governance. IT governance consists of the leadership and organisational structures and processes that ensure that the organisation's IT sustains and extends the organisation's strategy and objectives. [19],[42] Today, IT governance is high on the agenda in many organisations and high-level IT governance models are being created. However, having developed a high-level IT governance model does not imply that governance is actually working in the organisation. Conceiving the IT governance model is the first step, implementing it as a sustainable solution is the next challenging step. Once a specific IT governance model is chosen and implemented, it should, as indicated in the above definition, enable that IT sustains and extends the business goals, or in other words, enable that IT is aligned to the business needs. The IT governance implementation challenge and the subsequent impact on business/IT alignment constitute the core domain of this research.

This practice-oriented research focus is relatively unexplored in academic literature. Many research projects focused on the impact of specific contingencies on e.g. centralised versus decentralised governance structures (eg. [1],[7],[16]) and on how strategic alignment impacts business performance (e.g. [5],[11],[40],[41]). However, fewer research can be found on how organisations are effectively implementing IT governance in day-to-day practice and what the impact is of the IT governance implementation on business/IT alignment. Via this research, we want to contribute to new theory building in the IT governance domain of knowledge and assist practitioners by providing more guidance on how IT governance can be effectively implemented.

2. General research framework

The general research question of this paper is: *How are organisations implementing IT governance to achieve a better alignment between the business and IT?* To answer this above general research question, two more detailed research questions can be analysed:

2.1. RQ1: how are organisations implementing IT governance?

Having developed a high-level IT governance model does not imply that governance is actually working in the organisation. Conceiving the IT governance model is the first step, implementing it into the organisation is the next challenging step. As proposed by work from amongst others Peterson [31], Weill and Ross [45], Peterson et al. [32] and Van Grembergen et al. [43], IT governance can be deployed using a mixture of various structures, processes and relational mechanisms. IT governance structures include "structural (formal) devices and mechanisms for connecting and enabling horizontal, or liaison, contacts between business and IT management (decision-making) functions" [31] (e.g. steering committees). IT governance processes refer to "formalisation and institutionalisation of strategic IT decision making or IT monitoring procedures" [31] (e.g. IT balanced scorecard). The relational mechanisms finally are about "the active participation of, and collaborative

relationship among, corporate executives, IT management, and business management” [31] (e.g. training). Relational mechanisms are crucial in the IT governance framework and paramount for attaining and sustaining business/IT alignment, even when the appropriate structures and processes are in place [20], [44], [8],[18].

2.2 RQ 2: what is the relationship between IT governance and business/IT alignment?

As discussed above, the goal of IT governance is achieving a better alignment between the business and IT. The ultimate question therefore is whether the implemented processes, structures and relational mechanisms enable the achievement of business/IT alignment. Business/IT alignment is a complex construct and the alignment discussion is certainly not new in academic literature. Henderson and Venkatraman [18] developed already in the early nineties their Strategic Alignment Model (SAM), distinguishing between strategic alignment and operational alignment, and many authors have provided comments and additional insight to this concept (e.g. [3],[6],[11],[17],[23],[22],[30],[40]). An important extension to SAM was developed by Maes [24] finetuning the model into more detailed levels and distinguishing between strategic, structural and operational alignment.

It is important to recognise that each of the applied processes, structures and relational mechanisms serve specific or multiple goals in the complex alignment challenge. However, dividing the IT governance framework into smaller pieces, and solve each problem separately, does not always solve the complete problem [31]. A holistic approach towards IT governance acknowledges its complex and dynamic nature, consisting of a set of interdependent subsystems (processes, structures and relational mechanisms) that deliver a powerful whole [35], [31]. Based on these considerations, we do not focus on the impact of one specific structure, process or relational mechanism on alignment, but prefer to analyse the impact of a mix of practices on alignment.

3. From a general to a specific research framework

It is recognised that, in order to maintain a sufficient level of internal validity within this research project, the research scope needs to be narrowed down. This focus on internal validity builds on the work of Cook and Campbell [10] who state that there is always a balancing

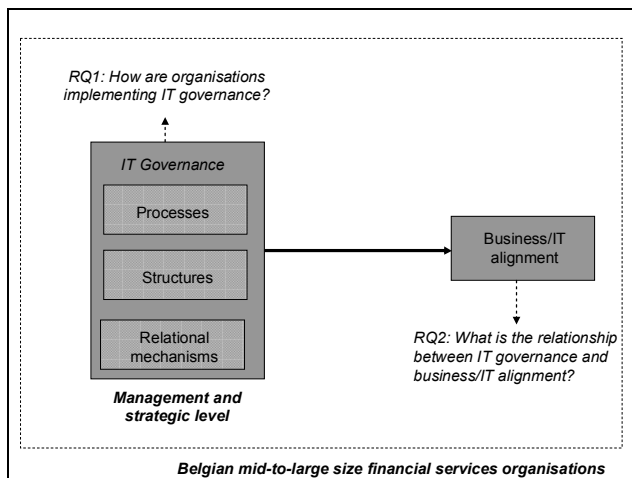
act between different types of validity. They argue that “for investigators with theoretical interests our estimate is that the types of validity, in order of importance, are probably internal, construct, statistical conclusion, and external validity... The priority ordering for many applied researchers is something like internal validity, external validity, construct validity of the effect, statistical conclusion validity, and construct validity of the cause.” As this research can be categorised as applied research, the primary focus is on internal validity.

To ensure sufficient internal validity, the research was therefore scoped down on multiple aspects. In the first place, it is acknowledged that the use of IT governance practices might be different in different types of industries. Therefore, the main focus of this research is only on one sector, more specifically the financial services sector, to control the contingencies resulting from differences in industries. The choice for the financial services sector is made because, amongst different industries, financial services, together with manufacturing and retailing, is the first industry to use information technologies and as such is already more matured in these domains, making empirical research interesting [9]. The scope was also reduced in geographic terms and regarding size of organisations. To avoid cultural differences between regions worldwide and contingencies related to the size of the organisations, it was decided to only focus on typical Belgian financial services organisations with headcounts ranging from 100 (mid-size) to over 1000 (large-size) employees. The final scope reduction focuses on the organisational level of IT governance practices. As indicated by Van Grembergen [43], IT governance is situated at multiple layers in the organisation: at strategic level where the board is involved, at management level within the C-suite and senior management layer and finally at the operational level with operational IT and business management. This implies that all these levels, business as well as IT, need to be involved in the IT governance process and they have to understand their individual roles and responsibilities within the framework. However, Peterson [31] makes a clear distinction between IT governance and IT management. He states that IT management is focused on the effective and efficient internal supply of IT services and products and the management of present IT operations. IT governance in turn is much broader, and concentrates on performing and transforming IT to meet present and future demands of the business (internal focus) and business customers (external focus). This “higher-level” focus of IT governance is confirmed in the IT governance definition of ITGI [19], which states that “IT governance is the responsibility of executives and the board of

directors”. Based on the considerations, we will discard the operational oriented level, which according to Peterson [31] maps to IT management instead of IT governance.

These limitations in scope of course reduce the generalisability or external validity of this research. Focusing on e.g. other types of organisations would therefore be interesting domains for further research. Based on the previous argumentation, the more specified research question is, as visualised in the next figure: *How are Belgian mid-to-large size financial services organisations implementing IT governance to achieve a better alignment between the business and IT?* The detailed research questions put forward in previous sections remain relevant, but are now contained in a more narrow research scope, as visualised in Figure 1.

Figure 1: Specific research framework



4. Research assumptions

An important assumption for this research is that it adheres to the process theory as opposed to the variance theory. The variance theory starts from the premise that the cause is necessary and sufficient for the outcome while the process theory more starts from the idea that outcomes may not occur, even when the cause exists (cause was necessary but not sufficient) [26]. As our research domain operates in complex organisational and behavioural settings, variance theory is too stringent and therefore we adhere clearly to the process theory. This implies a more limited definition of prediction and generalisability, “one in which the analyst is able to say only that the outcome is likely (but not certain) under some conditions and unlikely under other...”. [26] In our case, our conclusions would be stating that a high degree of business/IT alignment is likely to happen when an

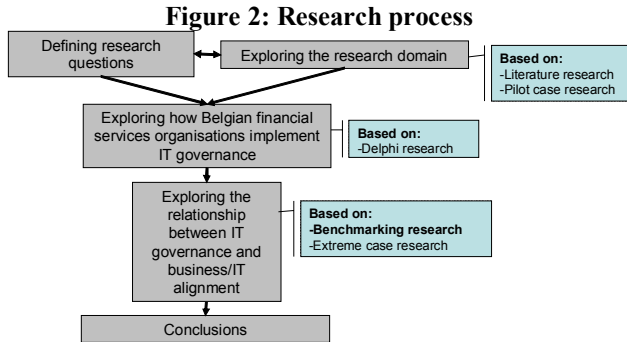
organisation leverages a defined mix of IT governance practices (which results from the research) and alignment in unlikely to happen in other cases. We can however not make the correlation with absolute certainty because of the complexity of organisational and behavioural settings.

5. Research methodology and approach

Because research in the domain of IT governance implementations and its relationship with business/IT alignment is in its early stages and theoretical models are scarcely available, the nature of this research is exploratory rather than hypothesis testing. Indeed, the concept of IT governance, as it is understood now, only emerged late nineties ([13],[45]), and there has been little research material developed on which we can build. The latter is not only true because it is a new research domain, but as denoted by Benbasat and Zmud [4], “generally, IS researchers have been less successful than their colleagues in other business school disciplines in developing a cumulative research tradition. Without such cumulative results, it becomes difficult, if not impossible, to develop and assess strong theoretical models such that prescriptive actions can confidently be suggested for practice”. By exploring this research domain in detail, we do however want to contribute to creating a basis for future research, by building theoretical models and generating potential hypotheses to be tested. Our choice for exploratory research is confirmed by similar research in the Journal of Management Information Systems, in which Mahmood and Mann [25] were investigating the relationship between investments in IT and economic performance. Similar to our research domain, that subject was fairly new at that time and high on the agenda in many organisations. However, based on the observation that theoretical models were not available, they opted for exploratory research to build a basis for future study.

Exploratory research often builds on secondary research, “such as reviewing available literature and/or data, or qualitative approaches such as informal discussions with consumers, employees, management or competitors, and more formal approaches through in-depth interviews, focus groups, projective methods, case studies or pilot studies.” [33] Our research strategy therefore also triangulates between multiple different research methods: literature research, pilot case research, delphi method research, benchmark research and extreme case research. This triangulation enables us to obtain a richer insight in reality, as also advocated by Mingers [27]: “... different research methods focus on different aspects of reality and therefore a richer understanding of a research topic will be gained by combining several

methods together in a single piece of research or research program”. The different research methods are applied in parallel or sequentially, as visualised in Figure 2 and described below. The results of the main research phases are described in section 6.



5.1 Literature and pilot case research

The research process with exploring the research domain and defining the research questions through a detailed literature research in the domain of business/IT alignment and IT governance. Papers and research reports of both academic and professional journals were collected, read, organised, analysed and summarised into one masterfile, providing the researcher a complete and workable overview of existing literature relevant to the research domain. The focus was on defining and refining the research questions and on finding an initial list of structures, processes and relational mechanisms that organisations can leverage to implement IT governance. At this moment, the research was not yet scoped down to only the Belgian financial services sector.

To complement the initial list of IT governance practices, pilot cases were described. These cases consisted of one in-depth case and five mini-cases. These case studies are exploratory and based on multiple interviews with both business and IT managers (Figure 3).

Figure 3: Exploratory pilot case studies

Company	Industry	# interviewees
KBC (in-depth case)	Finance	6
Vanbreda (mini case)	Insurance	3
Sidmar-Arcelor (mini case)	Steel	2
CM (mini case)	Insurance	3
AGF Belgium (mini case)	Insurance	2
Huntsman (mini case)	Chemicals	2

Two criteria are used to select the sample of pilot case studies: local proximity to enable the researcher to execute multiple in-depth interviews at site and diversity to enable the gathering of as rich data as possible on used structures, processes and relational mechanisms in

practice. Therefore, Belgian based organisations were selected, both operating nationally and internationally in different sectors (finance, insurance, chemicals, steel).

5.3 Delphi research

In exploring how Belgian financial services organisations are implementing IT governance, the delphi research methodology was leveraged. The delphi method can be characterized “as a method for structuring a group communication process so that the process is effective in allowing a group of individuals, as a whole, to deal with a complex problem.” ([21]) This method is particularly suited as a research methodology for this research as “the delphi method technique lends itself especially well to exploratory theory building on complex, interdisciplinary issues, often involving a number of new or future trends” [2]. An expert panel was composed of 29 consultants, senior IT and senior business professionals who are all knowledgeable about organisations operating in the Belgian financial services sector. From this group, 22 experts continued to be involved in the full delphi research effort (25% drop off rate), with 6 senior business/audit management, 8 senior IT management and 8 senior business/IT consultant.

Using the delphi method, these financial services sector experts needed to complete questionnaires in three consecutive rounds. Similar to the delphi research work of Keill et al. [20], the delphi research started from a predefined set of IT governance practices. This list was operationalised based on findings of the literature research and the in-depth exploratory case research (see 5.1). In the first round, the respondents were only asked to provide their feedback on the predefined list of practices, giving them the opportunity to make recommendations to add, change, delete some of the practices. The focus of this first round was on validating the predefined list of practices specifically for the financial services sector, so no other input or feedback was requested at this stage. In the second round, the respondents were asked to rate on a scale of 5, for each of the reviewed IT governance practices, the "perceived effectiveness (0=not effective, 5=very effective) and the "perceived ease of implementation" (0=not easy, 5=very easy). The respondents were also asked to, taken the previous attributes (effectiveness - ease of implementation) and their personal experience into account, to provide the top 10 most important IT governance practices, which are in their opinion crucial elements or a minimum baseline of an optimal IT governance mix (the most important practice score 1, the second most important score 2, ... the 10th most important score 10). In the third and final

round, the respondents were asked to re-evaluate their own scores out of round 2, taken the group averages into account. Goal of this round was primarily to come to a greater consensus in the group. At the end of the third round, the degree of consensus between the experts was measured leveraging Kendall’s W coefficient [36],[37], specifically for the question on the minimum baseline. Schmidt [36] offers an interpretation of Kendall’s W, indicating that the reached level of consensus in this research of 0,53 can be considered moderate providing a fair degree of confidence in the results.

5.4 Benchmarking and extreme case research

The following research step was aimed at exploring the relationship between IT governance implementations and business/IT alignment. This phase started with creating a business/IT alignment benchmark for the Belgian financial services sector based on a sample of 10 Belgian financial services organisations. In each organisation, it was asked that five to ten senior business and IT managers completed a questionnaire measuring business/IT alignment maturity. This questionnaire was based on an instrument already used in previous research of Luftman [23] and Cumps et al. [12] and later validated by Sledgianowski, Luftman and Reilly [38]. The latter validation work resulted in an “assessment instrument based on a model using multiple criteria and multiple levels to represent different degrees of alignment, from less mature to more mature” [38]. In total, 84 managers over 10 organisations participated. From the results of this benchmark, four extreme case organisations were selected (2 high performers and 2 low performers in terms of business/IT alignment), in which a workshop was organised (extreme case research) to measure the maturity of the IT governance practices applied based on a generic maturity scale from 0 (non-existent) to five (optimised).

The data collected allowed for detailed cross-case analysis, looking for causes that could explain why some organisations achieved a higher business/IT alignment score compared to other organisations. Comparisons were made between the high and low performers in terms of the mix of IT governance practices applied and in terms of the maturity of each of these practices.

Finally, a full report was produced providing conclusions and discussions issues (section 6 and 7).

6. Research results and discussion

6.1 Explorating the research domain

From the pilot case studies, different drivers for adopting IT governance were identified. An important

one was certainly the need to comply with Sarbanes-Oxley requirements, which impacts heavily on the control environment in IT. Other important drivers for IT governance were the push to achieve economies of scales after mergers and acquisitions and budget pressure, resulting in a smaller budget for new projects. Challenge of course is then to optimally assign the remaining budget to projects and activities that are delivering value to the business. Finally, some pilot case companies mentioned that the IT governance project was more an effort of formalizing and structuring existing mechanisms already applied. Based on the findings of the literature research and the pilot case research, an initial list of IT governance practices was composed, as shown below. For each of these practices, as short definition was developed based on the literature, pilot cases and delphi expert input.

Figure 4: Initial list of IT governance practices

	IT governance practice	Some references from literature	Cross-references from pilot cases					
			KBC	AGF	VanBreda	Huntsman	Sidmar	CM
Structures	Integration of governance/alignment tasks in roles&responsibilities	[13][14][19][45]	x		x	x		x
	IT steering committee(s)	[13][14][19][22][45]	x	x	x	x	x	x
	IT strategy committee	[13][19][28]	x					
	CIO on Executive Committee	[13][19][45]			x	x		
	CIO reporting to CEO	[19][45]	x	x	x	x		x
	Architecture Committee	[19][45]						
Processes	Strategic information systems planning	[13][15]		x			x	x
	Balanced scorecard	[13][19][43]	x		x	x		
	Portfolio management	[13][19]	x	x	x	x	x	x
	Charge back arrangements (ABC)	[13][43][45]	x					x
	Service Level Agreements	[13][43][45]	x		x			x
Relational Mechanisms	COBIT	[13][43][45]		x				
	Job-rotation	[13][22]	x		x	x	x	x
	Co-location	[13][22]	x		x			x
	Cross-training	[13][22]		x	x			
	Knowledge management	[13][22][45]	x	x		x		x
	Business/IT account managers	[13][22]		x	x			
	Senior management giving the good example	[13]	x					
	Informal meetings between business and IT senior management	[13]						x
IT leadership	[28][39]							

6.2 Exploring how Belgian financial services organisations are implementing IT governance

The delphi research revealed that, according to a group of 22 industry experts, Belgian financial services organisations can leverage a wide range of structures, processes and relational mechanisms in order to implement IT governance to support business/IT alignment. This research reveals a list of 33 IT governance practices at the level of strategic and executive/senior business and IT management. It should be noted that this list can not be exhaustive and the practices at operational level are discarded in this research. These practices are shown in the first two columns of Figure 5, with Sx being the structures, Px being the processes and Rx being the relational mechanisms.

Figure 5: Validated list of IT governance structures, processes and relational mechanisms

		Effectiveness (from 0-5)	Ease of implementation (from 0-5)
S1	IT strategy committee at level of board of directors	3,67	3,40
S2	IT expertise at level of board of directors	3,14	2,18
S3	(IT) audit committee at level of board of directors	3,22	3,40
S4	CIO on executive committee	4,38	3,56
S5	CIO (Chief Information Officer) reporting to CEO (Chief Executive Officer) and/or COO (Chief Operational Officer)	4,50	4,21
S6	IT steering committee (IT investment evaluation / prioritisation at executive / senior management level)	4,69	3,35
S7	IT governance function / officer	2,93	3,11
S8	Security / compliance / risk officer	3,28	4,06
S9	IT project steering committee	4,03	4,01
S10	IT security steering committee	2,82	3,61
S11	Architecture steering committee	3,04	3,14
S12	Integration of governance/alignment tasks in roles&responsibilities	3,18	2,63
P1	Strategic information systems planning	3,82	2,82
P2	IT performance measurement (e.g. IT balanced scorecard)	3,97	2,76
P3	Portfolio management (incl. business cases, information economics, ROI, payback)	4,13	2,67
P4	Charge back arrangements - total cost of ownership (e.g. activity based costing)	3,28	2,40
P5	Service level agreements	3,47	3,13

P6	IT governance framework COBIT	3,36	2,42
P7	IT governance assurance and self-assessment	2,79	2,54
P8	Project governance / management methodologies	4,10	2,94
P9	IT budget control and reporting	4,13	4,00
P10	Benefits management and reporting	2,85	2,36
P11	COSO / ERM	2,39	2,04
R1	Job-rotation	2,35	2,36
R2	Co-location	2,79	3,01
R3	Cross-training	2,76	2,82
R4	Knowledge management (on IT governance)	3,24	2,68
R5	Business/IT account management	3,79	3,36
R6	Executive / senior management giving the good example	3,88	2,81
R7	Informal meetings between business and IT executive/senior management	3,79	3,88
R8	IT leadership	3,89	2,82
R9	Corporate internal communication addressing IT on a regular basis	3,43	3,69
R10	IT governance awareness campaigns	2,83	3,14

The research demonstrated that, according to the expert group, some of the addressed practices are more effective or easy to implement compared to others (see columns at the right in Figure 5). The five practices being perceived as most effective for the Belgian financial services sector are “IT steering committees”, “CIO reporting to the CEO/COO”, “CIO on executive committee”, “IT budget control and reporting” and “portfolio management”. All these practices were also identified as being relatively easy to implement. The least effective practices are “IT governance assurance and self-assessment”, “job-rotation” and “COSO/ERM”.

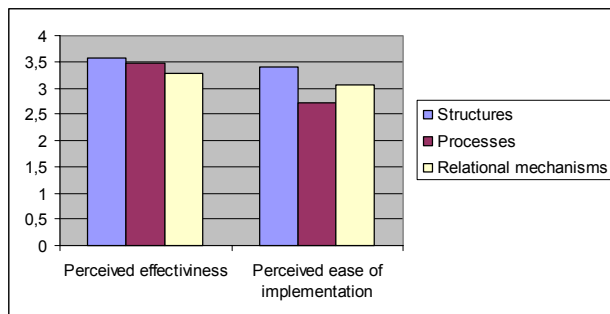
Some practices were perceived as fairly effective but not easy to implement. Good examples in this high-effectiveness/low ease of implementation domain are “benefits management and reporting” and “charge back arrangements”. Another interesting case here is “COBIT”. This framework is receiving a lot of attention in literature and in the field, but did not come out very high in this research. However, there are indications that COBIT is a very solid framework to work with. COBIT is a framework which has a higher level of abstraction compared to other, more detailed, practices referred to in this research. The good news for COBIT is that many of these detailed practices are integral part of its framework, certainly the ones that are indicated in this research as

being very effective. (such as “IT steering committee, “portfolio management”, etc.)

An interesting finding to pinpoint is that many IT governance definitions stress the prime responsibility of the board of directors in IT governance, while these results reveal that the mechanisms to achieve this (“IT expertise at level of board of directors” and “IT strategy committee”) are rated relatively low in terms of perceived effectiveness. This can possibly be explained by the fact that making the board of directors more IT literate is not easy to achieve, which is confirmed by the second to last score in term of ease of implementation of “IT expertise at the level of the board of directors”. The results of this research in any way raise questions on how financial services organisations realise this board involvement in practice.

If averages are calculated for effectiveness and ease of implementation for all the structures, the processes and the relational mechanisms (see Figure 6), it appears that structures and processes are in general perceived as being equally effective. However, it appears that IT governance structures are perceived as being easier to implement compared to IT governance processes, although in many cases they are closely related. A good example here is the “IT steering committee”, which is a crucial element to build up a “portfolio management” process, but the steering committee is perceived as much easier to implement compared to the whole “portfolio management” process. Relational mechanisms are also perceived as being easier to implement compared to IT governance processes, probably because some relational mechanisms can have a very informal character (e.g. R7: Informal meetings between business and IT executive/senior management).

Figure 6: Average effectiveness and ease of implementation



The delphi research also brought up a list of IT governance practices, specifically for the Belgian financial services sector, that can be regarded as a minimum baseline to implement IT governance. This

suggests that, in implementing IT governance within a specific financial services organisation, these minimum baseline mechanisms may play an important role. These practices are “IT steering committees”, “CIO on executive committee”, “IT portfolio management”, “IT budget control and reporting”, “IT strategy committee”, “strategic information systems planning”, “IT leadership”, “CIO reporting to the CEO or COO”, “IT project steering committee” and “project management methodologies”.

It was surprising that only one relational mechanism was reported in this minimum baseline (“IT leadership”), while many authors in literature stress that the relational mechanisms are crucial enablers for IT governance. A possible explanation is that, just as in literature, less detailed knowledge and expertise is available on relational mechanisms which often have a more intangible and informal character. On the other hand, it should be noted that many other relational mechanism, such as “business/IT account management”, “senior management giving the good example” and “informal meeting between business and IT executive/senior management”, attained very positive scores in terms of effectiveness and ease of implementation and should therefore certainly be considered when complementing the minimum baseline.

It is also important to point out that the before mentioned minimum baseline should be regarded as a holistic set of practices, contributing as a whole to better business/IT alignment. This insight explains that some of the individual practices, such as the “IT strategy committee”, received individually a lower score for effectiveness. Its value however is constituted in it being part of the minimum baseline, enabling the other practices to operate and be effective.

6.3 Exploring the relationship between IT governance and business/IT alignment

After measuring alignment in 10 Belgian financial services organisations, it appears that the overall business/IT alignment maturity is 2,69 on a scale of 5 in the Belgian financial services sector (Figure 7).

The benchmark contained two organisations with a relatively high business/IT alignment maturity compared to the overall average (high performers, I-J) and two organisations with a relatively low business/IT alignment maturity compared to the benchmark (low performers, A-B). The other six organisations were all situated around the overall average. An interesting consideration here is what the desired target or to-be situation would be for the financial services sector. There is no literature available in this domain, but taken the high-dependency on IT into account, one could argue that at least a maturity level 3

earlier defined set of ten minimum baseline practices, seven appear to be clearly present and mature (above maturity level 2) in the high-performers. This reduced set is called the key minimum baseline and constitutes of the following practices: “IT steering committee”, “IT project steering committee”, “portfolio management” and “IT budget control and reporting”, “CIO reporting to the CEO/COO”, “project governance/management methodologies” and “IT leadership”.

An interesting IT governance practice that was not used by any of the organisations, although being promoted by experts and thought leaders as very important ([19],[28]), is the “IT strategy committee at the level of the board of directors”. This practice is promoted as a structure to ensure that board gets involved in a structured way in IT governance issues. During the interviews, three out of four organisations stated that board involvement in IT governance is not feasible and probably not required. The representatives of the shareholders are more concerned with the core financial services activities and less worried about (operational) IT issues. Another IT governance practices that was indicated as not being relevant for alignment purpose was “COSO/ERM”. While this was recognised as probably a very good framework for general internal control, the value for governance or impact on alignment did not appear at all.

7. Conclusions

As a general conclusion, this research revealed that IT governance is indeed high on the agenda and that organisations with a mature mix of structures, processes and relational mechanisms indeed achieved a higher degree of business / IT alignment maturity compared to other organisations. However, as indicated earlier in this paper, this research adheres to the process theory, implying a limited definition of prediction. Therefore, our conclusion here is limited to the statement that business/IT alignment maturity is likely to be higher when organisation are applying a mix of mature IT governance practices and likely to be lower in organisations with a more poor mix of IT governance practices.

Some detailed conclusions were drawn regarding IT governance structures, processes and relational mechanisms. It was demonstrated that it is easier to implement IT governance structures compared to IT governance processes. It also appeared that relational mechanisms are very important in the beginning stages of an IT governance implementation project and become less important when the IT governance framework gets embedded into day-to-day operations. This research

provides a key minimum baseline of seven IT governance practices that each organisation at least should have and supplement with practices that are highly effective and easy to implement. When an organisation wants to implement these practices, it has to make sure that at least of maturity level of 2 is obtained, to ensure that it positively impacts business/IT alignment.

A recommendation to practitioners resulting from these findings is that the best approach to implement IT governance is to start with setting up these seven key minimum baseline IT governance practices. This core set of practices should be supplemented with other key practices that are highly effective and relatively easy to implement. At the initial stages of such IT governance project, sufficient attention should be given to relational mechanisms to ensure commitment of all the involved people in the process. Once the “governance culture” is embedded in the implemented structures and processes, these relational mechanisms require less attention.

8. References

- [1] Ahituv N., Neumann S., Zviran M.,1989, Factors affecting the policy for distributing computing resources,MIS Quarterly,vol.13,no.4
- [2] Akkermans H.A. et al., 2003, The impact of ERP on supply chain management: exploratory findings from a European delphi study, European Journal of Operational Research, no. 146, pp. 284-301
- [3] Avison et al., 2004, Using and validating the strategic alignment model, Journal of Strategic Information Systems, vol. 13, pp. 223–246
- [4] Benbasat I., Zmud R.W., 1999, Empirical research in Information Systems: the practice of relevance, MIS Quarterly, vol. 23, no. 1
- [5] Bergeron, F., Raymond, L., & Rivard, S., 2003, Ideal Patterns of Strategic Alignment and Business Performance. Information & Management, Elsevier, 41(8), 1003-1020.
- [6] Burn, J.M., & Szeto, C., 2000, A comparison of the views of business and IT management on success factors for strategic alignment. Information & Management, Elsevier, 37(4)
- [7] Brown C.V., Magill S.L., 1994, Alignment of the IS functions with the enterprise: towards of model of antecedents, MIS Quarterly, vol. 18, no. 4, pp. 371-403
- [8] Callahan, J., & Keyes, D., 2003. The evolution of IT Governance at NB Power. In Van Grembergen, W. (Ed.), Strategies for Information Technology Governance. Hershey, PA: Idea Group Publishing.
- [9] Chiasson, Mike W.; Davidson, Elizabeth, 2005, Taking industry seriously in Information Systems research, MIS Quarterly, Vol. 29 Issue 4, p591-605, 15p;
- [10] Cook T.D. and Campbell D., 1979 Quasi-experimentation: design and analysis issues for field settings, Rand. McNally College Publishing Company

- [11] Croteau, A.M., & Bergeron, F., 2001, An Information Technology Trilogy: Business Strategy, Technological Deployment and Organizational Performance. *Journal of Strategic Information Systems*, vol. 10, 77-99.
- [12] Cumps B., S. Viaene, G. Dedene, J. Vandenbulcke, 2006, An Empirical Study on Business/ICT Alignment in European Organisations, in the proceedings of the Hawaii International Conference on System Sciences (HICSS)
- [13] De Haes S., Van Grembergen W., 2006, IT Governance best practices in Belgian Organisations, in the proceedings of the Hawaii International Conference on System Sciences
- [14] Duffy, J., 2002a, IT/Business alignment: is it an option or is it mandatory?, IDC document # 26831, IT and Business Alignment Advisory service.
- [15] Earl, J.M., 1993, Experiences in Strategic Information Systems Planning. *MIS Quarterly*, 17(1), 1-24.
- [16] Ein-dor P. and Segev E., 1982, Organisational context and MIS structure, *MIS Quarterly*, vol. 6, no. 3, pp. 55-68
- [17] Feurer, R., Chaharbaghi, K., Weber, M., & Wargin, J., 2000, Aligning Strategies, Processes and IT: a Case Study. *Information Systems Management*, winter, 23-34.
- [18] Henderson, J.C., Venkatraman, N., & Oldach, S., 1993, Continuous Strategic Alignment: Exploiting Information Technology Capabilities for Competitive Success. *European Management Journal*, 11(2), 139-149.
- [19] ITGI, 2003, Board Briefing on IT Governance, Second Edition. From www.itgi.org
- [20] Keill M. et al., 2002, Reconciling user and project manager perceptions of IT project risk: a delphi study, *Information Systems Journal*, no. 12, pp. 103-119
- [21] Linstone H.A., Turoff M., 1975, *The Delphi Method: Techniques and Applications*, Addison-Wesley Publishing Company, 620 pp.
- [22] Luftman, J., & Brier, T., 1999, Achieving and Sustaining Business-IT alignment. *California Management Review*, 42(1), 109-122.
- [23] Luftman, J., 2000, Assessing Business-IT alignment Maturity. *Communications of AIS*, 4(14).
- [24] Maes, 1999, Reconsidering Information Management through a Generic Framework. *PrimaVera Work. Paper 99-15*.
- [25] Mahmood MA., Mann G.J., 1993, Measuring the organizational impact of information technology investment; an exploratory study, *Journal of Management Information Systems*, vol. 10, no1, pp. 97-122
- [26] Markus M.L., Robey D., 1998, Information technology and organisational change: causal structure in theory and research, *Management Science*, vol. 34, no. 5
- [27] Mingers J., 2001, Combining IT research methods: towards a pluralist methodology?, *Information Systems Research*, vol. 12, no. 3
- [28] Monnoyer, Willmott P., 2005, What IT leaders do: Companies that rely on IT governance systems alone will come up short., *McKinsey Quarterly on IT*
- [29] Nolan, R., & McFarlan, F.W., 2005, Information Technology and the Board of Directors. *Harvard Business Review*, 83(10), 96-106.
- [30] Patel, N.V., 2003, An emerging strategy for e-business IT Governance. In Van Grembergen, W. (Ed.), *Strategies for Information Technology Governance*. Hershey, PA: Idea Group Publishing.
- [31] Peterson, R. R., 2003, Information Strategies and Tactics for Information Technology Governance. In Van Grembergen, W. (Ed.), *Strategies for Information Technology Governance*. Hershey, PA: Idea Group Publishing.
- [32] Peterson R., Parker M.M., Ribbers P., 2002, Information Technology Governance Processes under environmental dynamism: investigating competing theories of decision making and knowledge sharing, 23 *International Conference on Information Systems*
- [33] Ryerson, 2007, Exploratory Research, accessed in June 07 at www.ryerson.ca/~mjoppe/ResearchProcess/ExploratoryResearch.htm
- [34] Sabherwal, R., & Chan, Y., 2001, Alignment between business and IS strategies: a study of prospectors, analyzers and defenders. *Information Systems Research*, 12(1), 11-33.
- [35] Sambamurthy, V., & Zmud, R.W., 1999, Arrangements for Information Technology Governance: a theory of multiple contingencies. *MIS Quarterly*, 23(2), 261-290.
- [36] Schmidt, Roy C., 1997, Managing Delphi surveys using nonparametric statistical techniques., *Decision Sciences*, Vol. 28 Number 3
- [37] Siegel S., 1988, *Nonparametric statistics for the behavioural sciences*, Mc.Graw-Hill, New York
- [38] Sledgianowski D., J. Luftman, R.R. Reilly, 2006, Development and Validation of an Instrument to Measure Maturity of IT Business Strategic Alignment Mechanisms, *Information Resources Management Journal*, 19(3), 18-33
- [39] Smith G, 2006, *Straight to the top - Becoming a world-class CIO*, John Wiley & Sons
- [40] Smaczny, T., 2001, Is an alignment between business and Information Technology the appropriate paradigm to manage IT in today's organizations? *Management Decisions*, 39(10)
- [41] Teo T.S.H., King W.R., 1996, Assessing the impact of integrating business planning and IS planning, *Information & Management*, vol. 30 (6), pp. 309-321
- [42] Van Grembergen, W., 2002, Introduction to the Minitrack: IT Governance and its Mechanisms. In proceedings of the 35th Hawaii International Conference on System Sciences (HICSS).
- [43] Van Grembergen, W., De Haes, S., & Guldentops, E., 2003, Structures, Processes and Relational Mechanisms for IT Governance. In Van Grembergen, W. (Ed.), *Strategies for Information Technology Governance*, Idea Group Publishing.
- [44] Weill P. and Broadbent M., 1998, *Leveraging the new Infrastructure: how market leaders capitalize on information technology*, Harvard Business School Press
- [45] Weill, P., & Ross, J., 2004), *IT Governance: How Top Performers Manage IT Decision Rights for Superior Results*. Boston: Harvard Business School Press.