

THE I-FIT MODEL: DEVELOPING A TOOL TO DETECT POTENTIAL ALIGNMENT PROBLEMS

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Abstract

This paper summarises the initial findings of the I-Fit research project. The main goal of the project is to develop tools to improve alignment between business and IT in companies. The I-Fit project takes the perspective of both the IT manager and the business manager to define how a business manager can influence and increase the value of the IT services that he receives.

Based on the literature on strategic alignment and information quality, we develop the I-Fit model. The model assumes causal relationships between 'IT governance', 'Strategic Alignment', 'Information Quality', and 'Business Performance' in an organisation, as shown in the paper. This model has been used to develop a Quicksan questionnaire to pinpoint areas of concern regarding alignment in a company. The tool was tested and validated, demonstrating that the approach taken is valid and deserves further pursuit.

Keywords: Alignment, I-Fit model, IT governance, Information Quality, Business Performance

1 INTRODUCTION

For two decades, IT alignment has consistently appeared as a top concern for IT practitioners and company executives (Luftman *et al.*, 2005). Several empirical studies clearly demonstrate that those organisations that successfully align their business strategy with their IT strategy will outperform those that do not (Chan *et al.*, 1997; Kearns & Lederer, 2003).

Yet Chan and Reich (2007) describe the alignment concept as “elusive”. There is no definitional rigour. The concepts lack precision and thus are less helpful in articulating what exactly constitutes good alignment and how it might be measured (Cumps, 2007; Chan & Reich, 2007). Moreover, many business managers are unaware of the importance of IT alignment (Baets, 1996), regardless its business value creation potential. These elements make it quite difficult to have a meaningful and to the point discussion at general director level or at board meetings.

In co-operation with an international consulting firm, based in The Netherlands, we developed a tool that allows companies to pinpoint potential alignment problems in order to help both managers and consultants to grasp the situation and translate it into areas of concern. The tool enables them to break down the alignment issue into smaller areas that are in need of further examination. The initial version of the tool is referred to in this paper as the Quicksan.

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In line with the plea of Chan and Reich (2007) to construct tools based on sound theoretical foundations and following the suggestion of Bergeron (2001) to incorporate multiple performance criteria, we started by developing a theoretical framework. This framework is referred to as the I-FIT model.

In this paper, we focus first on I-Fit, the theoretical model upon which the tool is based. In the subsequent part of the paper we describe the rationale behind the Quickscan tool as well as the way in which it was tested and validated. We finish this paper by describing the lessons learned during the validation of the tool and describing the future heading of the project.

2 THE I-FIT MODEL

Based on the literature on strategic alignment and Information Quality, the I-Fit model was developed. The model is based upon four building blocks: 'IT governance', 'Strategic Alignment', 'Information Quality', and 'Business Performance'.

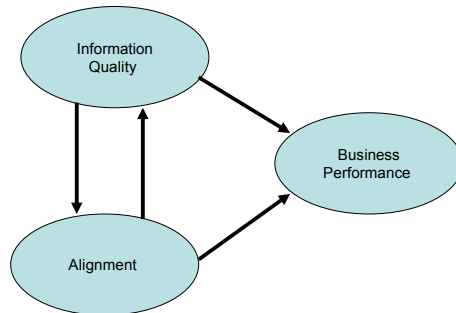


Figure 1. Building blocks for the I-Fit project. The arrows indicate some possible relations between Alignment, Information Quality and Business Performance

In the remainder of this section, we will elaborate on each of the building blocks before discussing the I-Fit model that combines and interrelates them.

2.1 Information Quality

Our view on information quality is based on the work of Roest (1988), Van der Pijl (1994a, 1994b), and Vermeer (1999) and denotes a typical European perspective on information management. In this perspective, the quality of information (coming from Information Systems) 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.

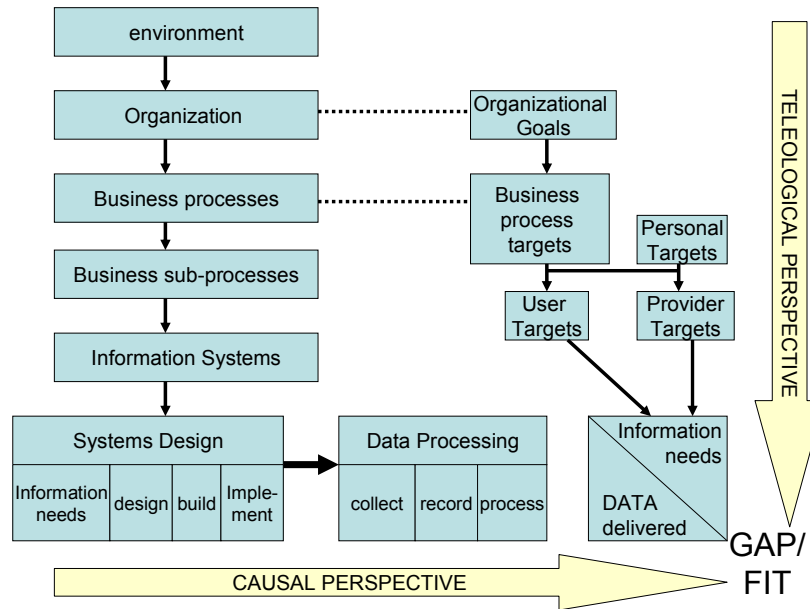


Figure 2. Causal and Teleological perspectives on Quality of information, based on Van der Pijl (1994)

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 analyse the origins, Information Quality can be determined in two distinct ways, also known as the teleological and the causal perspective (Van der Pijl, 1994a) (Figure 2 shows these two perspectives).

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, 1994a) 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, 1994a) 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’.

Interestingly, the variety of Information Quality indicators from the two perspectives create the need for business managers to balance between timeliness, completeness, accurateness, and the flexibility of Information Services.

2.2 Strategic Alignment

As Chan and Reich (2007) convincingly demonstrate in their elaborate overview article, the term “alignment” is still elusive despite two decades of both scholarly research and interest from the

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field. Even the definition of the term “alignment” (equivalent terms: fit, linkage, integration) is not free of discussion (Cumps, 2007). Hence, a certain viewpoint needed to be selected.

For developing the i-Fit model, we opted for the well-known definition of Henderson and Venkatraman (1993). They introduced ‘business-IT alignment’, in short ‘alignment’, intended to support the integration of IT into business strategy. They distinguish in their classic ‘Strategic Alignment Model’ (Figure 3) between the business domain (consisting of ‘business strategy’ and ‘business processes’) and the technology domain (consisting of ‘IT strategy’ and ‘IT processes’, including systems development and maintenance) in an organisation.

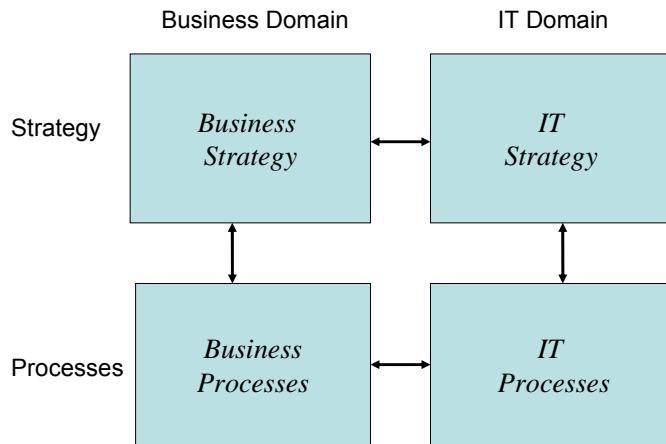


Figure 3. The Strategic Alignment Model (based on Henderson and Venkatraman (1993) and Parker, Benson, Trainor (1988))

Strategic alignment is pursued along two dimensions in Figure 3:

- strategic fit: the (vertical) fit between strategies (business and IT) and internal infrastructures and processes
- functional integration: the (horizontal) fit between the business and the technology domain) (Henderson and Venkatraman, 1993).

2.3 IT governance defined

IT governance is introduced as the control structure in an organisation to realise effective alignment processes. IT governance is defined as the way in which IT in an organisation is controlled and co-ordinated (Brown 1997; Sambamurthy and Zmud 1999). More precisely, IT governance is about the locus of IT decision-making authority (centralised versus decentralised control) and the processes that are in place to communicate IT decisions (Peterson, 2001). Effective IT governance leads to successful alignment processes.

Governance comes from ‘kybernan’ (Greek) and is related to ‘cybernetics’ (Wiener, 1948), meaning ‘to steer’ and ‘keeping a ship on its course in the midst of unexpected changing circumstances’. Governance can be regarded as ‘control’ in a broad perspective, meaning that governance includes the total set of controlling activities that keep the system (ship, organisation) on the right (chosen) course (Malone and Crowston, 1994).

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

- Centralised: in this configuration, corporate IT management has IT decision-making authority concerning infrastructure, applications, and development.
- Decentralised: in this configuration, division IT management and business-unit management have authority for infrastructure, applications, and development.
- Federal: in this configuration (a hybrid configuration of centralisation and decentralisation), corporate IT has authority over infrastructure, and division IT and business-units have authority over applications and development.

In general, it is argued that centralisation provides greater efficiency and standardisation, while decentralisation 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 co-ordination needs. Figure 4 shows how the strategic (business) context influences the type of governance design and the integration mechanisms for IT governance, ultimately influencing IT performance. Peterson showed that for organisations in a dynamic strategic context, the best IT governance structure is decentralised decision-making, combined with rich integration mechanisms.

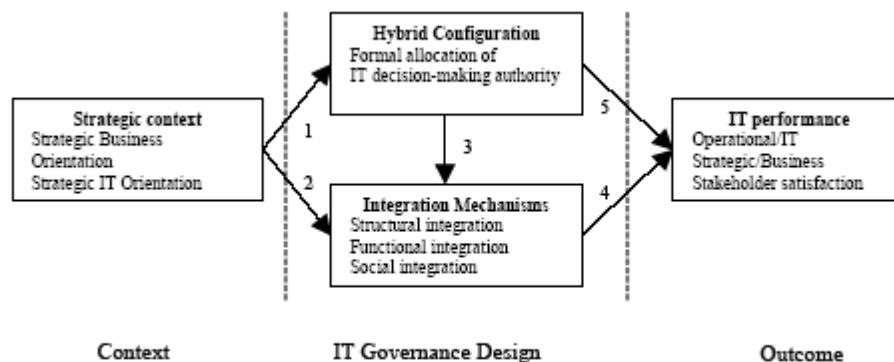


Figure 4. IT governance Design Peterson (2001)

2.4 Business Performance

Melville et al (2004) reviewed the literature on IT and Organisational Performance and developed an integrative model of IT - Business value (Figure 5). The term IT - business value is commonly used to refer to the organisational performance impacts of IT, including productivity enhancement, profitability improvement, cost reduction, competitive advantage, inventory reduction, and other measures of performance.

The core of the model shows the impact of IT and complementary organisational resources on business processes and business process performance. Mediating variables are trading partner resources, industry characteristics, and country characteristics. The term performance is used to denote both intermediate business process level measures (also indicated as first order effects) as well as organisational measures (indicated as higher level variables, such as 'market share')

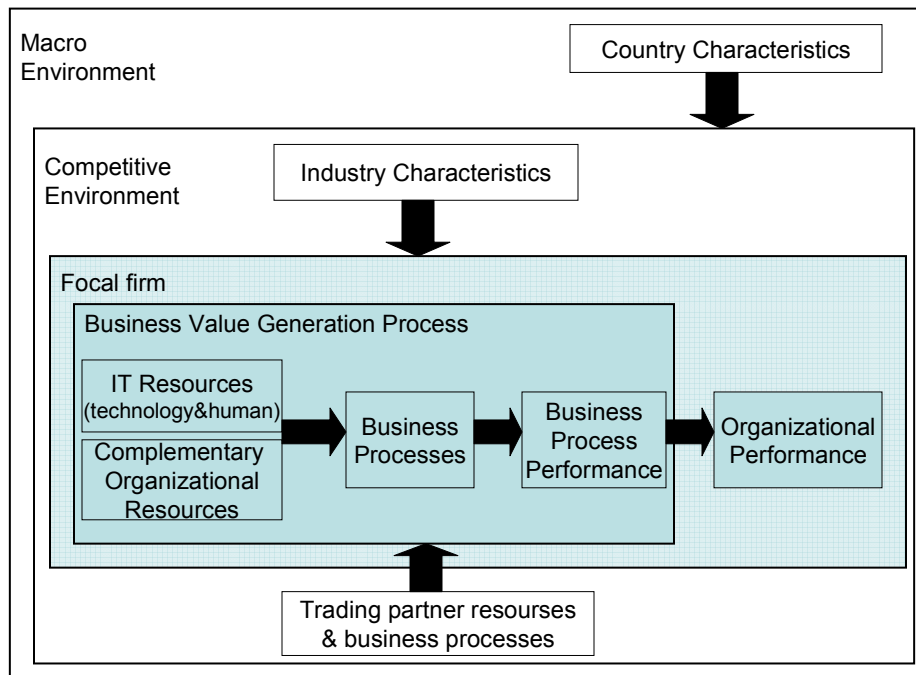


Figure 5. The IT Business Value model indicating the effect of IT resources on business processes, business process performance and organisational performance (Melville et al, 2004)

2.5 I-Fit Model: Combined Building Blocks

The I-Fit model is based upon the four building blocks: IT governance, Alignment, Information Quality and Business Performance (Figure 6)

Information Quality can be determined in two perspectives: the quality of the information that is provided to the business (the causal perspective) and the quality of the information that is needed by the business (the teleological perspective). The difference between the two quality indicators 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.

Strategic Alignment in an organisation can be determined by analysing the alignment processes that occur in an organisation (from driver, to lever, and impact) and to assess the IT governance structure and integration mechanisms in an organisation aiming to manage alignment and to reduce the gap between information needs and Information Services.

Business Process Performance in an organisation can be determined by assessing performance at the business process level using balanced scorecard like performance indicators. Based on the building blocks described earlier, we propose the I-Fit model (Figure 6), to analyse alignment (the current situation) in an organisation. Key hypothesis in Figure 6 is that 'good alignment (effective driver-lever-impact processes and good IT governance) leads to good Information Quality (good fit between causal and teleological quality indicators), ultimately improving Business Performance'.

Based upon the models of Peterson (figure 4) and Melville et al (figure 5), we denote "IT governance" (which includes elements such as formal allocation / decision making) and

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“Strategic alignment” (integration / strategic orientation) as prime variables that impact the business process performance and thus organizational performance. Though, in line with the European perspective on information quality (see supra), the impact on business process performance is realised through better information quality and not IT performance as such.

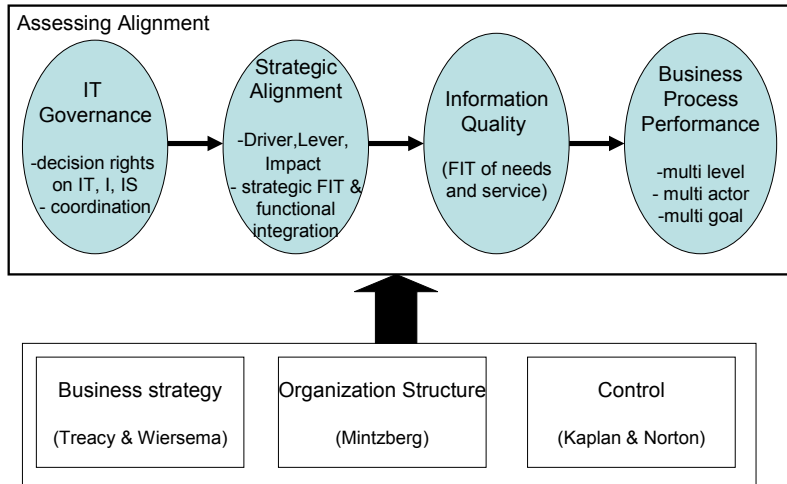


Figure 6. The I-FIT model: a framework for tools to analyse alignment in an organisation

Key questions for analyses of the current situation (IST) in an organisation are:

- How is IT governance implemented in the organisation?
- How do alignment processes exist in the organisation?
- Are existing Information Systems aligned with the business strategy in the organisation?
- Do the Information Services fit with the information needs in the organisation?
- How mature is the IT and business organisation? (similar to the concept of the Capability Maturity Model (CMMi)?)

Answering these questions means that there is a ‘FIT’ between the four circles in Figure 7. If there is no ‘fit’, a new situation should be designed (best case scenario, known as SOLL), by changing one or more circles. This design process would be a joint effort of consultants and the client organisation: the effort can be considered successful if insight in the IST situation has increased, and if a shared basis for implementation of improvements has been accomplished.

3 THE QUICKSCAN

Based upon the I-Fit Model, an attempt was made to devise a tool to help managers and consultants to analyse the current situation of a company and to determine potential problem areas regarding the key questions raised by the I-Fit model. The Quickscan takes the form of a questionnaire that needs to be filled out by both business and IT responsible of the company.

A set of questions was developed to monitor the IT governance, the strategic alignment and the business process performance. We decided not to incorporate questions regarding information quality into the Quickscan at this point in time, because on the one hand this would make the Quickscan far more complex and on the other hand because of negative input given to us by the participating consultants.

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Questions were developed to see the gap between planned and actual IS ‘fit’ situations. The IS policy goals (SOLL) are addressed by "target" IS activities, and then actual outcomes of IS policy can be examined. Gaps, or decision needs, are based on the Target-Actual (SOLL-IST) comparison (Hoffmann, 1996).

The questions were developed as follows: first a scan of existing questionnaires was performed for each I-Fit building block. Based upon this review, a senior researcher suggested a number of questions, which were discussed and evaluated in a Delphi-like manner by 4 senior researchers and two consultants. The latter approach was chosen to ensure active participation of the experts. Moreover, a Delphi approach is an efficient way to pursue a consensus among the participants.

Five questions were developed for every building block of the I-Fit model. Every question is answered on a 5 point Lickert scale. Every question is posed 4 times (see Figure 7):

- Quadrant 1: to the business managers, asking about the situation as it is at the moment (ex. We are early adopters of innovation)
- Quadrant 2: to the business managers, asking what the situation should be in the future (ex. In the future we want to be early adopters of innovation)
- Quadrant 3: to the IT manager, asking about the situation as it is at the moment (ex. We are early adopters of innovation)
- Quadrant 4: to the IT managers, asking what the situation should be in the future (ex. In the future we want to be early adopters of innovation)

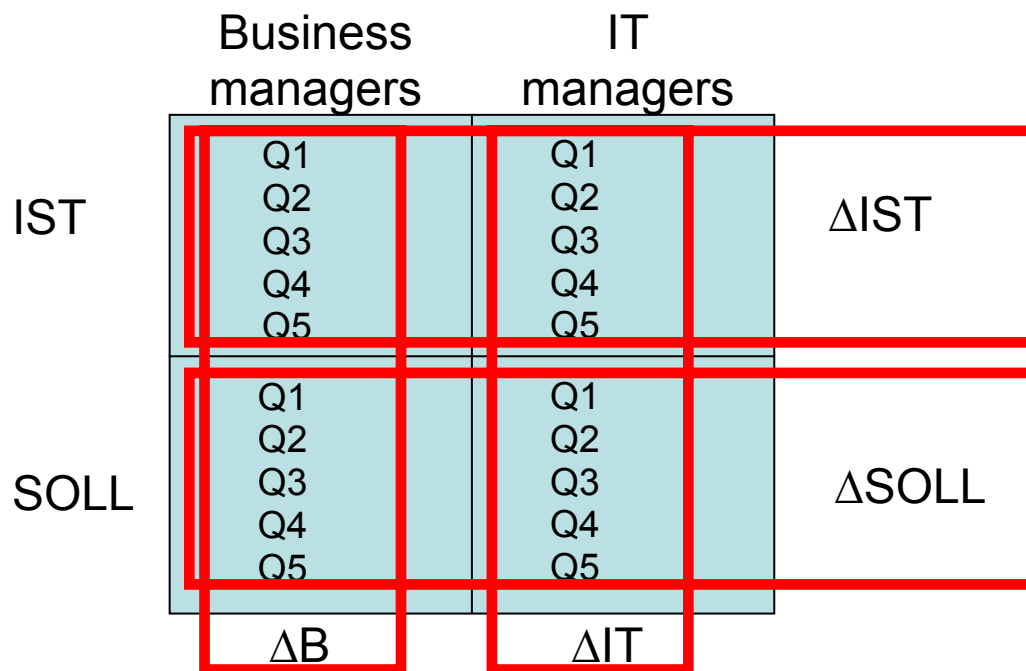


Figure 7. the Quickscan structure

This results in four scores for every building block:

- Δ B = difference between what business managers want (SOLL) and how they perceive the current situation (IST)
 - Δ B-Governance: how IT needs to be governed vs. how governance actually takes place

- ΔB -Strategic alignment: the applications that should be there vs. the applications that are actually in use
- ΔB -Business process performance: the BPP that has been planned vs. the BPP that is actually achieved
- ΔIT = difference between what IT managers want (SOLL) and how they see this now (IST)
- ΔIST = difference between the support business managers actually needs and what IT delivers
- $\Delta SOLL$ = difference between what business managers want and what IT managers want

These four points are represented in a diamond graph for each building block. A high score indicates a high delta, and thus represents a large gap or possible miss-fit. Hence, a high delta represents an area of concern and should be examined more closely.

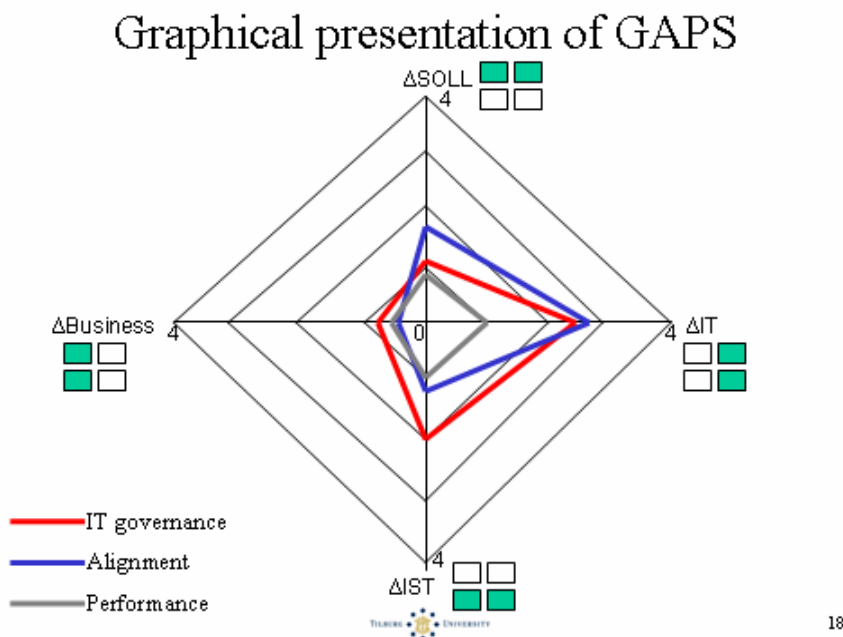


Figure 8: graphical representation of the outcome of the tool

4 EVALUATING AND REFINING THE QUICKSCAN TOOL

In order to refine the set of questions and to validate the approach, the Quickscan was put to the test. First, 6 senior managers of KZA (a Dutch consulting firm that participates in the project) were selected. The group contained both business and IT managers. They received a letter with the outlines of the project and were asked to fill out the questionnaire. The researchers guaranteed full anonymity. With the help of the Quickscan tool, the data was analysed and conclusions drawn. In a second step, these results were presented in a workshop with 20 KZA consultants. The consultants were asked whether or not the description of KZA matched with their view on the firm and whether or not we pinpointed the most important gaps. Based upon the answers of the consultants, this proved to be the case.

Another test was performed to check the usability of the tool. A few days before the workshop described above, the 20 consultants that participated were asked to make a case description of a

company they often worked with. They were asked to reflect on issues such as IT governance, Strategic alignment and Business process performance. The questionnaire was filled out and rules to interpret the results were revealed at the workshop, allowing the participants to check whether the results of the tool corresponded with their insights.

After this exercise, the participants were invited to join a moderated discussion and were invited to give comments and suggestions regarding the tool. Two major points of improvement were formulated:

1. The workshop revealed that the consultants regret the decision of not dealing with the “information quality” issues in the Quicksan. They emphasised that in their opinion, this building block should be an element of the Quicksan.
2. There was some discussion about the interpretation of the “SOLL” situation of the “IT governance” building block. The “SOLL” situation should not represent how the managers want the IT governance to be in the future, but rather how it should have been currently. Clearly, these questions should be re-written so that it is clear to the participant which interpretation is represented in the tool.

In general, the consultants had a very positive attitude towards the tool. The approach, the questionnaire and the usability of the tool were highly rated.

5 CONCLUSIONS AND SUGGESTIONS FOR FURTHER RESEARCH

As suggested by Chan & Reich (2007) and Bergeron (2001), we started the development of a multi-dimensional tool for the analysis of IT-Business alignment with the construction of a theoretical model. This I-Fit model was constructed on four building blocks (IT governance, Strategic alignment, Information quality and business process performance) that are interrelated to each other.

The tool (Quicksan) was constructed to analyse three of this building blocks, based on a questionnaire. For each building block the current situation was compared with the situation as it should be, both from the viewpoint of the IT manager and the business manager. Two test were performed to refine the set of questions and to validate the approach chosen. The tests pointed out that the approach used lead to a tool that was well accepted, both in terms of usability and accuracy. The approach taken to construct the tool proved to be valid and strengthens us to continue the project along the chosen route.

Nevertheless, additional work is needed to be able to capture the whole I-Fit model in the tool. Further testing, refinement and validation of the tool is needed, preferably by engaging a large number of companies that are willing to explore the possibilities of the tool. As such, the current model and tool should be regarded as work in progress.

By further refining the tool, we want to create a valuable means for managers to explore possible alignment gaps in the organisation. We also hope to apply the tool in a sufficient amount of companies to allow us to examine alignment within sectors or regions.

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