

Can IS/IT Governance contribute for Business Agility?

Eduardo Sá Couto^a, M. Filomena Castro Lopes^b, Rui Dinis Sousa^c

^a*Instituto Universitario da Maia, UNICES, Portugal*

^b*Universidade Portucalense, Portugal*

^c*IS Department & ALGORITMI R&D Centre, Universidade do Minho, Portugal*

Abstract

Business agility is the ability to answer quickly to internal and external changes, either reactively or proactively, in an efficient and effective way. As markets experience sudden changes and meeting requirements and expectations of several stakeholders requires quicker process improvements, business agility becomes a fundamental factor, one of the most decisive in turbulent environments for organizations to succeed. Therefore, it comes to no surprise that business agility has become one of the top 10 most important organizational concerns for IT management. Given the important and increasing crucial role of information systems and information technology (IS/IT) for business performance, IT management should be concerned in providing agility to the business while striving to keep business and IT strategically aligned.

To achieve business-IT alignment, organizations need to set up processes for decision making regarding the effective and efficient management of information systems and information technology, i.e., IS/IT Governance. Governance means rules, organizational procedures, supervision, monitoring and control. On the other hand, agility requires degrees of freedom to decide and make changes in the business processes. The possible tension between IS/IT Governance and Business Agility may be a result of the conflict between adaptation and anticipation. While Governance requires planning, anticipation, supervision and control, agility requires high degrees of adaptation, many times, under unforeseen circumstances. In this work, we propose a conceptual model to look into the contribution of IS/IT Governance for Business Agility.

Keywords: Business Agility; IS/IT Governance; IS/IT Alignment; Business Performance.

Corresponding author. Tel.: +351 919 742 431 ; fax: 351 229 825 331

E-mail address: esc@ismai.pt

1. Introduction

Business IS/IT alignment and business agility have been on the top of IS/IT business executives and managers concerns [1, 2]. Several studies [3-7] repeatedly state that alignment has a positive impact on organizational performance and that is a reason why organizations consider it a management priority.

On the other hand, the increase of market volatility, the world economy uncertainty, and products with a shorter life cycle push organisations to search for an ability to deal with uncertainty and to identify threats and opportunities. New questions related to IS/IT supervision, monitoring and control place Governance as an IS/IT evolving area. Some organizations started to implement IS/IT Governance to reach better results on the scope of IS/IT alignment and organizations strategies. Therefore, it is important to study how IS/IT Governance practices turn organizations into being more agile to generate value efficiently in a context of high turbulence. However, a question arises. If IS/IT Governance helps the alignment, will it allow for the required business agility?

Governance means rules, organizational procedures, supervision, monitoring and control. On the other hand, agility means a certain freedom of decision and process changing. Agility in business is the ability to feel highly uncertain external and internal changes and to answer them reactively or proactively, based on internal operational processes innovation, by involving clients in the exploration and by profiting business network partner resources [8]. The tension between both concepts seems to come from adaptation versus anticipation. Agile methods need to be quite adaptable to decide in the last moment when change occurs while Governance defends anticipation from planning, controlling and supervising in advance [9].

This work starts with a literature review on IS/IT Governance. It then approaches the question of business agility, its definitions and relevance. Further, it establishes the relationship between IS/IT alignment and business agility, it investigates the relationship between alignment and organizational development where business agility intermediates the connection between alignment and business performance under variable IS/IT infrastructural conditions and environmental volatility. This article ends by proposing a conceptual model to analyse the interdependence and synergies created by these concepts trying to identify which IS/IT Governance practices turn easier and contribute to business agility.

The way that organizations consider the role of Information Systems and Information Technologies (IS/IT) for business performance is changing. It is becoming widely recognized that IS/IT can add value and highly contribute to business [10].

2. IS/IT Governance

There are many definitions for IS/IT Governance. The IT Governance Institute, a non-profit, independent research organization affiliated with an association of IT Governance professionals (ISACA), quoting Robert S. Roussey, states that “IT Governance is the term used to describe how those persons entrusted with Governance of an entity will consider IT in their supervision, monitoring, control and direction of the entity” [11].

To assure a better use of IS/IT, areas such as strategic alignment, risk management, resources management, value delivery and performance evaluation should be addressed in IS/IT Governance so that IT best practices can be aligned to business requirements more than technical requirements [12]. In fact, “How IT is applied within the entity will have an immense impact on whether the entity will attain its vision, mission or strategic goals” [11]. As the use of IS/IT becomes increasingly strategic, IS/IT Governance requires a broader scope and understanding. The roots for IS/IT Governance trace back to several IS research areas, namely, strategic information systems planning, change management, IS/IT productivity and regulatory compliance as shown in a literature review of IS/IT Governance that links it to a set of initiatives related to a more strategic adoption and use of IS/IT [13].

The publication of ISO/IEC 38500, first published in 2008 and revised this year, provides guiding principles for members of governing bodies on the effective, efficient, and acceptable use of information technology within organizations. Other tools like COBIT, Val IT e Risk IT help managers to assure that IS/IT support business purposes while maximizing IS/IT investments.

IS/IT Governance should be part of business management and requires leadership for creating structures and organizational processes to assure that IS/IT is adequate to implement and support strategies to achieve business goals. The identification and control of what may be critical for IS/IT Governance - critical success factors (CSF) – is

of the most importance. As IS/IT becomes much more central to carry out the work in organizations, the responsibilities of corporate directors have to evolve regarding IS/IT management and IS/IT investments; the establishment of effective IT steering committees will be critical [14] and top management has to be more directly involved in IS/IT Governance [15].

In summary, IS/IT Governance should be an important component of the overall Corporate Governance requiring the same level of commitment from top management. Several studies have found a significant impact of IS/IT Governance on organizational performance [16, 17]. Among organizations pursuing similar strategies, those that effectively govern information technology show profits 20% higher than the others [18].

3. Business Agility

Business agility is not something new, but nowadays we need to give it more attention. Organizations must be more agile in order to survive in markets that are becoming more turbulent and volatile. Table 1 presents some definitions for business agility.

Table 1. Business Agility Definitions

Source	Definition
Luftman et al., 1993	It is the ability to "change the direction of the environment and respond efficiently and effectively to that change" [19].
Dove, 2001	"Agility is the ability to manage and apply knowledge effectively, so that an organization has the potential to thrive in a continuous changing and unpredicted business environment. Agility implies not only the ability to respond to unanticipated change (response ability) but also to act proactively with regard to change" [20].
Sambamurthy et al., 2003	"...agility encompasses a firm's capabilities related to interactions with customers, orchestration of internal operations, and utilization of its ecosystem of external business partners". "Operational agility", one of the capabilities, "ensures that firms can rapidly redesign existing processes and create new processes for exploiting dynamic marketplace conditions" [21].
Plummer and McCoy, 2006	"The ability of an organization to sense environmental change and to respond efficiently and effectively to it" [22].
Fink and Neumann, 2007	"The ability to respond efficiently and effectively to emerging market opportunities by taking advantage of existing IT capabilities" (IT-Dependent Strategic Agility) [23].
Oosterhout et al., 2007	"Business agility is the ability to sense highly uncertain external and internal changes, and respond to them reactively or proactively, based on innovation of the internal operational processes, involving the customer in exploration and exploitation activities, while leveraging the capabilities of partners in the business network" [8].

We will adopt Oosterhout et al.'s definition, a more encompassing one that refers to internal and external changes that may trigger operational processes reorganization where IS/IT Governance may be critical, while underlining the involvement of customers and partners.

Agility is a fundamental factor, even decisive, for organisations to change processes so they can adapt as quick as possible to market changes. Innovation, resilience, delivery and dedication are other decisive factors, but agility is a *sine qua non* condition [24].

The ways organisations can deal with the uncertainty and the dynamics of change have been addressed both in the organizational and academic worlds. Networking, reengineering, modular organizations, virtual organizations, etc. are among the proposals on how to deal with the uncertainty and unpredictability of the business environment boiling down to the popular concepts of "Adaptive Organization", "Flexible Organization" and "Agile Enterprise". All of them converge to the ability of adapting and acting efficiently to adjust and respond to change [25], i.e., business agility.

4. IS/IT Governance and Business Agility

Recent research shows IT Governance as an important component of business-IT alignment [16]. The alignment between business and IT strategies has been pointed out as an important factor for business performance [26, 27].

Since IS/IT alignment allows organizations to make the most of the return on IS/IT investments, alignment should be seen as an important target for management. Improving the level of alignment should be among the major concerns for IS/IT and business managers [28]. Relevant alignment *drivers* have been extensively researched [27] and some studies indicate that IS/IT *Governance* develop a main role in IS/IT alignment [28-30].

Having IS/IT alignment as a priority, nevertheless, given an increase in the volatility of the markets, organizations may be more interested in being more agile to respond to market's opportunities and threats more promptly and efficiently. Whether alignment helps or not business performance, it is something that calls for evaluation.

Empirical research with business executives from 241 organizations on a conceptual model from Tallon and Pinsonneault (Figure 1) shows a positive and significant link between alignment (Strategic IT Alignment) and agility (Firm Agility) and between agility and performance (Firm Performance): agility fully mediates the effect of alignment on performance. Since moderators have been playing an increasingly important role in the study of alignment, two moderators were examined in that empirical research: IT flexibility, defined as the extent to which key IT resources can scale and adapt for different purposes, and environmental volatility, defined as the frequency and extent of change in critical market variables. While IT infrastructure flexibility does not moderate the effect of alignment on agility, except in a volatile environment, IT infrastructure flexibility has a positive and significant main effect on agility [31].

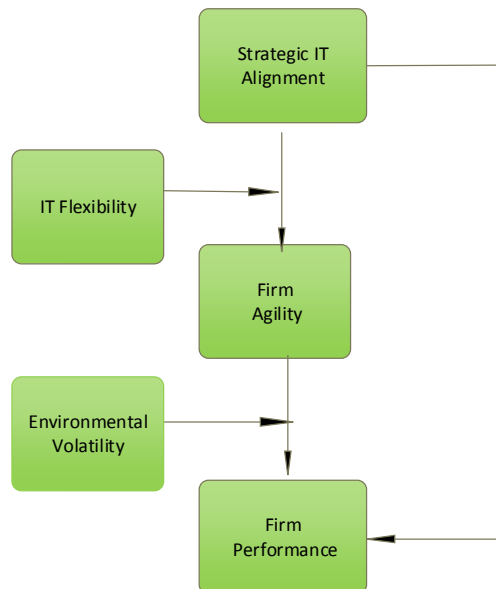


Figure 1. Agility as a mediator of the impact of Alignment on Performance

IT infrastructure flexibility “is the ability to easily and readily diffuse or support a wide variety of hardware, software, communications technologies, data, core applications, skills and competencies, commitments, and values within the technical physical base and the human component of the existing IT infrastructure” [32]. Related to IT infrastructure flexibility is IT reaction capability, the ability of IT “to quickly respond to the organization’s changing business needs/demands” [31]. Empirical research shows IT reaction capability with a very significant positive impact (50%) on IT Governance, the second largest one after IT Strategic Planning, among seven IT governance elements under examination [16]. Thus, IT infrastructure flexibility may be just one of the important dimensions to

take in account for IS/IT Governance in what relates to Business Agility. Table 2 includes the above mentioned studies as a starting point to examine the relationship between IS/IT Governance and Business Agility.

Table 2 – Studies on IS/IT Governance, Business-IT Alignment, Business Agility, and Business Performance

Source	Focus			
	IS/IT Governance	Business-IT Alignment	Business Agility	Business Performance
Tallon and Pinsonneault [31]		x	x	x
Luftman et al. [16]	x	x		x
Oosterhout et al. [8]			x	

5. Model Proposal

Case study research has uncovered a positive impact of IT Governance processes on realizing business value of IT [17] and survey research shows a positive relationship between IT Governance and Business-IT Alignment [33]. IS/IT Governance is shown to have an impact on Business Performance [16]; a positive and significant impact of Business-IT Alignment on Business Performance has also been demonstrated: Business Agility is mediating that impact [31]. In this last study, found support for a positive impact of alignment on agility, we should note that alignment was measured at the process level using Porter's value chain as a generic outline of the processes in an organization. Other ways of measuring it may be considered if we look at the Strategic Alignment Maturity model as a reference where IS/IT Governance is one of the six components of alignment [1]. We wonder now whether just IS/IT Governance policies and processes can have an impact on Business Agility.

In this work, we will examine the relationship between IS/IT Governance and Business Agility building upon the model from Tallon and Pinsonneault. Table 3 shows what we already know regarding supported relationships and what we want to examine.

Table 3. Relationships under scrutiny

Source	Relationship		Status
Luftman et al. [16]	IS/IT Governance	————> Business Performance	Supported
Tallon and Pinsonneault [31]	Business-IT Alignment (→ Business Agility)	————> Business Performance	Supported
Proposal	IS/IT Governance	————> Business Agility ?	To examine

Empirical findings support the association of IT infrastructure capabilities with IT Governance and business process improvements [34]. IT flexibility, as an IT infrastructure capability, and alignment, both have been found important as predictors of agility [31]. Although the hypothesis of IT flexibility as a moderator of the impact of alignment on agility has not been supported, as pointed out in Tallon and Pinsonneault's research, it is interesting to note that their study revealed a main effect of IT flexibility on agility as large as the effect of alignment on agility [31].

Figure 2 presents our model to analyse the relationship between IS/IT Governance and business agility, building upon the Tallon and Pinsonneault's model [31]. In face of previous findings, we will consider IT flexibility no more as a moderator of a relationship with business agility but, instead, as having a direct impact on business agility.

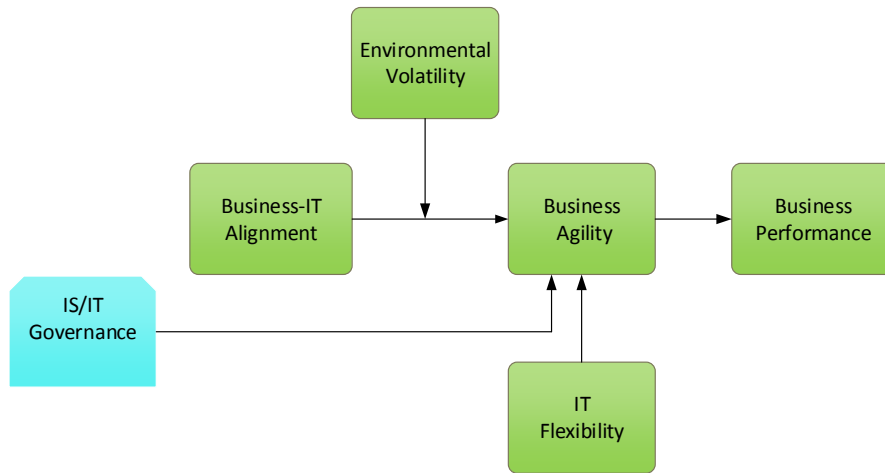


Figure 2. Research Model

In order to get an adequate operationalization of the constructs in the model, we will look into IS/IT governance practices that seem more likely to promote agility. A first selection of the most promising key factors associated with those practices were taken from COBIT, a well-known IT Governance framework with a good coverage of other standards and frameworks [35, 36] (Table 4):

Table 4. Key factors from COBIT processes to achieve agility

Key Factors	COBIT Process
Clear definition of personnel's responsibility and authority	Ensure Governance Framework Setting and Maintenance (EDM01)
Nature of management	
Transparency in information sharing	
Participative management style	
Clearly known goal management	Manage the IT Management Framework (AP001)
Smooth information flow	
Flattened organisational structure	Manage Human Resources (AP007)
Team management for decision making	
Interchangeability of personnel	
Devolution of authority	
Education and training to create self-managed teams	
Management involvement	
Profit motivation coupled with humanitarian approach	
Rapid evaluation and implementation of employee suggestions	
Employer-employees regular meetings	Manage Relationships (AP008)

6. Future Work

The set of key factors introduced in the previous section will be submitted for validation to a panel of experts selected from academia and practice. A Delphi method will be used and will take that first proposed set of factors to converge to a solution. That solution should be the appropriate set of factors for the operationalization of IS/IT Governance on what relates to foster business agility. Survey research will follow to assess the relationships in the model and compare with previous findings.

Case study may be later considered to go deep and better understand some results from survey research that may lead to discuss effective and efficient ways of having in consideration the guidelines from COBIT for IS/IT Governance.

At the end, while adding to the research on IS/IT Governance, we expect to help organizations to focus on a key set of factors when adopting IS/IT Governance practices that may help them to be more agile in surviving and prospering in a turbulent and volatile environment.

Acknowledgements

This work has been supported by FCT - Fundação para a Ciência e Tecnologia within the Project Scope UID/CEC/00319/2013

References

© 2015 The Authors. Published by Elsevier B.V.

Peer-review under responsibility of SciKA - Association for Promotion and Dissemination of Scientific Knowledge.

1. Luftman, J. and R. Kempaiah, *An Update on Business-IT Alignment: "A Line" Has Been Drawn*. MIS Quarterly Executive, 2007. **6**(3): p. 165-177.
2. Turel, O. and C. Bart, *Board-level IT governance and organizational performance* European Journal of Information Systems, 2014. **23**: p. 223-239.
3. Chan, Y.E., et al., *Business strategic orientation, information systems strategic orientation, and strategic alignment*. Information Systems Research, 1997. **8**(2): p. 125-150.
4. Chan, Y.E., R. Sabherwal, and J.B. Thatcher, *Antecedents and outcomes of strategic IS alignment: an empirical investigation*. Engineering Management, IEEE Transactions on, 2006. **53**(1): p. 27-47.
5. Oh, W. and A. Pinsonneault, *On the Assessment of the Strategic Value of Information Technologies: Conceptual and Analytical Approaches*. MIS Quarterly, 2007. **31**(2): p. 239-265.
6. Tallon, P.P., *A process-oriented perspective on the alignment of information technology and business strategy*. Journal of Management Information Systems, 2007. **24**(3): p. 227-268.
7. Preston, D.S. and E. Karahanna, *Antecedents of IS Strategic Alignment: A Nomological Network*. Information Systems Research, 2009. **20**(2): p. 159-179.
8. Oosterhout, M.v., et al., *Business Agility: Need, Readiness and Alignment with IT Strategies*, in *Agile Information Systems: Conceptualization, Construction, and Management*, K. DeSouza, Editor. 2007.
9. Abrahamsson, P., M.A. Babar, and P. Kruchten, *Agility and Architecture: Can They Coexist?* IEEE Software, 2010. **16-22**.
10. (ITGI), I.G.I., *Global Status Report on the Governance of Enterprise IT (GEIT)*. 2011.
11. IT Governance Institute (ITGI), *Board Briefing on IT Governance*. 2003.
12. IT Governance Institute (ITGI), *Aligning COBIT 4.1 ITIL v3 and ISO/EIC 27002 for Business Benefit*. 2008.
13. Wilkin, C. and R.H. Chenhall, *A Review of IT Governance: A Taxonomy to Inform Accounting Information Systems*. Journal of Information Systems, 2010. **24**(2): p. 107-146.
14. Bowena, P.L., M.-Y.D. Cheung, and F.H. Rohdeb, *Enhancing IT governance practices: A model and case study of an organization's efforts*. International Journal of Accounting Information Systems, 2007. **8**: p. 191-221.
15. Trites, G., *Director responsibility for IT governance*. International Journal of Accounting Information Systems, 2004. **5**: p. 89-99.
16. Luftman, J., et al., *IT Governance: An Alignment Maturity Perspective*. International Journal on IT/Business Alignment and Governance, 2010. **1**(2): p. 13-25.
17. Heier, H., H.P. Borgman, and M.G. Maistry, *Examining the Relationship between IT Governance Software and Business Value of IT: Evidence from Four Case Studies*, in *40th Hawaii International Conference on System Sciences (HICSS'07)*. 2007, IEEE.
18. Weill, P. and J. Ross, *A Matrixed Approach to Designing IT Governance*. MIT Sloan Management Review, 2005. **46**(2): p. 26-34.
19. Luftman, J.N., P.R. Lewis, and S.H. Oldach, *Transforming the Enterprise: The Alignment of Business and Information Technology Strategies*. 1993. **32**(1).
20. Dove, R., *Response Ability: the Language, Structure, and Culture of the Agile Enterprise*. 2001: John Wiley and Sons.
21. Sambamurthy, V., A. Bharadwaj, and V. Grover, *Shaping agility through digital options: Reconceptualizing the role of information technology in contemporary firms*. MIS Quarterly, 2003. **27**(2): p. 237-263.

22. Plummer, D.C. and D.W. McCoy, *Achieving Agility: Defining Agility in an IT Context*. 2006, Gartner.
23. Fink, L. and S. Neumann, *Gaining agility through IT personnel capabilities: The mediating role of IT infrastructure capabilities*, *Journal of the Association for Information System*, 2007. **8**(8).
24. Alves, J.P., *Agilidade*, in *Revista CEO*. 2012, PricewaterhouseCoopers: Lisboa.
25. Sherehiy, B. and J.K. Layer, *A review of enterprise agility: Concepts, frameworks, and attributes*. *International Journal of Industrial Ergonomics*, 2007. **37**: p. 445-460.
26. Sabherwal, R. and Y.E. Chan, *Alignment Between Business and IT Strategies: A Study of Prospectors, Analyzers, and Defenders*. *Information Systems Research*, 2001. **12**(1): p. 11-33.
27. Chan, Y.E. and B.H. Reich, *IT alignment: what have we learned?* *Journal of Information Technology*, 2007. **22**: p. 297-315.
28. Tiwana, A. and B. Konsynski, *Complementarities Between Organizational IT Architecture and Governance Structure*. *Information Systems Research*, 2010. **21**(2): p. 288-304.
29. Haes, S.D. and W.V. Grembergen, *An Exploratory Study into IT Governance Implementations and its Impact on Business/IT Alignment*. *Information Systems Management*, 2010. **26**: p. 123-137.
30. Kuruzovich, J., G. Bassellier, and V. Sambamurthy, *IT Governance Processes and IT Alignment: Viewpoints from the Board of Directors*, in *45th Hawaii International Conference on System Sciences*. 2012.
31. Tallon, P.P. and A. Pinsonneault, *Competing Perspectives on the Link Between Strategic Information Technology Alignment and Organizational Agility: Insights From A Mediation Model*. *MIS Quarterly*, 2011. **35**(2): p. 463-486.
32. Byrd, T.A. and D.E. Turner, *Measuring the flexibility of information technology infrastructure: Exploratory analysis of a construct*. *Journal of Management Information Systems*, 2000. **17**(1): p. 167-208.
33. Hardy, G., *Using IT governance and COBIT to deliver value with IT and respond to legal, regulatory and compliance challenges* *Information Security Technical Report*, 2006. **11**(1): p. 55-61.
34. Law, C.C.H. and E.W.T. Ngai, *IT Infrastructure Capabilities and Business Process Improvements: Association with IT Governance Characteristics*. *Information Resources Management Journal*, 2007. **20**(4): p. 25-47.
35. ISACA, *COBIT5: A Business Framework for the Governance and Management of Enterprise IT*. 2012.
36. ISACA, *COBIT 5: Enabling Processes*. 2012.