

The efficiency of strategic alignment

Determining the level of efficiency of the alignment of information systems with corporate strategy

Doctoral Consortium paper

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5 April 2013

Abstract – This article presents the current state of the preliminary work done in research on the topic of efficiency of the alignment of an information system with the corporate strategy. The work is the result of investigating both professional and scientific literature, and includes feedback obtained from various companies in which the author has been working during the last six years on the context of advisory services. This research favours an empirical approach for the construction of a model to calculate efficiency within a company. In order to calculate the point of efficiency of strategic alignment, it is necessary to position the subject of the study in a framework and a specific and weighted ontology. The model resulting from the work will be tested and improved within one organization, before being rolled out for wider use.

Key words — *strategic alignment; efficiency; effectiveness; ontology; information system; total quality; value*

I. INTRODUCTION

The aim of the research is to determine what constitutes efficient strategic alignment, in order to define a “point of efficiency” for which the investments made by the organization will allow an effective alignment of the information system with the corporate strategy, with optimum management of resources. Indeed, [10] states that “a system is [...] efficient when this effectiveness is achieved with the optimized commitment of funds”.

This research aims to provide a model that indicates, for a given company, if it has exceeded or not yet reached this point of efficiency. If the point of efficiency has not yet been reached, the model must provide a forward-looking assessment of the timeframe for the achievement of the target and the remaining “investment” to be made.

If the investment exceeds the gains made, the model must show to the organization concerned which investments need to be curbed in order to achieve the optimal balance.

This raises several issues, which we will try to resolve in the ensuing doctoral research:

- In what conditions is the information system able to further rather than penalize the sustainable efficiency of strategic actions?

- How should the “point of efficiency” of investment and the effectiveness of the strategic alignment approach be calculated?
- How can this aim be achieved and maintained in an environment subject to constant change?

For the purposes of this research, let us assume that the organization has implemented a process for the alignment of its information systems with its corporate strategy. Thus, strategic alignment results from the allocation of various resources between the different stakeholders involved in the business and IT strategies ([12], [15], [17] and [22]).

In this context, the thesis work focuses on targeted, pragmatic research.

II. STATE OF THE ART

A. *In scientific and professional literature*

In the literature, strategic alignment is generally studied as a process ([18]), for example in [4], where strategic alignment “must be thought of as an iterative process”. Furthermore, research aims to construct a representation of this alignment in the form of a state.

Analysis attempts to establish a relationship of cause and effect between the alignment approach and the performance of the organization. Nevertheless, [4] considers that “it has not been possible to prove any direct, automatic link between a company’s IT expenditure and its performance”.

The notion of value provided by the information system (IS) remains a principal concern. “An information system creates value and constitutes a source of competitive advantage.” References [5], [6], [7], [8], [11], [19] and [23] identify different methods of analyzing value applied to IT and alignment, including:

- The ValIT framework, published by the IT Governance Institute (ITGI), provides the process-oriented viewpoint of an auditor.
- The Mareva and Webi methods are interesting approaches developed by French and German administrations.

- An Enterprise Architecture approach: IS planning, for the construction and development of alignment ([9]).
- [13] use the Strategic Alignment Model (SAM) in a financial services firm to “demonstrate that SAM has conceptual and practical value.”

Nevertheless, the study of the measurement of strategic alignment has already been addressed from the perspective of the impact of IT on a company’s performance. For example, [5] states that “two types of evaluation exist. Firstly, approaches that measure alignment in such a way as to justify its relevance, the impact of IT on a company’s performance and its relationship with a company’s financial profit or the value of IT. Secondly, research approaches that help to understand and measure alignment in such a way as to help the company to improve its current situation”. The correlation between these two evaluation categories is essential in order to determine the point of efficiency of alignment.

B. In the field

My years of experience in the field as a consultant in information systems strategy and governance have given me a good grasp of the concrete issues that companies face.

This field data can thus be used to identify the recurring expectations of the decision-makers: the General Management, Business Line Management and Information Systems Management. Indeed, providing advisory services is also a means of meeting numerous professionals and experts in this area. In terms of knowledge management, the large advisory firms such as Deloitte or Ernst & Young possess databases containing very diverse knowledge. This aspect is reinforced by the proximity of professionals who contribute additional competence in IT performance and information systems transformation.

III. RESEARCH METHODOLOGY

The method used for this research is based on an empirical approach ([20]). The purpose of the first stage is to build the framework for the study through the use of literary research and a survey in the form of a questionnaire. Then a model will be developed, and tested in a pilot company. The roll-out and general use of the model will constitute the end result of the research.

A. Using an online survey

A survey composed of 10 questions was drawn up in order to identify the main challenges and the importance of the components of strategic alignment, according to line personnel and the company’s various players on a daily basis. The objectives of this questionnaire were:

- To make it possible to classify the components of strategic alignment by order of relevance.
- To undertake a brainstorming session (particularly on the last section of the questionnaire) in order to develop the model for the calculation of strategic alignment efficiency.

This approach focuses on two types of target:

a) direct contacts, selected for their positions in specific organizations (information systems directors or IT managers, consultants in major advisory and audit firms, strategic alignment managers, etc.);

b) indirect contacts, approached through focus groups on the social networks LinkedIn, Viadeo, Twitter and 12Manage.com.

The questionnaire had been filled in by 101 people as of 25 March 2013, 45% of whom were active players or decision-makers in strategic alignment.

B. Defining and enhancing an ontology

In order to calculate the point of efficiency of strategic alignment, it is necessary to position the subject of the study in a particular specific context. Thus, an ontology specific to the analysis of strategic alignment efficiency has to be created. This is arrived at on the basis of a semantic and conceptual analysis of the words and expressions used in strategy and IT. Structuring items through predicative and deontic logics will make it possible to consolidate the calculation model in the ensuing research work.

C. Finding a partner organization to test a pilot model

This empirical approach requires the initial results of the study to be transposed into a real-life situation as soon as possible. Thus, setting up a pilot model will make it possible to analyze the model and highlight ways of improving it.

The aim of this stage is to create a real partnership with an organization. This organization must be selected on the basis of its maturity regarding strategic alignment, but also according to various other criteria, including size. Indeed, testing the model in a large-scale company could prove to be tedious and counter-productive initially.

D. Designing and using a model

The model will be designed based on the ontology work. In addition, it will be enhanced iteratively during its set up and when the first results are obtained with the pilot model.

IV. CURRENT RESULTS

A. Innovative aspect of the approach

The subject of strategic alignment has already been studied from the point of view of the approach to be implemented in order to align information systems with corporate strategy. This study is innovative in that it starts from this premise and goes further downstream, providing insight into the efficiency of the alignment.

This approach requires deeper analysis of the phenomenon. The study will concern gains and investments made, in terms of time, but also with a perspective on the return on investment.

B. The framework and the ontology

1) Composition

The study of the company will be based on five main components: Information System, Organization/Business, Process, Project and Human Resources ([10] and [14]); these constitute the initial framework model for the study and the analysis of the efficiency of the strategic alignment. The interpretation of the processes for the alignment of information systems with corporate strategies involves analyzing the above-mentioned five components of the company according to the two focus areas "IS strategy" and "corporate strategy". The synergy of these analytical perspectives is shown below:

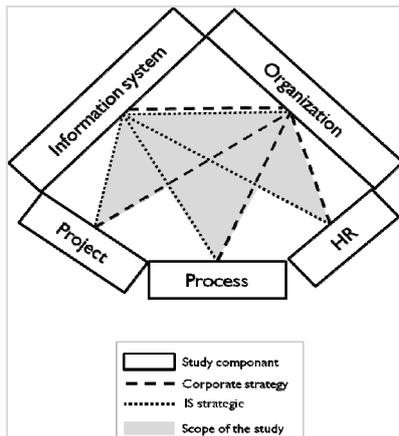


Fig. 1. The study framework

The ontology associated with the framework is composed of interrelated items ([16]). Links between items in the ontology express either aggregation and specialisation links or dependencies based on deontic operators such as obligation and possibility ([21]).

Structuring items through predicative and deontic logics will make it possible to consolidate the calculation model of efficiency of strategic alignment. Indeed, the ontology composed of items aims to provide the efficiency calculation model with the following material:

- the proposed items involved in strategic alignment efficiency (methods, tools, objects, players, etc.)
- the predicates involved in the strategic alignment approach: either on single items or couples of items (known as predicates of arity 2), triplets of items (arity 3), etc.
- the links between the variables and objects used in the calculation
- the "power" ratios between the items, obtained through weighting the concepts
- the potential action drivers resulting from the deontic links
- the predictive assumptions relating to future events, etc.

For example, the table below shows an extract of the ontology on two items from the "Actor" type.

Item	Type	weighting	Occ	Typ	SL	GL	Dp	Cp	Decomposition / link 1	Dcp / link 2
Collaborator	Actor	0,78%	3	1,5	1	2	4	4	A.Business(Cp)	A.CIO(Cp)
Decision maker	Actor	1,32%	5	1,5	1	8	3	3	A.Collaborator(Cp)	A.CIO(Dp)

The ontology is composed of six types of core items, shown in white, and three types of unitary items, shown in black.

Its structure is as follows:

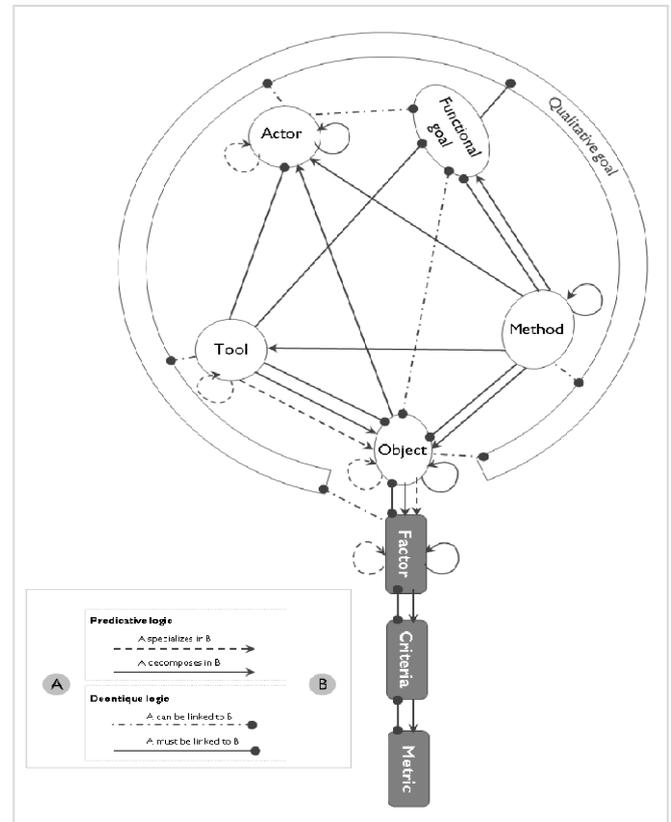


Fig. 2. The defined ontology

In this diagram, we assume that whenever there is a predicative logical link between two elements, then there is necessarily a permission link (deontic logic) between them. These links are not explicitly represented in the diagram.

2) The problem of weighting

As stated above, the ontology represents the source data for the point of efficiency of strategic alignment calculation. Thus, the analysis of the weightings of the ontology items is used for two purposes.

a) Firstly, to highlight the words that are not relevant in the context of the strategic analysis: with low weighting, to be studied on a case-by-case basis in order to identify which items should be eliminated from the ontology and which should be kept;

b) Secondly, to identify the words with high values for strategic alignment as well as a "power" ratio for these words in relation to each other.

The aim is to find a weighting formula for the ontology items, based on the following characteristics:

- Type of item [Typ]
- Occurrence of the word in the study [Occ]
- Number of specialization links [SL]
- Number of generalization links [GL]
- Number of decompositions [Dp]
- Number of compositions [Cp]

Each characteristic may have values of 1 to 20. The value of [Occ] is also impacted by the results of the survey carried out. These criteria are divided into three batches:

- Batch 1: [Occ] x [Typ]
- Batch 2 “Specialization”: [SL] + [GL]
- Batch 3 “Decomposition”: [Dp] + [Cp] or 1 if [Dp] + [Cp] = 0

The weighting obtained as a result of this work gives a percentage according to the following formula:

$$\frac{\text{Batch 1} \times \text{Batch 2} \times \text{Batch 3}}{\text{Max (Batch 1} \times \text{Batch 2} \times \text{Batch 3)}} = \text{Weighting (as \%)}$$

3) Development of the ontology

The creation of the ontology is based on different types of information sources: articles, professional publications, theses, the results of the survey, and field data (advisory assignments).

To create the ontology, first step was to list manually every item involve in the strategic alignment field that can be found in the sources of information. This resulted in a list of 192 items.

The second step was to apply successively four filters to refine this ontology. These made it possible to combine, eliminate and separate items. The ontology is thus currently composed of 142 items. It will evolve during the course of the study.

C. Finding a pilot company

As explained above, the model must be deployed and tested in an organization. The criteria for selecting the company are as follows:

- The management should have a good understanding of the strategic alignment approach;
- The company should be small;
- The company should be able to respond to the regular demands that may be made upon it;
- The timeframe for the implementation of the model should coincide with the pace of development of the company;
- The company should have a strong interest in the project.

Steps are being taken to initiate this approach with Comunethic¹. The company’s strategy, its high development potential, the heterogeneity of its current information system and its desire to align its information system with its strategy make Comunethic a suitable choice for the experimentation of the model.

D. Areas for research

1) Effectiveness of strategic alignment

For a strategic alignment approach to be effective, it must possess the following characteristics and principles. There come from the investigation and online survey results:

- **Ensuring the consistency of the information system** to sustain the strategy to be implemented. This translates into consistency between the corporate strategy and the development of the information system.
- The **strong commitment** of top management, sponsor(s) and General Management.
- **Designing a clear strategy with precise objectives**, shared with all the players involved. Strategic alignment aims first and foremost to build a communications architecture working for the company’s development strategy through transverse and vertical exchanges. The objectives and the advancement of said objectives must be shared and known by all in order to involve the entire organization in this alignment approach.
- Analyzing the value by **Key Performance Indicators (KPI)** (e.g. [2] and [3]), by monitoring a limited number of the company’s KPIs in order to ensure that everyone has a vision of the production of value (cultivated, sustained or eroded value). Information systems become decision-support tools, tools to monitor indicators, make savings and accelerate growth. Information systems give results that confirm that developments are supported and successful with a proven return on investment (ROI).
- Ensuring the **overall commitment** of the company’s departments. This is an approach where each sector of the organization is at the service of the core business so that the latter can focus on external aspects (customers, prospective customers, partners, etc.). The approach involves the business departments as well as the support functions (IS, as well as accounts, purchasing, human resources, logistics, etc.).
- Implementing a **project prioritization and arbitration process** that is shared and applied by the business lines and the Information Systems Management (ISM). This implies having a rationalized portfolio of projects that supports the corporate strategy (involving investments). Similarly, the company does not need all the information available within the context of its strategic alignment approach; data must be selected.

¹ Comunethic is an advisory firm specializing in the creation and development of innovative projects and businesses with an ethical and socially responsible purpose.

- Developing a target and a **roadmap, updated periodically** (e.g., a balanced scorecard). Having an IT master plan validated by the business line and reviewed regularly or whenever there is a significant change in trajectory or strategy.
- Ensuring **strong partnership and integration between the ISM and the business departments**. Continuous dialogue with the business line is a key factor of successful alignment. The ISM must therefore contribute its expertise to back up the business choices.
- **Managing quality investments** and assets. Technology upgrades are not always useful for the user, but are very costly. It is necessary to identify the IS costs that are the most appropriate and reliable for the delivery of products and services. The assets portfolio (capacities, processes, applications, etc.) must be managed and reviewed continuously in order to make sure that the quality of the assets is managed.
- **Coordinating the business process and the IS** within a harmonized, coordinated development approach. The medium-term ISM plan must be defined based on the objectives, challenges and needs on the business side. This is easier if the processes are simple, uniform and adhere to standards.
- Steering committee meetings must be held regularly with the Department managers, within a pre-established **governance framework**.
- The strategic alignment approach consists in **evaluating** the business and its internal and external environments, and also evaluating the IT planning to support and improve the business processes, so as to remain competitive.

2) *Methods of measuring effectiveness*

In addition, the methods of measuring the effectiveness of strategic alignment and the items needed to calculate this effectiveness mainly involve the setting-up of **operational performance and effectiveness indicators** (KPIs), which may or may not be financial. These include several types:

- Definition of KPIs on the management of the project portfolio
- KPIs on performance
- KPIs on the service provided
- KPIs on resources
- For accounting

The improvement of the business process KPIs correlated with the IT function KPIs makes it possible to define and improve the calculation of the return on investment (ROI). This notably involves taking into account the investment, operating expenses, workload (in man/days or FTEs), expected gains in terms of services, customer satisfaction, etc.

In the same way as for KPIs, establishing **ineffectiveness indicators** is a way of detecting loss in value. Strategic non-alignment is measured by the number of cases where the

information systems are a brake on the development of activities, new products, new customers, regulatory compliance, etc.

Effectiveness means, above all, “getting it right” the first time, that is to say, providing a quality of service that satisfies the customer, but that also satisfies the company in terms of risk, particularly as regards Health, Safety and Environment (HSE). This idea is developed in [1] with the **notion of Total Quality** (Total Quality Management, TQM), in an approach based on ISO 9004. The strategic alignment of the information system should be a means for users to improve their daily lives. The effectiveness of a process can therefore be measured pre- and post-implementation of alignment, thus highlighting a reduction in time or costs, or an improvement in the service provided. We should aim at optimum strategic alignment, not merely good alignment enabling organizational flexibility and adaptation to change. Consequently, continual monitoring of the state of alignment, surveys and reviews of strategic choices and of the effectiveness of the implementation, are the key to optimum strategic alignment.

The effectiveness of the alignment approach can also be achieved and measured by other means:

- Fixing **quantified, measurable targets to be met** (ROI, percentage of projects completed/in progress/late, level of confidence of major players via an anonymous survey, etc.) when defining strategic alignment so as to measure its effectiveness. The objectives must be defined for the development of the information system in the short, medium and long term.
- Involving the business line, IT department and the entire organization in the implementation of the **information systems master plan**. The communication of the challenges and objectives to all departments ensures that they are understood. The regular review of the master plan also ensures that all stakeholders are involved.
- Reducing the time spent on tasks with little added value, and fostering **better cross-disciplinarity** and the decompartmentalization of departments, which can then function according to the same process framework.
- Using management **tools**: business steering committees, scorecards, P&L and product roadmap, mapping of applications and business processes, EIS (Executive Information System), and use of recognized standards, for example CobIT².
- Measuring the effectiveness of the **value chain** (observing any change in effectiveness according to the modifications made to the information system). All the enterprises must be able to experience the value of the alignment directly, without any third party having to point it out. The alignment must provide the proof that a change in the long-term business results has been achieved.

² (Control Objectives for Information and related Technology developed in 1994 (and published in 1996) by the ISACA (Information Systems Audit and Control Association).

V. OUTSTANDING ISSUES

There are still numerous outstanding issues at this stage. The following require clarification:

- The validation of the assumptions made on the item specialization and decomposition links;
- The refining of the ontology framework, with the use of the weighting formula and related assumptions.

As the research is still in progress, the following actions will be undertaken in the coming months:

- Continuing the analysis and modelling of the framework;
- Designing the first version of the model for the calculation of efficiency;
- Finalizing the partnership agreement with Comunethic for the implementation of the pilot model.

ACKNOWLEDGMENT

I would like to thank Colette Rolland and Selmin Nurcan for their advice and the constructive feedback that I have received from them right from the start. I would also like to thank Christophe Georget, Partner at Ernst & Young, for his support in this project. Finally, my thanks go to all the respondents, anonymous and named, who took part in my online survey on the challenges of strategic alignment.

REFERENCES

- [1] S. George and A. Weimerskirch, "Total quality management – strategies and techniques proven at today's most successful companies" Second Edition, John Wiley & Sons, Inc. USA, 1998
- [2] R. Kaplan and D. Norton, "The balanced scorecard" 7^e tirage, Eyrolles, 2010
- [3] J. Rockart and C.V. Bullen, "Rise of Managerial Computing" Brown (William C.) Co, U.S., Feb. 1987. ISBN-13: 978-0870947575
- [4] CIGREF: R. Phelizon and S. Rouhier, "Alignement stratégique du système d'information - Comment faire du système d'information un atout pour l'entreprise?", Sept. 2002
- [5] L-H. Thevenet, "Proposition d'une modélisation conceptuelle d'alignement stratégique : La méthode INSTAL", thèse doctorat, Université Paris I – Panthéon-Sorbonne, 2010
- [6] C. Jouineau, "L'Analyse de la Valeur, méthodes, mise en œuvre et applications", ESF Éditions, 252 p., 1985
- [7] J.D. Martin and J.W. Petty "Value based management: the corporate response to the shareholder revolution", Financial Management Association survey and synthesis series, Harvard Business School Press, 2000, ISBN: 9780875848006
- [8] J. Simonin, "Conception de l'architecture d'un système dirigée par un modèle d'urbanisme fonctionnel", thèse doctorat, Université de Rennes 1, 29 janvier 2009
- [9] C. Longépé, "Le projet d'urbanisation des S.I.", 3rd édition, dunod, 2006
- [10] E. Fimbel, "Alignement stratégique: Synchroniser les SI avec les trajectoires et manœuvres des entreprises", Village Mondial, 2007, ISBN: 978-2-7440-7226-0
- [11] Capgemini, "ROI, Valeur et coûts du SI: Ensemble des méthodes et outils indispensables", 2011
- [12] T. Burns, G. Stalker, "The Management of Innovation", Tavistock, London, UK, 1961
- [13] D. Avison, J. Jones, P. Powell, D. Wilson, D., "Using and validating the strategic alignment model", Journal of Strategic Information Systems 13, pp.223-246, 2004
- [14] Hajer Kefi, "Processus organisationnels et systèmes d'information et de communication : alignement et performance", La Revue des Sciences de Gestion 5/2011 (n° 251), p. 189-200.
- [15] J.-C. Henderson and N. Venkatraman, "Strategic Alignment : leveraging Information Technology for Transforming Organizations", IBM Systems Journal 32 (1), pp. 4-16., 1993
- [16] J.N. Luftman, R. Papp, T. Brier, "Enablers and Inhibitors of Business-IT Alignment", Communications of the Association for Information Systems, 1, article 11, 1999
- [17] J.N. Luftman, P.R. Lewis, S.H. Oldach, "Transforming the Enterprise : The Alignment of Business and Information Technology Strategies", IBM Systems Journal 32 (1), pp. 198-221, 1993
- [18] B. Campbell, "Alignment: Resolving ambiguity within bounded choices", 9th Pacific Asia Conference on Information Systems (PACIS), pp. 1-14, 2005
- [19] A. Barua, C.H. Kriebel, and T. Mukhopadhyay, "Information Technologies and Business Value : An analytic and empirical investigation", Information Systems Research, 6 (1), pp. 3-23, 1995
- [20] R. Wieringa, "Design Science as Nested Problem Solving", Department of Electrical Engineering, Mathematics, and Computer Science, 2009
- [21] G. Politzer, L. Bonatti, "Traité de Sciences Cognitives : Le raisonnement", Hermès, Paris, chap. 5, 2002
- [22] IT Governance Institute, "IT Alignment : Who is in charge? ", USA, 2005, ISBN 1-933284-14-5
- [23] S. Chatterji, "Bridging business and IT strategies with enterprise architecture: realising the real value of business-IT alignment", Information Systems Control Journal, volume 3, ISACA, 2007