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Assessing Strategic Alignment to Improve IT Effectiveness

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Abstract

A long running challenge in both large and small organizations has been aligning information systems services with business needs. Good alignment is assumed to lead to good business results, but there is a need for good instruments to assess strategic alignment and business success in practice. Based on existing information management theories, we develop the I-Fit model and the I-Fit tool. The model assumes causal relationships between four main areas: 'IT governance', 'Strategic Alignment', 'Information Quality', and 'Business Performance'. The tool consists of 40 questions that are used to quick scan alignment. We apply the iFit tool in nine organizations in the Netherlands in order to validate the instrument. Further steps of the project are discussed, including tools for drilling down into the four main areas with greater depth.

Keywords: Assessment tool, Alignment, IT governance, Information Quality, Business Performance

1 Introduction

The concept of strategic alignment in IT systems has been around for many years, but the growing need for information transparency and completeness in a competitive economy continues to drive the need for better tools to enable and align business activities with supporting technologies. Strategic alignment, or 'business-IT alignment', intends to support the integration of IT into business strategy and processes (Luftman et al, 2005). The classic 'Strategic Alignment Model' distinguishes between the business domain (business strategy and business processes) and the technology domain (information strategy and IT processes, including systems development and maintenance) in an organization (Henderson and Venkatraman, 1993).

Two distinct conceptualizations of alignment can be found in the literature (Chan and Reich, 2007). The first sees alignment as an ongoing process of balancing IT supply and

business needs, requiring specific IT management capabilities and going through discernable patterns over time. The second sees alignment as a state and as a degree of fit between business and IT functions. Chan and Reich (2007) call for research of strategic alignment that includes both conceptualizations.

Luftman and Kempaiah (2007) list three reasons for the elusiveness of alignment. First, alignment is often regarded as ‘how IT is aligned to the business’, lacking the focus on ‘how the business is aligned with IT’. Second, alignment has often been regarded as a single issue item (e.g. ‘choosing the right technology’), in stead of being the result of multiple issues (like ‘adequate implementation process, adaptations of business activities and data). Third, there are no adequate tools to assess alignment in an organization. Luftman and Kempaiah propose a tool to assess strategic alignment by measuring the degrees of alignment maturity (five levels) on six dimensions (communications between business and IT; value of IT for the business; governance of IT decision making; partnership between business and IT; the scope and architecture of IT; the human resources and skills in business and IT).

Strategic intent is a concept coined by Hamel and Prahalad (2005) to stress the importance of balancing the strategic focus of an organization with available internal resources, by establishing communication between managers and shared perceptions of reality. Our research on strategic alignment follows the directions and perspectives given by Chan and Reich (2007) and Luftman and Kempaiah (2007) and aims to establish shared perceptions of business and IT.

The objectives of the I-Fit project are (i) to predict the impact of the business environment on the IT function in an organization, and (ii) to identify and manage the factors that influence IT effectiveness in an organization. The I-fit project focuses on ‘identifying key alignment processes’, ‘identifying performance indicators for alignment processes’, and ‘developing methods to improve alignment’. In the project, we develop instruments (1) to assess strategic alignment state and alignment processes in an organization and (2) to trigger discussion between business and IT management by assessing and confronting their perceptions of key strategic alignment topics.

This paper is based on the I-Fit research project, and focuses on the development of the instrument (a ‘quick scan’ to assess the alignment status in an organization), which aims to further develop the alignment model. The paper is structured as follows. We first review literature on assessing strategic alignment in an organization and develop our research model in section 2. The I-Fit tool to assess strategic alignment is described in section 3 and the method to validate and test the tool in nine firms in section 4. Results are given in section 5 and we conclude with future directions for assessing strategic alignment.

2 Assessing strategic alignment

Several theories exist on linkages between business-IT alignment and business performance. We summarize the main theories and develop our research model to assess relationships between IT governance (decision making on IT), Alignment (as the fit between IS services and Business needs), Information Quality, and Business Process Performance in an organization.

Chan *et al* (1997) use a well-accepted model (Parker *et al*, 1988; Palmer and Markus, 2000; Sabherwal and Chan, 2001; Saraf *et al*, 2007) to link “business strategic orientation” and “IS strategic orientation” to “IS strategic alignment”, “business

performance” and “IS effectiveness” (Figure 1). They define IS Strategic Alignment as ‘the alignment between ‘business unit strategic orientation’ and ‘IS strategic orientation’ and calculate IS strategic alignment as the degree to which a company employs the systems that support strategic orientation. Chan *et al.* examine whether the impact of IT on performance may not be a direct one, but intermediated by other factors, such as the alignment between Business Strategy and IT Strategy (see also Melville et al, 2004). Chan et al modified the well-known STROBE model (STRategic Orientation of Business Enterprises) of Venkatraman (1989) to include performance at the IS level as well as at the business unit level.

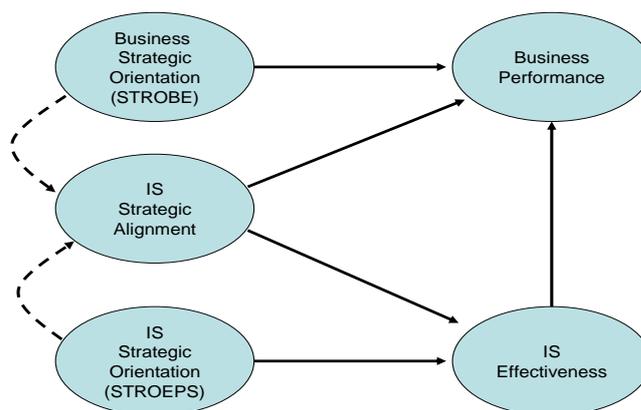


Figure 1. Framework linking IS strategic alignment to business performance (Chan et al, 1997).

The Chan et al model (1997) assesses IS strategic alignment and business performance (Figure 1) using the following five constructs: (i) ‘Strategic Orientation of the Business Enterprise (STROBE), which is the Realized Business Strategy, (ii) Business Performance, (iii) IS Effectiveness, which is the Current Value and Business Contribution of IS, assessed by determining the business satisfaction with IS staff and services, the Information product, and End User Knowledge and Involvement, (iv) Strategic Orientation of the Existing Portfolio of IS applications (STROEPS) which is the “realized IS strategy”, assessed by determining IS support for ‘business aggressiveness’, ‘internal defensiveness’, ‘external defensiveness’, ‘futuraity’, ‘proactiveness’, ‘risk aversion’, and ‘innovativeness’, and (v) IS Strategic Alignment, calculated from the scores on STROBE and STROEPS.

We aim to add to the Chan et al model in two ways. First, their model does not include the decision processes for matching STROEPS (strategic orientation of IS) and STROBE (strategic orientation of business) and how these processes lead to a certain degree of alignment. Such orchestration and coordination of decision processes is also known as *IT governance* (Smits and Van der Poel, 1996; Weill and Ross, 2004). Second, the Chan et al model does not specify how alignment influences IS effectiveness and (ultimately) business performance. We use *information quality* theory to fill in the assumed relationship between alignment and business performance.

We further define IT governance (section 2.1), information quality (2.2), and business performance (2.3) and present our research model in section 2.4.

2.1 IT governance

IT governance is the control structure in an organization to realize effective alignment processes. IT governance is defined as the way in which IT in an organization is controlled and coordinated (Brown 1997; Sambamurthy and Zmud 1999).

Traditionally, three configurations are distinguished for IT governance (Sambamurthy and Zmud 1999). In each configuration, stakeholder constituencies (business and IS management) take different lead roles and responsibilities for IT decision making:

- Centralized configuration: corporate IT management has IT decision-making authority concerning infrastructure, applications, and development.
- Decentralized configuration: division IT management and business-unit management have authority for infrastructure, applications, and development.
- Federal configuration: this is a hybrid configuration of centralization and decentralization, where corporate IT has authority over infrastructure, and division IT and business-units have authority over applications and development.

In general, it is argued that centralization provides greater efficiency and standardization, while decentralization improves business ownership and responsiveness (Brown, 1997). Peterson (2001) indicated that as companies experience increased uncertainty and complexity, and adopt multi-focused strategies, IT governance designs are more hybrids with increased coordination needs. Peterson showed that for organizations in a dynamic strategic context, the best IT governance structure is decentralized decision making, combined with rich integration mechanisms.

Integration mechanisms include both formal coordination activities as well as social settings that enable internal communication among business and IT managers to enhance shared vision and shared understanding (Peterson, 2001). In order to assess effectiveness of IT governance and strategic alignment, Torabkani et al (2007) analyze alignment processes by distinguishing between driver (of a decision process), levers (intermediate results of decisions), and impact (of the decisions). This process perspective on IT governance and strategic alignment stems from previous operationalizations of alignment by Luftman (1996) and Hsiao and Ormerod (1998). They describe alignment as a process with a typical sequence of activities with three major components that form a complete pattern of strategic change: driver, lever, and impact. For instance, business strategy can be the driver for a change of business processes or information strategy (called ‘levers’), ultimately affecting the IT processes (‘impact’).

Summarizing, IT governance in an organization affects the decision making processes on business and IT in an organization and the coordination and communication processes among business and IT decision making. Based on IT governance theory, we hypothesize

- **H1:** good IT governance (fitting the business and IT context) leads to good fit (alignment) between supply and demand of IS services in an organization.

We next examine the linkages between IS strategic alignment is the relation between ‘alignment of the demand and supply of IS services’ and ‘business performance’ using information quality.

2.2 Information quality

Our view on information quality is based on the work of Roest (1988), Van der Pijl (1994), and Vermeer (1999) and denotes a typical European perspective on information management. In this perspective, the quality of information is the key issue to explain business success. The USA approach differs since it aims to explain business success not by focusing on information, but on Information Technology and Information Systems.

A well accepted definition of information quality is formulated by Klobas (1995): ‘the degree to which information is fit for use’ or ‘fitness for purpose’. Therefore, information quality on the highest level can simply be determined by asking for user satisfaction. However, this does not provide insight into the origins of quality failures. To analyze the origins, information quality can be determined in two distinct ways, also known as the teleological and the causal perspective (Van der Pijl, 1994), as shown in Figure 2.

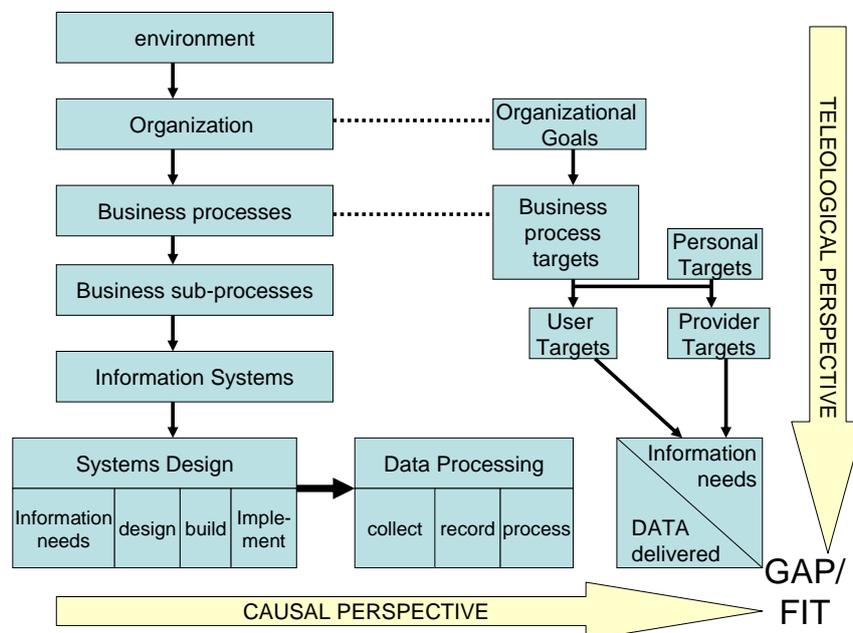


Figure 2. Causal and teleological perspective on information quality (based on vd Pijl, 1994)

In the teleological perspective, information quality is the degree to which ‘the information (data) that is delivered to the business fulfils the business needs’. In the teleological perspective the quality of information is determined by the objective for which the information is intended to be used. Typical indicators for Information Quality in the teleological perspective (Van der Pijl, 1994) are: timeliness, accurateness, relevance, availability, and completeness.

Another perspective on information quality is found in the causal model. In this perspective, Information quality is the degree to which ‘the information that is delivered to the business’ is the result of a clear and correct chain of activities. The importance of the causal model of information quality is that it is not possible to measure all aspects of the quality of information only from the information itself. The reliability of information also depends on the measures that are taken in the IS development and

operational phase. Typical indicators for information quality from the causal perspective (Van der Pijl, 1994) are ‘the information is provided according to the existing service level arrangements’, ‘the information creation process is accountable for and transparent’, and ‘it is SOX compliance’.

Summarizing, information quality can be determined in two perspectives, where the teleological perspective implies indicators representing information needs and the causal perspective indicators for information supply. The difference between the two quality perspectives illustrates the ‘gap’ showing a certain degree of (miss-) fit. We aim to qualify the gap by distinguishing between four types of information, following the balanced score card perspectives: financial, process, customer, and innovation related information. Gaps can be calculated for each balanced scorecard perspective.

Based on the information quality theory, we hypothesize

- **H2:** good fit (alignment) between supply and demand of IS services in an organization leads to good information quality (low gaps), and
- **H3:** good information quality leads to good business process performance.

2.3 Business performance

Melville et al (2004) reviewed the literature on IT and Organizational Performance and developed an integrative model of IT - Business value. The term IT - business value is commonly used to refer to the impacts of IT on organizational performance, including productivity enhancement, profitability improvement, cost reduction, competitive advantage, inventory reduction, and other measures of performance. The term performance is used to denote both intermediate business process level measures (also indicated as first order effects) as well as organizational performance measures (indicated as higher level variables, such as ‘market share’).

The core of the model indicates the influence of “IT and complementary organizational resources” on “business process structure and functioning” and ultimately on “business process performance”. Mediating variables for these relations are “trading partner resources”, “industry characteristics”, and “country characteristics”.

Based on the business performance theory we focus our analysis of the impact of strategic alignment on business process performance (and not on business and organizational performance).

2.4 Research Model

Our research model (Figure 3) is based on four constructs: (i) IT governance (as defined in section 2.1), (ii) Alignment, (iii) Information Quality (section 2.2), and (iv) Business Performance (section 2.3). Hypotheses H1-H3 have been formulated above and are indicated in Figure 1. Our main assumption is that ‘good IT governance’ (effective decision making organization and effective driver-lever-impact processes) leads to good ‘alignment’ (fit between supply and demand for information services), which leads to good ‘information quality’, ultimately improving Business Performance’.

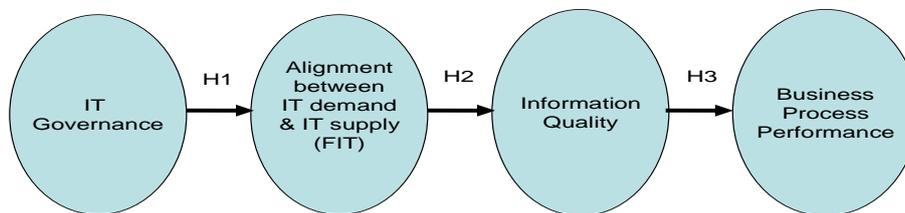


Figure 3. Research model distinguishing between four strategic alignment constructs.

In the rest of this paper we design (section 3) and validate (section 4) a tool (called the ‘I-Fit tool’) to assess the four strategic alignment constructs in an organization. Our ultimate aim (not in this paper) is to use the tool in practice in order to provide insight for business managers in the IT consequences of decisions on information services, to support business managers to control Information services, based on alignment processes, and to design strategies for the IT domain in order to maximize IT value added for the business, and (possibly) for benefits management.

3 I-Fit Questionnaire

For each construct (IT governance, alignment, information quality and business process performance) in the research model, we ask five questions on ‘how the manager thinks the domain should be’ (to assess the TO BE (desired) situation) and five almost similar questions focusing on ‘how the manager scores the current situation’ (to assess the AS IS (current) situation). In this way the gap between planned (SOLL) and actual (IST) situations can be assessed (Hoffmann, 1996).

The 20 questions for IST and the 20 related questions for SOLL were developed, based on current IM literature. First a scan of existing questionnaires (STROEB, STROPE, INK, etc) was performed for each I-Fit building block. Based upon this review, questions were selected and discussed by four senior IM researchers and two senior consultants in a Delphi-like manner. Five questions were developed for each of the four building blocks of the I-Fit model, giving a total of 20 questions. For example, one of the five questions on the current alignment situation is “There is a fit between our long-term IT plans and out current IT projects and IT operations” and the related question on the desired situation is “There is need to be a fit between our long-term IT plans and out current IT projects and IT operations”.

So, the questionnaire consists of questions on

- **IT governance:** five questions on ‘the way in which IT in the organization is controlled and coordinated’, how decision rights regarding IT applications, infrastructure, and projects are distributed and coordinated in the organization.

- Strategic alignment: five questions on ‘the fit between an organization and its strategy, structure, processes, technology, and environment’.
- Information Quality: five questions on ‘the degree to which information is ‘fit for use’ and ‘fit for purpose’.
- Business Performance: five questions on ‘productivity enhancement, profitability improvement, cost reduction, competitive advantage, inventory reduction, and other measures of business performance’.

Each of the 20 questions would be answered on a 5 point Likert scale for two situations: the desired (planned) SOLL situation and the existing (IST) situation. Typically, the questionnaire would be answered by business and IT managers in an organization. In this way two distinct measures can be calculated to assess the perceptions of strategic alignment by business and IT management:

- Satisfaction of a (business or IT) manager. Satisfaction is calculated as the gap (the average of the five absolute gaps) between the answers (the scores on the 5 point scale) on the desired situation and the questions on the current situation. So, a high gap (4 is the maximum) indicates dissatisfaction, and a low score (below 1) indicates manager satisfaction.
- Agreement between business and IT managers. Agreement is calculated as the gap between the answers (scores on the 5 point scale) given by business and IT managers on the current situation (agreement on IST) and as the gap between the answers on the desired situation (agreement on SOLL). A high gap (4) indicates disagreement between business and IT managers.

Figure 2 shows an overview of the I-Fit Questionnaire (or I-Fit quick scan) and the calculations of business management satisfaction, IT management satisfaction, business-IT agreement of the current situation (IST) and the desired situation (SOLL).

	Business managers	IT managers	
IST Questions (5 per construct)	Q1ist	Q1ist	$\frac{\sum (\text{abs}(Q_{ist_n} - Q_{ist_n}))}{5}$ Business - IT Agreement IST
	Q2ist	Q2ist	
	Q3ist	Q3ist	
	Q4ist	Q4ist	
	Q5ist	Q5ist	
SOLL Questions (5 per construct)	Q1soll	Q1soll	$\frac{\sum (\text{abs}(Q_{soll_n} - Q_{soll_n}))}{5}$ Business - IT Agreement SOLL
	Q2soll	Q2soll	
	Q3soll	Q3soll	
	Q4soll	Q4soll	
	Q5soll	Q5soll	
	$\frac{\sum (\text{abs}(Q_{ist_n} - Q_{soll_n}))}{5}$ Business satisfaction	$\frac{\sum (\text{abs}(Q_{ist_n} - Q_{soll_n}))}{5}$ IT satisfaction	

Figure 4. Overview of the I-Fit questionnaire (Quick Scan) consisting of 20 questions (5 per construct) for the desired situation (SOLL) and 20 for the existing situation (IST).

4 Method

We analyze strategic alignment in an organization by using the iFit Quick scan tool. Analysis of strategic alignment is based on interviews with business managers and IT managers. Each interview takes one hour and includes answering 40 short questions on four the four domains in our research model:

During the period May 2008 through January 2009, we interviewed both IT and business management in nine organizations in The Netherlands using the Quick Scan questionnaire. An interview takes one hour and includes answering 40 short questions on the four domains and an assessment of the position of the respondent in the organization. The size of the firms ranged from an SME to a business unit of a major financial organization. Four of the nine firms were service providers in the public sector, and the other five firms were in the financial or other commercial services sector. All of these firms were clients of the ICT consultancy working closely with our university on this project. Given their relationship with the consultancy, after doing the interview and creating the analysis, we confirmed our findings with the consultants who handled those accounts. We then went back to the firms to present the results to further validate the findings.

5 Results

We first present our findings per January 2009 in one organization to illustrate the analysis of strategic alignment in one organization (5.1) and then present a summary of our findings in nine organizations.

5.1 Findings in one case

The case is a relatively small independent bank with about 1000 fte personnel, operating in The Netherlands. The bank's strategy is designed to build its market position while preserving its independence. The organization structure consists of five business clusters. Each cluster is headed by one member of the executive board. The two customer oriented clusters are 'Market' (for three client groups) and 'Product' (for banking products including insurance and investments). The other three clusters are (i) Staff, (ii) Finance & Control, and (iii) ICT, Operations, Compliance, and Corporate Development. The Corporate Development (CD) unit was initiated per January 2008 in order to clarify the prioritization of IT projects and IT project portfolio management in the bank. The CD unit comprises about 30 full-time equivalent (fte) process & information analysts, business analysts, architects, and information managers, IT project leaders, program managers, and project portfolio managers.

In this organization we analyze alignment between the IT function as represented by the head of Corporate Development (IT supply) and business management (IT demand) represented by the head of Financial and Legal Compliance (e.g. Basel2). Our findings on satisfaction of and agreement between business and IT managers are given in Figure 5.

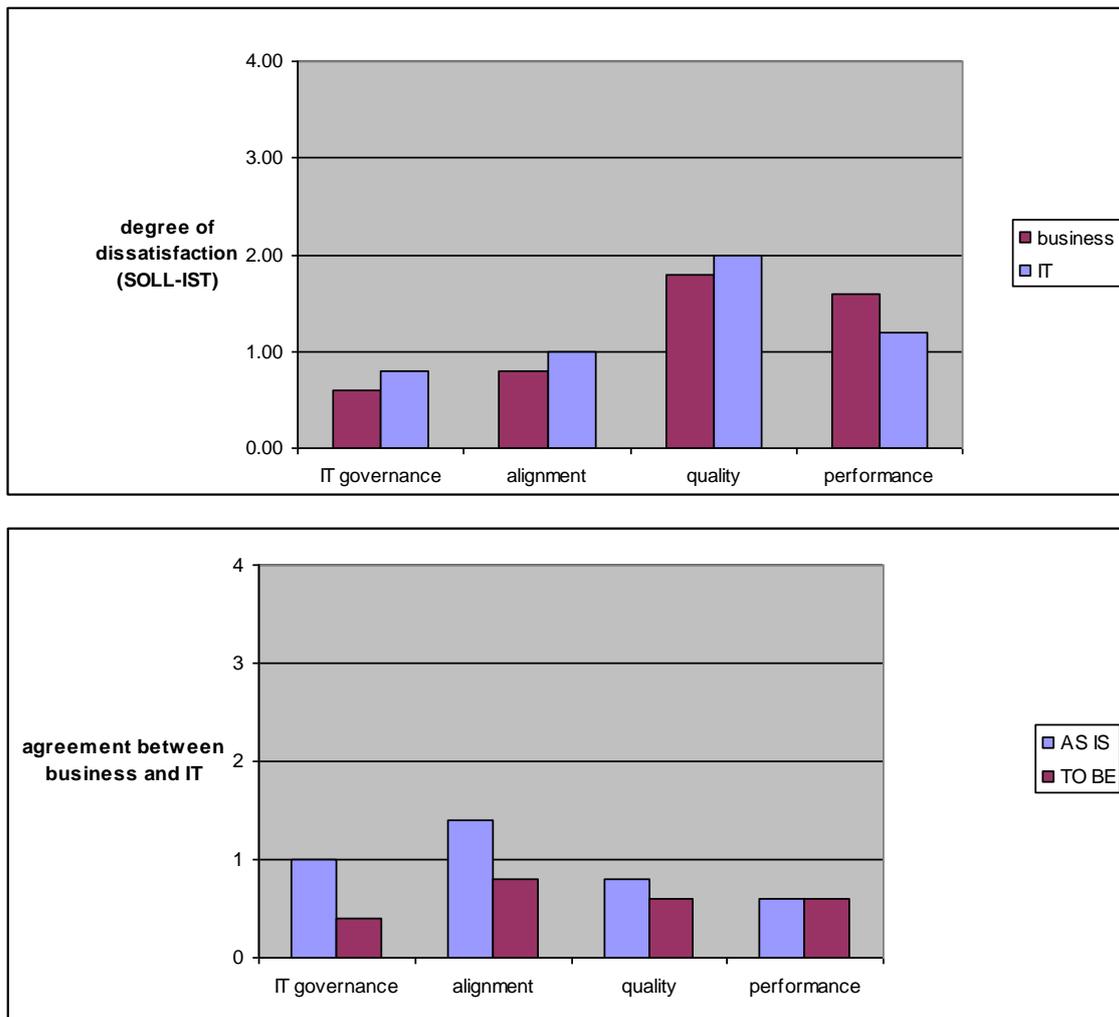


Figure 5. Satisfaction of business and IT managers on four aspects of Strategic Alignment (upper graph) and agreement between business and IT managers (lower graph)

We conclude that business and IT managers are satisfied on IT governance and alignment (gap scores are below 1), that business and IT managers are not satisfied on information quality (gap scores 1.8 and 2.0), and not satisfied on business performance (1.6 and 1.2). Detailed analysis of the gaps indicates a need for further analysis of Information Quality on the topics ‘data availability’, ‘data characteristics’ and ‘business information needs’. Detailed analysis also indicates a need for further analysis of business process performance on ‘business process efficiency’, ‘business process reliability and flexibility’, and ‘fit between process performance and business strategy’.

The upper part of Figure 5 indicates that Business and IT managers perceive data quality and business performance as unsatisfactory, but apparently, they don’t regard IT governance and alignment as the cause of these bad scores (because they perceive these aspects as satisfactory).

This contradiction may be explained by looking at the lower part of Figure 5 showing that there is a difference in perception between business and IT managers regarding the

current alignment situation (gap = 1.4). This disagreement between Business and IT management on current alignment (and current IT governance) may explain the dissatisfaction scores on data quality and business performance as reported in the previous section.

In order to further validate the instrument and to test the hypotheses given in section 2, more research is needed. As a first step in this process, we present an overview of our findings in 5.2.

5.2 Summary of findings in nine cases

Table 1 gives an overview of our findings in nine cases on the average satisfaction of and agreement between business and IT managers on IT governance, alignment, information quality, and business process performance.

Findings indicate relative satisfaction of business and IT managers on IT governance and alignment and relative dissatisfaction on information quality and business process performance. Like the findings in the bank case in 5.1, it is suggested that bad scores on information quality and business process performance may occur even if IT governance and alignment scores are OK. However, like our findings in the bank case, the bad scores on information quality and business process performance may be caused by disagreement between business and IT managers on IT governance (gap 1.0) and alignment (gap 1.1). This preliminary empirical finding supports hypotheses H1, H2, and H3, but needs to be confirmed by further analysis of governance processes, alignment, and data quality of multiple respondents in more organizations.

Table 1. Satisfaction of and agreement between business and IT managers on four strategic alignment constructs in nine cases (numbers between brackets indicate standard deviations).

Strategic alignment construct	Business manager satisfaction	IT manager satisfaction	Diasagreement on IST	Disagreement on SOLL
IT Governance	0.5 (0.3)	0.6 (0.3)	1.0 (0.4)	0.9 (0.5)
Alignment	1.4 (0.7)	1.3 (0.3)	1.1 (0.6)	0.7 (0.2)
Information Quality	1.9 (0.8)	1.6 (0.7)	0.9 (0.8)	0.6 (0.3)
Process Performance	1.9 (0.3)	1.7 (0.4)	0.7 (0.3)	0.5 (0.3)

Key questions for further analysis include:

A first examination of the four public sector organizations separately from the overall analysis, we see the following trends. IT governance was within satisfactory limits, and in most cases, alignment was also within satisfactory limits. However, in all four cases, there were gap issues with both information quality and business performance to various extents. One unusual trend was the dissatisfaction with strategic alignment by the IT respondents. This may be caused by reorganizations or internal communication issues, which is an area for further investigation.

6 Conclusions and future directions for research

In summary, we have created a model to examine the interactions between four building blocks of strategic alignment: IT Governance, Information Quality, Alignment, and Business Process Performance. To assess strategic alignment, we use a tool (i) to

provide insight for business managers in the IT consequences of decisions on information services, (ii) to support business managers to control information services, based on alignment processes, and (iii) to support design strategies for the IT domain in order to maximize IT value added for the business, and (possibly) for benefits management. The added value of the current tool is that it assesses satisfaction gaps for business and IT managers and possible disagreement gaps between business and IT managers. In this way the tool and method may trigger and support communication between business and IT as a starting point to improve strategic alignment and IT effectiveness.

In terms of the limitations of this model, this study is exploratory and the research model uses tools that model a subset of the factors that could be involved in the respective relationships. We have not examined how strategy and governance are set, nor have we examined how business performance targets are set in these organizations. However, the acceptance of the results and their validity with both the external consultants and the firms in question help us fine tune the model for future implementations.

Further analysis and research is needed on the following issues: (i) How much fit (satisfaction; agreement) is there now? (ii) when are gaps acceptable?, (iii) How dynamic are the business needs?, and (iv) Can a fit remain when business needs are changing? We also plan additional instruments (based on existing IM literature) to the main Quick Scan tool for delving deeper insight into the four areas examined. Items to be included in tools to assess business process performance are topics such as Six Sigma.

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