Strategic Business-IT Alignment, and Factors of Influence: A Case Study in a Public Tertiary Education Institution

IGNITIA MOTJOLOPANE AND IRWIN BROWN
University of Cape Town

Alignment between business and information technology (IT) strategies has been a key concern for both IT and business managers for several decades. It is recognised that achieving alignment contributes immensely to ensuring that investments in IT result in improvements in organisational performance. Alignment is a concern, not only for commercial organisations, but also for tertiary-level educational institutions, many who have invested heavily in IT for teaching and educational purposes, as well as to improve efficiency and effectiveness of administrative processes. It is therefore necessary for research on alignment to be conducted in such institutions, as much of the literature assumes a commercial organisational context. In this paper, a case study is reported in which it was found that integration between business and information systems (IS) planning, rational-adaptation in IS planning, IT managerial resources, and IT implementation success are all factors likely to influence alignment. Their relative importance, however, is very much dependent on the organisational context, the timing of the study, and on whose perspective is being sought.

Categories and Subject Descriptors: K.6 [Computing Milieux]: Management of Computing and Information Systems
General Terms: Human Factors, Management, Performance
Additional Key Words and Phrases: Strategic Alignment, Case Study, Tertiary Education

1. INTRODUCTION

The South African public higher education sector is faced with a dynamic and turbulent environment. As a result of apartheid era policies, anomalies and duplication exist. To deal with these, a series of mergers have been promulgated, and historically white institutions are under pressure to transform both their student and staff profiles. In certain fields of study, few students from secondary school manage to qualify for entry, with many that do failing to complete their degrees within the expected period, if at all. The competitive landscape has also changed, with new private tertiary institutions having been set up, and distance education and online offerings available from foreign institutions. These are drawing students away from traditional public education providers. Several top-tier institutions have also been classified as research-led with the need, therefore to improve research output, and achieve a 70:30 ratio of postgraduate to undergraduate students. It is within this context that Chief Information Officers (CIOs) or the equivalent at these institutions must grapple with the issue of aligning investments in IT with organization strategy.

The role of ICTs (information and communication technologies) has certainly gained prominence, given the national skill shortage in certain highly specialised areas such as ICT on one hand, and the large pool of unemployed on the other. ICTs have also gained prominence in terms of the capabilities they provide for distance education, as well as in improving and aiding the traditional classroom-based educational process. A third area of importance is in their role of improving efficiency and effectiveness in managing and administering tertiary institutions. As with commercial organisations, there is a belief that IT can contribute to improved organisational performance.

Alignment of business and IT strategies has been viewed as key to obtaining value from IT investments, and is therefore an important area of research, given the multi-faceted role for ICT in the education environment. In this study, a case study of a tertiary institution was undertaken, and its success, or otherwise in achieving alignment was examined. From hereon, the term alignment is used to refer to strategic business-IT alignment, whilst the terms ICT and IT and IS are used interchangeably. It is recognised that these are not actually synonymous, but are often assumed to be in everyday speak.

In the next section the concept of alignment is discussed in greater detail, leading to the research framework for the study. The research methodology is then outlined, following which the results are analysed and discussed. This section is followed by limitations and ideas for further research before the conclusion of the paper.

Author Addresses:
I. Motjolopane, Department of Information Systems, University of Cape Town, Private Bag, Rondebosch, 7701, South Africa.
I. Brown, Department of Information Systems, University of Cape Town, Private Bag, Rondebosch, 7701, South Africa;
ibrown@commerce.uct.ac.za.
Permission to make digital or hard copies of all or part of this work for personal or classroom use is granted without fee provided that the copies are not made or distributed for profit or commercial advantage, that the copies bear this notice and the full citation on the first page. Copyrights for components of this work owned by others than SAICSIT or the ACM must be honoured. Abstracting with credit is permitted. To copy otherwise, to republish, to post on servers, or to redistribute to lists, requires prior specific permission and/or a fee.
© 2004 SAICSIT

Proceedings of SAICSIT 2004, Pages 147 - 156
2. CONCEPTUAL BACKGROUND

2.1 Strategic Alignment

Strategic business – IT alignment has continued to garner attention, despite decades of research. This has been attributed to, among other things, the many practical challenges it presents [D’Souza and Mukherjee 2004]. Reich and Benbasat [1996] note furthermore that in much of the research on strategic alignment, no distinction is made between factors influencing alignment, and alignment itself. They therefore make the distinction between causal factors, such as the IS planning process, and alignment - the state or outcome. They further define the alignment outcome along two dimensions – the intellectual dimension, and the social dimension. The intellectual dimension refers to the alignment of IS plans (or strategies) with business plans (or strategies), and is defined as the state in which a set of high-quality interrelated business plans and IS plans exist [Reich and Benbasat 1996]. The social dimension of alignment on the other hand refers to the state in which the IS and business executives understand and are committed to the business and IS mission, objectives and plans [Reich and Benbasat, 2000]. Luftman [2000], in a separate line of research, define business-IT alignment as:

Applying IT in an appropriate and timely way in harmony with business strategies, goals and needs.

This contrasts with the definitions provided by Reich and Benbasat [2000], in that the focus is on applying IT, rather than on IT plans or social aspects. It is thus similar to what Chan et al. [1998] define as realised strategic alignment, as opposed to the intended strategic alignment, typically reflected in plans and strategies. These three perspectives of alignment are not totally separate, but interrelated. The social dimension will have a positive impact on the intellectual, both of them in turn influencing realised strategic alignment. The dynamic and turbulent business and IT environment has an impact too, however, making alignment a moving target, with business and/or IS strategies continually changing, and the subsequent need for one or the other to be adjusted.

Executive concern for the value of IT investment has kept the spotlight on alignment, as it is believed that by aligning IS with business strategies and objectives, organisational benefits will accrue [Henderson and Venkatraman 1993]. Chan et al. [1997] provide evidence for this assertion by demonstrating that strategic alignment is the main influence on organisation performance, rather than either business strategic orientation or IS strategic orientation alone. Tallon and Kraemer [2003] confirm this relationship is valid up to a certain point, but note that beyond this threshold further increases in alignment may yield lower IT payoffs. This finding highlights the need to get a better understanding of the dynamics of alignment.

2.2 Influencing Factors

One means of achieving alignment is strategic information systems planning (SISP). Lederer and Salmela [1996], for example, in proposing a theory of SISP view alignment as the central outcome of such an endeavour. Segars et al. [1998] in deriving a measure for the SISP success construct include alignment as one of the key dimensions. They further demonstrate in Segars and Grover [1999] that a SISP approach characterised by rational adaptation is the most successful. Reich and Benbasat [2000] identify integration between business planning and IS planning (BP-ISP integration), shared domain knowledge, communications, and past IT implementation success as influences on the state of social alignment, whilst Luftman [2000] list the following as enablers: Senior executive support for IT; IT involved in strategy development; IT understands the business; Business-IT partnership; Well-prioritised IT projects; and IT that demonstrates leadership.

Integrating these and other findings [Cohen 2003] together, results in the identification of four major influences on alignment, whether intellectual, social or realized:

− Business Planning – IS Planning integration (BP-ISP integration)
− Rational-adaptation in SISP
− IT implementation success
− IT managerial resources.

Each alignment dimension (social, intellectual and realised) is affected by these factors to a greater or lesser extent, and thus the aggregate state of alignment is likely to be influenced by these as well.

2.2.1 BP-ISP Integration

BP-ISP Integration has been operationalised by Teo and King [1997a] as a four-stage typology, varying from no integration to full integration. It is demonstrated in Teo and King [1999] that the greater the degree of integration, the fewer the planning problems, and the greater the IS contribution to organisational performance – an indication that alignment has been achieved [Cohen, 2003]. Reich and Benbasat [2000] in like manner define connections between business planning and IS planning, according to a similar typology of integration, and demonstrate this as an influence on long-term social alignment. The following proposition is thus put forward:
Proposition 1: The level of BP-ISP Integration positively influences the state of strategic alignment.

2.2.2 Rational-Adaptation in SISP (Strategic Information Systems Planning)
Segars and Grover [1999] distinguished between alternative SISP approaches by examining the level of rationality and adaptation in organisations. Rationality was characterized by a comprehensive, formalized process, with a top-down flow and a focus on control. Adaptation was evident where there were frequent planning cycles and broad participation profiles. Organisations that rated highly on both rationality and adaptation were found to be the most successful in SISP, where one of the success measures was alignment. This leads to the following proposition.

Proposition 2: The level of rationality and adaptation in the SISP process positively influences the state of strategic alignment.

2.2.3 IT Managerial Resources
Many of the enablers of alignment mentioned by Luftman [2000] refer to the managerial resources required to successfully leverage value from IT in an organisation. These include top management support for IT initiatives on the one hand, and on the other, IT management that understands the business and demonstrates leadership. Reich and Benbasat [2000] provide additional support for the importance of managerial resources, especially to the social dimension of alignment, as does Cohen [2003]. Thus the proposition supported is:

Proposition 3: The quality of IT managerial resources positively influences the state of strategic alignment.

2.2.4 IT Implementation Success
The Lederer and Salmela [1996] SISP model shows IS plan implementation as having a direct influence on alignment, whilst Reich and Benbasat [2000] show prior IT implementation success as a major contributor. Where an organization has been successful in implementing an IT project, from both a business and IT perspective, a positive mindset about IT is engendered, which enhances mutual understanding and commitment amongst the stakeholders. This contributes to the level of social alignment, lending support to the following proposition:

Proposition 4: IT implementation success positively influences the state of strategic alignment.

3. RESEARCH METHODOLOGY
In this study a positivistic approach is employed. However, unlike with most positivistic studies, a case study is used as the basis for data collection. Darke et al. [1998] define a case study as:

An empirical enquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomena and context are not clearly evident.

It relies upon multiple sources of evidence, and could be based on a single organisation or multiple organisations. Several data collection techniques may be employed, including interviews, observation, questionnaires, and document analysis, i.e. a mix of qualitative and quantitative [Darke et al., 1998]. This study follows the approach adopted by Reich and Benbasat [2000] who also used a positivistic, case study approach. However, unlike Reich and Benbasat [2000] who examined ten business units in three organisations, this article reports on findings from one organisation.

In the first stage of data collection, documents were gathered and analysed, following which structured interviews were conducted with three key executives in the organisation. The interviews were targeted at getting information on perceptions of alignment, IT managerial resources, IT implementation success, rational-adaptation in SISP, and BP-ISP integration. This was followed up with a questionnaire sent to those executives and academics who sit on one or more ICT committees. 17 questionnaires were returned from this phase, out of a target group of about 30. These multiple sources of evidence were then corroborated, and analysed to ascertain whether there was support for the propositions.

3.1 Questionnaire Design
The questionnaire consisted of a section that gathered demographic data, followed by a section on alignment, and then sections on the four factors of influence. These items were all assessed on a scale of 1 to 6 (See Appendix 1).

3.1.1 Alignment
Alignment was assessed by asking respondents their perception of organisational success in matching IT and business strategies [Luftman 2000]. In addition respondents were asked about how they perceive the importance of alignment, as well as their awareness of business and IT strategies in the organisation.

3.1.2 BP-ISP Integration
BP-ISP integration was assessed by asking respondents to indicate the level of integration, as operationalised by Teo and King [1997a]:

Proceedings of SAICSIT 2004
− Administrative (IS planning and business planning are separate unrelated processes)
− Sequential (IS planning follows and supports business planning)
− Reciprocal (IS planning and business planning are mutually reinforcing)
− Full (IS planning and business planning are fully integrated)

3.1.3 Rational-Adaptation in SISP
Based on the work of Segars et al. [1998], the SISP approach was assessed by the following dimensions:
− Rationality
  − Comprehensiveness (The extent of solution search)
  − Formalisation (Rules and procedures guiding SISP)
  − Focus (The extent of control versus creativity)
  − Flow (Vertical orientation – top-down versus bottom-up)
− Adaptation
  − Participation profile (Number and variety of participants)
  − Consistency (Frequency of planning cycles)

3.1.4 IT Managerial Resources
IT managerial resources were assessed with 6 items, related to the following:
− Top management support for IT initiatives [Luftman 2000; Teo and King 1997a]
− Line management support for IT initiatives [Chan 2002; Hirschheim and Sabherwal 2001]
− IT management competency [Teo and King 1997a]
− IT-business executive mutual respect [Chan 2002; Reich and Benbasat 2000; Hirschheim and Sabherwal 2001]
− IT-Business communications [Reich and Benbasat 2000; Luftman 2000]
− IT executive position in the organisation [Teo and King 1997a; Cohen 2003]

3.1.5 IT Implementation Success
This factor was assessed by asking respondents to rate the availability of several key IT services in the institution, similar to the approach adopted by Sabherwal and Kirs [1994]. This serves as a proxy for past implementation success. The services assessed were:
− On-line staff administration systems
− On-line student administration systems
− On-line library services
− Web-based learning systems
− Computer labs for student instruction
− Computer facilities for student projects

4. DATA ANALYSIS AND RESULTS
4.1 Managerial Structure and Strategy in the Organisation
The overall vision, mission and direction for the organisation has been articulated by the President (CEO). The managerial structure includes under the President, several vice-presidents. One of the vice presidents is among other things responsible for operational planning and budgeting, as well as ICT. Reporting to this vice President is the CIO (Chief Information Officer). Thus, the level of the CIO is only two levels below the President. The vice-President is responsible for formulating a three-year plan and budget, in consultation with various stakeholders represented on committees. This plan is approved by a high level strategic planning committee. The CIO is responsible for formulating the organisation-wide strategic ICT plan, in consultation with the various ICT committees, containing representatives from both administration, and academia. In like manner, the strategic ICT plan must be presented for approval to the strategic planning committee.

4.2 Intellectual Dimension of Alignment
In order to assess the intellectual dimension of alignment Reich and Benbasat [1996] examined both short-term (1 year), and long-term (5-year) IT and business plans of strategic business units, and rated them as being high, medium or low in terms of short-term alignment, then long-term alignment. In the institution under study, there was a long-term business vision document, and then a medium-term (3-year) operational plan and budget, and a 3-year ICT plan. Thus, rather than examining long-term and short-term alignment, alignment in this case was assessed based on the long-term vision document, and the 3-year plans.

The medium-term business plan was a detailed document, which made reference to the long-term vision document, and outlined several initiatives, including those for IT. The ICT strategic plan, in like manner made reference to the
strategic business drivers, taken from the strategic vision document as well as expanding on the IT initiatives mentioned in the medium-term business plan. There were thus close links and interrelationships between the long-term vision document and the two medium-term plans.

4.3 Social Dimension of Alignment

In order to evaluate the social dimension of alignment, the views of the CIO, vice-President, and a Departmental Manager with specialist knowledge of IS were sought by asking each what the key short- and long-term business and IT goals of the organisation were. The medium-term planning cycle employed in the organisation lead one of the interviewees to point out that:

The short-term goals are also long-term goals.

The institution has been defined as a research institution by government, and this issue seemed to be upper most on all of the interviewees’ minds - improving research output and quality was mentioned as a key business goal by all three. Other goals mentioned by at least 2 of the 3 interviewees related to transformation in terms of the demographic and cultural profile of the institution, and the achievement of financial management targets.

In terms of the IT goals, all three mentioned the need to improve the IT infrastructure as key. 2 of the 3 interviewees also mentioned the need to increase Internet bandwidth, the need for integration of IT systems, and implementation of a new student information system. Thus on the whole, the analysis points to mutual understanding of business and IT goals, and a fairly strong level of social alignment.

4.4 Realised Strategic Alignment

The realised strategic alignment was assessed in both interviews and the questionnaire by asking respondents their opinions as to the organisational success in matching IT and business strategies. The first interviewee stated:

The answer somehow entails organisation success as a whole.

This provides evidence of a holistic mindset, where IT is viewed as very much an embedded component of the organisation system. The second noted too:

This year we have taken a holistic integrated approach and we budget for all our initiatives together.

The third interviewee stated that:

In general matching business and IT goals is in its early days.

The responses thus show that in the past there may not have been much attention paid to aligning IT with business strategies, but there has been a shift of emphasis recently to begin to address it.

The questionnaire respondents were asked to rate success on a scale of 1 to 6, 1 representing highly unsuccessful, and 6 highly successful. The mean rating was 4.1, indicating on the whole some success in achieving alignment. Only 3 out of the 17 respondents (18%) believed the organisation had been unsuccessful (rating of 2), with the rest giving a rating of 4 or 5. Putting these findings together indicates that the organization has been moderately successful in achieving alignment, with recent successes at the higher levels (in the intellectual and social dimension), but some weaknesses currently in actually realising alignment. Over time it can be expected that the current emphasis on integration of strategies should lead to realized strategic alignment at the operational level.

4.5 Factors of Influence

4.5.1 BP-ISP Integration

There were perceptual differences as to the level of BP-ISP integration amongst the 3 interviewees, with one stating that there is full integration, the other reciprocal integration, and the third sequential. Such perceptual differences between business and IT executives were noted too by Teo and King [1997b] in their study of integration. The differences thus relate to the position and responsibility of the interviewees. For the CIO, who has overall responsibility for IT in the organisation, there is a need to focus efforts on understanding the business strategy and ensuring the ICT strategy is in harmony with it, thus he sees the need for full integration. For the vice-President who has responsibility for both business planning and oversight of ICT planning, his view is that of reciprocal integration. For the Departmental Manager, the level of integration is seen as sequential, with IS planning following on from business planning. From the questionnaire, 8 respondents viewed integration as sequential, 5 as reciprocal, and the rest were not sure. Thus, it is an area where percepts differ, and in some cases it is not well understood. This apparent lack of consensus can be viewed in the light of a comment by an interviewee that:

This year we have taken a holistic integrated approach and we budget for all our initiatives together.

Thus the move toward greater integration is a new initiative. This is confirmed by another comment that:

For the first time a holistic plan has been drawn up.

A questionnaire respondent also noted

[The organization] is moving towards this (full integration).
4.5.2 Rational-Adaptation in SISP

In terms of rationality, the CIO noted that:

Before a decision is made not all the possible courses of action are necessarily examined, but risk management informs the planning and a lot of work goes into scoping.

This is an indication that the level of comprehensiveness in SISP is medium. He noted too that although no formal methodology was employed, planning methodologies and theoretical frameworks do inform the customized approach used. There is also a formal plan document produced. This gives an indication again of medium level formalisation. The flow was agreed to be top-down, but with a lot of bottom-up work done, a point noted by all three interviewees (top-down flow, with bottom-up interactions). In terms of focus, one interviewee pointed out that:

The primary focus of the strategic planning is not to control costs, but we strike a balance and we control costs whilst meeting the current and future need.

This corresponds to a medium-level control focus in planning. On the whole therefore the level of rationality can best be described as medium. This is confirmed by the questionnaire respondents who on average rated the rationality as 4.1 on a scale of 1 to 6. Only three respondents averaged less than 4 (indicating low levels of rationality in their opinion).

The level of adaptation was assessed by participation profile, and frequency of planning meetings. On both scores there was more or less unanimity from interviewees and questionnaire respondents that the participation profile is broad, and the frequency of planning meetings are high. As noted by an interviewee:

One of the key strengths of [the organisation] is putting people in place.

This is evidenced by the many committees, which aim to be as representative as possible. Only 3 of the 17 questionnaire respondents had averages of less than 4 for adaptation (indicating low levels in their opinion).

4.5.3 IT Managerial Resources

IT managerial resources were rated highly across both interviews and questionnaires, with the average from questionnaires being 4.7, on a scale of 1 to 6, and only 2 out of 17 respondents in disagreement with the quality of IT managerial resources. Interviewees noted the position of the CIO as being appropriate. His reporting to the vice-President is also positive for IT management, particularly as the vice President is also responsible for business planning. The experience of the CIO in the organisation was also mentioned as a positive, as well as the working relationship between CIO and vice President.

4.5.4 IT Implementation Success

IT implementation success was measured in terms of availability of web-based student administration systems, staff administration systems, on-line library services, web-based learning tools, teaching labs, and labs for student projects. Across the board there was agreement that the on-line library services were highly available, with the only limitation being bandwidth. Teaching labs were also rated available, but in some cases it was noted there were insufficient PCs for students. Labs for student projects were viewed as less available, although this is expected, since they are mainly provided for senior students and specialised programs. Web-based learning tools were rated as available, with the limitation being the lack of use by lecturers for their courses. Web-based student and staff administration systems were rated the least available, although it was noted that these were still under implementation. The questionnaire responses reflected the same trend as the interview responses, with overall availability averaging 4.2, and only on-line staff and student administration systems averaging less than 4 (insufficiently available).

4.5.5 Correlation Analysis

Using non-parametric statistics, it was possible to perform simple correlation analysis on the questionnaire data as shown in Table 1. This table shows how key variables in the study were statistically related. The abbreviations can be interpreted as follows:

- **Exp**: Respondents’ years of experience in the organization
- **Level**: Respondents’ job level
- **Plg**: Respondents’ years of strategic planning experience in the organization
- **Imp**: Perceived importance of strategic alignment
- **Res**: Perceptions of IT managerial resources
- **Integ**: Perception of BP-ISP integration
- **Impl**: Perceptions of IT implementation success
- **Rat**: Perceptions of rationality in SISP
- **Adap**: Perceptions of adaptation in SISP
- **Align**: Perception of organizational success in achieving alignment

Only the items in bold-italics in Table 1 were statistically significant. The closer the correlation coefficient is to 1, the stronger is the relationship. There was a strong positive correlation between IT managerial resources (Res), and IT implementation success (Imp), between managerial resources (Res) and adaptation in SISP (Adap), and between
managerial resources (Res) and alignment (Align). BP-ISP integration correlated strongly with adaptation in SISP (Adap), whilst both rationality (Rat), and adaptation (Adap) in SISP correlated with IT implementation success (Imp). Finally adaptation in SISP (Adap) correlated strongly with alignment (Align). There were some negative correlations between the demographic variables and IS planning characteristics. For instance, respondent experience in the organization (Exp) correlated negatively with perceptions of BP-ISP integration (Integ), and years of strategic planning experience correlated negatively with perceptions of rationality in SISP (Rat). Those with more planning experience (Exp) were also more negative about IT implementation success (Imp).

<table>
<thead>
<tr>
<th></th>
<th>Exp</th>
<th>Level</th>
<th>Plg</th>
<th>Imp</th>
<th>Res</th>
<th>Integ</th>
<th>Impl</th>
<th>Rat</th>
<th>Adap</th>
<th>Align</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exp</td>
<td>1.00</td>
<td>-0.28</td>
<td>0.43</td>
<td>-0.05</td>
<td>-0.08</td>
<td>-0.57</td>
<td>-0.09</td>
<td>-0.40</td>
<td>-0.25</td>
<td>-0.34</td>
</tr>
<tr>
<td>Level</td>
<td>1.00</td>
<td>-0.13</td>
<td>0.26</td>
<td>0.19</td>
<td>-0.04</td>
<td>0.14</td>
<td>0.05</td>
<td>0.34</td>
<td>0.32</td>
<td></td>
</tr>
<tr>
<td>Plg</td>
<td>1.00</td>
<td>0.01</td>
<td>0.26</td>
<td>-0.41</td>
<td>-0.34</td>
<td>-0.51</td>
<td>-0.84</td>
<td>-0.45</td>
<td>-0.16</td>
<td></td>
</tr>
<tr>
<td>Imp</td>
<td>1.00</td>
<td>0.22</td>
<td>0.41</td>
<td>-0.04</td>
<td>-0.10</td>
<td>0.28</td>
<td>0.14</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Res</td>
<td>1.00</td>
<td>0.53</td>
<td>0.59</td>
<td>0.32</td>
<td>0.79</td>
<td>0.71</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Integ</td>
<td>1.00</td>
<td>0.57</td>
<td>0.39</td>
<td>0.62</td>
<td>0.39</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Impl</td>
<td>1.00</td>
<td>0.52</td>
<td>0.72</td>
<td>0.25</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rat</td>
<td>1.00</td>
<td>0.48</td>
<td>0.25</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adap</td>
<td>1.00</td>
<td></td>
<td>0.59</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Align</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 1: Correlation Matrix (Highlighted factors significant at p < 0.05.)

5. DISCUSSION AND IMPLICATIONS

Whilst it is not possible to prove statistically the propositions with the qualitative data, it can be seen that the level of alignment corresponds with the aggregate levels of BP-ISP integration, Rational-adaptation in SISP, managerial resources, and IT implementation success – i.e., in all cases these are seen to be moderately successful, with room for improvement.

The interviewees were asked to rank the factors in order of their importance to alignment. The rank orders differed, probably again as a result of differences in position and responsibility of the three. The CIO saw BP-ISP integration and rational-adaptation in SISP as key. This is consistent with his position, as having overall responsibility for IT, and being eager to achieve alignment through better integration of appropriate planning processes with business. For the vice-President, IT managerial resources was the most important factor, followed by BP-ISP integration. His oversight role is shown in the importance attached to managerial resources for IT. The Departmental Manager rated rational-adaptation in SISP as most important followed by IT implementation success, which may be reflective of his position, and the importance attached to seeing tangible success in the form of implemented systems, aligned with business strategy.

Taken together, based on the interview responses, the most important factors were the planning concerns, BP-ISP integration and rational adaptation in SISP, followed by IT managerial resources and then IT implementation success. The importance of BP-ISP integration can be traced to the new holistic approach to planning in the organisation. Rational-adaptation is also seen as key, due to the fact that there is recognition of the need for a rational planning process, whilst at the same time accommodating the organisational culture of debate and managing by committee (adaptation). Furthermore, turbulence and uncertainty in the environment, necessitates a process that can adapt as required, for example through frequent meetings. As noted by the CIO:

If business strategy changes in one direction IT strategy has to change in the same direction.

The quality of IT managerial resources is generally perceived as good, and thus is having an impact on the level of alignment, with the new focus being on planning integration. IT implementation success is overall seen as least important, probably because the recent efforts at improving planning and management processes have not yet been fully realised in the currently implemented systems. Only once systems planned for under the new dispensation are realised will the full impact of IT implementation be felt.

Considering the statistical findings, factors correlating significantly with alignment included IT managerial resources, and adaptation in SISP. This finding once again underlines the importance of the social dimension to achieving alignment, as opposed to a techno-centric mindset, focused on IT and methodology. This is furthermore evidenced by IT implementation success and rationality having the lowest correlation with alignment. Overall, the statistical findings corroborate with the interview responses. The main difference is in the importance of BP-ISP integration, which is rated as highly important by the key executives, but is not significantly correlated with alignment based on questionnaire data. This can be attributed to the fact that planning integration is a recent endeavour, whose impact has not yet filtered through. Those with more years of experience in the organisation, for example, perceived the level of integration to be lower, and may have rated it based on their past experience, rather than the more recent efforts.
In terms of rational-adaptation in SISP, the statistical findings point to the greater importance of adaptation over rationality. This exonerates the CIO’s decision not to use a proprietary planning methodology without customisation, and is in harmony with the institutional culture of seeking broad participation, and having frequent committee meetings. Most of the interview responses to the rationality queries were also qualified. For example, the planning process is comprehensive, but not every possible course of action is examined, with risk management informing the process. In terms flow it is top-down, but with bottom-up considerations. The focus is not only on control of costs, but also on the consideration of innovative initiatives. Finally, plan outputs are formally documented, but no proprietary planning methodology is rigidly followed. The very strong negative correlation between respondent planning experience and rationality needs further investigation, however, as it indicates that those with the most planning experience rated rationality the lowest. Again, their ratings may have been based on past experience, rather than the most recent efforts.

Managerial resources and adaptation are strongly correlated, whilst both adaptation and rationality are correlated with IT implementation success. Successful IT implementation thus depends on a rational adaptive SISP process, supporting the Lederer and Salmela [1996] model. BP-ISP integration and adaptation are as expected also correlated. In order for there to be close integration between business planning and IS planning, broad representation from both business and IT is required in the planning processes.

In summary, the following can be said of the 4 propositions:

**Proposition 1** – BP-ISP integration is important to alignment, but higher levels of integration have only recently been sought, thus to many respondents, it is not yet a major factor of influence.

**Proposition 2** – Rational-adaptation in SISP is important to alignment, especially the adaptation dimension, due to the turbulent and dynamic business environment, and the organisational culture of managing by committee and consensus.

**Proposition 3** – Managerial resources are key to achieving alignment, as shown by the statistical data. There is evidence that the organisation has had some success in getting the right IT governance structures in place.

**Proposition 4** – IT implementation success is seen as least important to alignment. As noted by one interviewee:

There have been more failures than successes.

Furthermore, alignment is not simply success in implementing IT solutions, but in the matching of those IT solutions to business goals, objectives and strategies.

6. **LIMITATIONS AND FUTURE RESEARCH**

The paper has been focused on examining only one organisation, thus findings may have limited generalisability. They do however point to the importance of organisational context, and how that shapes which factors will be of most importance to alignment in a particular situation. Future research might perform multiple organisation case studies to aid generalisability, as comparative analysis can be done, in addition to analysis within an organisation.

Improvements can be made to the questionnaire design, with one respondent, for example, questioning whether availability of IT services is an appropriate measure of IT implementation success. Usage and appropriateness were suggested as additional considerations. The measure for frequency of planning meetings did not convey the need to consider frequency of meetings between planning cycles, and thus may have been interpreted as the frequency of meetings at the time of formulating plans for the next 3 years. Thus, this aspect of adaptation may not have been captured. One respondent was confused with the terminology of referring to the business, which has commercial connotations. Referring rather to the institution, which is more common in higher education would have assisted their understanding. Finally, a respondent pointed out that the difference between strategy and planning needed to be clearly delineated. The terms strategy formulation and strategic planning were viewed as synonymous by the researchers.

A further limitation has been the focus on the four factors of influence. This is consistent with the positivistic stance taken, but does point to an area of future research, whereby the case study can be undertaken by employing an interpretive research approach. A grounded theory stance, for example, might shed new light on alignment by identifying additional factors of influence and their interrelationships, in addition to or instead of the four identified from the literature.

Perceptual differences between the interview respondents were apparent with some factors. Thus, this is a fertile area for future research. Many studies have typically sought the opinions of the CIO specifically, with some also getting the view of the CEO [Teo and King 1997b; Burn and Szeto 2000]. Getting the views of line management provides another valid perspective. Alignment is a complex multi-faceted phenomenon that impacts on all member of an organisation. Thus, even if it is seen as successful by top management, this is meaningless if at the operational level, there is dissatisfaction with the realised level of alignment.

7. **CONCLUSION**

The case has demonstrated that although all four factors considered (BP-ISP integration, rational-adaptation in SISP, managerial resources and IT implementation success respectively) have some influence on alignment, their relative importance varies, depending on the organisational context, the point in time at which the assessment is made, and whose perceptions are being sought.
In this case, a new managerial structure had been put in place, with appropriate positioning of the CIO and reporting relationship to the vice-President. Thus, IT managerial resources were broadly viewed as key to the current state of alignment. A high level of adaptation in SISP was consistent with the institutional culture of managing by committee, and achieving consensus, thus the importance of this factor. The differing perceptions on the level of BP-ISP integration, and its importance to alignment is explained by the fact that holistic planning was a new endeavour, which had only just been attempted in the most recent planning cycle. Finally, the findings demonstrate that IT implementation success by itself does not guarantee alignment – only those IT systems that match business goals and strategies, or those that create new strategies and direction. Over time, as IT identified in the current planning cycle are implemented, they should begin to influence alignment positively, depending on whether the assumptions upon which they were based are still valid [Baker 1995]. Changes in the environment sometimes make these obsolete, thus the necessity for business and IT strategies to be continually adjusted to maintain alignment. For now South African higher education institutions must grapple with issues of transformation, mergers, and new identities. Aligning business and IT strategies in this environment would be assisted by enhancing integration between business and IS planning, ensuring rationality and adaptation in SISP, enhancing IT managerial resources, and ensuring IT implementation success.

REFERENCES


Chan Y. 2002. Why haven’t we mastered alignment? The importance of the informal organization structure. MIS Quarterly Executive 1, 2, 95-110.


Reich, B. and Benbasat, I. 1996. Measuring the linkage between business and information technology objectives. MIS Quarterly, 20, 1, 55-78.

Reich, B. and Benbasat, I. 2000. Factors that influence the social component of alignment between business and information technology objectives. MIS Quarterly, 24, 1, 81-113.


APPENDIX KEY QUESTIONNAIRE ITEMS

Demographic Questions
1. For how many years have you been working in this university?
2. What is your current job title?
3. For how many years have you been involved with strategic planning for this university?

Alignment
1. Do you think that matching of business and information technology strategies is vital for the long-term survival of the university now and in the next 3 years (Scale of 1 to 6)?
   – Now
   – In the next 3 years
2. Please indicate how you would rate the success in strategic alignment as it relates to this university? (Scale of 1 to 6).

IT Managerial Resources
Please indicate the extent to which you agree with each of the following statements as it relates to your organization (Scale of 1 to 6):
1. Senior management champions IS initiatives and implementations.
2. Line executives are committed to IS initiatives.
3. The senior IS executive is knowledgeable of the business and is able to identify and plan for future challenges.
4. IT and business executives respect each other’s unique contribution and challenges.
5. There is a close working relationship between IT and business.
6. The head of ICT service is adequately positioned in the organization.

BP-ISP Integration
Please indicate the description that mostly fits your current business planning and information systems planning:
1. Administrative Integration
2. Sequential Integration
3. Reciprocal Integration
4. Full Integration

IT Implementation Success
Please rate the availability of each of the following IS services in your institution using the scale of highly available to highly unavailable (Scale of 1 to 6).
1. Web-based Student Administrative Systems.
2. On-line Staff Administrative Systems.
3. On-line library services.
5. Computer labs for student instructions.
6. Computer facilities for student projects.

SISP Approach
Please indicate the extent to which you agree with each of the following statements as it relates to the university’s strategic planning approach (Scale of 1 to 6):
1. We attempt to be exhaustive in gathering information relevant for IS initiatives.
2. The process and outputs of the strategic planning process are formally documented.
3. Our strategic planning process is focused on controlling costs.
4. Strategic planning for IS is initiated at the highest levels of the organization.
5. A variety of functional area managers participate in the process of IS planning.
6. We frequently schedule face-to-face meeting to discuss strategic planning.