

# EVALUATION OF STRATEGIC INFORMATION SYSTEMS PLANNING (SISP) TECHNIQUES: DRIVER PERSPECTIVE

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## Abstract

*Strategic Information Systems Planning (SISP) literature reviews with a focus on the global dimension are considered in this research. The paper counters the evaluation of SISP techniques through information system (IS) strategic drivers. These techniques can be vital contributors in the IS strategy (ISS) designing process. Therefore, categorisation of the techniques of ISS planning will be developed. Keeping in mind the global dimension, the planning team needs to identify how it can cluster an organization's ISS drivers. This may be achieved by analysing the drivers that can have an effect on IS for the organization, which may support categorisation of drivers against techniques being classified to understand which are needed to fit specific drivers. The contribution of this research is the taxonomy of SISP techniques, with a case study for X international airlines. This classification can benefit evaluation of the ISS planning processes to support decision-makers through the planning process.*

**KEYWORDS:** SISP, IS strategic drivers, IS strategic techniques, airlines case study.

## 1 INTRODUCTION

The organization looks to obtain the maximum benefit from its resources and reduce the risk as much as possible. It attempts to use all of its resources efficiently, effectively, and competitively. In so doing, there appears to be a need to link all of the resources in a way that allows these to be controlled, creatively, flexibly, and educationally. From this point of view, there is also a need to determine the significant processes within the entire organization. The processes are not only important, but they also share activities to be completed beyond the business unit. At the same time, these processes are not just routine, but sometimes also creative. Therefore, it is necessary to consider these processes in the planning stage by analysing them and considering the role of IS\IT in supporting these processes' integration (Robson, 1997; Tallon, 2007). The importance of the techniques of strategic planning in the role of IS\IT is increasing. These techniques may help to build the business model of the organization (Robson, 1997), which would support managers by simulating a situation or providing the problem's solution in many ways, such as decreasing the cost of experimentation to lower than it is in real life; simulating time in seconds as opposed to real-life, which may require years; changing the variables of the model in the experiment, easier than changing them in real life; and finally, using the models to deal with uncertainty, by including "what-if" roles or risk calculations (Turban et al., 2005).

Many headings can be used to categorise techniques that could support strategic planning, as suggested by Robson (1997). These are techniques that follow the model of planning or the decision-making process; their nature of attention, such as opportunities; their identifying origin; their perspective view; and current business problems. Another possibility in grouping these techniques is meeting the goal of efficiency, effectiveness, competitiveness, business alignment, or impact on business. The techniques can also be grouped according to awareness, opportunity, or positioning framework, as in Earl (1996). Generally, all of these techniques are grouped according to a judgment

of their use, because their purposes intermingle, and they are applied in many ways. Therefore, care should be taken in choosing them for applications. However, these applications could differ in terms of strategic focus, such as competitiveness, alignment, analysis, or a combination. The analysis focus considers the efficiency and effectiveness of an organization. This could improve application of IS benefits, such as cost, control and business processes delivery time for the organization. In addition, the alignment focus can participate with the analysis focus in terms of IS strategy goals, because the alignment is one of the IS strategy priorities. So, strategic focus supports identification of the core business processes that can be integrated. Both analysis and alignment focuses support the internal environment and cope with the external environment of the organization. By doing so, the competitive focus, as an important factor of external environment, is connected with both analysis and alignment focuses. The competitive focus considers both competitors and customers. Consequently, the connection between these focuses (analysis, alignment, and competitiveness) is important. All these focuses are important in IS contribution to the organization. Accordingly, this paper considers these strategic focuses for IS.

IS can obtain competitive advantage through some key factors (Robson, 1997; Willcocks et al., 1997). The availability of the technique applications to use IS strategically is one example. Another is the knowledge of the extent to which the business environment has been affected by the information revolution—understanding IS strategic planning process in terms of generating, solidifying, implementing, and planning. If the ISS planning is treated as a system that includes input, process, and output, the techniques are as important as input and output, in order to reach new approaches to planning through applications of the process (Robson, 1997; Willcocks et al., 1997). This may be useful in an unstable environment that needs to act effectively and efficiently to face any changes in the environment. With this in mind, this work considers the adaptability of applying strategic techniques in the ISS planning to develop a framework for evaluation of these techniques. This framework may also be used as a tool to support the planning team through the IS planning process.

## **2 STRATEGIC PLANNING TECHNIQUES**

The planning details are very important in building strategy. When organizations wish to create ISS plans, they should have frameworks for doing so. These frameworks contain the planning techniques in flexible and adaptable processes to reach goals. So the ISS is an outcome of the IS process plan. Frameworks organise the important analyses necessary to produce the ISS. Simultaneously, they avoid deep details of data and specific systems, because such details need tools that can combine the techniques of the ISS planning process. From this point of view, there are many approaches or methodologies to planning. The nature of the methodology contains many tasks that require techniques to be completed, in order to generate deliverables. In order to create an effective methodology that can support management's plan, review and control of the ISS planning project, there should be a standard set of techniques and supportive tools to facilitate these projects (Robson, 1997).

Many studies in IS strategy has focused on strategic information system planning (SISP) approaches, the use of Mintsberg's models, and the stage of growth analysis, which relate to Nolan and with the organization's theory, in order to obtain an organizational fit for IS (Burn, 1991). Many techniques can be used in the strategic planning processes, and it becomes clear that a business needs frameworks, which require an understanding of different methods, techniques, and tools. Systems Development Life Cycle (SDLC) methods differ, according to their processes, advantages, and disadvantages. In addition, different IS planning tools are used depending on the basis of their dimensions, advantages, and disadvantages. Moreover, a classification of techniques depends on their focus, benefits, advantages, and disadvantages, as presented in table 1. These techniques, critical contributors in the ISS planning process, are the paper's focus.

| Technique                    | Strategic Analysis<br>(strategic planning<br>process) | Competitiveness-<br>Focused (objective-<br>focused) | Alignment-Focused<br>(relationship to<br>business strategy) | Benefit   | Advantages  | Disadvantages  | References  |
|------------------------------|---|---|---|---|---|--|---|
| SWOT                         | √   | X   | X   | Navigation techniques   | Familiarises, considers, and balances external and internal factors of planning, risk exposure, and defining strategy | No action guide. General analysis is strategic and not a deep analysis.  | Avison et al. (2003); Robson (1997); Brumec et al. (2002) |
| Opportunity Categorising     | √   | √   | X   | Navigation of opportunities   | Shows the best, current, and future opportunities by using technology and information                                 | Relies on technology and information without other opportunities         | Robson (1997)   |
| Strategic Importance Matrix  | √   | X   | √   | Shows the importance of IS to the business  | Gives advice about business value from IS   | Shows the value after the fact, needing to develop application           | Robson (1997)   |
| Benefit Level Matrix         | √   | X   | X   | Helps to evaluate the systems regarding the different benefits and organizational impacts                                 | Shows the dynamic nature of IS related to competitive advantage   | Lack in supporting strategic level                                       | Robson (1997)   |
| 5-Forced Model               | √   | √   | X   | Emphasises the Porter's model to distinguish the important force to the organization and showing the suitable opportunity | Supports organization with current situation, opportunities, and threats  | More related to external environment than internal one                   | Robson (1997); Brumec et al. (2002)                       |
| Generic Business Strategies  | √   | √   | √   | Supports the tend of the strategy to cost leadership, differentiation, and focus by IS                                    | Useful in planning and familiar   | Relies on 5-Forced model   | Robson (1997)   |
| Information Intensity Matrix | √   | X   | X   | Advises as to where IS is critical to the organization  | Supports the organization to measure the importance of IS, details of where and how the importance holds              | Relies somewhat on Porter's value chain model                            | Robson (1997)   |
| Impact Categorising          | X   | √   | X   | Models can be used strategically in competitive marketplaces or in the internal operations.                               | Focuses on management, such as efficiency, effectiveness, and strategic advantage                                     | Difficult in terms of making experience (past stories) into future plans | Robson (1997)   |

|                             |   |   |   |  |  |  |  |
|-----------------------------|---|---|---|--|--|--|--|
| Industry Analysis           | X | √ | X | Relates to future opportunities of IS  | Contributes to the competitive opportunities of product/service, markets, and economies of production  | Focuses on competitive perspective as external environment   | Robson (1997)  |
| Strategic Thrusts           | X | √ | √ | Facilitates the process of making strategic choices  | Generator of strategic option can work as an aligning or impacting technique.  | Can be used in the stage of building alternative strategies  | Robson (1997)  |
| Strategy-Set Transformation | X | √ | √ | Reflects the business strategy sets to become information strategy sets  | A high quality aligning technique, if used well, it can be a basis for business systems and planning techniques  | Needs clear corporate strategy set and excellent skills to translate these   | Robson (1997)  |
| Business Modelling          | X | X | √ | A business scenario modelling for business analysis  | Can be used as one model for specific business units and in deep processes or as the distinction of key future factors impacting strategy and using technology, such as software and flexibility | Needs more time to build a model for a specific organization, for software, which can be neglected, and for human and political issues | Robson (1997)  |
| Critical Success Factors    | X | X | √ | A technique serving key decisions by providing information requirements and aligning techniques                                    | Flexibility regarding organization needs and can be used as measurements and for a number of levels and a variety of purposes  | Difficult to reach information requirements by CSF alone, so needs support of other techniques and skills of defining critical factors | Avison et al. (2003); Robson (1997); Wheelen et al. (2002); Brumec et al. (2002) |
| Critical Set Analysis       | X | X | √ | An aligning technique  | Helps to align IS vision with senior manager vision  | Difficult to use in impacting or business re-engineering techniques  | Robson (1997)  |
| Business Systems Planning   | X | X | √ | A process for structure-planning approaches  | Shows bottom-up view of information  | Needs centralised environment  | Robson (1997); Brumec et al. (2002)  |
| Lateral Thinking            | √ | X | √ | Generates alternatives, challenges assumptions, fractionation, and brainstorming   | Supports the idea and its argument and changes the management  | Different skills of practitioners, not very controllable and difficult to arrange  | Avison et al. (2003)   |
| Scenario Planning           | √ | X | X | Predicting the future in changeable environments, such as expert scenarios, morphological approaches, and cross-impact approaches. | May help to predict future problems  | It is difficult to deal with the environment changes in the long term.   | Avison et al. (2003); Wheelen et al. (2002)                                      |

|                             |   |   |   |  |  |   |   |
|-----------------------------|---|---|---|--|--|---|---|
| Case-Based Reasoning        | √ | √ | √ | Learning from previous situations  | Fast solution for similar cases, support solution, evaluation, and avoidance of repetition of mistakes | Requires considerable experience and skill to avoid unsuitable case application.  | Avison et al. (2003)  |
| Cost-Benefit Analysis       | √ | X | X | Cost – benefits of IT investment   | Shows the balance between cost and benefits of IT  | Needs good skill and experience in order to apply   | Turban et al. (2005)  |
| Balanced Scorecard Analysis | √ | X | X | Supports developing strategy and measuring performance by finance, internal business perspective, customer perspective, innovation, and learning perspective and communication | Popular and relates to different dimensions  | It relies on financial results  | Ward et al. (2002); Brumec et al. (2002); Huang et al. (2007) |
| Process Analysis            | √ | √ | √ | Expresses core processes and connects the process effectiveness to drivers   | Utilities decision-making for process options  | In some cases, needs radical changes, which may affect some organizational issues such as structure, people, and culture. | Ward et al. (2002)  |
| Stage of growth             | √ | X | √ | IT planning model  | Basic for SISP methodology   | No strong empirical support   | Turban et al. (1997)  |

Table 1. Classification of strategic planning techniques

### 3 FRAMEWORK FOR EVALUATING INFORMATION SYSTEM PLANNING TECHNIQUES

As mentioned earlier in this paper, it is clear that there is a need for a framework of evaluation for the IS planning techniques, in order to support the planning team in using the decision process as a tool. This section presents the evaluation framework of IS planning techniques. This evaluation framework has been developed to fill this gap. The drivers of strategic levels are used as criteria that need to be considered in the strategic planning of IS, as Ezingard et al. (2007) stated. As indicated in table 2, the drivers will be applied in this framework, which contains the symbols (√) and (x). (√) Means that the technique can support the analysis of the driver (x) means that the technique cannot support the analysis of the driver (see Table 3).

| Driver   | Reference(s)  |
|--|---|
| • Users' politics                              | Galliers et al. 2003; Hartono et al. 2003; Robson 1997; Magdaleno et al. (2008)                             |
| • Time   | Hartono et al. 2003; Robson 1997  |
| • Budget and cost                              | Hartono et al. 2003; Robson 1997; Ward et al. 2002; Weill et al. 2004                                       |
| • IT architecture                              | Ciborra et al. 2000; Luftman 2000; Robson 1997; Weill et al. 2004   |
| • Business process (cost, time, effectiveness) | Galliers et al. 2003; Laudon et al. 2004; Pant and Hsu 1999; Turban et al. 2005; Ariyachandra et al. (2008) |
| • Executive skills and commitments             | Benson et al. 2004; Laudon et al. 2004; Robson 1997; Pant and Hsu 1999; Ariyachandra et al. (2008)          |
| • Global business and geography                | Laudon et al. 2004; Newkrik et al. (2003); Shore 2006   |
| • Nature of the organization                   | Robson 1997; Newkrik et al. 2003  |
| • Importance of IS                             | Laudon et al. 2004; Robson 1997   |
| • Organizational situation                     | Newkrik et al. 2003; Robson 1997; Ward et al. 2002  |
| • Joint resources                              | Benson et al. 2004; Luftman 2000; Turban et al. 1997  |
| • Risk reduction                               | Robson 1997; Turban et al. 1997   |
| • Global product/service                       | Turban et al. 1997; Ward et al. 2002  |
| • Quality                                      | Galliers et al. 2003; Turban et al. 1997; Weill et al. 2004   |
| • Suppliers                                    | Laudon et al. 2004; Turban et al. 1997; Ward et al. 2002  |
| • Corporate customers                          | Benson et al. 2004; Turban et al. 1997  |

Table 2. The classification of ISS planning drivers

| Technique                    | Driver          |      |                 |                 |                  |                                  |  |                            |                  |                        |                 |                |                        |         |           |                     |
|------------------------------|-----------------|------|-----------------|-----------------|------------------|----------------------------------|--|----------------------------|------------------|------------------------|-----------------|----------------|------------------------|---------|-----------|---------------------|
|                              | Users' politics | Time | Budget and cost | IT architecture | Business process | Executive skills and commitments | Global business and geographical information | Nature of the organization | Importance of IS | Organization situation | Joint resources | Risk reduction | Global product/service | Quality | Suppliers | Corporate customers |
| SWOT                         | √               | X    | X               | √               | √                | √                                | √  | √                          | √                | √                      | x               | √              | √                      | √       | x         | x                   |
| Opportunity Categorising     | X               | X    | X               | √               | √                | √                                | √  | √                          | √                | √                      | x               | X              | √                      | X       | x         | x                   |
| Strategic Importance Matrix  | X               | X    | X               | √               | X                | √                                | √  | √                          | √                | √                      | x               | X              | √                      | X       | x         | x                   |
| Benefit Level Matrix         | X               | √    | √               | √               | √                | √                                | √  | √                          | √                | √                      | x               | X              | √                      | √       | x         | x                   |
| 5 Forced Model               | X               | X    | √               | √               | √                | √                                | √  | √                          | X                | √                      | √               | X              | √                      | √       | √         | √                   |
| Generic Business Strategies  | X               | X    | √               | √               | X                | √                                | √  | √                          | √                | X                      | x               | X              | √                      | X       | x         | x                   |
| Information Intensity Matrix | X               | X    | X               | x               | √                | √                                | X  | √                          | √                | X                      | x               | X              | x                      | X       | x         | x                   |
| Impact Categorising          | X               | X    | √               | √               | √                | √                                | √  | √                          | √                | √                      | √               | X              | √                      | √       | √         | √                   |
| Industry Analysis            | X               | X    | X               | √               | X                | √                                | √  | √                          | √                | √                      | x               | X              | √                      | X       | x         | x                   |
| Strategic Thrusts            | X               | X    | X               | √               | √                | √                                | √  | √                          | X                | √                      | √               | X              | √                      | X       | √         | √                   |
| Strategy Set Transformation  | √               | X    | X               | √               | √                | √                                | √  | √                          | X                | √                      | √               | X              | x                      | X       | x         | x                   |
| Business Modelling           | √               | √    | X               | √               | √                | √                                | √  | √                          | X                | √                      | √               | √              | √                      | √       | √         | √                   |
| Critical Success Factors     | √               | X    | X               | √               | √                | √                                | √  | √                          | √                | √                      | √               | √              | √                      | √       | √         | √                   |
| Critical Set Analysis        | X               | X    | X               | x               | √                | √                                | X  | X                          | √                | x                      | x               | X              | x                      | X       | x         | x                   |
| Lateral Thinking             | √               | X    | X               | √               | X                | √                                | √  | X                          | X                | √                      | x               | X              | x                      | X       | x         | x                   |
| Business System Planning     | √               | X    | X               | √               | √                | √                                | √  | √                          | X                | √                      | √               | X              | √                      | √       | √         | √                   |
| Scenario Planning            | X               | X    | X               | √               | √                | √                                | √  | √                          | X                | √                      | x               | X              | √                      | X       | √         | √                   |
| Case-based Reasoning         | X               | X    | X               | √               | √                | √                                | √  | √                          | X                | √                      | x               | X              | x                      | X       | x         | x                   |
| Cost-benefit Analysis        | √               | √    | √               | √               | √                | √                                | √  | √                          | X                | √                      | √               | √              | √                      | √       | √         | √                   |
| Balanced Scorecard Analysis  | √               | X    | X               | √               | √                | √                                | √  | √                          | X                | √                      | √               | X              | √                      | X       | √         | √                   |
| Process Analysis             | √               | X    | X               | √               | √                | √                                | √  | √                          | X                | √                      | √               | √              | √                      | √       | √         | √                   |
| Stage of Growth              | √               | X    | X               | √               | √                | √                                | √  | √                          | X                | √                      | √               | X              | √                      | √       | √         | √                   |

Table 3. The evaluation framework for IS planning techniques

#### 4 ISS PLANNING TECHNIQUES AND STRATEGIC FOCUS

In order to evaluate these techniques, they should be divided according to their use and applicability. This may increase the effectiveness and efficiency of decision-making in the planning process. In Table 1, the techniques have been classified with regard to the strategic analysis, competitiveness, and alignment as dimensions of strategic planning explained in section 1. Table 4 presents the strategy focus with its suitable techniques. Strategic focus is supported to evaluate the techniques to meet ISS drivers.



|                |                    | Techniques   |
|----------------|--------------------|--|
| Strategy Focus | Strategic Analysis | SWOT, opportunity categorising, strategic importance matrix, benefit level matrix, 5-forced model, generic business strategies, critical success factors, information intensity matrix, business system planning, lateral thinking, scenario planning, case-based reasoning, cost-benefit analysis, balanced scorecard analysis, process analysis, stage of growth |
|                | Competitiveness    | Opportunity categorising, generic business strategies, impact categorising, industry analysis, strategic thrusts, strategy-set transformation, case-based reasoning, process analysis  |
|                | Alignment          | Strategic importance matrix, generic business strategies, strategic thrusts, strategy set transformation, business modelling, critical success factors, lateral thinking, critical-set analysis, business systems planning, case-based reasoning, process analysis, stage of growth  |

Table4. Strategy focus points and their techniques

## 5 THE EVALUATION OF IS STRATEGIC TECHNIQUES AGAINST IS DRIVERS

In this section, the techniques of IS planning are evaluated against the IS drivers. There is a need to connect the evaluation to drivers to support the evaluation of techniques. Not all the IS planning techniques can be used for all the strategy focus. For instance, strengthens, weakness, opportunities and threats (SWOT) analysis technique can be used for the users' politic driver in the strategic analysis focus, whereas it cannot be used in the competitiveness focus. Table 5 presents these strategic drivers with the strategy focuses.

| Driver                                       | Technique  |   |  |
|--|--|---|--|
|  | Strategic analysis   | Competitiveness   | Alignment  |
| User's Politics                              | SWOT, critical success factors, business system planning, cost-benefit analysis, balanced scorecard analysis, process analysis, stage of growth, lateral thinking  | Strategy set transformation, process analysis   | Strategy set transformation, business modelling, critical success factors, business systems planning, process analysis, stage of growth, lateral thinking  |
| Time   | Benefit level matrix, case-based reasoning   | Case-based reasoning  | Business modelling, case-based reasoning   |
| Budget and Cost                              | Benefit level matrix, 5 forced model, generic business strategies, cost-benefit analysis, lateral thinking   | 5 Forced model, generic business strategies, impact categorising,   | Generic business strategies, lateral thinking  |
| IT Architecture                              | SWOT, opportunity categorising, strategic importance matrix, benefit level matrix, 5 forced model, generic business strategies, critical success factors, business system planning, scenario planning, case-based reasoning, cost-benefit analysis, balanced scorecard analysis, process analysis, stage of growth     | Opportunity categorising, 5 forced model, generic business strategies, impact categorising, industry analysis, strategic thrusts, strategy set transformation, case-based reasoning, process analysis | Strategic importance matrix, generic business strategies, strategic thrusts, strategy set transformation, business modelling, critical success factors, business system planning, case-based reasoning, process analysis, stage of growth                |
| Business Process (cost, time, effectiveness) | SWOT, opportunity categorising, benefit level matrix, 5 forced model, information intensity matrix, critical success factors, business system planning, lateral thinking, scenario planning, case-based reasoning, cost-benefit analysis, balanced scorecard analysis, process analysis, stage of growth               | Opportunity categorising, 5 forced model, impact categorising, strategic thrusts, strategy set transformation, case-based reasoning, process analysis   | Strategic thrusts, strategy set transformation, business modelling, critical success factors, critical set analysis, business system planning, lateral thinking, case-based reasoning, process analysis, stage of growth                                 |
| Executive Skills and Commitments             | SWOT, opportunity categorising, strategic importance matrix, benefit level matrix, 5 forced model, generic business strategies, information intensity matrix, critical success factors, business system planning, lateral thinking, scenario planning, case-based reasoning, cost-benefit analysis, balanced scorecard | Opportunity categorising, 5 forced model, generic business strategies, impact categorising, industry analysis, strategic thrusts, strategy set transformation, case-based reasoning, process analysis | Strategic importance matrix, generic business strategies, strategic thrusts, strategy set transformation, business modelling, critical success factors, critical set analysis, business system planning, lateral thinking, case-based reasoning, process |



|                                  |   |   |   |
|----------------------------------|---|---|---|
|                                  | analysis, process analysis, stage of growth   |   | analysis, stage of growth   |
| Global Business and Geographical | SWOT, opportunity categorising, strategic importance matrix, benefit level matrix, 5 forced model, generic business strategies, critical success factors, business system planning, scenario planning, case-based reasoning, cost-benefit analysis, balanced scorecard analysis, process analysis, stage of growth                                | Opportunity categorising, 5 forced model, generic business strategies, impact categorising, industry analysis, strategic thrusts, strategy set transformation, case-based reasoning, process analysis | Strategic importance matrix, generic business strategies, strategic thrusts, strategy set transformation, business modelling, critical success factors, business system planning, case-based reasoning, process analysis, stage of growth |
| Nature of the Organization       | SWOT, opportunity categorising, strategic importance matrix, benefit level matrix, 5 forced model, generic business strategies, information intensity matrix , critical success factors, business system planning, scenario planning, case-based reasoning, cost-benefit analysis, balanced scorecard analysis, process analysis, stage of growth | Opportunity categorising, 5 forced model, generic business strategies, impact categorising, industry analysis, strategic thrusts, strategy set transformation, case-based reasoning, process analysis | Strategic importance matrix, generic business strategies, strategic thrusts, strategy set transformation, business modelling, critical success factors, business system planning, case-based reasoning, process analysis, stage of growth |
| Importance of IS                 | SWOT, opportunity categorising, strategic importance matrix, benefit level matrix, generic business strategies, information intensity matrix , critical success factors, lateral thinking   | Opportunity categorising, generic business strategies, impact categorising, industry analysis   | Strategic importance matrix, generic business strategies, critical set analysis, critical success factors, lateral thinking   |
| Organization Situation           | SWOT, opportunity categorising, strategic importance matrix, benefit level matrix, 5 forced model, critical success factors, business system planning, scenario planning, case-based reasoning, cost-benefit analysis, balanced scorecard analysis, process analysis, stage of growth   | Opportunity categorising, 5 forced model, impact categorising, industry analysis, strategic thrusts, strategy set transformation, case-based reasoning, process analysis                              | Strategic importance matrix, strategic thrusts, strategy set transformation, business modelling, critical success factors, business system planning, case-based reasoning, process analysis, stage of growth                              |
| Joint Resources                  | 5 Forced model, critical success factors, business system planning, cost-benefit analysis, balanced scorecard analysis, process analysis, stage of growth   | 5 Forced model, impact categorising, strategic thrusts, strategy set transformation, process analysis   | Strategic thrusts, strategy set transformation, business modelling, critical success factors, business system planning, process analysis, stage of growth   |
| Risk Reduction                   | SWOT, critical success factors, process analysis  | Process analysis  | business modelling, critical success factors, process analysis  |
| Global Product/Service           | SWOT, opportunity categorising, strategic importance matrix, benefit level matrix, 5 forced model, generic business strategies, critical success factors, business system planning, scenario planning, cost-benefit analysis, balanced scorecard analysis, process analysis, stage of growth  | Opportunity categorising, 5 forced model, generic business strategies, impact categorising, industry analysis, strategic thrusts, process analysis  | Strategic importance matrix, generic business strategies, strategic thrusts, strategy set transformation, business modelling, critical success factors, business system planning, process analysis, stage of growth                       |
| Quality                          | SWOT, benefit level matrix, 5 forced model, critical success factors, business system planning, cost-benefit analysis, process analysis, stage of growth  | 5 Forced model, impact categorising, process analysis,  | Business modelling, critical success factors, business system planning, process analysis, stage of growth   |
| Suppliers                        | 5 Forced model, critical success factors, business system planning, scenario planning, cost-benefit analysis, balanced scorecard analysis, process analysis, stage of growth  | 5 Forced model, impact categorising, strategic thrusts, process analysis  | Strategic thrusts, business modelling, critical success factors, business system planning, process analysis, stage of growth  |
| Corporate Customers              | 5 Forced model, critical success factors, business system planning, scenario planning, cost-benefit analysis, balanced scorecard analysis, process analysis, stage of growth  | 5 Forced model, impact categorising, strategic thrusts, process analysis  | Strategic thrusts, strategy set transformation, business modelling, critical success factors, business system planning, process analysis, stage of growth   |

*Table5. Classification of ISS drivers, strategy focus, and strategic techniques*

## 6 RESEARCH METHODOLOGY

IS/IT strategic planning is a strategic issue, which means that it relates to business strategy. There are many dimensions to cover, such as strategic analysis, competitiveness, and alignment as considered in section 1. Positive IS/IT planning necessitates justifying IT/IS strategic drivers. Thus,

there is a need to understand these drivers using the “how” and “why” questions, and to understand the dimensions that may affect such justification, using the “what” questions. As what are the IS strategic drivers that affect IS strategic planning of particular organization? Therefore, the case-study strategy must be engaged. Case studies suggest that business and management research should result from both theoretical and practical issues. They distinguish between basic research (a more scientific approach) and applied research (a more practical approach in its purpose and context) (Saunders et al., 2003).

A single case attempts to study and focus on IS/IT strategic planning. X Airlines has been chosen for this because its IS/IT is comprehensive in implementation and important for survival in the highly competitive environment. The objective is to investigate the justification of the ISS planning drivers. This is accomplished by interviewing high-level organizational and IT managers. The case study strategy was selected because it is practical for business and management research. It uses empirical investigation of a specific phenomenon in the real-life environment, in addition to multi-source methods of data collection (Yin, 2003). It helps to achieve greater understanding of the research context and process and supports questions, such as “why” X is applying a particular planning technique, “what” are the drivers and techniques that are existing in X, and “how” X evaluates the techniques against the IS strategic drivers? These questions enable the use of multiple methods, such as interviews, documents, and observation, to collect data.

## **6.1 DATA COLLECTION**

Seven interviewees were used in this case study. Three of these interviewees were from IT—namely, the vice chief of information systems for strategy (ISP), the system manager for IT network planning (ERP), and the system manager for systems integration (IP). Three managers were from business—the vice president of corporate services, the senior manager for global projects (GNP), and the senior manager for communication systems (CIS). The seventh interviewee supported and coordinated the connection between the interviewer and the interviewees and collected some IT strategic documents. The interviews were conducted in a systematic way, starting with the subject of IS activity, in order to understand the available activities within it and how it works. All of the interviews were semi-structured interviews, due to the need for understanding the situation and for giving the interviewees direction to provide as much information as possible. All of the interviews were recorded and transcribed for clarity. Then they were sent to the interviewees to be reviewed for validity. The maximum time for the interviews was 1½ hours. All of the data from the interviews and documents were linked together.

## **6.2 CASE STUDY ANALYSIS AND DISCUSSION**

Regarding increasing competitiveness within the airline industry, the business has developed into a complex environment where planning should be comprehensive. X Airlines believes that comprehensive or integrated planning is needed to obtain and sustain a suitable position for the airline within the industry, especially in terms of its focus on the global dimension. Therefore, engaging the IS as strategic units within the strategic planning process for the organization as a whole became vital. Additionally, the new vision of the company to become fully private is important. With this paper’s focus in mind, this section considers the drivers measured against the strategic focus and summary of the ISS planning techniques that X Airlines applied.

- Drivers vs. strategic focus

Interviewees were required to evaluate the drivers of SISP applying the strategic focus categories of criteria classified in chapter three. Table 6 shows that, the interviewees’ insights consider SISP drivers to assess SISP techniques. The author considered the Miles and Huberman (1994) scales

for its similarities as high importance (■), medium importance (▣) and low importance (□) because there are three levels of importance in describing the drivers of SISP within X Airlines; the empty cells mean that is the interviewees provided no information.

| Driver                                       | Strategy focus     |    |     |         |                 |    |     |         |          |    |     |         |
|--|--------------------|----|-----|---------|-----------------|----|-----|---------|----------|----|-----|---------|
|  | Strategic analysis |    |     |         | Competitiveness |    |     |         | Aligning |    |     |         |
|  | ISP                | IP | CIS | GN<br>P | ISP             | IP | CIS | GN<br>P | ISP      | IP | CIS | GN<br>P |
| users politics                               | ■                  | ■  | ■   |         |                 | ■  |     |         |          | ■  | ■   | ■       |
| Time   |                    | ■  | ■   | ■       | ■               | ■  | ■   | ■       | ■        | ■  | ■   | ■       |
| Budget and cost                              | ■                  |    | ■   | ■       | ■               | ■  |     | ■       | ■        | ■  |     | ■       |
| IT architecture                              | ■                  | ■  | ▣   | ■       | ■               |    | ▣   | ■       | ■        |    | ▣   | ■       |
| Business process (cost, time, effectiveness) | ■                  | ■  |     | ■       | ■               | ■  | ■   | ■       | ■        | ■  | ■   | ■       |
| Executive skills and commitments             | ■                  | ■  | ■   | ■       | ■               | ■  |     |         | ■        | ■  |     | ■       |
| Global business and geographical             | ■                  | ■  | ■   |         | ■               | ■  |     | ■       | ■        | ■  |     |         |
| Nature of the organization                   |                    | ■  | ■   | ■       | ■               | ■  |     |         | ■        | ■  |     | ■       |
| Importance of IS                             |                    | ■  | ■   | ■       | ■               | ■  | ■   | ■       | ■        | ■  | ■   | ■       |
| Organization situation                       | ■                  | ■  | ■   | ■       |                 | ■  | ■   | ■       |          | ■  |     | ■       |
| Joint resources                              |                    | ■  |     | ■       |                 | ■  |     | ■       | ■        | ■  |     | ■       |
| Risk reduction                               | ■                  | □  | ■   | ■       |                 | ■  |     |         |          | ■  |     | ■       |
| Global product/service                       |                    | ■  | ■   |         | ■               | ■  |     | ■       |          | ■  |     |         |
| Quality                                      | ■                  | ■  | ■   | ■       | ■               | ■  |     | ■       | ■        | ■  |     | ■       |
| Suppliers                                    | ■                  | ■  | ▣   | ■       | ■               | ■  |     | ■       | ■        |    |     |         |
| Corporate customers                          | ■                  | ■  | ■   | ■       | ■               | ■  |     | ■       | ■        | ■  |     | ■       |

Table6. The X's SISP drivers to assess SISP techniques.

While, the connection between the strategic focus and the SISP drivers is one of the criteria to evaluate the SISP techniques for X not all the interviewees were able to complete this task. All the interviewees completed the task of drivers Vs strategic focus notwithstanding the ERP who redirected this task to ISP. So, Table 6 demonstrated the connection between the strategic focus and SISP drivers of X.

- Strategic analysis focus vs. drivers:

From Table 6 it can be seen that there are some similarities and differences between the interviewees' insights. Most of these insights are high importance ranking. Even though, most of the interviewees' insights were different, they were all agreed on some drivers such as executives' skills and commitment, organization situation, quality and corporate customers with high importance ranking. Even so, the IP considered risk reduction with low importance ranking, all other interviewees considered it with high importance ranking.

- Competitiveness focus vs. drivers:

It can be observed from Table 6 that there are some similarities and differences between the interviewees' insights. Most insights are high importance ranking. Although, most of the interviewees' insights were different, they were all agreed on some drivers such as time, business process and importance of IS. Nevertheless, the only IP considered both user politics and risk reduction as high importance ranking in this focus, whereas other interviewees had not considered them. The IT architecture as driver was considered by CIS as medium importance ranking in this focus.

- Aligning focus vs. drivers:

There are some similarities and differences between the interviewees' insights as Table 6 shows. Most of these insights are high importance ranking. Despite the fact that most of the interviewees' insights were similar in some drivers, all agreed on some drivers such as time, business process and importance of IS as high importance ranking. However, the IP, CIS and GNP not considered suppliers, whereas the ISP considered it with high importance. Also, both the CIS and GNP had not considered the global business and geographical driver, when ISP and IP considered it with high importance ranking. Nevertheless, the IP is the only one to consider the global product/service with high importance ranking, where the other interviewees did not rank it.

### **6.3 EVALUATION OF SISP TECHNIQUES AT X AIRLINES**

As mentioned earlier, X Airlines plans to become a private enterprise. It needs to be more competitive in order to make a profit. X Airlines was government-funded. It was not really looking for a profit, but the situation changed when more competitors entering the market. Additionally, the already high cost of the operation increased. As a result of the private trend, X Airlines decided to improve its IT function to become a sub-company support for X and other airlines. In doing so, X Airlines attempted to evaluate its IT strategically and to understand its strategic contribution. This evaluation required application of techniques that support the understanding of X Airlines' situation. And it needs both internal and external skills to complete it and design the new IT strategic role. Accordingly, the researcher considered the strategy focuses to understand the situation, as mentioned in section 4. These focuses are the most objective in the ISS planning process and include strategic analysis, competition, and integration.

Strategic analysis: With the new desire of X Airlines to become private and the transfer of the IT function into a sub-company, a new strategic trend of analysis is required. This analysis stage may support X Airlines to identify its new environment both internally and externally. Nevertheless, it may support X Airlines' understanding of to what extent an analysis stage needs to be done for IT, in order to identify the core business processes and how IT can contribute with them successfully.

Competition analysis: With new competitors in the national area and the improvement of competitors in the international dimension, X Airlines aims to re-position itself in both the national and international competition. The IT strategy should be parallel with the competitive vision of X Airlines, in order to understand how IT should support X's changeable and competitive environment, both nationally and internationally.

Integration analysis: X Airlines is moving its strategic planning in a new direction. This move must involve the IS/IT strategic role. Collaborations between the core processes, sub-companies, sub-business units, and different departments are required. These collaborations involve all levels, such as data, applications, and systems of IS/IT integration.

There are other strategy focuses in X Airlines' case, but the researcher is concentrating on the strategy focuses that relate to IS/IT strategic planning. When an interviewee was asked to explain this, he said:

'From the point of view of IT, we don't have a strategy apart from the business. As for IT, there are many strategies for business through the IT. First, we outsource whenever it is possible. Don't reinvent it. There are certain things that are not core business in IT, such as equipment and radio maintenance. They are outsourced and recorded in our business. Second, we need to reduce the process of internal development in the rudimentary solution to utilise it as much as we can. Third, never mind the business delay if we're the best IT. We must have the ability to meet the business deadline in the right way. Though it takes us seven to eight months, we can now do something quickly that the business wants to cover its needs. We evolve into the optimum solution. We don't have to be

perfect after seven months. We can deliver something within one month. Then we evolve to be perfect.'

It seems that X Airlines had problems understanding and applying the IS/IT strategic planning techniques. X has more experience in strategic analysis focus than in competitive and alignment focuses. Nonetheless, there is confusion in applying the different techniques to different situations, as needed; and there is a weakness in considering strategic planning techniques in the alignment strategy focus. Table 7 shows the summary of the evaluation of strategic analysis techniques for X Airlines.

|                |                    | Techniques  |
|----------------|--------------------|---|
| Strategy Focus | Strategic Analysis | SWOT, opportunity categorising, benefit-level matrix, 5-forced model, generic business strategies, impact categorising, information intensity matrix, industry analysis, business modelling, critical-set analysis, business system planning, scenario planning, case-based reasoning, cost-benefit analysis, balanced scorecard analysis, process analysis |
|                | Competitiveness    | Strategic importance matrix, strategic thrusts, case-based reasoning, process analysis, critical success factors, business systems planning, lateral thinking   |
|                | Alignment          | Benefit-level matrix, strategy-set transformation, stage of growth  |

Table 7. Summary of the ISS planning techniques that X applied

From this outcome, it appears that X lacks skills in applying strategic planning techniques for its IS/IT activity. Consequently, obtaining support from consultants experienced in applying strategic planning techniques for IS/IT is required. Understanding the application of strategic planning techniques is important to the entire process of the planning because of the difference in situations from time to time and from one level of planning to another. As mentioned in section 1, there is no single form of design strategy, particularly in terms of the differences in certain aspects of organizations, such as environment, culture, and available resources. These planning techniques support the planners' awareness of all strategic planning issues. Different interviewees have different views of these techniques. Some have no idea about these planning techniques; others have very limited information about it. This has led X to design a master plan, which is an IS/IT general and comprehensive plan. This plan is concerned with criteria that support evaluation technologies vendors, and is a plan for outsourcing. Therefore, X Airlines seeks consultants that have experience in conducting such evaluations. However, X should form a team that understands the drivers of IS/IT strategic planning to deliver the information to the consultancy team and work alongside with it.

## 7 CONCLUSION

This paper has provided a critical review of literature relating to the techniques of ISS planning at X Airlines. Starting with a discussion of the strategic planning of IS in the global dimension the discussion illustrates the techniques as an important controller of such a planning process. From the literature, the taxonomy of techniques was developed. These techniques re categorised according to the strategic focuses of IS as clarified in section 1. The techniques have then been evaluated against the IS strategic planning drivers.

After the ISS planning drivers were identified, they are connected to the investigation and evaluation of ISS planning techniques for X Airlines (paper contribution). The main result of the case study was the indication of a lack of attention to IS/IT as strategic business units. This created an insufficient process for the IS/IT strategic drivers and techniques to justify supporting the decision-makers. These drivers have been identified as criteria of evaluation for the ISS planning techniques to support the decision-makers throughout the planning process. In other words, implementing such taxonomy may support the success of practical implementation, because it takes into consideration many points from different stakeholders' thinking. Such stakeholders are rich in knowledge and have broad viewpoints in regarding improvement of IS drivers. Implementation should be structured and built in a systematic way, with an understanding of the circumstances and the environment.



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