A comparison of the views of business and IT management on success factors for strategic alignment

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Abstract

This paper reports on a study to determine whether there are any significant differences in perspectives of IT and business managers on what factors contribute to successful strategic alignment using Henderson and Venkatraman’s strategic alignment model as its framework. A general survey was undertaken over a range of industries and results indicated that the two perspectives were largely equivalent, except for their overall perception of the factors that contributed to success in strategic alignment. However, detailed case studies on container terminal operators showed very different patterns; this suggested that successful alignment of IT in industries which are highly IT-dependent would require very different perspectives of both IT and business managers although these are still convergent within the organisation. © 2000 Elsevier Science B.V. All rights reserved.

Keywords: Strategic alignment; Information technology management; Strategic perspectives; Container terminal industry

1. Introduction

The complexities of achieving business success through increased efficiency, effectiveness, and competitiveness, combined with innovative applications of IT, has heightened the awareness of both IT and business managers towards more strategically oriented approaches for planning and management [10,15]. In particular the need to align business and IT planning has been emphasised as both critically important and increasingly problematic [1–3,11]. This paper reports on a study to determine significant differences in perspectives of IT and business managers in assessing strategic alignment with business goals. The study uses the Henderson and Venkatraman [8,9] strategic alignment model. The study ranged over several industries and indicated that the management perspectives were largely equivalent. However, significant differences were found between industries. The conclusion of this analysis is that strategic alignment varies primarily in relation to the nature of industry and/or its dependence on IT.

2. Strategic alignment model

The Henderson and Venkatraman Strategic Alignment Model implies that effective and efficient
utilisation of IT requires the alignment of IT and business strategies. This reflects the view that business success depends on the linkage of business strategy, IT strategy, organizational infrastructure and processes, and IT infrastructure and processes. Fig. 1 shows the model. It has two building blocks. Strategic integration recognizes the need for any strategy to address both external and internal domains. This emphasizes the need to make choices that position the enterprise in an external marketplace and decide how to structure internal factors to execute a market-positioning strategy. These choices are the business strategy, and the organizational infrastructure and processes. Performance of the enterprise is defined by the extent to which these two strategies are consistent. Using IT to enhance these choices provides the opportunity for strategic advantage.

Functional integration, or cross-domain alignment, on the other hand, refers to the fit between external positioning and the internal domain. As business strategies change, IT strategies and processes must keep pace. It is in such situations that different functional relationships are defined. Effective positioning of the firm in the technology market is crucial to its ability to adapt and effectively leverage technology. Functional integration gives IT the opportunity to provide competitive advantage [14,15].

This research study assumes that effective alignment of IT and business strategies can be attained by means of strategic information systems planning (SISP). Thus, the study attempts to identify factors that contribute to successful alignment. By coordinating the objectives and views of IT and business managers, it is assumed that companies can outperform those without such alignment. Table 1 shows the four perspectives of the model and the associated performance criteria. Using these, one can identify the factors that should be considered by management in accomplishing effective strategic alignment of IT and business strategies. This has been extensively evaluated by Chan and Huff [5] to provide guidance to managers.

3. Methodological considerations

The study involved a two-stage investigation. The first was based on a survey that attempted to identify
the factors which impacted on managers during the strategic alignment process. The sample population was CEOs and CIOs, or their equivalent in the organisation, and the questionnaire asked respondents to reflect their views of the way in which their strategic alignment was conducted. This allowed us to analyze the strategic perspectives and then match them to those in the table, thereby allowing us to classify their strategic approaches and contrast the groups. This had previously been recognised as a ‘culture gap’ in the study by Galliers et al. [7] on critical issues in IS management.

Stage 2 of the investigation was based on interviews and selected a specific industry group that reflected a high degree of success in strategic alignment. These were then compared with the general survey results to see whether there were significant differences in perspectives. Such a mixed approach has been strongly supported in the research literature [6,12].

In designing the questionnaire (shown as Appendix A), the following assumptions were made:

1. All companies will perform planning, albeit short- or long-term, formal or informal.
2. All companies will have separate general and IT management members.
3. All companies will have experience in computers and IS regardless of the size and capacity of their IT.
4. The population of IT and business managers are normally, or approximately normally, distributed.
5. All observations in these two samples are independent in nature.

There are four perspectives of strategy alignment: strategy execution, technology transformation, competitive potential and service level. The questionnaire was generated on an assumption of these four. Questions from both Galliers’ survey as well as Henderson and Venkatraman’s strategic alignment model were combined. The questionnaire adhered to the logical steps of strategic planning and implementation starting with motives, objectives, and expectation of strategic planners. It then shifted focus to strategic management styles, roles of management and performance measurement, and finally the problems and key success factors. By guiding the respondents through a common strategic management process, the accuracy and reliability of the survey results should be improved.

Basically, questions 1–19 in the questionnaire were directly adopted from Section A of Galliers’ survey with modification to suit the local environment. In his Section B, key IS management issues were incorporated into the final section of the research questionnaire. Questions 26, 27, 28, 29 and 31 are derived from Henderson and Venkatraman’s strategic alignment model. In Question 26, the first two options referred to business strategy as driver, whereas the two following options refer to IT strategy as driver. In Question 27, each of the options represented the role of top management, as strategy formulator, technology visionary, business visionary, or prioritizer; in Question 28, each of the options represented the role of IS management, as strategy implementor, technology architect, catalyst or executive leadership; performance criteria in Question 29 were broken down into options including cost/service centre, technology leadership, business leadership and customer satisfaction; the options in Question 31 refer to the focus of IT strategy, management objectives, IS roles, as well as criteria for assessment. Actually, these provide the vital answers for subsequent analysis because they allow a comparison of the viewpoints between IT and business managers to see whether there is any alignment of strategies and how successful this alignment could be. All the other questions were created from concepts in the literature on strategic alignment, IS planning, business strategic management, or corporate strategy formulation.

<table>
<thead>
<tr>
<th>Perspectives</th>
<th>Driver</th>
<th>Role of top management</th>
<th>Role of IS management</th>
<th>Performance criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strategy execution</td>
<td>Business strategy</td>
<td>Strategy formulator</td>
<td>Strategy implementor</td>
<td>Cost/Service centre</td>
</tr>
<tr>
<td>Technology transformation</td>
<td>Business strategy</td>
<td>Technology visionary</td>
<td>Technology architect</td>
<td>Technology leadership</td>
</tr>
<tr>
<td>Competitive potential</td>
<td>IT strategy</td>
<td>Business visionary</td>
<td>Catalyst</td>
<td>Business leadership</td>
</tr>
<tr>
<td>Service level</td>
<td>IT strategy</td>
<td>Prioritizer</td>
<td>Executive leadership</td>
<td>Customer satisfaction</td>
</tr>
</tbody>
</table>

Table 1
The four perspectives of strategic alignment (adapted from Henderson and Venkatraman, 1993)
A pilot test was made on five companies in the banking, insurance, and manufacturing industries. All suggestions and recommendations collected in this phase were incorporated into the final version questionnaire for use in the subsequent full-scale survey.

Four hundred questionnaires were sent out and a total of 93 replies (22.4%) were received. However, five of them were incomplete and later discarded. The response rate of around 21.2 percent is fairly typical for this type of study. Table 2 shows the breakdown of respondents by industries.

Most of the respondents who fell in the ‘Other Industries’ category were in government or quasi-government organizations. They accounted for 47 percent in the survey. The profile of respondents represented a neutral mix of both profit-oriented and not-for-profit organizations. Organisations with 19 or less employees were classified as small, 20–299 as medium, and 300+ as large. 10 percent fell into small, 42 percent into medium, and the remainder into large categories. At a personal level the respondents had high academic qualifications, but 44% of the IT managers held a business-related first or second degree with only 37 percent holding formal IT qualifications. No business manager held a first degree in IT compared to 71 percent holding a business degree. 23 percent of the total population held post-graduate qualifications.

### 4. The survey results

The first analysis compared the perception of critical IS management issues as reported by Burn and Szeto [4]. The findings questioned the conclusion of Galliers et al. that IT and business managers view the issues differently and consider them of different importance. While there were differences, these were
insignificant, except in views of future issues. However, business managers were much more concerned with operational issues than their IT counterparts—a result which does not concur with Galliers et al.

The second analysis focussed on strategic alignment and twelve hypotheses were constructed based on the strategic alignment model (all but Hypothesis 11 were proven correct), as follows:

**Hypothesis 1:** Perspectives of IT and business managers differ with respect to their motivation for alignment.

Four motivators were considered: top management requirements, business/market requirements, competitive requirements, and others specified by respondents.

**Hypothesis 2:** Perspectives of IT and business managers differ with respect to the success of alignment as a planning strategy.

Five outcomes were considered: failure, some benefits but not necessarily resulting from alignment, better than not doing it, successful but can improve, highly successful.

**Hypothesis 3:** IT and business managers have different perspectives about their company's objectives in striving for alignment.

Six objectives were compared: match IS capabilities with business needs, seek competitive advantage from IT, gain top management commitment, forecast IT resources requirements, establish technology path and policies, others specified by respondents.

**Hypothesis 4:** The perspective of IT and business managers are different with respect to the expected benefits of alignment.

Eight expected benefits were compared: deliver product or service at lower costs, rapid response to the dynamic and volatile business environment, create new products or services, penetrate more deeply into a specific market segment, improve quality of managerial decision making, increase operational efficiency and productivity, effective utilization of IT resources to support company operations, others specified by respondents.

**Hypothesis 5:** IT and business managers will perceive different drawbacks from the implementation of an alignment strategy.

Five negative outcomes were ranked: greater expenditure on IS and their personnel, threaten status quo of top management in the shift of focus from monetary goals to technology goals, adaptation problems created when changing business practices and organization structure to secure alignment, pressure on functional departments to re-design their business processes for improved efficiency and effectiveness, others specified by respondents.

**Hypothesis 6:** Perspective of IT and business managers is different with respect to the goals of corporate strategy.

Six corporate goals were considered: sales growth, return on investment, market share, cash flow, customer satisfaction, others specified by respondents.

**Hypothesis 7:** Perspective of IT and business managers is different with respect to their company's approach to strategic management.

Five approaches were considered: maximize investment on IT resources by means of existing infrastructure, implement chosen business strategies through appropriate IT strategies, develop new products/services by exploration of IT capabilities, stimulate customer demand by building up leadership in IT, others specified by respondents. Respondents were also asked to relate these to the four perspectives of the role of top management in the strategic alignment model, namely, (a) strategy execution, (b) technology transformation, (c) competitive potential and (d) service level. This was used to identify whether managers perceived the driver of alignment to be business strategy or IT strategy.

**Hypothesis 8:** Perspectives of IT and business managers differ with respect to the roles that top management should play in strategy formulation.

Five roles were considered: articulate options pertaining to business strategy, provide technology vision which best support chosen business strategy, articulate the impact of IT capabilities on chosen business strategy, find the best way to allocate the resources within the organization, and others specified by respondents. Respondents were again asked to relate these to the four perspectives of the role of top management. This was used to compare their perceived roles for top management against those roles which they self-selected and with which they identified: strategy formulator, technology visionary, business visionary, or prioritizer.

**Hypothesis 9:** Perspective of IT and business managers are different with respect to the role of IT management in strategy formulation.
Five roles were compared: design and implement required organization structure to support chosen strategy, design and implement required IT structure to support the IT vision, identify trends in IT to help business manager to understand the potential opportunities and threats for the company, lead the IT function to achieve the strategic goals of top management, and others specified by respondents. As with the previous hypotheses, this was compared against the four perspectives of the role of IT management and related to their view of the role of IT management as strategy implementor, technology architect, catalyst, or executive leadership.

**Hypothesis 10: Perspective of IT and business managers are different with respect to the factors which should be used in measurement of strategy execution.**

Four measurements: costs and benefits, technology leadership, business leadership in terms of market share, growth, and new product introduction, and customer satisfaction. These were again related to the four perspectives of role of IT management to determine the focus that they would use for self-measurement of performance criteria: cost/service centre, technology leadership, business leadership, or customer satisfaction.

**Hypothesis 11: Perspective of IT and business managers are different with respect to the problems which they encounter in developing strategic alignment.**

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>IT Size n</th>
<th>Manager Variance s1</th>
<th>Business Size m</th>
<th>Manager Variance s2</th>
<th>F Scores</th>
<th>F &gt;=0.05</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Motives to alignment</td>
<td>54</td>
<td>42.6</td>
<td>34</td>
<td>28.1</td>
<td>1.52</td>
<td>1.94</td>
</tr>
<tr>
<td>2. Results of alignment</td>
<td>54</td>
<td>19.3</td>
<td>34</td>
<td>12.0</td>
<td>1.61</td>
<td>1.94</td>
</tr>
<tr>
<td>3. Objectives of alignment</td>
<td>54</td>
<td>56.2</td>
<td>34</td>
<td>34.4</td>
<td>1.63</td>
<td>1.94</td>
</tr>
<tr>
<td>4. Benefits of alignment</td>
<td>54</td>
<td>111.5</td>
<td>34</td>
<td>64.6</td>
<td>1.72</td>
<td>1.94</td>
</tr>
<tr>
<td>5. Drawback of alignment</td>
<td>54</td>
<td>45.7</td>
<td>34</td>
<td>30.0</td>
<td>1.52</td>
<td>1.94</td>
</tr>
<tr>
<td>6. Corporate goals</td>
<td>54</td>
<td>14.9</td>
<td>34</td>
<td>8.5</td>
<td>1.76</td>
<td>1.94</td>
</tr>
<tr>
<td>7. Approach to strategic mgt</td>
<td>54</td>
<td>16.8</td>
<td>34</td>
<td>10.7</td>
<td>1.58</td>
<td>1.94</td>
</tr>
<tr>
<td>8. Roles of top management</td>
<td>54</td>
<td>14.9</td>
<td>34</td>
<td>10.9</td>
<td>1.36</td>
<td>1.94</td>
</tr>
<tr>
<td>9. Roles of IT management</td>
<td>54</td>
<td>11.9</td>
<td>34</td>
<td>8.5</td>
<td>1.41</td>
<td>1.94</td>
</tr>
<tr>
<td>10. Measuring of strategy</td>
<td>54</td>
<td>30.6</td>
<td>34</td>
<td>16.6</td>
<td>1.84</td>
<td>1.94</td>
</tr>
<tr>
<td>11. Problems in alignment</td>
<td>54</td>
<td>36.2</td>
<td>34</td>
<td>17.5</td>
<td>2.07</td>
<td>1.94</td>
</tr>
<tr>
<td>12. Key success factors</td>
<td>54</td>
<td>33.1</td>
<td>34</td>
<td>22.8</td>
<td>1.45</td>
<td>1.94</td>
</tr>
</tbody>
</table>
Eight contributing factors were evaluated: top management commitment and participation in the process, changes in business practices and organization structure, shortage of qualified information systems personnel, estimate the funding levels for IT, reluctance to accept IT as a line instead of staff function, lack of understanding of IT potential by top management, lack of shared vision on business strategies, and others specified by respondents.

Hypothesis 12: Perspective of IT and business managers are different with respect to the key success factors in achieving strategic alignment.

Five KSFs were considered: match the internal IS function and organization with external marketplace, top management selects appropriate alignment approach to accomplish business objectives, IS and business executives must take multiple line and staff roles, multiple criteria must be used in assessing strategy performance, and others specified by respondents.

In order to test the validity of these twelve hypotheses, a two-tailed $F$-test was applied at an 0.05 level of significance. The summary of test results is shown in Table 3. As can be seen, only Hypothesis 11 shows a difference sufficient to reject the null hypothesis.

For Hypothesis 11, the test score ($F = 2.07$) is slightly greater than the $F$ ratio. Therefore, the null hypothesis that IT managers and business managers have the same perspective with regard to the problems encountered in arriving at strategic alignment is rejected. Business managers consider that top management commitment is very important, while IT managers think that lack of understanding of IT potential is a real problem. This divergence in views may reflect the differences in functional background of each group of managers.

The pattern of perspective of IT and business management on strategic alignment is indicated in Table 4. Overall, the survey result indicates that the perspectives of IT managers and business managers are remarkably consistent with both groups selecting Technology Transformation as their overall

<table>
<thead>
<tr>
<th>Alignment Perspectives</th>
<th>Role of Top Management</th>
<th>Role of IS Management</th>
<th>Performance Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Technology transformation</td>
<td>Business % strategy &amp; technology visionary</td>
<td>Technology architect</td>
<td>Technology leadership</td>
</tr>
<tr>
<td>3. Competitive potential</td>
<td>IT strategy</td>
<td>Business visionary</td>
<td>Catalyst</td>
</tr>
<tr>
<td>4. Service Level</td>
<td>IT strategy</td>
<td>Prioritizer % &amp;</td>
<td>Executive % leadership &amp;</td>
</tr>
</tbody>
</table>

Remarks: % represents IT managers’ choices in survey
& represents business managers’ choices in survey
perspective and Business Strategy as the driver. However, their roles are seen to be within the Service Level perspective for both business and IT managers and their performance measurement criteria accord with the Strategic Execution perspective. One interpretation of this is that the strategic alignment model does not accord with reality despite extensive validation of the model in the Chan and Huff study. The alternative is to imply a somewhat confused view of what managers would like to be doing compared to the way in which they appear to implement it.

Applying the strategic alignment model, we found that there was:

- Convergence of views in 11 of 12 hypotheses
  This would imply that IT and business managers have similar perceptions with regard to the drivers, need for, and appreciation of alignment principles between business and IT strategies.
- A divergence of view in Hypothesis 11, where they perceive different problems in implementing the alignment of business and IT strategies
  This would imply that if the problems are seen to be different, then the issues would also be different, maybe, therefore that some relevant issues have not been included.
- A consistent pattern of strategic alignment that represented a mix of perspectives and drivers
  This lends support to the argument that the theoretical model is not supported in practical implementation. To explore these issues further an in-depth case analysis was performed on the container terminal operator industry (CTOs), since they were found to be very successful in their strategic alignment.

5. Case studies on container terminal operators (CTOs)

The CTOs are of paramount importance to the HK economy. The port is the world’s number one container port, with a reported TEU (20 ft Equivalent Units, a more precise way of measuring cargo stock than by tonnage) greater than any other port in the world, 13 million in 1997 yet occupying the smallest space.

Its environment is indeed unique. Unlike other major ports in the world, there are no railway or airport links. Surrounded by a densely populated residential area, the Kwai Chung container port has very little space to expand for increasing trade to the territory. Four companies currently operate the terminals at the Container Port. They are Hong Kong International Terminals Ltd (HIT), Modern Terminal Ltd (MTL), Sea-Land Orient Terminals Ltd, and COSCO-HIT Terminals (Hong Kong) Ltd (CHT). For air cargo transportation, Hong Kong Air Cargo Terminals Ltd (HKACTL) is the only service provider. Answers to the survey were received from HIT, MTL and HKACTL. As HKACTL could be considered to have rather different strategies we decided to perform detailed studies on HIT and MTL as CTOs for sea transport. HIT is the biggest volume independent container terminal operator world-wide. This company handled over 3.5 million TEU in 1993, almost double that of its nearest rival. MTL handled 1.7 million TEU whereas Sea-Land processed 0.7 million TEU. Since HIT and MTL occupy nearly 90 percent of the total market share, an in depth case study was conducted on these two firms.

The case studies were conducted through structured interviews. Requests were sent to obtain interviews with the managers who had completed the mail survey. As a reminder, the survey was sent to them again 2 weeks before interviews were to be held. The interviews were then conducted separately and each lasted between 1 1/2 and 2 h. At these interviews further names were obtained of two senior operational managers and they were interviewed separately within a 6–8-week period.

The perspectives of IT and business management on strategic alignment in CTOs are summarized in Table 5.

Once again there is remarkable convergence of views between the two management groups; the only divergence is in the measurement of strategy execution. The IT managers take a Competitive Potential perspective and emphasize ‘Business Leadership’, while business managers take a Service Level perspective and focus on ‘Customer Satisfaction’ as vital performance criteria. Both groups have consensus on all the other perspectives. In Table 6, the research findings are consolidated from the general survey with CTOs. The results show a clear difference between the
Table 5
The perspectives of strategic alignment in CTOs

<table>
<thead>
<tr>
<th>Alignment Perspectives</th>
<th>Driver</th>
<th>Role of Top Management</th>
<th>Role of IS Management</th>
<th>Performance Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Technology transformation</td>
<td>Business * strategy *</td>
<td>Technology * visionary *</td>
<td>Technology architect</td>
<td>Technology leadership</td>
</tr>
<tr>
<td>3. Competitive potential</td>
<td>IT strategy</td>
<td>Business visionary</td>
<td>Catalyst * #</td>
<td>Business * leadership</td>
</tr>
<tr>
<td>4. Service Level</td>
<td>IT strategy</td>
<td>Prioritizer</td>
<td>Executive leadership</td>
<td>Customer # satisfaction</td>
</tr>
</tbody>
</table>

Remarks:
* represents IT managers’ choice
# represents business managers’ choice

Table 6
The comparison of perspectives of strategic alignment for all respondents against CTOs

<table>
<thead>
<tr>
<th>Alignment Perspectives</th>
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<td>4. Service Level</td>
<td>IT strategy</td>
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<td>Executive % leadership &amp;</td>
<td>Customer # satisfaction</td>
</tr>
</tbody>
</table>

Remarks:
* represents IT managers' choices in CTOs
two groups. In the general survey top management is the ‘Prioritizer’ that must find the best way to allocate resources within the organization. The role of top management for CTOs, however, is ‘Technology Visionary’, because they depend heavily on IT for organization growth. If their computer system goes down, the organization cannot function. The role of IS management in the survey falls within the service level perspective; they lead the IT function to achieve the strategic goals of top management. Hence, they provide ‘Executive Leadership’. In CTOs, the role of IS management takes a competitive potential perspective and IT people act as a ‘Catalyst’, from the interviews, IS management in CTOs have formal mechanisms to coordinate with top management in order to adopt the latest IT into their daily operations. For CTOs, competitive advantage is directly related to the degree of computerization.

With respect to strategy execution, ‘Costs/Service Centre’ is the most important concern in the general survey. For CTOs, ‘Business Leadership’ and ‘Customer Satisfaction’ are the most vital. This reflects the huge investment in IT necessary to be the leader in the container business. For example, all container port operators have developed their own EDI systems to link up with shipping companies [13]. Such systems provide competitive advantage as well as attracting more customers and helping to retain existing ones.

6. Conclusions

From the statistical tests, one can conclude that there was no significant difference in the perspectives of business and IT managers with regard to strategic alignment. The one slight difference was in the area of problems of alignment.

1. Both groups indicate that ‘Business Strategy’ is the driver for strategic alignment.
2. Both groups think that the role of top management should be ‘Prioritizer’, to find the best way to allocate the resources within the organization.
3. Both groups think that the role of IS management should be ‘Executive Leadership’, to lead the IT function to achieve the strategic goals.
4. Both groups think that the performance criteria for strategy execution should be based on ‘Cost/Service Centre’, to measure costs and benefits.

These perspectives, however, have to be matched with the perspectives within organisations. Only 50 percent of the business managers and 60 percent of the IS managers indicated that the matching of business and IT strategies in their companies was either successful or highly successful. While few indicated that they had a failure in linking business and IT strategies, there were still several in the ‘better than not doing anything at all’ group. The key success factors in business and IT strategy linkage (Hypothesis 12) were identified as:

- top management selection of appropriate alignment approach to accomplish business objectives (40% in IT managers group, 35% in business managers group)
- matching the internal IS with external market (21% in IT managers group, 26% in business managers group).

When a selected group of ‘highly successful’ organisations in one industry (CTOs) was examined the pattern of perspective alignment was quite different. This could suggest that:

- to be successful innovators or exploiters of IT, management need to have a focus on different issues.
- becoming successful through application of IT changes the view of both IT and business managers.

They had to realign not merely their IT strategy, but also their business strategy and to maintain close alignment between the two.

The results of this study suggest that industry-specific guidelines should be developed and further that people should audit where they currently are with regard to IT dependency. Companies who see future strategy becoming technology-dependent require to change their emphasis to that adopted by the leaders in the technology driven industries and concentrate on technology transformation and competitive potential.
Appendix A. Survey of strategic alignment of IT and business strategies

A.1. Aim of the survey

The aim of this study is to compare and contrast the views and attitudes of both business and information technology managers in Hong Kong toward the formulation of corporate strategies. The survey will not merely gather useful data for the understanding of their strategic orientation but also provide in depth insight into their current practices. Furthermore, it will provide us with the basis to develop a model for the effective alignment of business and information technology strategies to gain competitive advantage. The questionnaire contains two sections:

Section 1 asks questions about you, your company and IS/IT function.
Section 2 asks you to select the areas of concern in the matching of corporate strategies.
Section 3 asks you to rate the information systems issues currently and in next 5 years.

Please indicate your answer with a tick (√) or by writing in the spaces provided. Do attempt to answer all questions, but if you are in doubt about any, please skip to the next question.

Please attempt to answer all questions, but if you are in doubt about any, please pass on to the next question.

SECTION 1 Personal and Company Information
(Please indicate your answer with a tick or by writing in the spaces provided.)

I. Personal details

1. Do you hold any formal qualifications or professional membership?
   If so, please provide brief details:
   Business/Management [ ]
   IT related [ ]
   Other [ ]

2. What is the job title of the person to whom you report directly:

3. How many reporting levels between yourself and the Chief Executive:
   Direct link [ ]
   One level between yourself and C.E. [ ]
   Two levels [ ]
   Three Levels or more [ ]

4. Does your operational unit have responsibility:
   Corporate-wide [ ]
   To a function (finance etc.) [ ]
   To a business unit (product/customer) [ ]
   Other (please specify) [ ]

II. Company Details

5. What is your company’s name and sector of industry:
   Company name [ ]
   (Please tick one only)
   Import/export [ ]
   Wholesale/retail [ ]
   Finance, insurance, banking [ ]
   Transport, travel, communication [ ]
   Other (please specify) [ ]

6. How many employees does your company have in Hong Kong:
   0–19 [ ]
   100–299 [ ]
   >500 [ ]
   20 – 99 [ ]
   300 – 500 [ ]
7 What was the annual turnover of your company in 1992 (in million HK$):
<1 m [ ] 1–9 m [ ]
10–99 m [ ] 100–1000 m [ ]
>1000 m [ ]

8 Is your company’s entire operation based:
Local [ ] Regional [ ]
International [ ]

9 Which of the following would most closely describe control in your company:
(Please tick one in each pair only)
[ ] Centralized or [ ] Decentralized
[ ] Hierarchical or [ ] Flat
[ ] Cross-functional or [ ] Divisional/functional
Other (please specify)

10 Which would generally describe the management style of your company:
Authoritative, formal procedures and rules [ ]
Consultative, few rules, responsible autonomy [ ]
Democratic, cooperative, group based decision making [ ]
Other (please specify)

III. Information systems/technology
(Please proceed directly to Section 2 if you have a non-IT executive responsibility.)

11 What was your company’s total annual expenditure on information systems/technology in 1992 (in million HK$):
<0.5 m [ ] 0.5–1 m [ ]
2–4 m [ ] 5–10 m [ ]
>10 m [ ]

12 Who does the IS/IT function report to:
Chief Executive [ ] Management Services [ ]
Administration [ ] Finance [ ]
Marketing [ ] Manufacturing/operations [ ]
Other (please specify)

13 Which of the following would most closely describe the structure of the IS/IT function:
Centralized, controlled fully by headquarters [ ]
Centralized, organized from centre, some input from other units [ ]
Decentralized, guidelines from centre, primary input from other units [ ]
Decentralized, controlled fully by other units [ ]

14 Does your company have an IS/IT strategy: (Please tick one or more)
No [ ]
Yes, Corporate-Wide [ ]
Yes, Business Unit-based [ ]
Yes, Other (please specify)
If yes, what is the focus of this strategy: (Please tick one or more)

<table>
<thead>
<tr>
<th>Corporate</th>
<th>Business unit</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hardware, software acquisition</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>IT audit</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>Integration with business strategy</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>IS for competitive advantage</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>Strategic alliances (include inter-organizational systems)</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
</tbody>
</table>

Other (please specify)

15 Which of the following IS/IT roles is undertaken by your company:
(Please tick one or more)

<table>
<thead>
<tr>
<th>Role</th>
<th>In House</th>
<th>Outsourced</th>
<th>Non</th>
</tr>
</thead>
<tbody>
<tr>
<td>Software development</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>User support</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>Database specialties</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>Network specialties</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>Business analysis</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>Project management</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>Other (please specify)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

16 Which of the following areas are covered by your IS/IT applications:
(Please tick one or more)

<table>
<thead>
<tr>
<th>Area</th>
<th>Operational</th>
<th>Tactical</th>
<th>Strategic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Finance</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>Marketing/Sales</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>Human Resources</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>Administration</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>Management</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>Future Development</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
</tbody>
</table>

Section 2 Alignment of business and IT strategies

17 In the next 3–5 years, which would most closely describe your company
(Please tick one in each pair only)

<table>
<thead>
<tr>
<th>Description</th>
<th>Expansion (sales, market share)</th>
<th>Expansion (staff)</th>
<th>Acquisitions</th>
<th>Concentration (product/services)</th>
<th>In-house IS development</th>
<th>Contraction</th>
<th>Downsizing</th>
<th>Divestment</th>
<th>Diversification</th>
<th>Outsourcing IS development</th>
</tr>
</thead>
<tbody>
<tr>
<td>[ ]</td>
<td>or [ ]</td>
<td>or [ ]</td>
<td>or [ ]</td>
<td>or [ ]</td>
<td>or [ ]</td>
<td>or [ ]</td>
<td>or [ ]</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

18 Who do you think that the IS/IT function should report to:

<table>
<thead>
<tr>
<th>Role</th>
<th>Management Services</th>
<th>Finance</th>
<th>Manufacturing/Operations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chief Executive</td>
<td>[ ]</td>
<td>Management Services</td>
<td>[ ]</td>
</tr>
<tr>
<td>Administration</td>
<td>[ ]</td>
<td>Finance</td>
<td>[ ]</td>
</tr>
<tr>
<td>Marketing</td>
<td>[ ]</td>
<td>Manufacturing/Operations</td>
<td>[ ]</td>
</tr>
</tbody>
</table>

Other (please specify)
If different from current reporting channel, please explain reasons for change:
19. Do you think that matching of business and information technology strategies is vital for the long-term survival of a company now and in the next 3 years:
(Please circle one of the digits with 1 being most important and 5 most unimportant)

<table>
<thead>
<tr>
<th>Now</th>
<th>Next 3 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>Unimportant</td>
<td>Important</td>
</tr>
<tr>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>

20. What motivates your company to link IS/IT strategy with business strategy:
(Please tick one or more)
- Top management requirements [ ]
- Business/market requirements [ ]
- Competitive requirements [ ]
- Other (please specify)

21. If your company does match business and IT strategies, how successful has it been:
(Please tick one only)
- Failure [ ]
- Some benefits but didn’t need matching to achieve them [ ]
- Better than not doing it [ ]
- Successful but can improve [ ]
- Highly successful [ ]

22. What are your company’s objectives in the linkage of business and IT strategies:
(Please tick one or more)
- Match information systems capabilities with business needs [ ]
- Seek competitive advantage from IT [ ]
- Gain top management commitment [ ]
- Forecast IS resource requirements [ ]
- Establish technology path and policies [ ]
- Other (please specify)

23. What benefits do you expect from the linkage of business and IT strategies:
(Please tick one or more)
- Deliver product or service at lower cost [ ]
- Rapid response to the dynamic and volatile business environment [ ]
- Create new products or services [ ]
- Penetrate more deeply into a specific market segment [ ]
- Improved quality of managerial decision making [ ]
- Increase operational efficiency and productivity [ ]
- Effective utilization of IT resources to support company operations [ ]
- Other (please specify)

24. What drawbacks do you expect from the linkage of business and IT strategies:
(Please tick one or more)
- Greater expenditure on information systems and their personnel [ ]
- Threaten status quo of top management in the shift of focus from monetary goals to technology goals [ ]
Create adaptation problems when changing business practices and organization structure in alignment [ ]
Create pressure on functional departments to re-design their business processes for improved efficiency and effectiveness [ ]
Other (please specify)

25 What is the major goal in your company’s corporate strategy:
(Please tick one only)
 Sales growth [ ]
 Return on investment [ ]
 Market share [ ]
 Cash flow [ ]
 Customer satisfaction [ ]
 Other (please specify) [ ]

26 How do you describe your company’s approach to strategic management with respecto IT
(Please tick one only)
 Maximize investment on IT resources by means of existing infrastructure [ ]
 Implement chosen business strategies through appropriate IT strategies [ ]
 Develop new products/services by exploration of IT capabilities [ ]
 Stimulate customer demand by building up leadership in IT [ ]
 Other (please specify) [ ]

27 What roles do your top management take in the strategy formulation process:
(Please tick one only)
 Articulate options pertaining to business strategy [ ]
 Provide technology vision which best support chosen business strategy [ ]
 Articulate the impact of IT capabilities on chosen business strategy [ ]
 Find the best way to allocate the resources within the organization [ ]
 Other (please specify) [ ]

28 What roles do your IT management take in the strategy formulation process:
(Please tick one only)
 Design and implement required organization structure to support chosen strategy [ ]
 Design and implement required IT structure to support the IT vision [ ]
 Identify trends in IT to help business manager to understand the potential opportunities and threats for the company [ ]
 Lead the IT function to achieve the strategic goals of top management [ ]
 Other (please specify) [ ]

29 What is the primary concern of your company in measuring the performance of strategy execution:
(Please tick one only)
 Costs and benefits [ ]
 Technology leadership [ ]
 Business leadership in terms of market share, growth, new product introduction [ ]
 Customer satisfaction [ ]

30 What are the major problems you have encountered in the matching of business and IT strategies
(Please tick one or more)
Top management commitment and participation in the process [ ]
Changes in business practices and organization structure [ ]
Shortage of qualified information systems personnel [ ]
Estimate the funding levels for IS/IT [ ]
Reluctance to accept IS/IT as line instead of staff function [ ]
Lack of understanding of IT potential by top management [ ]
Lack of shared vision on business strategies [ ]
Other (please specify)

31 What have you found to be key success factors in business and IT strategy linkage:
(Please tick one or more)
Match the internal IS function and organization with external marketplace [ ]
Top management selects appropriate alignment approach to accomplish business objectives [ ]
IS and business executives must take multiple line and staff roles [ ]
Multiple criteria must be used in assessing strategy performance [ ]
Other (please specify)

Section 3 Key information systems management issues

What do you consider to be the most important and most problematic IS management issues facing your company now and over the next 3–5 years? Please indicate your views by rating each issue four times on a scale of 1–10, with higher numbers representing more important/problematic issues. Space is provided at the end of the form to write in additional issues. If you are uncertain about a particular issue or do not understand it, please indicate this by giving the issue a zero (0) score.

<table>
<thead>
<tr>
<th>RATING SCALE</th>
<th>Indifferent</th>
<th>Moderately important</th>
<th>Critically important</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>7</td>
<td>8</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>10</td>
<td>Not a problem</td>
<td>Moderately problematic</td>
</tr>
</tbody>
</table>

KEY Issues (Please use scale 1–10 as shown above)

1 Developing an information architecture
A corporate/global information architecture is needed to identify the major information categories used within an enterprise and their relationships to business processes. It is necessary to guide applications development and facilitate the integration and sharing of data.

2 Improving IS Strategic Planning
It is increasingly critical to an organization’s success that it aligns its long-range IS plan with its strategic business plan. Rapidly changing business environments, increased involvement of end-users, and accelerated technological change underscore the need to continue improving strategic planning skills.

3 Data as a Corporate Resource
The organization’s data resource is growing in size, complexity and value. Despite this, it remains largely unrecognised inaccessible and underutilised.
IS must develop a climate within its department and throughout the organization which values the data resource as a corporate asset.

4 Human Resources for IS
Current and future shortages of qualified information systems personnel threaten the IS department’s ability to keep up with the information needs of its parent organization. Career paths need to be clarified. More emphasis needs to be put on developing business skills.

5 IS for Competitive Advantage
In many business, long-term survival is dependent on using information systems to gain competitive advantage. The business can be lost without it. Competitive advantage results from recognition of opportunities through creativity and innovation, followed by rapid implementation. These are historical weaknesses of IS.

6 Organizational Alignment
The effectiveness with which IS can support the enterprises’ information needs is dependent on the IS department’s position within the enterprise. Too often IS is not located appropriately within the organization.

7 Organizational Learning
Organizations that prosper will be those that make use of appropriate new IS technologies in their entire operation. Business practices and organizational structures will need to be modified in many cases. IS also must demonstrate its own ability to learn and use new technology.

8 IS’s Role and Contribution
IS is sometimes viewed as an overhead expense with little appreciation of its contribution to the organization. This can lead executive management to make infeasible demands and to cut funding, resulting in missed opportunities for the organization.

9 Telecommunications
Communication is the lifeblood of the organization. Using IS for competitive advantage often depends heavily on telecommunications. Rapid and major changes in the industry complicate this task.

10 Quality of Software Development
The application development backlog remains at unacceptably high levels. Users are getting impatient. Add to this the increasing costs of human resources and the need for improved effectiveness in systems development becomes clear.

11 Managing End-User Computing
The proliferation of end-user computing through personal computers offers promise of improved productivity but also the dangers of inadequate management control.
Information systems management must balance control against the need for slack in 5 years. Clarification of IS and end-user roles is a necessity.

12 Integrating Technology
The capability now exists to integrate systems that are based on different technologies. As organizations try to integrate them, organizational and managerial problems will need to be solved.

13 Measuring IS Effectiveness
The measurement of IS performance is crucial to its effective management. This is becoming more important as organizations invest more and more money in information systems.

14 Security and Control
As organizations increase their dependence on information systems, there is greater risk from destruction and alteration of data, disclosure to outside sources, and disruption of information services. Tight security controls and fault tolerant information delivery are becoming a necessity.

15 Determining IS Funding Levels
There is no generally accepted way of establishing the level of IS funding relative to the other funding needs of the organization. This can put both IS and general now managers at a disadvantage.

16 Education of Senior Management
The education of senior managers in an organization will lead to more enlightened resource allocation for IS, a more strategic view in IS planning and an understanding of IS’s role in the organization.

17 Quality Assurance
Very often, reports are compiled using data from several sources. Frequently, there are discrepancies among these different data sources due to lack of controls in IS and user departments. Too often computer printouts are assumed to be accurate. Such assumptions can lead to faulty business decisions.

18 Information Centres
Information is the key to an organization’s success. Information centres are now being set up to centralise resources, provide guidelines for the organization and give support to end-users.

19 Fourth-generation languages
As end-user computing increases, 4GL’s are helping to ensure that the applications specified can be translated into a working system, without advanced knowledge of programming languages.

20 Decision Support systems
Improving managers ability to make effective decisions is an important objective for IS. Decision support systems help them to model different futures and make more informed choices.
THANK YOU VERY MUCH FOR YOUR ASSISTANCE.

If you have other thoughts, ideas, experiences which might contribute to this survey, please put down on separate sheet of paper and return either by mail or by fax.

References


[5] Y.E. Chan, S.L. Huff, The Development of instruments to assess information systems and company strategy and
Janice Burn is Foundation Professor of Information Systems at Edith Cowan University in Perth, Western Australia and President (2000) of the Information Resources Management Association (IRMA). Her business experience includes the primary commodity sector, manufacturing and consultancy for multinational concerns, and small business management. Burn taught, researched, and contributed to curriculum development in Britain, Canada, and Hong Kong before taking up her appointment in Australia in 1997.

Her research interests relate to information systems strategy and benefits evaluation in virtual organisations with a particular emphasis on cross cultural challenges. She has published widely in the international arena and participates in a number of joint research projects with international collaboration.

Colonel Szeto is an independent consultant and Director of Far East Data Limited (FED), a Hong Kong-based systems integrator which specializes in Material Requirements Planning (MRP) and Enterprise Resources Planning (ERP) systems as well as bilingual client server applications integration. Prior to starting this business, Colonel was systems manager with several multinational corporations linking systems on different platforms distributed widely in countries within the Far East region.

Colonel obtained his M.Phil. degree at Hong Kong Polytechnic University and has a longstanding interest in research into entrepreneurship and change management.