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# IS ALIGNMENT FACTORS: DYNAMIC RELATIONSHIPS AT STRATEGIC, TACTICAL AND OPERATIONAL LEVEL

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## Abstract

*The dynamic nature of IS alignment has been recognised in literature, nevertheless most empirical studies still focus on the relationships between business and IS at strategic level. Building on previously identified IS alignment factors (IT governance, IT value, communication, partnership, scope and architecture, human resources skills) this study incorporates an empirical investigation in a large insurance organisation that examines the relationships between business and IS across different organisational levels. By measuring the level of IS alignment of five strategic projects the impact of the factors affecting IS alignment is analysed. As previously reported IT governance was found to be the most relevant factor when high levels of IS alignment are obtained. However, by examining the variations of IS alignment for each project common areas of low IS alignment were identified: understanding of IT by business, balance metrics, budgetary control and share goals, risk and rewards. Findings reveal organisational structure and the business perception of IT value as the root causes behind low levels of IS alignment within those areas. Additionally, results exhibit a bigger IS alignment gap between the perceptions across strategic, tactical and operational levels than the traditional gap between business and IS.*

**Keywords:** Strategic alignment, Strategic Information Systems Planning, Coevolutionary Theory, IT projects

## 1 Introduction

The relevance of alignment between business and information systems (IS) strategies has remained as a top priority for both academics and practitioners (Luftman and Ben-Zvi, 2010). From one perspective, research suggests that aligning business and IS strategies has a positive effect on organisational performance (Teo and King, 1996; Reich and Benbasat, 2000; Chan, et al., 2006) and that organisations with strategic goals for IT showed higher levels of strategic alignment (Tallon and Kraemer, 2003). From another perspective, however, other research provides a counter noting that organisations with aligned business and IS strategies often fail to deliver value from IT investments. This latter stream of work suggests that business-IS strategy is

necessary but not sufficient to deliver business value from IT investments (Peppard et al., 2000; Sabherwal and Chan, 2001; Benbya and McKelvey, 2006). Peppard and Ward (2004) asserted that an organisation could conceive an innovative strategy based on IT, however, it is their IS capabilities that will enable the organisation to implement such a strategy.

Existing IS alignment research has extensively discussed the coordination between business and IS strategy (Henderson and Venkatraman, 1993; Reich and Benbasat, 2000; Kearns and Sabherwal, 2007). Strategic alignment has become embedded in the strategic management process, however, a demand is placed on better understanding the dynamics of the coordination between business and IS managers to prioritise and deliver IT projects that will effectively support business strategy (Luftman et al., 1999; Benbya and McKelvey, 2006). This coordination has been difficult to achieve at strategic level in organisations and consequently difficult to transmit to lower levels within organisations (Lycett et al., 2004; Srivannaboom, 2006). Additionally, the frequent failure of IT projects has reduced the trust of senior managers in IT investments and their business value (Peppard et al., 2000; Taylor, 2000; Hartman and Ashrafi, 2004). When an IT project is conceived at strategic level, it may be aligned with company goals; however, as it moves down through the lower levels of an organisation to be implemented, the original objectives for which the project was conceived can be lost. Relationships between business and IS implementers are not always close and IS staff tend to be more concerned with technical issues. Business and IS also need a close relationship at implementation level to ensure the project goals are well communicated and understood (Lycett et al., 2004; Campbell et al., 2005; Srivannaboom, 2006).

Despite the existence of various IS alignment models, little is known about the impact of the factors affecting alignment across different organisational levels. This paper aims to investigate the dynamic relationships between business and IS across strategic, tactical an operational level to identify the reasons behind high or low levels of IS alignment. To address this purpose, this paper examines empirical data collected from 5 strategic projects across 2 business units in a major insurance company. Each project included covers conceptualisation at the strategic level as well as data related to the implementation at tactical and operational levels.

The remainder of the paper is organised into four sections. Firstly, a review of existing IS alignment models is presented in order to contrast conceptual and empirical research. The gaps in empirical studies that measure IS alignment are explained. Secondly, the methods employed to collect and analyse data is explained alongside to the case study settings. Next the paper presents the results of the IS alignment assessment process discussing both quantitative and qualitative data. Finally, the research contributions of the work are highlighted.

## 2    Conceptual IS alignment Models

One of the first models that identified the components of alignment was the Strategic Alignment Model (SAM) proposed by Henderson and Venkatraman (1993). This model was intended to support the integration of IT and business strategies by advocating alignment between and within four domains illustrated in Figure 1: business strategy, IT strategy, organisational infrastructure and IT infrastructure.



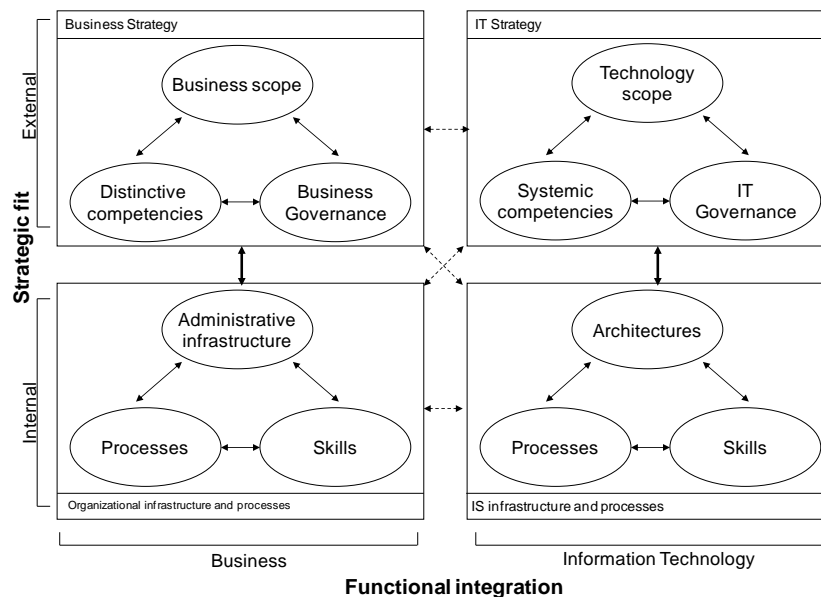**Figure 1.  Strategic Alignment Model (SAM) (Source: Henderson & Venkatraman, 1993)**

The SAM model had taken in consideration two important assumptions: firstly, economic performance is related not only to technology but to the ability of management to position the organisation in their competitive industry and their ability to design the internal structure to support its execution. Secondly, the strategic

alignment is inherently dynamic and the choices made in any of the components will over the time create subsequent changes. However, in order to achieve alignment this model proposed to find a balance among the choices made across the four domains which represents a problem in practice. Due to complex and changing environments business and IS strategies change demanding continuing adaptations to plans and projects.

In contrast with SAM that aims to balance the choices among the components, the coevolutionary IS alignment model proposed by Benbya and McKelvey (2006) responds to the difficulty of achieving alignment in a complex and changing environment. Drawn on coevolutionary and complexity theories they provide a comprehensive definition of alignment: "IS alignment is a continuous coevolutionary process that reconciles top-down 'rational designs' and bottom-up 'emergent processes' of consciously and coherently interrelating all components of Business/IS relationships at three levels of analysis (strategic, operational and individual) in order to contribute to an organisation's performance over time". (p. 287).



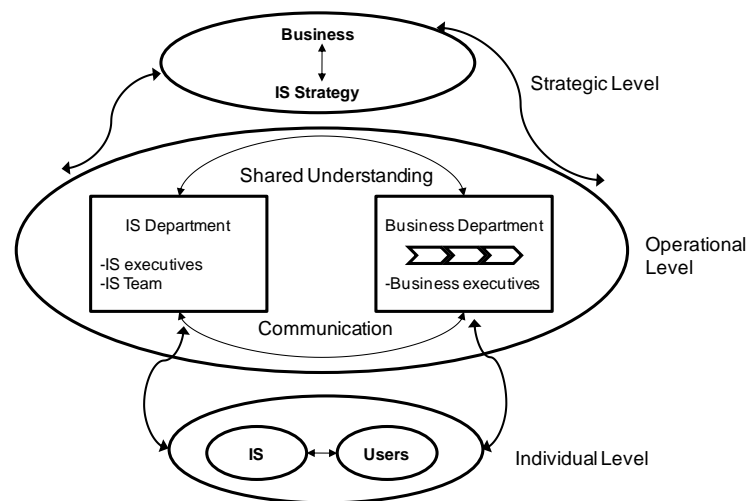**Figure 2. Coevolutionary IS alignment (Source: Benbya and McKelvey, 2006)**

Similarly to SAM this conceptual model highlights the relevance of analysing the relationship between business and IS (horizontal IS alignment) and also the need to reconcile the views at different levels of analysis (vertical IS alignment). The coevolutionary IS alignment perspective emphasizes the mutual adaptation and

change that result from the dynamic interplay of coevolving interactions, interrelationships and effects among the components of alignment. Therefore, this view does not aim for harmony or balance between the components of IS alignment since the lack of balance due to changes in the environment drives improvements and innovations. Despite SAM and coevolutionary models recognise the dynamic nature of IS alignment both of them are conceptual models. Chan and Reich (2007) support the point that alignment can be better understood and managed if it can be measured and in the following section empirical studies are compared to identify which approaches have been used to assess IS alignment and to what extent empirical results reflect the conceptual models.

## 2.1    Empirical IS alignment Models

In the introduction it was argued that alignment has been mainly investigated at strategic level leaving a gap at strategy implementation (Lycett et al., 2004; Srivannaboon, 2006). Most of the empirical work on IS alignment has focused on the alignment of business and IS strategies using as the unit of analysis the firm's level as illustrated in Table 1. Although some studies incorporated tactical and operational managers' perceptions (Chan et al. 2006; Luftman and Kempaiah, 2007) the analysis focuses on the strategic aspects from top executives' perspective. The empirical data from these studies explained the relationships at strategic level leaving the tactical and operational dynamics unexplored. The complexity of projects with high IT involvement makes the connections between strategy formulation and strategy implementation more critical (Sauer and Reich, 2009). Nevertheless, in Table 1 it can be seen that only one study from the selected sample used IT projects as unit of analysis (Avison et al. 2004).

It can also be observed from Table 1 that survey is the main research approach used which provides mainly statistical analysis of large samples that help to generalize findings. However, it does not provide depth understanding of alignment in the organisational context through the participants' voices or the messiness of everyday reality that organisations face (Ciborra, 1997; Campbell et al., 2005). In the same line of argument, the social dimension is found less in alignment assessment approaches which may help towards understanding how to achieve alignment given the context of

multiple antecedents and outcomes identified in IS alignment literature (Chan and Reich, 2007).

From the social perspective of alignment it was found that the most important predictor of alignment is communication between business and IS executives which is influenced by the shared domain knowledge and IT implementation success (Reich and Benbasat, 2000). This finding is reflected in the coevolutionary model that emphasises that communication and shared domain knowledge should drill down across different organisational levels to improve implementation success. Both conceptual models (SAM and Coevolutionary) include the operational component but Table 1 as mentioned above shows that only one study (Avison, et al., 2004) includes the IT projects as unit of analysis at operational level.

| Criteria | | Study | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Reich and Benbasat (2000) | Sabherwal and Chan (2001) | Hussin, King and Cragg (2002) | Tallon and Kraemer (2003) | Avison et al. (2004) | Chan, Sabherwal and Bennett (2006) | Luftman and Kempaiah (2007) |
| Unit of analysis | Strategic-Firm's level | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | Tactical-Business Units/Department | ✓ | | | | | ✓ | ✓ |
| | Operational-IT projects | | | | | ✓ | | |
| Research approach | Survey | | ✓ | ✓ | ✓ | | ✓ | ✓ |
| | Case Study/Action Research | ✓ | | | | ✓ | | |
| Alignment dimension | Intellectual | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | Social | ✓ | | | | | | |
| Measurement approach | Scoring factors affecting IS alignment | ✓ | | ✓ | | | ✓ | ✓ |
| | Scoring alignment and other variables such a IT investment, etc | | ✓ | | ✓ | ✓ | | |

**Table 1. Comparison of empirical alignment assessment approaches (Source: adapted from Gutierrez et al., 2008)**

Similarly, from the measurement approach criteria it can be appreciated in Table 1 that only four studies address the factor affecting alignment. These studies, are related to the aim of this paper, which is to better understand IS alignment – addressing how and why factors influence the degree of IS alignment at different organisational levels

– however, they have the same limitations mentioned before related to unit of analysis and research approach.

From the above discussion, neither of the empirical studies fully provides evidence to better understand why the factors are more or less mature across different organisational levels as most of the studies use the firm as the unit of analysis collecting information from executives at strategic level. The following section is advocated to review the antecedents of IS alignment factors.

## 2.2  Factors affecting IS alignment

To analyse the antecedents of IS alignment factors, the previous sections led to the selection of four studies that focus their measurement approach on scoring the factors as shown in Table 1. Luftman (2000) study brings an applied perspective to his identified factors. He refined the conceptual SAM model (Henderson and Venkatraman, 1993) by elaborating more critical management issues and proposes a model for evaluating these activities within an organisation to understand its position in terms of maturity levels of alignment. The model includes a range of attributes related to each factor that have been validated and used to assess IS alignment maturity (Sledgianowski, et al., 2006; Luftman and Kempaiah, 2007). Table 2 presents the factors definition and their related attributes.

| IS Alignment Factors | Attributes |
|---|---|
| COMMUNICATIONS: includes exchange of ideas, knowledge and information among the IS and business managers, enabling both to have a clear understanding of the organisation's strategies, business and IS environments. | Understanding of business by IT Understanding of IT by business Inter/Intra-organisational learning Knowledge sharing |
| IT VALUE: includes assessment of IT investment by the use of metrics to demonstrate the contribution of IT to the business. | IT metrics Business metrics Balanced metrics Formal assessment reviews Continuous improvement |
| IT GOVERNANCE: is the degree to which the authority for making IS decisions is defined and shared among management. It includes setting IS priorities and allocating IS resources. | Business strategic planning IT strategic planning Budgetary control IT investment management Prioritisation process |

| IS Alignment Factors | Attributes |
| --- | --- |
| PARTNERSHIP: is the relationship among the business and IS managers. It includes IS involvement in defining business strategies, the degree of trust between IS-business managers and how each perceives the contribution of the other. | Business perception of IT value Shared goals, risks, rewards/penalties Relationship/trust style |
| SCOPE & ARCHITECTURE: includes an organisation's infrastructure, change readiness, flexibility in structure and the management of emerging innovations. | Standards articulation Architectural integration Business and IT Change Management |
| HUMAN RESOURCES SKILLS: are human resource considerations for training, performance feedback, encouraging innovation and providing career opportunities. It also includes an organisation's readiness for IT change, capability for learning and ability to leverage new ideas. | Innovation, entrepreneurship Locus of power Change readiness Attract and retain best talent |

**Table 2. Strategic Alignment Maturity Model Factors (Adapted from Luftman, 2000)**

Luftman's model includes the views expressed in the other studies as illustrated in Table 3. These views are briefly discussed and compared below.

| Reference | Rationale of assessment | Antecedents of alignment factors | Related factor in Luftman (2000) |
| --- | --- | --- | --- |
| Luftman (2000) | Analyse the level of alignment maturity | 1. Communication | |
| | | 2. Competency/Value | |
| | | 3. Governance | |
| | | 4. Partnership | |
| | | 5. Scope and architecture | |
| | | 6. Skills | |
| Reich & Benbasat (2000) | Analyse the social dimension of alignment | 1. Shared domain knowledge | Communication |
| | | 2. IT implementation success | Partnership |
| | | 3. Communications between IS and business executives | Communication |
| | | 4. Connections between IS and business planning processes | Governance |
| Hussin et al. (2002) | Analyse alignment for SMEs | 1. IT sophistication | Governance |
| | | 2. CEO commitment to IT | IT Governance/ Partnership |
| | | 3. External IT expertise | Partnership |
| Chan et al. (2006) | Analyse antecedents of alignment and the business performance outcome | 1. Shared domain knowledge | Communication |
| | | 2. Planning sophistication | Governance |
| | | 3. Prior IS success (IS department track record) | Partnership |
| | | 4. Organisational size | Not related |
| | | 5. Environmental uncertainty | Not related |

**Table 3. Antecedents of IS alignment (Source: adapted from Gutierrez et al., 2009)**

Reich and Benbasat (2000) proposed a model with four factors: shared domain knowledge between IS and business executives, IT implementation success, communications between IS and business executives and connections between IS and business planning. Shared domain knowledge and strategic business plans connections were found to be the most important factors in achieving alignment. Hussin et al. (2002) examined three factors in the context of small organisations. They

included IT sophistication, CEO commitment to IT and external IT expertise. In this study it was found by testing the aforementioned three factors that the major factors that affect alignment on small organisations were: IT maturity, technical IT sophistication and CEO's software knowledge. Chan et al. (2006) proposed a model to explain the factors affecting alignment that includes shared domain knowledge, planning sophistication, prior success, organisational size and environmental uncertainty. This model found support for the argument that IS alignment improves organisational performance by examining the factors in the model across business strategies in different industries.

Shared domain knowledge definition in Reich and Benbasat's (2000) study, coincides with the same perspective used by Chan et al. (2006). Both studies highlight the importance of business and IS managers understanding each other's environments. The strategic alignment maturity (SAM) model proposed by Luftman (2000) includes in the communication factor two attributes that contribute to this mutual understanding. The communication factor also has attributes to measure the mechanisms in place to promote shared knowledge, liaison roles and a learning environment which are similar to the communications between IS and business executives included as another factor on Reich and Benbasat's (2000) study.

Connections between IS and business planning processes, planning sophistication and IT sophistication are common to the three studies of Reich and Benbasat (2000), Chan et al. (2006) and Hussin et al. (2002), respectively. The three terms refer to the use of strategic planning process and stress the relevance of business and IS manager's participation in each other's planning processes. In the SAM model (Luftman, 2000) the planning integration is included among the IT governance attributes.

The factors IT implementation success (Reich and Benbasat, 2000) and IS department track record (Chan et al., 2006) are related to the level of trust IS departments have in order to promote a partnership relationship between business and IS managers. This aspect is covered in the partnership factor in Luftman's model (2000). Hussin et al. (2002) use CEO commitment to IT in a very broad sense covering, among many aspects, the communication influence of the CEO with IS and the key role CEOs

have in the planning process and prioritising IT projects which are attributes in the communications and governance factors of the SAM model.

Hussin et al. also investigate the influence of the external IT expertise factor for small organisations. In this study, IT success was considered more likely to occur when IT experts worked in partnership with senior management. However, in the context of small organisations, many have neither an IT manager nor an IT department. Consequently, IT expertise comes from the consultants and vendors (Hussin et al., 2002). This factor relates to the partnership between business and IS, which is covered on Luftman's model that considers not only the relationship between business and internal IT expertise but extends the partnership to external service providers and partners.

Finally, two more factors have been considered to analyse alignment that are only included by Chan et al. (2006) study: environmental uncertainty and organisational size. The environmental uncertainty refers to environmental instability and changes different industries face which increases the need of information to make appropriate decisions. Whilst this factor is not directly linked with the factors in the SAM model (Luftman, 2000), Chan et al. (2006) reported that the greatest importance of factors are related to IS management than to environmental uncertainty. However, it is also recognised that there will be greater difficulty to align business and IS strategies when both environments and strategies are likely to be highly dynamic. Chan et al. (2006) observed that organisational size affects alignment and explained that, in general, small and medium-sized firms tend to be structured around functions and use centralised structures to coordinate sub-units. This central coordination generally limits the need for other explicit mechanisms to promote functional alignment and consequently the organisation lacks alignment. In large organisations the decentralised governance structures make coordination more difficult and therefore more mechanisms to promote strategic alignment are needed and usually more resources are available to invest in these mechanisms (Chan et al., 2006). Although organisational size factor is not directly linked to the alignment maturity model (Luftman, 2000) it was found that Luftman's factors are equally relevant regardless of the organisation's size (Gutierrez et al., 2009).

## 2.3 Strategic Alignment Maturity Model (SAMM)

Luftman (2000) argues that achieving alignment is an evolutionary process, which requires strong support from senior management, good working relationships, strong leadership, appropriate prioritisation, trust, and effective communication, as well as a thorough understanding of the business and technical environments. Thus, he proposes a model for evaluating activities within an organisation to understand its position in terms of maturity levels of alignment and how this can be improved. Figure 3 shows Luftman's (2000) maturity levels that were conceptualised from the capability maturity model (CMM) of software quality development by the Software Engineering Institute at Carnegie Mellon (Humphrey, 1988).
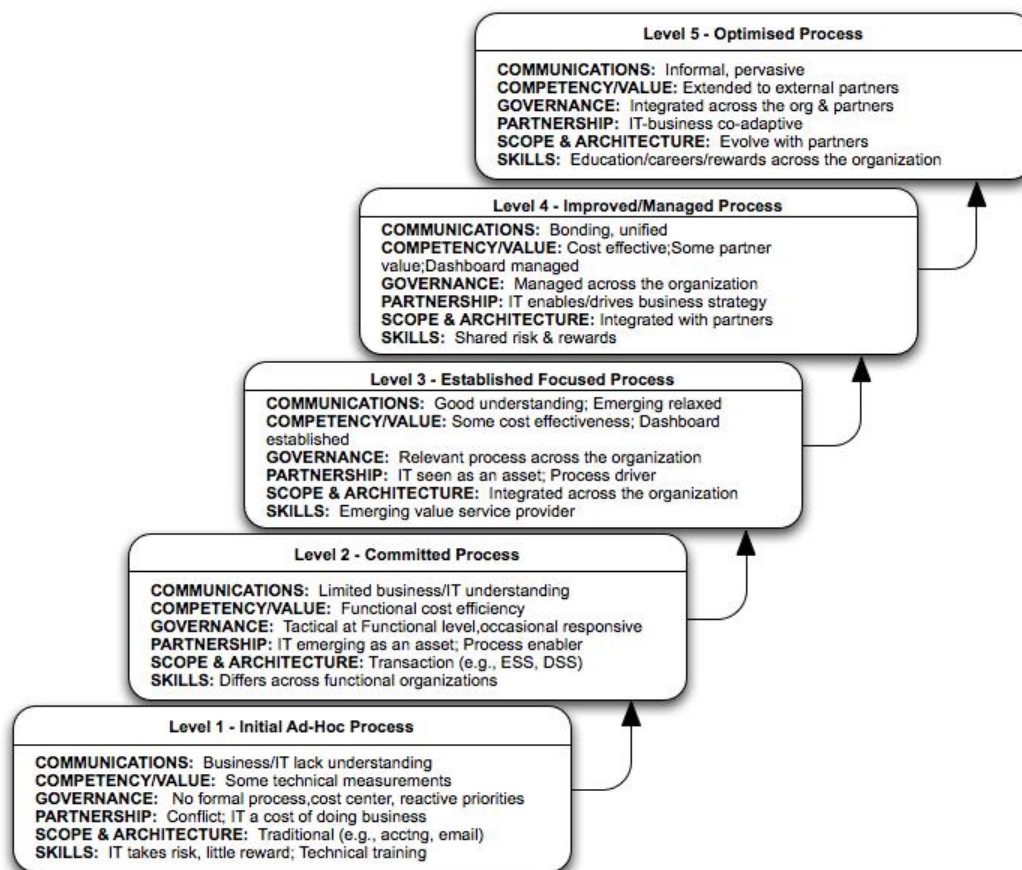
**Level 5 - Optimised Process**
COMMUNICATIONS: Informal, pervasive
COMPETENCY/VALUE: Extended to external partners
GOVERNANCE: Integrated across the org & partners
PARTNERSHIP: IT-business co-adaptive
SCOPE & ARCHITECTURE: Evolve with partners
SKILLS: Education/careers/rewards across the organization

**Level 4 - Improved/Managed Process**
COMMUNICATIONS: Bonding, unified
COMPETENCY/VALUE: Cost effective;Some partner value;Dashboard managed
GOVERNANCE: Managed across the organization
PARTNERSHIP: IT enables/drives business strategy
SCOPE & ARCHITECTURE: Integrated with partners
SKILLS: Shared risk & rewards

**Level 3 - Established Focused Process**
COMMUNICATIONS: Good understanding; Emerging relaxed
COMPETENCY/VALUE: Some cost effectiveness; Dashboard established
GOVERNANCE: Relevant process across the organization
PARTNERSHIP: IT seen as an asset; Process driver
SCOPE & ARCHITECTURE: Integrated across the organization
SKILLS: Emerging value service provider

**Level 2 - Committed Process**
COMMUNICATIONS: Limited business/IT understanding
COMPETENCY/VALUE: Functional cost efficiency
GOVERNANCE: Tactical at Functional level,occasional responsive
PARTNERSHIP: IT emerging as an asset; Process enabler
SCOPE & ARCHITECTURE: Transaction (e.g., ESS, DSS)
SKILLS: Differs across functional organizations

**Level 1 - Initial Ad-Hoc Process**
COMMUNICATIONS: Business/IT lack understanding
COMPETENCY/VALUE: Some technical measurements
GOVERNANCE: No formal process,cost center, reactive priorities
PARTNERSHIP: Conflict; IT a cost of doing business
SCOPE & ARCHITECTURE: Traditional (e.g., acctng, email)
SKILLS: IT takes risk, little reward; Technical training

**Figure 3 Strategic Alignment Maturity Summary (Source: adopted from Luftman, 2000)**

The selection of Luftman's approach for this research can be justified in two main arguments. First and more importantly, is that SAMM has been developed based on the original Strategic Alignment model (Henderson and Venkantraman, 1993) and includes most of the views expressed in IS alignment research as discussed above.

The second argument is the SAMM model facilitates the connection between theoretical knowledge and practical actions in both strategy formulation and strategy implementation. Furthermore, the validated assessment instrument (Strategic Alignment Maturity instrument) developed by Sledgianowski et al. (2006) to assess the maturity levels of IS alignment was concluded to be a reliable diagnostic tool for organisations.

Chan and Reich (2007) suggest that further examination of IS alignment antecedents is desirable that goes beyond listing antecedents but explores the interrelationships among them. The following sections are then advocated to present the research strategy and case study to explore the reasons behind lowest or highest levels of IS alignment maturity across different organisational levels.

## 3   Research strategy

The empirical settings focused on how to collect data that captures the views at different organisational levels that it is feasible to compare in order to find out the interrelations between the factors affecting IS alignment. Additionally, it was important for the researcher to ensure that the research design provides practitioners with valuable information as result of their participation in order to have organisations' access and support. The practical perspective is important as other researchers have argued for more connections between theory and practice (Avison et al., 2004; Campbell et al., 2005).

A case study allows capturing the knowledge of practitioners in their natural environment (Cavaye, 1996; Benbasat et al., 2002; Walsham, 2002) and was considered the most appropriate method of answering 'how' and 'why' questions which need to be traced over time and context rather than by frequency of incidence (Benbasat et al., 2002). From the several sources identified by Yin (2003) for this research the following were selected:

- Archival records. Written information about the organisation's profile i.e. organisational charts, mission, business and IT objectives.
- Documentation. Project documentation for the IT projects involved in the case study.
- Interviews. Semi-structured interviews were conducted with all the participants at different organisational levels.
- Direct observation. At each meeting notes were taken on details, actions and subtleties within the field environment.

- Physical artefacts. A validated instrument (Sledgianowski et al., 2006) was used to assess the maturity level of alignment at strategic level and adapted to assess the level of alignment of strategic IT projects selected from the views of tactical and operational managers.

The validated assessment instrument (SAM instrument) developed by Sledgianowski et al. (2006) to assess the maturity levels of IS alignment was concluded to be a reliable diagnostic tool for organisations in the previous sections. However, the questions were re-worded for the tactical and operational levels, where the IT projects are the unit of analysis rather than the firm level. The instrument structure has seven sections and examples of the original and adapted questions are included in Appendix A. The first section includes the participants profile and the following six sections correspond to each of the factors under investigation: communication, IT value, IT governance, partnership, scope & architecture, human resources skills. The original questions were given to senior managers and their views represent the whole organisation. For the tactical and operational level the questions were slightly adapted to focus the participant on actual practices they face during the implementation of specific projects. Each option given represents a level of maturity. Therefore the results at strategic levels are comparable with the results at tactical and operational levels. The instrument is applied in a similar way to the author's approach for the assessment at strategic level and is used as well as basis for the interviews discussion.

The study was conducted over a period of eight months. Face-to-face questionnaires and interviews were conducted by one of the authors who act as an external researcher who has no relationships with the organisation other than the research undertaken. Interviews were all recorded (28 participants from strategic, tactical and operational views) and notes were added about the field environment. The interviews were all transcribed and QSR NVivo 8 software was used to analyse the content.

## 3.1  Case Study: UK COMPANY

This study was conducted in a large company in the insurance and finance sector (UK COMPANY). UK COMPANY is a wholly owned subsidiary that operates in the UK and Ireland, and occupies a leading position in its main markets: life insurance, health insurance and general insurance. With more than 13,000 employees, UK COMPANY has been a well-established organisation for 200+ years. The organisation has recently started efforts to improve IS alignment and agreed to participate in the study involving

two business units (A and B). Five strategic projects were selected within the business units.

Twenty seven face-to-face questionnaires were applied and semi-structured interviews were conducted with the same participants. One senior manager was interviewed at the end of the study to discuss the research outcomes. A total of 28 participants were involved in the case study with a balanced representation of business and IS participants who were classified for this study according their positions as follows:

- Strategic. The strategic level category includes participants who are closest to the corporate strategy and have director/head positions at corporate or business unit level (4 participants).
- Tactical. Participants in charge of the strategy implementation with director/head positions within the sub-business unit were selected for this category (8 participants).
- Operational. This category included managers who are closest to the detailed projects (16 participants). Their positions vary from project managers, IT managers, senior IT developer, product manager, customer service manager, project sponsor.

## 3.2  Results

Factors affecting IS alignment from the aforementioned Strategic Alignment Maturity Model, were rated in a five-level maturity model, where Level 5 is the highest level of maturity. The overall alignment maturity obtained for UK COMPANY is 3.2 as it can be seen in Table 4.

| | Strategic Assessment | Tactical and Operational Assessment | | | | | Overall IS alignment maturity |
| | | Business Unit A | | | Business Unit B | | |
| | Enterprise | Project A1 | Project A2 | Project A3 | Project B1 | Project B2 | |
| Factors affecting alignment | (3 participants) | (8 participants) | (4 participants) | (4 participants) | (4 participants) | (4 participants) | |
|---|---|---|---|---|---|---|---|
| COMMUNICATION | 2.7 | 3.9 | 3.2 | 3.3 | 2.9 | 2.8 | 3.0 |
| IT VALUE | 2.5 | 3.8 | 3.4 | 3.1 | 3.0 | 2.7 | 2.9 |
| IT GOVERNANCE | 3.8 | 4.1 | 3.7 | 3.0 | 3.2 | 3.5 | 3.9 |
| PARTNERSHIP | 2.7 | 4.2 | 3.5 | 3.0 | 3.7 | 3.0 | 3.3 |
| SCOPE AND ARCHITECTURE | 2.7 | 3.4 | 3.3 | 3.5 | 3.2 | 2.5 | 3.2 |
| HUMAN RESOURCES SKILLS | 2.6 | 3.6 | 3.3 | 3.1 | 2.9 | 2.7 | 2.9 |
| **Overall business-IT alignment maturity** | **2.9** | **3.8** | **3.4** | **3.2** | **3.1** | **3.0** | **3.2** |

**Table 4. IS alignment maturity per assessment and overall maturity**

This result is slightly higher than the average maturity alignment obtained by other organisations in the insurance industry (3.15) and finance industry (2.9) where similar assessment has been applied (Luftman and Kempaiah, 2007). Results indicated that IT governance consistently achieve high IS alignment while there is a high variance among the other factors ranging from 2.5 to 4.2.

To identify in more detail the specific areas of low and high alignment, the factors and its attributes are presented in Table 5. It can be observed in Table 5 that managers from tactical level perceived highest level of IS alignment maturity than the managers from strategic and operational levels. The shading areas in Table 5 illustrates the attributes with high levels of IS alignment maturity and the lowest levels are highlighted in bold. From the results it can be seen that each factor varies in relation to the level of maturity, whilst most of the high maturity areas are concentrated on IT governance, there is significant variance among the areas where low levels were achieved.

| Factors | Attributes | Organisational levels | | |
|---|---|---|---|---|
| | | Strategic | Tactical | Operational |
| COMMUNICATION | Understanding of business by IT | 3.2 | 3.8 | 3.6 |
| | Understanding of IT by business | **2.5** | 3.6 | **2.7** |
| | Inter/Intra-Organisational learning | 3.0 | 3.8 | 3.2 |
| | Knowledge sharing | **2.0** | 3.9 | 3.1 |
| VALUE METRICS | IT metrics | **2.3** | 3.4 | 3.0 |
| | Business metrics | 3.7 | 4.1 | 3.9 |
| | Balanced metrics | 3.3 | 3.3 | **2.7** |
| | Formal assessments/reviews | 3.0 | 4.8 | 4.1 |
| | Continuous improvement | 3.5 | 3.1 | 3.2 |
| IT GOVERNANCE | Strategic business planning with IT participation | 3.7 | 4.0 | 3.8 |
| | Strategic IT planning with business participation | 3.2 | 3.9 | 3.5 |
| | Budgetary control | **2.7** | 3.3 | **2.2** |
| | IT investment management | 3.5 | 4.3 | 4.3 |
| | IT project prioritisation process | 4.0 | 4.2 | 3.4 |
| PARTNERSHIP | Business perception of IT value | **2.3** | 4.0 | 3.7 |
| | Shared goals, risk, rewards/penalties | **2.8** | 3.4 | 3.3 |
| | Relationship/trust style | 3.0 | 3.6 | 3.7 |
| SCOPE AND ARCHITECTURE | Standards articulation and compliance | 3.2 | 4.0 | 3.9 |
| | Architectural integration | **2.2** | 3.1 | 3.1 |
| | Business and IT changes management | 3.0 | **2.8** | 2.6 |
| HUMAN RESOURCES SKILLS | Innovation, entrepreneurship | **2.3** | 3.1 | 3.5 |
| | Locus of power | 3.0 | 3.4 | 3.2 |
| | Change readiness | 3.2 | 3.9 | 3.0 |
| | Attract and retain best talent | **1.8** | **2.7** | **2.9** |
| | Overall Maturity | 2.9 | 3.6 | 3.3 |

**Table 5. IS alignment per organisational level**

The graph in Figure 4 suggests the traditional gap between business and IS has been reduced whilst Figure 5 illustrates that the coordination between managers at different levels still represents a challenge.

Additionally, it can be observed in Figure 4 that tactical managers rate factors higher than strategic and operational managers. In this Figure it can also be illustrated that there are significant differences in perception regarding the understanding of IT by business and budgetary control among others. These overall results are taken into consideration for the qualitative analysis of each project to find out the possible reason for these differences. Therefore it is important to identify the main aspects that are preventing the organisation from having a sustainable Level 3 of IS alignment.
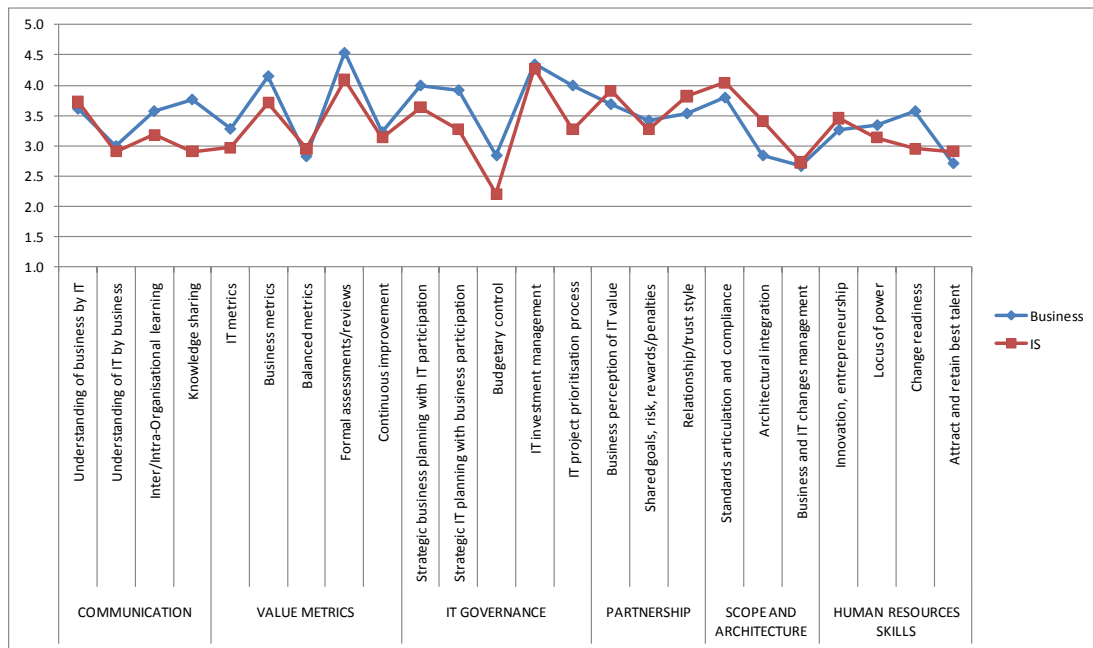
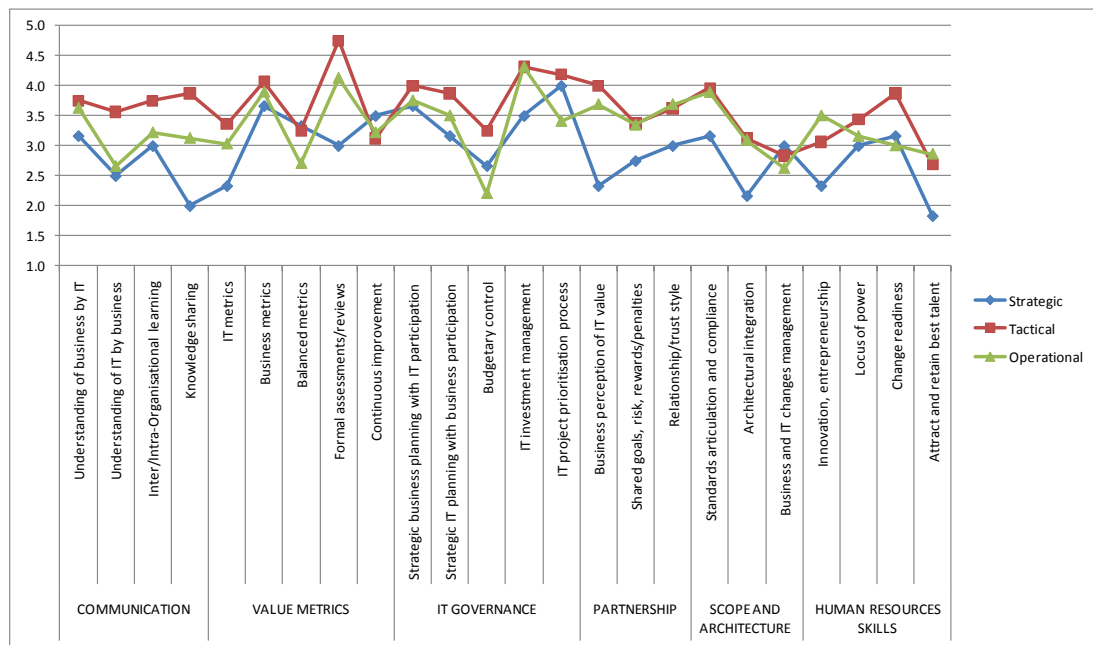**Figure 4. Factors/attributes results by business and IS groups**



**Figure 5. Factors/attributes by strategic, tactical and operational categories**

The interviews texts were reduced to categories per factor and for the common areas of concern in projects with low levels of IS alignment it was found that the main aspects contributing to low maturity are:

- Limited understanding of IT by business, 52% of the participants from both business and IS agree there is limited understanding of IT.
- No balanced metrics, 44% of the participants agree they have business and IT metrics but they are not linked.
- Budgetary control, only 19% of the participants consider IT as an investment and most of the operational managers do not know how the budget is managed in the organisation. Partnership then is not promoted as IS is considered as cost of doing business.
- No sharing of risk, rewards/penalties: 52% of the participants agree there is no sharing or it is only starting to emerge, especially the risk element. 25% agree there is a positive sharing of risk and rewards.
- Lack of formal knowledge sharing: 37% of the participants consider the organisation needs to improve this aspect. However, 14% of these regard knowledge sharing as the interaction between business and IS to share each other domains and only 11% regard knowledge sharing as a formal process to document the individual knowledge that needs to be shared at business unit and corporate level. Consequently, the differences are partially due to low maturity and also to the context in which the interviewee used the knowledge sharing concept.
- IS is not a partner with the business: 26% of the participants' perceive IT as the cost of doing business and emerging as an asset, whilst 26% state IT is emerging as a enabler of business strategy.
- A critical aspect recognised by business and IS managers was the difficulty of attracting and retaining IS professionals. IS staff is mainly hired on the basis of their technical skills which represents a problem at strategic level.

# 4 Analysis and discussion

From the results presented above, areas of low maturity were identified and further analysis was performed drawn from the interviews. The relationships between the categories were then explored to identify root causes for the common areas of low IS alignment:  understanding of IT by business, balance metrics, budgetary control and shared goals, risk and rewards.

## 4.1 Understanding of IT by business

Business and IS recognise there is a good understanding of business by IT. Both groups again agree the business understanding of IT is good but only at a high level and restricted to the business unit environment. The main reasons that this view emerged is that business managers recognise the importance of IS but consider they do not have to know "development" details as expressed by a manager at strategic level.

Therefore even when top managers supported the IS initiatives, business managers delegate the responsibility of IS major decisions to IT managers instead of

collaborating to develop an IT landscape that supports the business needs. Additionally, it emerged as a reason for low level of business understanding of IT the fact that IT is perceived as the cost of doing business, consequently business managers are less committed to spending time understanding the core elements of IT as they are paying for the service. Finally, another reason that contributes to the limited understanding of IT by the business is that both areas, business and IS, have their own metrics reducing the commitment for the overall project as their interaction is mainly related to the budget and not towards understanding each other's environment.

## 4.2    Balance metrics

Balanced metrics is the second area of concern. The main reasons identified for low maturity are that business and IS belongs to different business units and each business unit has its own mechanism to measure performance. Consequently, the IS people working on the projects are seen as a separate team from shared services. Business managers pay for the IT solution defined by the quotation IS provided, reinforcing the aforementioned perception of IT as the cost of doing business. A business case is a common practice across UK COMPANY for obtaining project approval from corporate level. However, there are projects where business and IS do not work as a team to develop the business case. The business case is developed by business and then IS provide the cost of the IT solution. From one project that obtained the highest level of maturity, it was clear that they had addressed these difficulties as all the members from tactical and operational levels expressed similar integrated opinions. They all recognise that business and IS work together since the conception of the business case in order to develop a solution from both perspectives. Consequently, the objectives defined in the business case are considered the objectives for both groups and the metrics they monitor are those in the business case. For this project, even the external service providers are well integrated to the team improving the partnership between all the participants. Balanced metrics have a close relationship with developing communication and partnership between business and IS, especially by sharing risk and rewards.

Organisational structure emerged as the reason for not having balanced metrics which impact as well the partnership factor. This is reflected on the low levels shown in

sharing of risks and rewards. Business and IS are different business units, they have different reward systems. IS is a separate team from the shared services, which is committed to the project but is the business unit that takes all the risks and rewards. This perception is also expressed by IS people who recognise that the business takes the risks and rewards and IS does not benefit if the project is successful. Therefore, the centralized structure of IT creates a client-service relationship instead of promoting partnership.

## 4.3 Budgetary control

Most of the participants agreed the budget was assigned from corporate level and therefore they have little influence on how it is managed. At tactical level few managers consider the budget for the project is treated as an investment whilst at strategic and operational levels the budget is a cost centre. In projects with low IS alignment it was reported that the interaction between business and IT are limited to the budgetary control and in most of the cases IT is seen as a very expensive resource which reduces the partnership element. This attribute is crucial at strategic and tactical level as it impacts how the partnership relationship between business and IS drills down to the operational level.  A participant from IS at strategic level explained: *"The big issue is that we have to charge back to the business that is seen as a massive locker ... we are seen as an expensive team so, if we could move away from the charge model that we have for the moment, I think suddenly the relationship will improve dramatically".*

At operational level neither business nor IS managers have a clear knowledge of how the budget is managed. Nevertheless, how the budget is managed seems to have less impact on the project's alignment compared with the impact of business perception of IT value that will be explained later.

## 4.4 Shared goals, risk and rewards

This attribute reveals the impact that balanced metrics and budgetary control have on partnership resulting in sharing of risk and rewards as the main reason for low partnership. Two common causes were identified for low levels of shared goals, risk and rewards. Although all the projects are considered strategic, some managers see the IT component as the cost of doing business, and instead of considering IS as a

partner they treat IS as a service provider responsible for delivering the IT component they pay for. Another reason that caused low sharing of risk and rewards is the organisational structure. IS staff are allocated by the central IS function and this position is reinforced by the service provider relationship which inhibits effective communication between business and IS. Business and IT are different business units and therefore they have different reward systems. IS recognised that the business takes the risks and rewards as IS does not benefit if the project is successful. Finally, due the organisational structure IS have dual goals, the business unit they report to and the business unit they are allocated to support. If the business unit strategy is not well aligned with the corporate strategy IS can be driven in different directions. The reasons for low sharing of goals, risk and rewards are common with the causes of no balanced metrics.

Another attribute from partnership with an average level of maturity but significant inconsistency between the participants' views is business perception of IT value. Although most of the participants agreed the IT investment decisions were primarily made to improve business effectiveness and create competitive advantage, there were still areas that regarded IT as the cost of doing business instead of being a partner. Among the reasons identified is that despite all participants recognised the strong planning processes the organisation has, that has not drill down to tactical levels and some operational managers do not know the connections between the projects they are implementing with the overall strategy. Only in one project participants from operational levels express the view that the project contributed not only to the business unit objectives but to the overall corporate strategy. Consequently, even if senior managers regard IT as an enabler of business strategy, corporate strategies have less impact at operational level where the participants have no sense of contributing to the corporate strategy.

From the above discussion, it can be seen that common reasons of low levels of IS alignment mentioned are organisational structure and business perception of IT value. The organisation had originally a decentralised IT structure which created a complex IT infrastructure with multiple applications that resulted in high IT costs. Therefore a centralised IT structure was designed to standardise and improve the infrastructure and update legacy systems. Consequently, IS staff were moved from the business

units and teams were allocated depending on specific needs. IS people were involved in more than one project and they report to the IT director not to the business unit they support. IT centralisation helped the organisation to establish standards and redefine their architectural integration. However, centralisation has a direct impact on communication and partnership creating an IT service supplier relationship. IS is paid to deliver an IT solution rather than being a partner in developing a business solution supported by technology. As a result, during the last year the organisation has started a restructure to keep the IS function centralised but has assigned IS staff to each business unit who will report directly to the business manager and not to the central IS function. However, they recognise that it will take time to formalise this new structure.

In Project A1 they created a different structural model even with the people that were assigned by the central IS function. The business unit director integrates and treat all the staff from central IT and even the external service providers as internals to remove the supplier-customer relationship that exists in big corporations. In this scenario, the partnership strategy the business director has adopted allowed them to overcome the difficulties of the IT organisational structure. However, for the rest of the projects the scenario is not the same which have a direct impact on IT governance, communication and partnership. In the same business unit, Project A3 managers implemented some of the strategies that in Project A1 were successfully such co-allocation of business and IS in the same physical areas to allow better integration and interaction. However, the project was still in problems reflected in the fact that some participants consider as the cost of doing business. Therefore, the relationship between organisational structure and business perception of IT value is critical.

As business-IS planning integration evolves and IT investment management is more focused on delivering business value, this attribute has the potential to be improved. As discussed above, limited understanding of IT by business has a negative impact on the IT value perception that is mainly consider a cost of doing business. This perception is reinforced with the budgetary control results. In most of the projects budget is treated as a cost centre instead of as an investment.

This case study illustrates the relevance of IT governance as a mechanism to trigger adaptations to enforce collaboration between business and IS. Communication and partnership would be improved by the collaboration, especially if balanced metrics are defined. For example, in this case study the business case is successfully used as a mechanism to improve communication and partnership when:

- Business managers included IS from the inception to develop the business case which integrates their mutual knowledge.
- IS managers improved their business skills and focus on IT business value instead of the technical aspects.
- Business and IS managers share responsibility for delivering the expected business benefits rather than delegating technical and business aspects respectively.

## 5  Conclusions

This study has examined the level of IS alignment maturity at strategic, tactical and operational within two business units in UK COMPANY. The factors were related to communication, IT value, IT governance, partnership, scope and architecture and human resources skills.

The results illustrate that organisations face greater challenges to improve IS alignment across different organisational levels than between business and IS. From the IS alignment models discussion in section two it was emphasised the dynamic nature of alignment. The business-IS relationships across different organisational levels demonstrate the factors coevolved with different patterns even when the same management mechanisms were used to improve IS alignment.

Broadly speaking, the principal findings of the case study are that (1) gaps in communication and partnership have been highly influenced by the organisational structure that is evolving from a centralised to federated model and (2) business perception of IT value is mainly viewed as the cost of doing business, even when business managers recognised the relevance of IS for their organisation. The impact of these two issues is reflected in low maturity in the following attributes in the business and IS relationship: (a) limited understanding of IT by business, (b) no balanced metrics (c) Poor budgetary control practices, (d) limited sharing of risk and rewards.

Alignment has been mainly researched through the views of senior managers, and whilst they represent the most informed participants in organisations, the views of managers at tactical and operational level reflect the reality people face in day-to-day implementation of the strategies. Views at different organisational levels need to be understood to reduce the gap between strategy formulation and strategy implementation. The integration of business strategy with IS strategy has been identified as a pre-requisite for alignment but not sufficient to deliver business value. The results in this paper suggest that improving IT governance triggers the involvement of IS in the strategic planning process and therefore enables improved communication between business and IS.

Another interesting co-evolving relationship between business and IS managers is the recognition that the understanding of IT by business is rather less evident. The key reasons identified are, first, they consider that further understanding of IT would mean learning extremely technical knowledge. Second, despite the fact that they consider IT relevant for the business, IT is seen as the cost of doing business. Third, as business is paying for the IT services they delegate important IS decisions to the IS function.

A very important mechanism to improve IT governance is balanced metrics. Projects where IS was included at the inception of the project in order to understand and contribute to the business case development resulted in higher maturity. The reason for this effect is that participants from both business and IS increase their understanding of each other's environment and develop ownership of the business case goals. Consequently, levels of communication and partnership improve. A key element in this partnership improvement is the relationship of trust required for the project team to deliver business value.

Although all the factors included in the study are considered important, this case study revealed the reasons behind the high impact of IT governance and it influence in communication and partnership. Even when communication is highly encouraged in the organisation, its effectiveness is reduced when partnership is low. It is important to emphasis the communication factor is defined as the level of understanding of each other's domains and the mechanisms used to share this knowledge and not just the type and amount of meetings they have.

Finally, this research showed that all the project reflect different levels of maturity due the dynamic interplay of coevolving interactions between business and IS across different organisational levels. Further research is needed to understand the dynamic relationships between the factors affecting IS alignment across multiple cases. The identification of coevolving patterns will lead to higher levels of alignment under complex and changing environments.

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**Appendix A**

Example of **original questions** from the validated instrument (Sledgianowski et al., 2006) used in this research for the strategic assessment process:

The following statements pertain to IT investment decisions. Our IT investment decisions are primarily based on IT's ability to:

1) Reduce costs.
2) Increase productivity and efficiency as the focus.
3) Traditional financial reviews. IT is seen as a process enabler.
4) Business effectiveness is the focus. IT is seen as a process driver or business strategy enabler.
5) Create competitive advantage and increase profit. Our business partners see value.
6) N/A or don't know


Example of **adapted question** used for the tactical and operational assessment process:

The following statements pertain to IT investment decisions. Our IT investment decisions for the project (project's name) are primarily based on IT's ability to:

1) Reduce costs.
2) Increase productivity and efficiency as the focus.
3) Traditional financial reviews. IT is seen as a process enabler.
4) Business effectiveness is the focus. IT is seen as a process driver or business strategy enabler.
5) Create competitive advantage and increase profit. Our business partners see value.
6) N/A or don't know