Assessing strategic, tactical and operational alignment factors for SMEs: alignment across the organisation's value chain

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Abstract: The strategic use of Information Technology (IT), better known as strategic alignment, has significantly increased, as a result of the strong dependence of organisational activity on Information Systems (IS) and their related technologies. Strategic alignment is considered as a key element to improve performance on organisations, enhance efficiency and allow organisations to be more competitive in their respective industry. One of the first steps towards achieving strategic alignment is to have adequate means to measure it. Current alignment assessment approaches, though, are mainly focused at the strategic level but provide little insight at tactical and operational levels, which are recognized as important areas for achieving strategic alignment. Furthermore, most of the existing approaches are tested in large organisations and there is little research on assessing the effectiveness of these approaches for Small and Medium Enterprises (SMEs). This paper proposes an alternative instrument that aims to the understanding of IT alignment at all three levels: strategic, tactical and operational. Finally this paper presents the findings of applying this instrument on a SME. The results demonstrate the feasibility of use the proposed instrument when determining the level of maturity. The instrument proved to be useful to share, between all the participants at all levels, the basic knowledge that is needed to achieve alignment, recognising the mature factors that contribute to the organisation's alignment and also to highlight other less matured factors that need to be improved to leverage the alignment maturity.

Keywords: Strategic alignment, Information Systems planning, Alignment assessment, IT projects alignment, Value Chain alignment.

1 Introduction

The strategic use of Information Technology (IT), better known as strategic alignment, has increased its significance as a result of the strong dependence of organisational activity on information systems and their related technologies. Consequently, organisations want to ensure that IT investments are made on those projects that improve business performance and competitiveness (Tallon, Kraemer and Gurbaxani, 2000). Furthermore, IT executives consider strategic alignment as one of the main challenges that the organisation has to face (Ives and Mandviwalla, December 2004; Luftman, 2000; Tallon and Kraemer, 2003).

Strategic alignment, however, has been subjected to different interpretations in theoretical and practical studies and it is difficult to find a common agreement, which can see reflected on the variety of definitions found in the literature. For example, strategic alignment has adopted different pseudonyms like integration (Weill and Broadbend, 1988), fit (Porter, 1996), linkage (Henderson and Venkatraman, 1993), harmony (Luftman, 1996), bridge (Ciborra, 1997) and fusion (Smaczny, 2001). All these definitions, though, focus on how to improve organisational capabilities through technology. In the early works, researchers focused on developing a strategic plan that integrates business and IT visions. Frameworks were also used by organisations to improve the information system strategic planning process. Examples of these are: Critical Success Factors, the value chain, the Strategic Option Generator and methodologies such as Business System Planning and Strategic System Planning (Robson, 1997). More recent research on this area define alignment as all the activities that management performs to achieve business goals supported by IT across the organisation (Luftman, 2000).

Several approaches have been used to integrate the business strategy and information technology (IT) strategy. Most of these approaches are planning oriented (Smaczny, 2001) and assume structured environments under full control (Ciborra, 1997; Maes, 1999) in contrast with the real environment organisations face where uncertainty, flexibility and changeability prevail (Peppard and Ward, 2004). Even if some organisations do not have a formal planning process, they still need to be able to develop their business direction (Reich and Benbasat, 2000)). This direction should be clear enough to allow organisations to focus on those IT projects that add business value.

Despite the wide acceptance of strategic alignment, there is no consensus on how to achieve alignment and few references detail the process. Henderson and Venkatraman (1993) suggested that alignment could be achieved through the selection of appropriate alignment perspective included in their strategic alignment model (SAM) see figure 1. These perspectives were: strategy execution, technology transformation, competitive potential and service level. Each of these defines the driver of the perspective and the roles of business and IT managers including the criteria performance measure. This approach was followed by Luftman (1996), who redefined the SAM model providing eight perspectives instead of four. The general process of achieving alignment (Luftman and Brier, 1999) consists of the following steps:

- Set the goals and establish a team
- Understand the business linkage between IT and the business
- Analyze and prioritize gaps
- Specify the actions (project management)
- Choose and evaluate success criteria
- Sustain alignment

Existing literature, however, does not provide further details for all the steps involved. One interesting consistency along the evolution of alignment theory is that several researches take the SAM model as a ground theory. This research also found valuable to conceptualize the components of alignment through this model as draw attention to the complex relationships that needed to be understood in order to align the business strategy and the IT strategy as showed by the arrows in the figure 1.
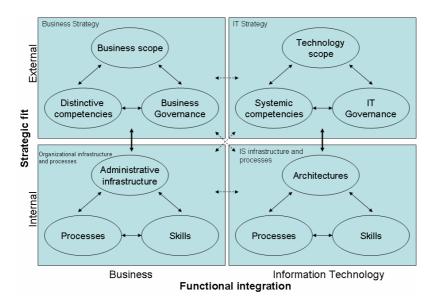
Figure 1 Strategic Alignment Model (SAM), adopted from Henderson & Venkantraman (1993)

The following sections analyse in more detail current approaches for assessing strategic alignment in order to identify their advantages and limitations. Subsequently, a proposed solution that addresses some of the limitations found is presented.

2 Assessing strategic alignment

Current alignment assessment approaches can be classified in two types. First, those approaches that investigate the impact of alignment in organisations through the correlation or causal relationships between alignment and other phenomena like business performance, financial benefits or its business IT value. Therefore those approaches create a medium to measure alignment and support hypothesis as their relevance and impact for the organisation. Second, there are other research approaches that use instruments to help the organisation to improve their current alignment situation. Representative research of each type is discussed in the following sections highlighting their advantages and limitations.

2.1 Assessment to support the impact of alignment in the organisations

Although executives are sceptical of the payoffs of IT investment due to its difficulties in achieving tangible benefits (Weill and Broadbent, 1998), Tallon (2003) provides evidence that corporations with clear strategies goals for IT achieve higher levels of strategic alignment, therefore higher IT business value(Tallon and Kraemer, 2003; Tallon, Kraemer and Gurbaxani, 2000). In addition, a key contribution from Tallon's work is the unit of analysis, while most of the literature focuses the alignment analysis at firm's level, Tallon focuses on process level to obtain deeper insight of alignment. A survey was developed to measure the payoffs across the processes in the

value chain; this survey was duplicated to address both the business and the IT strategy. Despite the fact that he found that strategic alignment can improve the business value of IT, the authors also found that highly-tight strategies between IT and business strategy could prevent organisations from the flexibility required to react in a changeable environment (Tallon and Kraemer, 2003), also known as the alignment paradox. Thus, the business value of IT depends, to some extent, on the organisation's ability to link their strategic process with the IT strategic process with a flexible framework. Consistently Kearns and Lederer (2000) state the relevance of the alignment dichotomy, where the alignment of the information systems plan with the business plan (ISP-BP) is as important is the reciprocal alignment (BP-ISP). Literature shows that only a small number of organisations gained a competitive advantage although they aligned their ISP to the business plan (Lederer and Mendelow, 1988). Furthermore, it was found that the main reason of this happening is due to the lack of alignment of the business plan to the IS plan (BP-ISP) (Kearns and Lederer, 2000).

Another example of this type of research indicates that alignment affects the perceived business performance (Sabherwal and Chan, 2001). The model has two components: one to conceptualize the business and the other to conceptualize IT strategy. The first component of the model, the business strategy, classifies the types of business strategy in terms of the Miles and Snow's typology. This typology includes three types: defenders, prospectors and analyzers. Defenders are more stable and stressing operational efficiency and economies of scale. The prospectors type continuously seeks new products/market opportunities, and is the creator of change in its market. Finally, the analyzers share common characteristics with each of the other two types, and seek to simultaneously minimize risk while maximizing opportunities for growth. The second component of the model is the information systems strategy that is described in terms of the IS purpose: IS for efficiency, IS for flexibility and IS for comprehensiveness. Then, a correlation is established between these two components to allocate the most appropriate IS strategy for a specific type of business strategy to improve alignment. Greater alignment between an organisation's business strategy and IS strategy implies that the systems are oriented on areas that are critical to achieve business strategy, therefore IS should contribute to the business performance as they are using IS for a competitive advantage. A survey aiming to examines the impact of alignment on business performance shows that the association between alignment and business success depends on selecting the appropriate IT strategy for the specific type of business strategy. While analyzers and prospectors showed strong correlation between alignment and performance, for defenders this association is not found. Consequently, the authors conclude that for organisations with a defenders type of business strategy, the emphasis on IS may not improve strategy execution and business success. The alignment paradigm then is more appropriate for organisations that are interested on use IT as competitive advantage.

2.2 Assessment to improve strategic alignment in the organisations

Early work on the SAM model alignment is assessed in order to identify which of the four possible perspectives an organisation is related (Henderson and Venkatraman, 1993). This type of assessment allows the organisation to identify the perspective(s) they follow. For example, if the analysis suggests that the strategy execution is their perspective, then

the business strategy is the driving force, the role of top managers is strategy formulator, the IS managers are strategy implementers and the performance criterion is considered as cost service centre. As a result of the assessment, the organisation identifies its characteristics in terms of which component drives the alignment, the role of top management, the role of IT management and their performance criteria. The authors suggested that alignment could be achieved through the selection of appropriate alignment perspectives. It is not clear, however, how to determine which perspective is the appropriate one. Furthermore, fewer guidelines are provided on how to achieve that perspective.

Papp (2005) propose similar research, based on SAM model as well, to assesses the organisation's alignment through a web tool. The results, however, is a description of which perspective the organisation fit. Despite the fact that this web-tool provides more analysis about which perspectives are strong or weak, in practice, it provides little support to managers in order to improve alignment. Using their approach, it is difficult to identify which factor produces which perspective. Additionally this web-tool requires an understanding of the SAM model in order to provide relevant answers (Papp, 2005). On this research the unit of analysis is the whole corporation and no empirical research is provided.

Following the research based on the SAM model, a useful research (David Avison et al., 2004) is presented where the strategic planning was merged with a prioritization process as organisational context. The approach aims to determine the degree of alignment between business and IT strategies based on their completed projects. The authors modified the Luftman's alignment perspectives and developed empirical research. In order to identify what type of alignment or perspective the organisation has. They analysed IT projects data instead of collecting the executive's perception. This approach emphasises the relevance of having clear business goals and a prioritization process to align the IT projects to the organisational goals. Moreover, it represents a practical approach not only to examine the current alignment but also it can be used to monitor and track alignment in a flexible way by re-allocating project resources when strategy change or if the project is not more aligned with the strategy. Despite the fact that this approach represents a deeper analysis to assess alignment, the matching project process to identify the alignment perspective the organisation follows is considered by the authors as not conclusive. In addition, the assessment results do not help to identify details of those areas that need improvement in terms of strategic alignment. More specific information, such as the identification of the factors that hinder alignment, could help managers to take the corresponding actions to improve the level of alignment.

Another limitation of the instruments available to measure alignment is that most of them are designed for larger organisations and little evidence exits to validate their applicability for small organisations. Small and medium enterprises are usually less strategically oriented than larger organisations. For those SMEs that consider IT as strategic, however, alignment is also very important, thus it needs to be measured. Hale and Cragg (Hale and Cragg, 1996), for example, constructed measures to assess small firms based on Venkatraman's instrument called STROBE that conceptualize the business strategy and also use Chan's STROIS instrument to conceptualize the IT strategy. For each dimension on these instruments the corresponding results are compared to assess the degree of mis-match between business and IT strategies. Low scores for dimensions indicate that the dimensions are receiving sufficient attention. A high score indicates an opportunity to improve alignment in that dimension. Where a STROBE

score is high and the associated STROIS score is lower, firms should invest in that dimension as it is most likely to bring significant benefits. This research demonstrated that current models could be adapted to provide SMEs with relevant mediums to assess and improve alignment. To validate these assumptions, though, more empirical research is required.

Luftman provides an extended research that started when he redefined the SAM model (Luftman, 1996). In 1999, Luftman published the enablers and inhibitors of alignment as a result of deeper research using his framework for alignment (Luftman, Papp and Brier, 1999). In 2000, he had provided a model to assess the maturity level of alignment called the strategic alignment maturity model (SAMM). This model is consistent with his previous research and, using the same background he concludes that the harmony between the 12 components of the SAM model is impacted by six factors: communication, measurements, governance, partnership, scope & architecture, skills (Figure 2). For each of these factor, he defines the attributes that determine the level of maturity in each one (Luftman, 2000). The SAMM model represents a contribution for the alignment assessment that could be extended to different organisational levels despite the fact that has been only tested on large organisations at strategic level.

The above discussion of alignment assessment is summarised in Table 1. From this discussion the following limitations were identified:

    a)   the current assessments measure alignment at strategic level without integrating the tactical and operational.

    b)   there is a lack of instruments to measure alignment specifically for SMEs.

    c)   It is needed a deeper understanding of the factors that impact the strategic alignment.

The instrument proposed in this paper aims to address these limitations and taking advantage from the assessments antecedents to contribute to the alignment theory.

Criteria	Atribute	Henderson, et al. (1993)	Hale, et al. (1996)	Luftman (2000)	Sabherwal, et al. (2001)	Tallon, et al. (2003)	Avison, et al. (2004)	Papp (2005)
Assessmet purpose	Perspective (strategic role)	x	x				x	x
	Productivity or Business value				x	x		
	Factors that impact alignment			x				
Organisation size	Large				x	x	x	x
	Medium	NA			x		x	NA
	Small		x		x			
Unit of analysis	Strategic level	x		x	x	x	x	x
	Tactical level						x	
	Operational level							
Data collection	Theoretical	x						x
	Survey		x	x	x	x		
	Case study						x	

Table 1 Comparison of Assessment Approaches

3 Methodology

This research aims to investigate the alignment phenomena through the interpretation of its social and cultural context trying to better understand how to assess alignment on SMEs. In doing so the following research strategy was developed:

1. Theoretical model construction
2. Instrument design
3. Instrument structure
4. Instrument implementation and results

Walsham (1995) explain that is desirable in interpretative studies to use the theory as initial guide for the design and data collection that take in account previous knowledge in order to create a sensible initial theoretical model. Moreover it is also important to maintain a degree of openness to the field data in order to be able to modify initial assumptions and theories (Walsham, 1995). This study aims at the understanding of alignment by interpreting the current practices on the organisations. It is expected that the iterative process of this research strategy, could represent a good approach to consolidate the current alignment theory, provide insights of new possible concepts, and specially provide a link to apply the alignment theory on the industry.

The following section describe this initial use of theory to develop a theoretical model and a proposal instrument to measure alignment that includes the gaps found in previous research. The implementation of the instrument in one SME organisation is explained together with the data analysis to validate its practicality.

4 An alternative instrument to measure strategic alignment

4.1 Theoretical model

Base on the alignment definition given by Luftman (2000), alignment involves all the activities that management performs to achieve business goals supported by IT across the organisation. However to delimit which management activities need to be investigated this research proposes a framework grounded on two well known models: SAMM model developed by Luftman (2000) and the Value Chain model proposed by Porter (2004).

From the SAMM model two concepts are relevant: the *components of alignment and* the *factors that impact alignment.* The components of alignment were derived from the original SAM model, since this research agrees they are the most appropriate way to conceptualise alignment. The *factors that impact alignment* are derived from Luftman (2000). Luftman describes the twelve components of alignment, which in turn are impacted mainly by six factors as show in the figure 2.
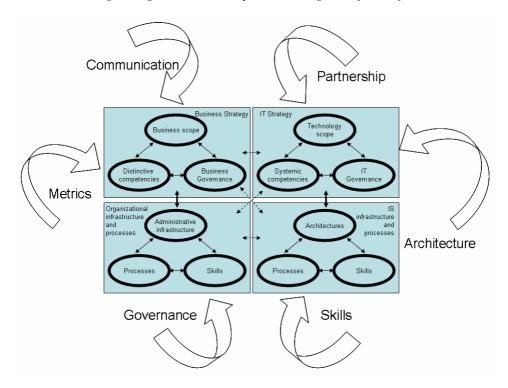
Figure 2 Factors that impact the components of SAM model

The alignment assessment model in this research keeps the twelve components of SAM model as they seem to be the best model to conceptualise alignment with the difference that instead of using the perspectives to measure alignment, the factors that impact the alignment are used as the measure constructors. Previous research mainly measure alignment by modelling the organisations strategies (whether planed or realised) or by questionnaires that only top executives are able to answer. The gap in perceptions between senior and functional managers has been elucidated as a problem for the adoption of technological innovations in SME's (Power, 2006). Many IT projects fail during the implementation even if they were planned and supported by senior managers and the gap in alignment perceptions across the organisational levels require more attention to validate its implications. At operational level the IS team in charge to implement the project and the business users involved have not clear idea of what strategic business this IT project is supporting neither the factor that enable or inhibit the IT project to be aligned. The alignment assessment proposal aims to integrate the views of senior managers' perspective, business unit managers and the key participants at operational level. The factors that impact the alignment represent a better constructor to achieve this purpose.

On the other hand the alignment the chain value represents a systematic way of examining the impact of the IT projects on those processes across the value chain that are directly related with the business strategy (Porter, 2004). Therefore the value chain model helps to emphasis the scope of the IT project, its impact for each business unit and its

relationship with the business strategies. Usually the impact of IT projects across the value chain is not taken into account and it was found that one important procedure to realise value from IT projects is to use tools for the value chain analysis that ensure the strategic alignment (Chowdhury, Sherer and Ray, 2001).

The two models described (SAMM and Value Chain) are illustrated in the Figure 3 to show how the alignment flows from the strategic planning to the operational level. In order to ensure the projects are aligned the assessment factors are included. It is expected that the understanding the results of this measurement instrument will provide guidance on how to improve the problematic areas and therefore enhance the overall organisations alignment.
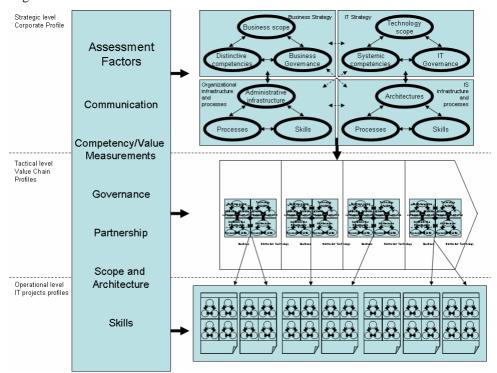

Figure 3 IT Alignment assessment theoretical model

4.2 Instrument design considerations

The instrument proposed in this paper aims to measure the factors that impact alignment maturity (as described on SAMM model) from the strategic perspective and the current practices at tactical and operational levels. When some factors show low maturity, it may be possible to identify the reasons of this happening to make the corresponding adjustments that allow improving that factor, hence the alignment.

The instrument is based on the alignment dichotomy paradigm, which argues that the information system plan should be aligned to the business plan (ISP-BP) and the business plan should be aligned to the information system plan (BP-ISP). Both these types of

alignment increase the organisational understanding of IT that helps to prioritize IT projects. Furthermore, it signifies better top manager understanding and commitment that are considered enablers of alignment (Luftman, Papp and Brier, 1999). This alignment dichotomy is emphasized at strategic level, but is needed as well at tactical and operational levels. Another example that justifies the use of different organisational levels is the information technology alignment planning process. This process helps to identify IT strategies, IT projects and Information Systems from the requirements of each business unit and creates links between the strategic and the operational levels (Peak, Guynes and Kroon, 2005). Consequently, the proposed instrument to measure alignment collects information from different stakeholders that participate in those IT projects carried out by the organisation using an on-line questionnaire. The analysis of these data will permit to recognise inconsistencies assessing the factors that impact the alignment across the organisation.

Another consideration when developing the questions is the knowledge needed from the participant in order to provide appropriate answers. An important aspect is to develop the questionnaire in a language that every participant can easily understand even if they are not use to the SAMM model.

For the questionnaire design, the factors that impact the alignment maturity proposed by Luftman in the SAMM model are considered. The attributes of each factor, however, were reviewed according to the SMEs context to make the questions more appropriate and still measure the same factors. This can help to interpret the results according to the five maturity levels recommended by the SAMM model. A better understanding of this factors and how to assess them is the main focus of this research.

The questions were designed to collect the same data from different people at all levels and use the people experience obtained from the IT projects where they had participated.

4.3 Instrument Structure

The instrument consists of a questionnaire of 29 questions related to one or more of the factors from the SAMM model that impact the strategic alignment. The following example describes the design of the instrument questions to measure the factors that impact alignment at strategic, tactical and operational levels on SMEs compared with the proposed in the original model.

The first factor in the SAMM model is communications and one of its attributes is the understanding of business by IT. Then the top IT executives are asked to rank the maturity in terms of the following options:

1. Understanding of business by IT
2. It management not aware
3. Limited IT awareness
4. Senior and mid-management
5. Pushed down through organisation
6. Pervasive

An understanding of business by IT is relevant not only at strategic level but also at tactical and operational levels. Moreover it is needed to know if that understanding is applied to all the participant in IT projects. Consequently, the proposed questions for top IT executives, IT middle managers and IT staff are:

1. Do you know which business strategies are supported by the IT project(s)?

2. Do you know which organisational areas are impacted by the IT project(s)?
3. Could you describe which business processes are impacted by the IT project(s)?
4. Could you describe the main business benefits of the IT project(s)?
5. Do you know what IT your competitors are using equivalent to the IT project(s) in your organisation?

The analysis of the responses not only provides a measure of alignment maturity for this attribute. It also allows a comparison of the consistency of results at different organisational levels. All this questions refers mainly to communication but also have a cross reference with other factors like partnership. The proposed instrument permits to identify the maturity level of each factor and its consistency at strategic, tactical and operational level (see Figure 4).

The factor with less maturity can be then further analyzed to verify which practices inhibit the alignment or if the problem is the lack of linking between the organisational levels. The main contribution of this instrument is assessing alignment to obtain in depth understanding within one organisation rather than comparing the alignment between several organisations. This may contribute to enhancing the current alignment theory. The questionnaire was developed using an online tool and is available in the appendix A.
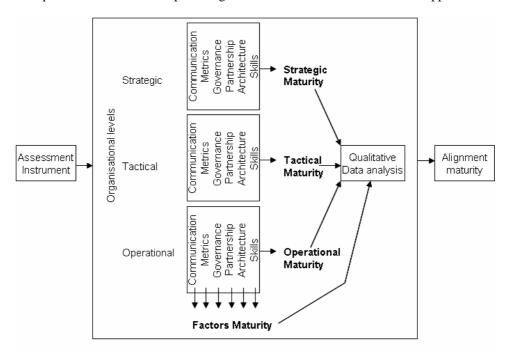

Figure 4 Business-IT alignment maturity across organisational levels on SMEs

4.4 Implementation and results

To investigate the advantages and limitations of the proposed instrument, this was applied in a small business services organisation in Mexico City. The following stages were conducted:

Stage 1: Questionnaire application. The questionnaire was applied to people at different organisational levels using an on-line tool.

Stage 2: Calculate the maturity alignment. A questionnaire interpretation was done per participant to determine the maturity alignment for each factor and organisational level. This interpretation was guided by the characteristics of the five levels of maturity on the SAMM model.

Stage 3: Qualitative results analysis. A semi-structure interview was conducted with the organisation's CEO to present the results obtained on the stage 3. The main purpose was to discuss the inconsistencies found between the organisational levels to determine if the inconsistency represents a misinterpretation or a potential area that needs attention in order to improve alignment. This allows adjusting the level of maturity for each factor and estimate the overall organisations alignment maturity.

The data analysis done on the stages 2 and 3 is explained in more detail in the following subsection including the measures in each stages and interpretation examples.

Data Analysis

Stage 1: Questionnaire application.

The CEO involved 9 participants from the total of 64 employees the organisation have. All of the participants belong to different functional areas or organisational level and they answer the questionnaire on line.

Stage 2: Calculate the maturity alignment.

Calculate the maturity for each participant. Each question uses a five-point scale to assess the alignment maturity of each factor. Hence, the maturity obtained is quantified for the factor or factors that each question is addressing. From the table 2, it could be observed the perception of each participant has regards to the maturity alignment through the different factors.

Participant	Comm	Metrics	Governance	Partnership	Architecture	Skills	Maturity	Level
A	2.72	2.60	2.74	3.24	2.33	3.60	2.87	S
B	3.00	2.67	3.39	3.88	2.33	4.40	3.28	S
C	3.16	2.87	2.52	3.00	3.00	3.00	2.92	S
D	4.40	4.67	4.17	4.41	4.00	4.40	4.34	S
E	3.96	3.93	3.83	3.94	3.00	3.40	3.68	T
F	2.56	2.07	2.48	3.06	1.67	3.80	2.61	T
G	3.40	2.40	3.30	3.53	1.67	3.60	2.98	T
H	2.60	2.80	2.91	3.35	2.67	3.40	2.96	T
I	3.42	3.73	3.39	3.59	2.33	4.00	3.41	O

Table 2

Calculate the maturity of each factor and across the different organizational levels. The quantitative analysis depicted in the table 3 shows that communication, metrics/value, governance and skill reached a level 3 of maturity, however the standard deviation prevents to consider this maturity level as the final one. The maturity for partnership and skills were rated with a level three as well, nevertheless in this case the standard deviation is low, reflecting agreement in the assessment of participants. The next

step is to validate the quantitative results and understand the reasons of high standard deviation on some factors.

	Communications		Metrics		Governance		Partnership		Architecture		Skills		Level	Level
	Mean	St Dev	Mean	St Dev	Mean	St Dev	Mean	St Dev	Mean	St Dev	Mean	St Dev	Maturity	St Dev
Strategic	3.32	0.74	3.20	0.98	3.21	0.74	3.63	0.64	2.92	0.79	3.85	0.68	3.35	0.68
Tactical	3.13	0.63	2.80	0.91	3.13	0.87	3.47	0.72	2.25	0.58	3.55	0.72	3.06	0.71
Operational	3.42	0.70	3.73	NA	3.39	NA	3.59	NA	2.33	NA	4.00	NA	3.41	NA
Factor Maturity	3.29		3.24		3.24		3.56		2.50		3.80		3.27	
Factor St Dev	0.63		0.84		0.58		0.46		0.73		0.47			

Table 3

Stage 3: Qualitative results analysis.

The qualitative analysis is required to fully understand if the level obtained correspond to the SAMM levels characteristics. Verifying if the organization meets the attributes of each factor, the final level is shown the qualitative column in table 4. For example Metrics/Value factor resulted on level 3, however a deeper analysis of the answers in the questionnaire confirms that the organization has business and IT metrics but they are not using them continuously. Also, employees perceive that they are not evaluated with those metrics. For all this reasons the factor finally was rated with a maturity level of 2. Reviewing the final column in the table 3, it depicts that most of the factors reached a level 2; therefore the qualitative analysis provides valuable information in those factors that require more attention. The organization should establish new mechanisms to monitor the alignment maturity with the proposed instrument and improve those factors that require consideration.

	Instrument results		Instrument priority	Organisation's priority		
	Quantitative	Qualitative		Strategic	Tactical	Operational
Architecture	2.50	2	1	6	5	4
Governance	3.24	2	2	3	2	1
Metrics/Value	3.24	2	3	2	4	2
Partnership	3.56	2	4	4	3	3
Communications	3.29	3	5	1	1	6
Skills	3.80	3	6	5	6	5

Table 4

Finally, another interesting analysis the instrument provide is the comparison between the instrument results and the different organisational levels when considering what factors require more attention. On the table 4 the factors are ordered according the priority the instrument generates from the quantitative and qualitative results then the organisation's priority is shown for the strategic, tactical and operational level. Even the architecture is consider less relevant at strategic and tactical level, the operational level indicates this infrastructure is not enough to develop the main business processes therefore investment is require to prevent this factor impact the others to be achieved. Another contrasting example is the communication factor, while strategic and tactical levels consider they need to invest on this area operational level highlight as

communications problems the attributes related to governance, metrics and partnership and therefore this factor are higher for the operational level. A consistency result is the partnership factor that is ranking between 3 and 4 priorities by the instrument as well as the organisations perception.

The figures obtained by the instrument represent a guide for the organisation to recognise the level of alignment they show and the areas that require attentions. The instrument can also be a valuable tool to promote the discussion among the key participants without loosing the focus on the alignment. It is argued that the instrument helps to share the core alignment knowledge that is needed between all the participants at all levels.

5 Conclusions and recommendations for further research

This paper is part of an ongoing research in the area of strategic information systems planning, focused on strategic alignment. Even though the authors recognise the limitations of applying the questionnaire to one organisation, the results provide evidence that such approach can help organisations to assess their strategic alignment and to identify those areas that need further improvement.

This paper emphasise the need to integrate the alignment theory to create the appropriate processes to measure alignment that represents a key contribution as the instrument proposed assess strategic alignment supported by a theoretical model that takes the advantages from the assessment antecedents. Moreover the research also demonstrates the potential of using the assessment instrument to promote the knowledge sharing of alignment that represents a key factor to achieve alignment as recognised by Reich and Benbasat (2000).

The application of the questionnaire enables insight into some recommendations that could improve the alignment assessment proposal. First, further research is needed on the factors that impact the strategic alignment that helps to improve the questionnaire design and consequently improve the measure obtained in each factor. Secondly, it is needed to improve the process for the data analysis, a possible solution could be formal interviews to discuss the data from each questionnaire to obtain more details and improve the qualitative analysis. Also a group session to discuss the overall results could provide valuable information to better understand the alignment phenomena. Finally, it was found during the interview that some of the results inconsistencies between the organisational levels can be explained by the different experience the participants have on IT projects. This suggests that it is important to take into account the fact that each project may have different level of alignment, and thus the data obtained can be biased. More research is needed to validate this relationship. One possible solution could be to assess the alignment maturity for each IT project in the organisation instead of the organisation as a whole, therefore the addition of the analysis of total of projects may provide a more realistic picture of the level of alignment of the organisation.

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Appendix A

Q1 Check the classification most appropriate for your organisation:
Education/ManufacturingRetailGovernment or Public AdministrationBanking/Finance
Insurance/Construction/Health/Pharmaceutical/Business Services (includes IT services)/Other
Q2 How many employees are there in total in your organisation?
Q3 Where is your organisation located?
Q4 In which of the following groups do your main activities fit?
Business group/Information Technology group/Other
Q5 What organisational level your main activities belong to?
Strategic/Tactical/Operational
Q6 What is the level in which the business strategic planning is developed in your organisation?
Ad-hoc planning for some projects
Basic planning at the functional level
Some inter-organisational planning
Managed across the enterprise
Integrated across and outside the enterprise
Q7 What is the level in which the IT strategic planning is developed?
Ad-hoc planning for some projects
Basic planning at the functional level
Some inter-organisational planning
Managed across the enterprise
Integrated across and outside the enterprise
Q8 At what level are the business and IT strategic planning integrated?
At the functional level
Business process
Inter-organisational
Across the enterprise
Integrated across and outside the enterprise
Q9 How are IT projects prioritized?
Reactive to the current needs
Guided by the business strategic planning
Guided by the IT strategic planning
Through steering committees
Partnership between business and IT
Q10 Answer the following section from your experience on projects that require IT to some degree. How many people involved in the IT projects could answer the following questions. Check all that apply.

	None	Executive management	IT department	Project leader	All the participants
Which business strategies are supported by the IT projects?					
Which business processes are impacted by the IT projects?					
What are the main business benefits of the IT projects?					
What IT are your competitors using, compared to the IT projects in your organisation?					

Q11 What level of applications is your organisation using? Check all that apply.
Desktop suites (e.g. Word processing, productivity)
Communication systems (e.g. groupware, e-mail)
Transactional systems for accounting, finance, marketing, etc.
Decision support systems for accounting, finance, marketing, etc.
Enterprise systems (ERP, CRM)
Interorganisational Information systems (EDI, Electronic Business)
Other
Q12 Application integration refers to the level of data communication between the different applications used to acomplish a business process.

What is the level of applications integration?
No formal integration
Early attempts at integration
Emerging enterprise standard
Enterprise standards
Inter-enterprise standards

Q13 Are the IT applications supporting the organisations business processes?
No/Not well/A little/Mostly/Yes

Q14 How many people involved in the IT projects could answer the following questions. Check all that apply.

	None	Executive management	IT department	Project leader	All the participants
Which IT supports the business strategies?					
Which IT is used in the functional areas?					
Which IT is used in the business processes?					
What are the IT benefits for your organisation?					
What IT are your competitors using, compared to the IT on your organisation?					

Q15 Answer the following section from your experience on projects that require IT to some degree. Rate your level of agreement of each of the following statements:

	Strongly disagree	Disagree	Slightly disagree	Slightly agree	Agree
There are regular meetings to assess the achievement of results for IT projects					
Problems are discussed in a team that involves business and IT people					
Any participant could speak freely					
The organisation has a learning together approach					
There are mechanisms to pervade the learning together approach in all the organisational levels.					

Q16 To what extend do you believe the following statements are valid in your organisation:

	Strongly disagree	Disagree	Slightly disagree	Slightly agree	Agree
The decision making process is informal rather than command and control					
There are formal liaisons between IT and business units at all organisational levels					
The trust style between IT and business units is considered as valued partnership					
There are formal steering committee(s) to prioritise the IT projects.					

The CIO reports to CEO in the organisation structure					

Q17 Please select the appropriate level of agreement for each of the following statements.

	Strongly disagree	Disagree	Slightly disagree	Slightly agree	Agree
There is a formal process to prioritises the IT projects					
The CIO reports directly to the CEO					
There are regular meetings to assess if the IT project is aligned to the business objectives					
The role of CIO is to execute the business goals but he does not participate in the business planning					
There are formal assessment of IT projects that are carried out by IT and business areas in partnership					
The IT department enables the business strategies					

Q18 Select the appropriate level for each of the following questions.

	None	Departmental	Across several departments	Across the organization	Between trading partners
At what level is the IT aligned with the business objectives?					
At what level is there a shared understanding of the IT business value?					
At what level have the use of IT and systems resources been utilized to support the business process?					
At what level is formal IT training provided?					
At what level is the impact of IT assessed?					
At what level are goals, risk, rewards and penalties shared between business and IT areas?					

Q19 To your knowledge which of the following type of metrics are defined and used in your organisation for IT projects:
Technical metrics
Business metrics
Business and IT metrics unlinked
Business and IT metrics linked
Business, partners and IT metrics linked
Other

Q20 Are any of the following used in your organisation to measure the benefits of IT in your organisation? Check all that apply.
Key performance indicators (KPIs)
ROI/TCO type measurements
Balanced scorecard (BSC)
EFQM (European Foundation for Quality Management) Excellence Model
Activity base costing
Share holder value added
Competitive benchmarking
Other

Q21 Are your employees evaluated on achieving the IT project goals that are aligned with the business goals?
Not at all/Not well/A little/Very well/Unknown

Q22 How often do you use the following types of metrics?

	Never	Rarely	Some	Often	Always
Cost reduction					
Customer satisfaction					
Quality					
Efficiency					
Strategy					

Q23 Are the people impacted by any IT project receiving training programs?
No
Planning to but not implemented yet
Ad-hoc training
Basic training
Fully planned and implemented

Q24 Do you know if your IT projects are successful?
Yes/No

Q25 If your IT projects are successful, were the business goals achieved?
Yes/No/Don't know

Q26 If the business goals were achieved, did the IT add value to the organisation?
Yes/No/Don't know

Q27 Which of the following is the most relevant factor to be improved in your organisation to ensure a better alignment between business and IT people? Rank values must be between 1 and 6, where 1 is the most relevant.
Communications (across organisational level between IT and business people)
Metrics to assess the IT business value
Governance (how the authority for resources, risk, conflict resolution and responsibility is manage)
Partnership ((how the authority for resources, risk, conflict resolution and responsibility is share)
Architecture (infrastructure and technology policies)
Skills (H/R consideration to support the business-IT alignment)