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EVALUATING THE ADOPTION OF STRATEGIC INFORMATION SYSTEMS PLANNING (SISP) IN GLOBAL ORGANISATIONS

Thesis submitted for the degree of Doctor of Philosophy by

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‘O lord! Increase me in knowledge.’

[*Surah Taha: Ayah 114*]

PhD Abstract

In a comprehensive review of literature on the strategic adoption of information systems (IS), various approaches to strategic IS adoption were unable to verify and coordinate different factors for IS investment as a strategic business unit. An assessment of different models in this area through the review of empirical case studies was required to identify the factors that affect IS strategic adoption, because these factors support the evaluation and adoption of both the process and result of IS strategic adoption. Thus, a study to investigate and evaluate the adoption of strategic information systems planning (SISP) within organisations is required in order to identify the factors that affect this type of adoption. The research in this thesis takes into account the adoption process and the factors for the adoption of SISP. There is also a need to understand and evaluate different IS planning techniques within a framework that can support decision-makers through the entire IS strategic adoption process. This framework is a component of the proposed novel model that considers other crucial factors that influence IS strategic evaluation and adoption. Decision-makers may employ such a model and evaluation framework that considers important SISP criteria, such as (a) SISP benefits, (b) SISP requirements and, (c) SISP drivers, as an important reference tool.

After presenting the conceptual components of this research, the empirical side expresses the application of a qualitative research approach through a case study strategy to investigate the proposed model of SISP adoption. As a result, two global organisations were investigated, reported, and analysed. Additional factors for the adoption of SISP emerged from these analyses. The proposed conceptual model was modified to present 11 factors that influence the adoption of SISP, including (a) planning team; (b) benefits; (c) requirements; (d) drivers; (e) costs; (f) IS performance measurement; (g) framework for the evaluation of SISP techniques; (h) SISP methods; (i) SISP tools; (j) support; and (k) IS strategy.

The primary contribution of this thesis is a comprehensive novel model for the evaluation and adoption of SISP. The model includes two levels of original contribution. Firstly, it accounts for previous studies in SISP and their factors, which supports the conceptual level of this contribution. The researcher incorporated and extended these studies to merge the factors which were recognised in the normative literature. In addition, factors from empirical work have also been combined in the proposed model, thus developing a consistent paradigm for the evaluation and adoption of SISP. Secondly, the concept and process of the proposed model can be applied as an educational guide throughout the IS strategic evaluation and adoption process. Nevertheless, this model contains a proposed framework for the evaluation of IS strategic planning techniques as factors that influence the adoption of SISP. This framework is novel, since it is a part of the proposed model as well as a classification of IS planning techniques, and supports decision-makers' understanding and evaluation of planning techniques during the adoption of SISP.

Keywords: Information systems, IS strategic planning adoption and evaluation, IS strategic benefits, IS strategic requirements, IS strategic drivers, IS strategic planning techniques, and global organisation.

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Declaration

This dissertation provides a report of the study conducted by Abdullah Basahel. Some of the material contained within this thesis has been published in the following publications:

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[4] Basahel, A. & Irani, Z., 2009a. Novel Taxonomy for Evaluation of Strategic Information Systems Planning (SISP) Techniques. In *UK Academy for Information Systems (UKAIS)*. Oxford, UK.

[3] Basahel, A. & Irani, Z., 2008. Conducting of the linkage between information systems strategy (ISS) and Operation Strategy in the case of 'X'Airlines in Arabic gulf country. In *European, Mediterranean & Middle Eastern Conference on Information Systems (EMCIS)*. Dubai, UAE.

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[1] Basahel, A. & Irani, Z., 2007. Exploration of the relationship between information systems (IS) activity and marketing activity in the case of 'X' Airlines in developing country. In *European, Mediterranean & Middle Eastern Conference on Information Systems (EMCIS)*. Valencia, Spain.

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Chapter 1: Introduction

1.0 Introduction

Information systems (IS) are now considered by organisations and industries much more than they used to be following the transformation of their business through numerous business processes and applications. Later in last century, the planners, as programmers, considered technological innovation more than the business aim. At that time, business processes and applications were not a high priority and there was no real awareness of planning roles. This caused a set of complex technological infrastructure problems for organisations that needed a huge amount of time, maintenance and cost (Avison et al., 2003). At the same time these technological infrastructures were unable to cope with business changes such as requirements and drivers considered in chapter 2. Then, information systems (IS) planning emerged as a method of solving problems of connectivity between business and technology in a way that serves businesses (Earl, 1996; Turban et al., 2005).

Attention to strategic IS/IT adoption has improved and continues to be an important issue in many industries and organisations (Sledgianowski et al., 2006; Philip, 2007). This kind of planning has been called by different names such as information systems planning, information technology planning, strategic information systems adoption, information systems strategy and strategic information systems planning. They are applied equally to refer to IS strategic adoption in this research. Their goal is to connect IS/IT with business (Galliers et al., 2003).

The improvement in connectivity between IS/IT and business has become even more important in an uncertain business environment. Principally, this is because this type of planning increases the effectiveness and efficiency of the business through time and cost saving via IS/IT investment. Further, IS/IT strategic adoption now supports organisations to compete within their own industries as considered in chapter 2.

However, the necessity of understanding the business is an important requirement in order to develop a successful IS/IT plan. This type of understanding requires the involvement of the decision-makers within the organisation in order to understand the value of IS/IT investment. Some researchers such as Galliers et al. (2003), Turban et al. (2005) and Ward et al. (2006) have considered this issue in the literature but improvement is still limited and needs further scientific as well as practical research.

Strategic information systems planning (SISP) seeks to justify IS/IT investment as well as its impact on organisations. This justification can be achieved through a greater focus on benefits, requirements and drivers of both business and IS/IT to adopt SISP. This thesis examines and investigates *the evaluation and adoption of strategic information systems adoption within global organisations.* Many authors such as Egelhoff (1988), Galbraith (1974), Huber (1989) and Thompson (2003) have applied information processing models on global organisations and they concluded that high-level information processing is an important criterion in international business strategies (Earl, 1996). As mentioned earlier, IS/IT strategy is important in the planning process in the sense of market position and competition. In other words, e-commerce plays a crucial part in developing IS/IT strategy. One issue is international or global competitiveness. So, the level of integration, both internally and externally, is highly recommended in order to use IS/IT effectively as an organisational resource. As Shore (2006) suggested, there are two inconsistent pressures in managing global service organisations. Firstly, to what extent should operations be decentralised and with what business process should it be outsourced? Secondly, is there a competitive pressure to centralise the function's management and integrate the operations of the organisation?. This chapter introduces the rationale for undertaking this research, the aims and objectives of the research and outlines the thesis.

1.1 Background to the Research Problem

Information technology (IT) has had an important impact on transforming most industries and markets. King (1995), Luftman (1996), Earl (1993), Goff (1993), Robson (1994) provided an explanation of the impact IT has had on industries and markets. Integration expresses how IT and business align with each other (Luftman, 2000; Avison *et al*., 2004; Silvius, 2009). It has been reported that the alignment between IS/IT and organisational objectives is an important issue in supporting business success (Turban *et al*., 2005; Ciborra 1994; Southon *et al*., 1999; Kawalek, 2007). It is also one of the key strategic concerns of IS

managers (Galliers and Leidner, 2003; Applegate *et al*., 1999; Earl, 1996; Avison *et al*., 2004; Laudon and Laudon, 2004; Robson, 1997; Ward and Peppard, 2002). Functional integration or cross-domain alignment connects the external positioning and the internal environment of the organisation. Thus, it is important to maintain a connection between IT and business strategies if there is any change in the marketplace, because this change may affect the business strategy which should run in parallel with IT strategy (Burn and Szeto, 2000). However, from IT as strategy, the importance of competitive advantage has emerged. Porter (1985) defined competitive strategy as a broad-based formula in three dimensions: how the firm is going to compete, what its goals should be and what plans and policies will be needed to achieve those goals (Haberberg and Rieple, 2001; Joyce and Woods, 2001, Applegate *et al*., 2008). A well-defined strategy may lead to competitive advantage for a firm within its industry. Competitive advantage occurs when a firm leads its competitors in some respects, such as cost, quality or time saving. This helps it to control the market and increase profit (Pearlson *et al*., 2000; Haberberg and Rieple, 2001; Gonzales *et al*., 2009).

Strategic information systems (SIS) support organisations through integration with strategic goals and by the ability to clearly improve performance and productivity (Haberberg and Rieple, 2001; Galliers and Leidner, 2003; Applegate *et al*., 1999; Earl, 1996; Laudon and Laudon, 2004; Robson, 1997; Ward and Peppard, 2002). Any IS, as well as other business units, has the ability to significantly change goals, processes, products or the environment in which the business seeks competitive advantage (Haberberg and Rieple, 2001; Joyce and Woods, 2001; Mäkipää, 2006). Much of the literature suggests that without alignment between business and IS/IT organisations may not be competitive or successful. Also, the combination of strategic planning at all organisational levels and prioritisation of projects by executive committees is vital to the alignment process (Galliers, 1991; Southon *et al*., 1999; Avison *et al*., 2004; Ariyachandra and Frolick, 2008).

In order to achieve competitive advantage, there is a need to analyse competitive issues such as cost reduction, growth and innovation. Some researchers such as Smaczny (2001) have argued that IS/IT alignment is not separate from business strategy by using the term ‘fusion’ (Avison *et al*., 2004). Porter (1985) produced a framework called the ‘competitive forces’ model. This model comprised five forces, namely the threat of new competitors, the bargaining power of suppliers, the bargaining power of customers, substitute products or services and rivalry among existing firms in a given industry (Haberberg and Rieple, 2001; Joyce and Woods, 2001; Pearlson *et al*., 2000; Horn, 1998). Electronic business (E-business), for example, has a strong impact on the nature of competition and changes it (Earl and Khan,

2001, Applegate *et al*., 2008). This shows how could IS/IT as strategic unit contribute in organisation competition through IS-business alignment.

The concept of integrating a business plan (BP) with information systems planning (ISP) was first emphasised by King (1978). His methodology argued that information systems strategy (ISS) should be formulated relying on organisational strategy. This methodology is used by IBM to adopt its business systems planning. This one-way support from ISS to BP was improved to become a two-way interaction between ISS and BP by King and Zmud and this was the basis of many future studies in this area. In 1987, Synnott explained ISP and BP integration at five levels: no planning; stand-alone planning; reactive planning; linked planning and integrated planning. Goldsmith, in 1990, used Porter's value chain and competitive forces framework in the information engineering methodology for ISP. He argued that ISP and BP should not be separated and both should be developed by the same processes at the same time. This is similar to the integrated planning of Synnott (Teo and King, 1997).

However, there are many models of strategic IS and alignment, but the two models which have been focused on by most researchers are MIT90s by Scott Morton (1991) and the Strategic Alignment Model (SAM) by Henderson and Venkatraman (1989) (Avison *et al*., 2004). Information systems strategic adoption has been defined as:

> *'the process of establishing objectives for organisational computing and identifying potential applications that the organisation should implement.'*
>
> *Teo and King (1997, p.1)*

Pant and HSU described strategic information systems planning (SISP) as:

> *'the analysis of a corporation's information and processes using business information models together with the evaluation of risk, current needs and requirements'*
>
> *Pant and HSU (1999, p.15)*

The importance of ISP comes from information systems (IS) as an organisation attempts to increase its benefits in efficient applications, business processes reengineering, and competitive advantage gaining (Teo and King, 1997; Pant and HSU, 1999; Turban *et al*., 2005; Applegate *et al*., 1999; Earl, 1996; Ward and Peppard, 2002; Gonzales *et al*., 2009). Weill and Broadbent argued that an understanding and improved relationship between IT and business support a firm to focus on IT applications that enable business strategy. Nevertheless, ISP has been described by Reich and Benbasat (1996) as a mechanism to obtain what they call linkage, so there is some disagreement about whether IS integration is a process or an outcome (Avison *et al*., 2004). Luftman (2000) and Hinton (2006) argued that there are activities that management perform to obtain goals among IT and other organisational functions and this is the focus of strategic alignment.

It has been suggested that, aligning investment in IS with the business plan is one of the recommended areas in which SISP can contribute. This matter is concerned with ISS as Earl suggested (Galliers and Leidner, 2003; Earl, 1996). There are many synonyms for strategic alignment such as fit, integration, bridge, harmony, fusion and linkage (Avison *et al*., 2004; Luftman, 2000). All these synonyms have been applied interchangeably in this research. A study by Earl for 27 companies within the UK for the purpose of using SISP concluded that integrating IS with business needs was the primary objective of SISP. In his study, he used five approaches to differentiate between applications of SISP activity. These are business-led, method-driven, administrative, technological and organisational, and he concluded that the organisational approach was the most successful one (Galliers and Leidner, 2003; Earl, 1996). Another survey of 500 executives from 300 US organisations by Luftman *et al* (1996) revealed that nearly half of those executives believed their organisations had reached alignment stage (Avison *et al*., 2004).

IS-business alignment can be influenced by many factors. There are five factors suggested by Reich and Benbasat. These are: exchange of knowledge between business and IT/IS executives; IT implementation success; level of communication between IT/IS executives and business; level of connection between IT/IS and business planning processes (Galliers and Leidner, 2003, Avison *et al*., 2004; Moore *et al*., 2007) and business direction. These factors influence short-term alignment (Avison *et al*., 2004). There is also a suggestion that, to achieve and sustain strategic alignment is to maximise enablers and minimise inhibitors. These enablers are senior executive support for IT, IT involvement in strategy development, IT understanding of the business, business - IT partnership, prioritisation of IT projects and IT demonstrating leadership, whereas, the inhibitors are lack of a close relationship between

IT/business, IT s not prioritising well, IT failing to meet commitments, IT not understanding business, senior executives not supporting IT and IT management lacking leadership (Luftman, 2000; Villarreal *et al*., 2009).

Some researchers such as Platts *et al*. (1996) went on to evaluate the process of strategy itself rather than the results (Acur *et al*., 2006). However, Willcocks argued that the alignment between ISS and BP is an important factor in evaluating information systems plans. He also noted that this is a common problem in public sector organisations. A study by Ernst and Young for 86 UK firms concluded that only two firms reached alignment stage (Galliers and Leidner, 2003; Willcocks *et al*., 1997).

Three problematic trajectories in obtaining alignment were identified by Hirschheim and Sabherwal (2001): paradoxical decisions, excessive transformation and uncertain turnaround (Avison *et al*., 2004). So, the problems accrue in implementation and evaluation of integration models as a strategic issue for many reasons. The most important reason may be the differentiation between countries or even between organisations, because every firm has its own unique factors that affect its strategy.

As mentioned earlier about the importance of IS strategic adoption, most of these studies are concerned with developed countries such as the UK, USA, Australia and Canada. However, there is a gap in applying such studies to developing countries such as India and Brazil as Palvia and Palvia addressed in their study (Galliers and Leidner, 2003). Because, as different organisations environment in different countries counts different factors that impact IS strategic adoption in global organisations. So, different resources and capabilities for organisation are different and need to be counted by the decision makers.

1.2 Current Gap in the Research

IS strategic adoption is a core strategic issue for both practitioners and researchers (Carr, 2003). Although many books and articles have discussed IS/IT strategic adoption and strategic integration as a strategic issue in theory (Turban *et al*., 2005; Applegate *et al*., 1999; Earl, 1996; Ward and Peppard, 2002), there is potential room for improvement in this area by assessing these models that discussed more in chapter two using empirical case studies to identify factors that affect the IS strategic adoption, because these factors support the

evaluation and adoption of both the process and result of IS strategic adoption, because the adoption process differs from one organisation to another, for many reasons, such as culture and business type (Currie and Galliers, 1999; Hunter *et al*., 2006). As mentioned in part 1.1 progress in this area of research came by analysing existing models to identify factors that support the IS strategic adoption process in global organisations. There is a need to apply IS as a strategic issue in alignment with other business activities and not only as traditional disc-office support. In order to achieve success there should be connectivity between all levels of management and activities within an organisation at operational level to support the work flow and at corporate or senior level to address the resources and capabilities of IS. So, there is a need for a study to investigate and evaluate the adoption of the strategic IS process with its techniques within global organisations to identify the factors that affect this adoption by developing a model that can support decision-makers during the adoption process. In chapter 2 many factors that affect the IS strategic adoption presented in different studies, however grouping these factors is important to support the decision makers to understand the organisation resources and capabilities. These factors divided into benefits, requirements, drivers, IS strategy, planning team, strategic planning techniques, systems development methods and IS planning tools in this thesis. These factors divided as strategic perspective that influences the decision makers' views and behaviours. These grouping support the decision makers to identify and understand these factors and their relationships. Nevertheless, understanding the organisation situation requires involving strategic techniques. These techniques support to assess the capabilities and resources of the organisation. Therefore, evaluating these techniques can be supported by IS strategic requirements and drivers as presented in chapter 3.

1.3 Aim, Objectives and Novelty Statement of the Study

In this section more explanation of the research aim, objectives and contribution statement presented.

1.3.1 Research Aim

The research in this thesis derives from the importance of IS strategic issues, which may affect the success or failure of a business strategy (Chan and Huff, 1992; Kang and Park, 2005; Yetton, 1994; Heo and Han, 2003; Silvius, 2009), and researchers need to improve their ability to measure IS/IT strategy fit (Chan and Huff, 1992). The IS strategic dimension in this

research considers the process and techniques of IS strategic adoption in the absence literature and empirical studies of such techniques and their impact on the strategic adoption process of IS. Therefore, there is a need to understand and evaluate different IS strategic planning techniques (e.g. SWOT, opportunity categorising) in a framework that can support decision-makers through the IS strategic adoption process. This framework is a factor in the proposed conceptual model that considers crucial factors (novel contributions). understanding IS strategic benefits, requirements and drivers influence IS strategic evaluation and adoption. Such a model (see Figure 3.2) and evaluation framework can be employed as a reference tool by decision-makers considering important criteria of IS strategic adoption. These criteria are: (a) SISP benefits, (b) SISP requirements and, (c) SISP drivers. Nevertheless, such a model and framework may also provide organisations with a competitive advantage or help them to sustain competitive advantage through better analysis and investment of strategic IS. Thus, *the aim of this research is to:*

> *Evaluate the adoption of Information Systems Strategic Planning in global organisations*[1]*. As a result of doing so, to develop a model that can be employed to support decision-makers.*

1.3.2 Research Objectives

From the aim of this research the objectives are:

- To review comprehensively the literature in the area of strategic information systems adoption with attention to the adoption and evaluation of the IS strategic adoption process.
- To identify and classify the benefits, requirements and drivers that influence decision-making in IS strategic adoption in global organisations.
- To investigate and evaluate those approaches such as impact and alignment that influence the adoption of strategic IS. In doing so, justifying the IS strategic adoption process that has been adopted.
- To identify and assess the techniques related to IS strategic adoption. In doing so, justifying why such techniques were adopted.
- To develop a conceptual model for evaluation and adoption of strategic IS.

[1] Global or International organisation means a firm that has a set of activities performed across national boundaries to perform the organisational goals (Deresky, 2008).

1.4 Structure of the Thesis

This PhD thesis has been structured according to the Phillips and Pugh (2000) methodology. So, its components are: a) background theory; b) focal theory; c) data theory and d) novel contribution. The background theory considers SISP justification and introduction of the research as presented in Chapter 1. It is also to clarify the research problem as presented in Chapter 2. The third chapter of this thesis reflects the focal theory, as it discusses and develops the conceptual model that is proposed in this thesis. The data theory is developed and discussed in both Chapters 4 and 5. Chapter 4 of this thesis considers the research methodology. This methodology discusses the philosophy, approach, strategy and data collection methods used in this research. Additionally, data theory in Chapter 5 considers the case study protocol and data analysis in which case studies of this thesis are reported. The novel contribution is presented in Chapter 6 where the proposed conceptual model and the evaluation framework have been revised in the light of the results in Chapter 5. So, the importance of this thesis is contained in Chapter (6) through the development of the research area considered in Chapters 2 and 3. Finally, Chapter 7 is concerned with a general research summary of the work presented through the thesis, research contributions and future work recommendations.

Figure 1.1 presents a visual representation of the structure, development and conclusions of the thesis.

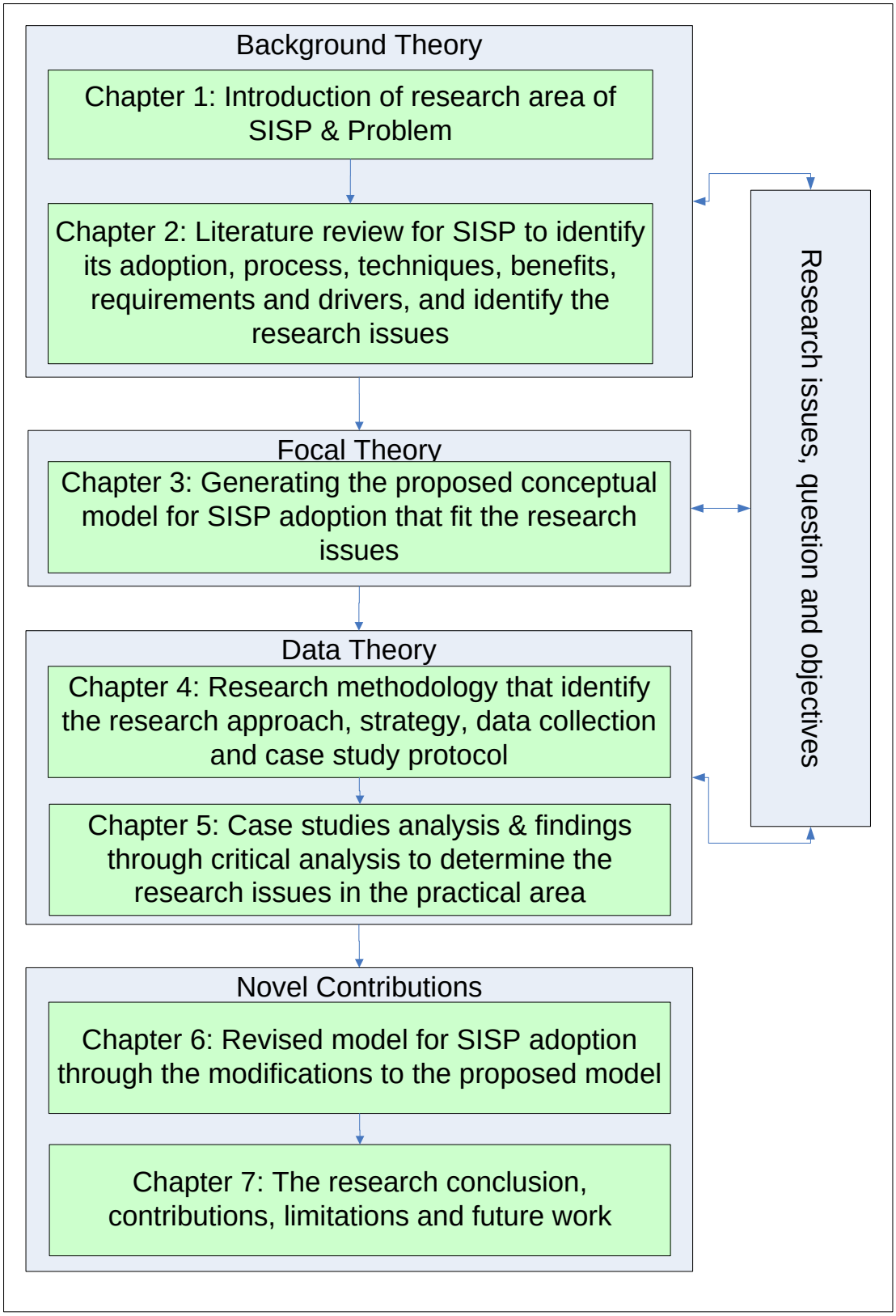

Figure 1.1: Thesis outline

From Figure 1.1 the following summaries of the thesis chapters are given below:

Chapter 1: Introduction to the Research

In this chapter the main issues of IS strategic adoption are discussed as an introduction in order to consider its adoption. These issues consider the requirement of IS justification as a strategic activity in organisations and understanding of the adoption process of IS strategic adoption. The aim and objectives of the research are stated in support of the outline of the thesis chapters (see Figure 1.1).

Chapter 2: Comprehensive Literature Review-Background Theory

After considering the introduction and scope of the research in this chapter, the literature review of IS strategic adoption starts in Chapter 2. At the start, this chapter discusses the nature of IS strategic adoption in terms of approaches and roles. Then a critical review of the different models for SISP adoption is considered. In doing so, models have been divided into general and process models for SISP adoption. Following that, various classifications of IS strategic adoption issues such as benefits, requirements, drivers and techniques are presented.

Chapter 3: Proposed Conceptual Model for IS strategic Adoption -focal Theory

A proposed conceptual model for SISP adoption is presented in Chapter 3 (see Figure 3.2). This proposed model has been developed as a tool to support decision-makers through the IS strategic adoption process. Moreover, the model can be also applied by practitioners and researchers to analyse and understand SISP adoption. In doing so, this chapter investigates and analyses proposed factors that influence the adoption of SISP. The proposed model comprises the following factors: (a) planning team, (b) SISP benefits, (c) SISP requirements, (d) SISP drivers, (f) IS strategy, (g) SISP tools, (h) SISP methods and, (j) proposed framework for evaluation of SISP techniques. The proposed evaluation framework for SISP techniques supports decision-makers in assessing different IS planning techniques through understanding these techniques. In this, *this proposed model contributes on different levels:*

1. Conceptual contribution of different factors that influence the adoption of SISP. These factors have been presented separately in previous studies.
2. The concept and process of the proposed model can be applied as a map for the evaluation process of IS as a learning process.
3. This model contains a proposed framework for evaluation of IS strategic planning techniques as factors that influence the adoption of SISP. This framework is novel in that it is part of the proposed model as well as a taxonomy of IS planning techniques.

Chapter 4: Research Methodology-Data Theory

As presented in both Chapters 2 and 3, the background of the research, research issues and the proposed conceptual model support greater understanding of the issues in order to select the appropriate research methodology. This research methodology is identified and justified in Chapter 4. As the research aims to investigate and evaluate the adoption of SISP in global organisations and identify its factors, the appropriate method for considering the literature review was a deductive approach, in order to develop the appropriate conceptual model for SISP adoption. A case study approach is the study method because there is a need to understand the measurements of 'what, why and how' in order to understand IS strategic adoption issues, so, there was a need for knowledge of its adoption and experience. In doing so, the case study is a research strategy in which real life IT is studied within an organisation.

Chapter 5: Empirical work and Research Findings-Data Theory

After understanding the research issues in Chapters 2 and 3 and research methodology selected in Chapter 4, this chapter describes the case studies employed. Two global organisations have been considered and their efforts to adopt SISP are reported. Therefore, Chapter 5 provides: (a) organisational backgrounds for the case studies, (b) the motivation for adoption of SISP, (c) adoption process of SISP, (d) evaluation of SISP techniques, (e) SISP benefits, (f) SISP requirements and, (g) SISP drivers.

Chapter 6: Revised Model for IS strategic Adoption-Novel Contribution

From the analysis and findings of the case studies presented in Chapter 5, the sixth chapter revised the proposed conceptual model for SISP adoption as presented in Figure 6.1. This revised model considers: (a) reviewing the existing factors influencing the adoption of SISP in the case studies and, (b) allocating and describing additional factors that were extracted from the empirical work to the proposed model. Different lessons learned from these two case studies are summarised at the beginning of this chapter. Thus, the aim of this research is achieved through presenting the revised model of SISP adoption for both practitioners and researchers.

Chapter 7: Conclusions of the Research-Novel Contribution

A summary of the work for this thesis is presented in Chapter 7. It considers the descriptions of the research aim, objectives and main findings of the thesis. Then, the novel research contribution is discussed and stated. Furthermore, the main conclusions about limitations of the study and an explanation and discussion of suggestions for further work in this research area are given.

Chapter 2: The Literature Review

2.0 Introduction

As presented in Chapter 1, more attention needs to be paid to IS strategic adoption in the global organisations. The literature suggests that the findings derived from the study of IS strategic adoption in non-global organisations may provide some understanding of the phenomenon of IS strategic adoption or SISP adoption, as the terms are used interchangeably in this research. However, the findings cannot be generalised or applied to global organisations without first examining the adoption of strategic IS. Among others, this may be attributed to the characteristics of global organisations: (a) variety of natural resources in different countries, (b) structure, (c) operational and functional activities and (d) decision-making processes that significantly differ from other non-global organisations. In order to study IS strategic adoption in global organisations, Chapter 2 analyses the literature and identifies the research issues. In doing so, this chapter presents the background theory that is used in constructing the conceptual model presented in Chapter 3.

This chapter critically reviews the literature relating to IS strategic adoption in global organisations. It presents: a) a classification of the types of SISP methods that follow an information systems development life cycle (SDLC), b) a taxonomy of strategic adoption techniques for IS, and c) a classification of strategic adoption tools for IS. The chapter also covers the concepts of strategic management (SM), strategic information systems planning (SISP) and inter-organisational information systems (IOS). These topics rely on understanding a business plan (BP), information systems plan (ISP), integration methodologies, models, and the connection between all these topics, specifically, IS strategic adoption for a global environment. Nevertheless, benefits, requirements and drivers that are factors in global IS strategic adoption are also presented in this chapter.

Globalisation in business is growing quickly for many reasons. A huge number of global and multinational firms both import and export, and some of these companies compete with each

other from different countries where employment and other costs or natural resources vary. Moreover, some of these organisations have the benefit of low-cost production facilities in certain countries (Dhillon, 2005; Deresky, 2008; Berghout et al., 2009). This has led organisations to improve their business operations, and IS is becoming important in providing solutions.

As mentioned by many researchers such as Earl (1996) and Applegate et al., (2008), IS strategic adoption means considering internal as well as external integration of different systems, processes and applications for organisation. When external integration is considered, internal integration should also be discussed because the two are interdependent. Therefore, adoption of IS strategic integration is an important issue to consider in the comprehensive strategic adoption process of an organisation.

This chapter starts with the motivation concerning the strategic adoption for IS. The next section gives an overview of IS strategic adoption, considering it in terms of alignment, dimensions and roles, approaches, levels, systems infrastructure and IS strategic integration. All these points help to clarify the benefits, requirements and drivers of such adoption. Nevertheless, a model that identifies suitable methods, techniques and tools for this adoption, especially at the strategic level[2] of a global organisation, has not been investigated widely (Hunter, 2006; Shore, 2006; Moor, 2007; Saglietto, 2009). From these issues, it is clear that an increased understanding of both business and the IS environment would allow adoption of strategic information systems. This gap in theory will be discussed in Chapter 3 which presents the proposed conceptual model of the research.

The following sections present an evaluation of the need for IS strategic adoption by describing the benefits, requirements and drivers of IS strategic adoption that have been demonstrated by IS strategic adoption models (see Table 2.5 and Section 2.3.2) and validated through published case studies (see Tables 2.7, 2.9 and 2.11). The models section is divided into two subsections: the generic models and process models of IS strategic adoption. This is followed by ‘methods’, ‘techniques' and tools' sections. Figure 2.1 presents a summary of the chapter. The result of this chapter are taxonomies of the benefits, requirements and drivers of IS strategic adoption. These taxonomies will help determine the factors and techniques that comprise the proposed conceptual model in Chapter 3.

[2] Strategic level means the board of directors within an organisation. At this level of management whole organisation planning and direction issues such as objectives, vision, policies are formulated. There are other levels such as operational level and middle managerial level.

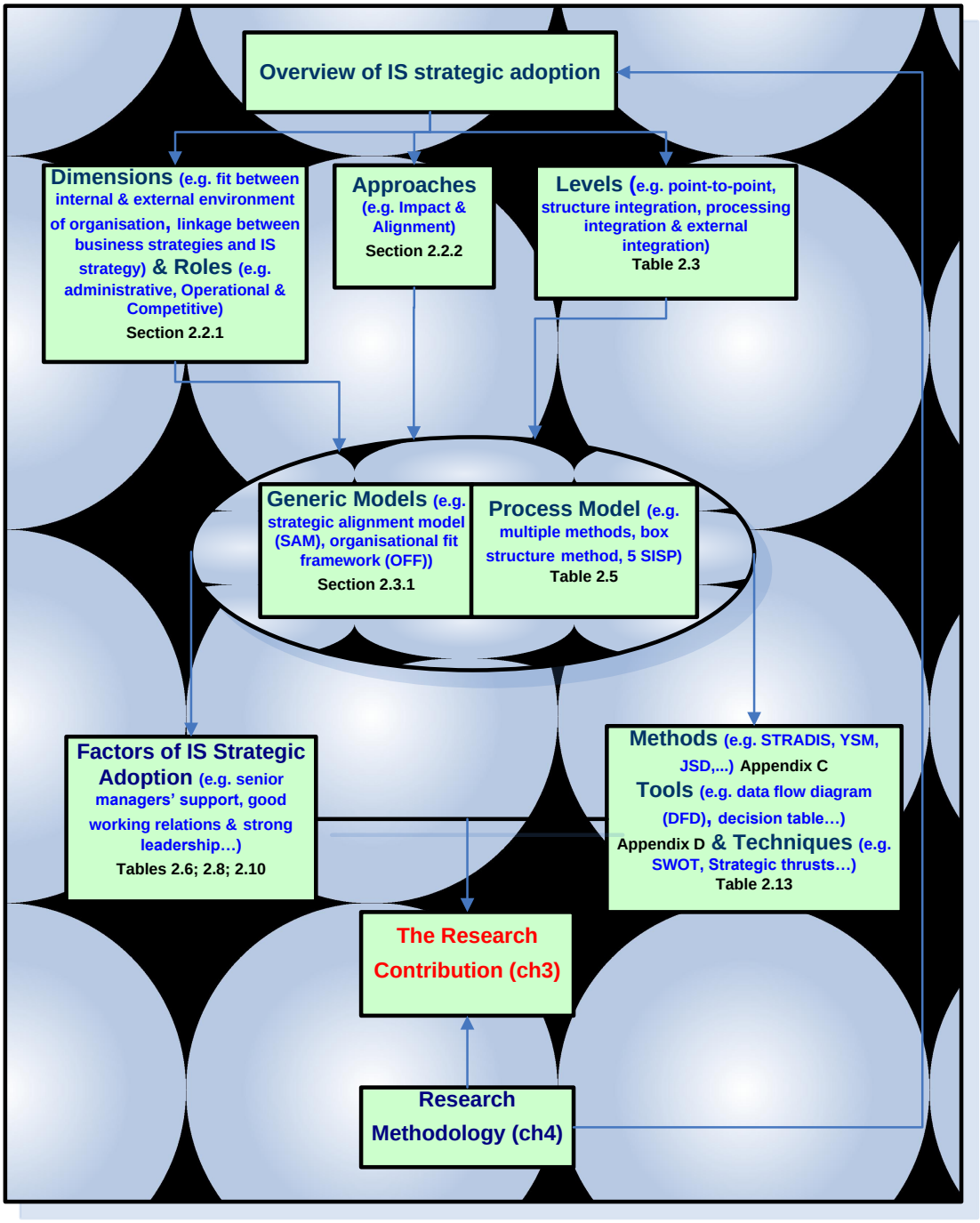

Figure 2.1: The sequence of Chapter 2

2.1 Motivation for Adopting Strategic Information Systems

There are crucial motivations to consider in strategic information systems (IS) adoption. These motivations are strategic, organisational, managerial, and technological. They should be reviewed with attention to an organisation's environment so they run in parallel with its goals, enabling the effective and efficient management of the organisation's resources. The vision and goals of an organisation should be clear in order to match it with resource allocation. The strategic or master plan, which is the result of the strategic planning process, needs to be reviewed as an ongoing process because it is the focal point for implementation decisions. It has been reported that IS strategy must contain a corporate plan, a defined role for IS in the organisation from a management viewpoint, and the stages of IS maturity and its management (Galliers, 1991; Robson, 1997; Clarke, 2006; Magdaleno et al., 2008). The following points consider (1) strategic, (2) organisational, (3) managerial and (4) technological motivations in more detail.

2.1.1 Strategic Motivation

- SISP support(s) the success of an organisation when an implementation is successful. Successful implementation means alignment of the results of SISP with the business needs (Clarke, 2006). Alignment of IS-business is important in evaluating SISP. The latter seeks to affect the firm beneficially; one way of doing so is the fit between IS projects and the firm's objectives: 'Alignment is the degree to which the information system plan reflects the business plan' (Lederer and Salmela, 1996, p. 248). It has been suggested that alignment is one of four dimensions used to evaluate SISP success. Here, alignment means the linkage between IS strategy and business strategy (Newkirk, Lederer and Srinivasan, 2003; Grover and Segars, 2005; Silvius, 2009). Therefore, the integration issue is one of the most important goals of SISP as well as an important stage within SISP. Research by Teo and King (1997) showed some of the integration conceptualisations such as integration levels and their explanations as mentioned in Table 2.3. Thus far, SISP is considered a difficult process.
- Integration of IS-business is a corporate-level problem that needs a corporate strategy, because it meets only an average of 70% of organisational needs as explained by Markus (Mendoza et al., 2006). A study (1997) by CIO Communications Inc. of 301 IT executives ranked IS/IT strategy as the most important concern for CIOs (Turban et al., 1997).

- There are many motivations to involve a firm with IS strategic adoption. The first is to support the firm by focusing on information technology (IT) applications that improve the firm by facilitating the development and implementation of a connection between business and IT strategies. The second motivation is to increase profitability by maximising the IT investment of the organisation and obtaining an alliance with its business strategies. Strategic alignment focuses on IT as a new cost centre and on how it affects business strategy. Additionally, it also shows the fit between strategy and infrastructure, as well as the business-IT functional integration (Papp, 1999; Mohdzain et al., 2007, Ariyachandra and Frolick, 2008; Eom, 2009). IS/IT activities have had various effects on industries and firms, and within individual firms over time (Applegate, McFarlan, and McKenney, 1999). Nevertheless, a study in 2003 by the National Computing Centre (NCC) showed that a high number of firms that were concerned with strategic issues kept IS/IT strategy aligned with business strategy (Turban, Rainer, and Potter, 2005).
- There is a connection between success in the competitive global environment and the integration between IS and global business strategy. It is suggested that to obtain overall alignment, an organisation should consider its IS/IT mission, assess the environment, assess legacy systems' availability and capability, assess organisational objectives and strategies, IS/IT objectives, strategies and policies, and the potential impact of IS/IT (Galliers, 1991; Turban et al., 1997; Tapia et al., 2008).

2.1.2 Organisational Motivation

- A study by Lederer and Salmela (1996) examined the relationships between components of the final version of SISP theory as they stated. These components are the external environment, internal environment, planning resources, planning process, information plan, implementation of the information plan and alignment of the IS plan with the business plan. Their study stands on environmental conditions and managerial behaviours. All these components are dependent variables, so they can affect each other. They suggested that SISP is a process of integration IT within firms, especially for electronic-strategy (e-strategy) which involves electronic-commerce (e-commerce). E-commerce contains many applications such as electronic business (E-business), electronic government (E-government) and collaborative commerce (C-commerce). All these applications are crucial in building the organisation's strategy and its direction.

- There are many reasons that make IS strategic adoption important to end-users. Firstly, every business unit has its IS plan. Secondly, units also participate in IS planning for the whole organisation, so they need to understand the process. Finally, the infrastructure is the result of organisational IS planning, hence every unit will be affected by this infrastructure (Turban et al., 1997; Alter, 2009).

2.1.3 Managerial Motivation

- The availability of many types of software and technologies that support integration is important, but at the same time managerial and organisational issues are important too in building the organisational strategy. The contribution of IS at a strategic level is highly recommended because of the rapid development of technologies and IS. Management needs to consider in which part of the organisation technologies can be used distinctly from its competitors and in which part they can obtain IS competency. Therefore, the organisation should consider the planning process part of IS strategy. It has been suggested that the choice of manufacturing resource planning is the natural choice for improving process performance and competitiveness within manufacturing organisations (Irani, 2002). Furthermore, there should be a good working relationship between the chief executive officer (CEO) and chief information officer (CIO), because this relationship is the basis for a complex planning process (Turban et al., 1997; Tai et al., 2000; Denford et al., 2009).

- It has been argued that the IS planner job has roles that distinguish it according to managerial types. Firstly, there is the IS resource allocation as an active participant in management decisions. Secondly, there is the process facilitator with planning skills to support others obtaining management decisions on IS strategy (Robson, 1997; Levy, 2000; Clarke, 2006).

- Most of the surveys that intend to examine the important issues of managing IS function are usually concerned with general management issues and not management details. They are also concerned with functional issues which may affect the effectiveness of the organisation. Examples of general management issues include how to achieve strategic advantage from IS/IT, how to align IS/IT strategy with business strategy and how to organise the IS/IT function. Examples of functional issues are how to plan and build IS/IT infrastructures. Consequently, both management issues and functional issues are strategic management issues of IS/IT (Eral, 1996; Hinton, 2006).

2.1.4 Technological Motivation

- In order to apply IS strategically for business, the management should distinguish between technology type, technology capability, useful technology and strategic technology, as Feeny suggested in 1989 (Robson, 1997).
- An organisation's work such as structure, management and functioning can be impacted by technology. Organisation analysis can be supported by the nature of technology (Mullins, 2005).

These different types of motivations show that there is a need to understand different types of factors that influence IS strategic adoption. These factors need more consideration from both literature and empirical researches. These factors can be classified and grouped in order to be understood by organisations.

2.2 Overview of Information Systems Strategic Adoption

Strategic decision-making reflects the strategic management process (Clarke, 2006). This process is described in the well-known model of strategic management elements created by Johnson and Scholes (1993). This model has been used by many researchers such as Miller and Dess (1993) and Row et al. (1994). Nevertheless, it helps to organize thoughts without losing sight of the interactive nature of its elements. The model also helps to illustrate the plan components which come from planning elements. Strategic planning is a process that supports creating and improving the integration between an organisation's goals, resources and changing opportunities. This is expressed in the strategic planning process. This process is a continuous activity of assessment, selection and implementation, so it needs a framework that may help when evaluating alternatives and influences. This process produces the strategic plan which contains the mission, goals, strategy and policy (Robson, 1997; Gottschalk, 1999; Kawalek, 2007). An IS/IT strategic plan is:

> A set of long-range goals that describe the IT infrastructure and major IS initiatives are needed to achieve the goals of the organisation.
>
> Turban et al. (2005, p. 338)

Therefore, the competition has an important role in developing IS strategic adoption. There are four categories for using IS for competitive advantage suggested by Ward and Peppard (2002). These are: 1) building connection channels between an organisation and its customers and suppliers; 2) improving the value-adding process and value-chain primary activities by developing integration of their use of information; 3) using the information to allow the organisation to develop or produce new products/services and markets, and 4) supporting senior management in the decision-making process to develop and implement strategies. Rayport and Sviokla (1995) suggested another categorisation. They divided the effect of IS in the market place (physical world) and in the market space (virtual world created by IS). Robson (1997) argued that this is no longer an issue, because the IS revolution impacts everything including whole industries and, in some cases, new industries. This may explain so-called industry transformations. What he suggested is organisational transformation in the way that the IS impacts the business in both revenue and cost. The organisation should try to obtain an equation between revenue and cost. Thus, the information should be seen more from a management perspective and used more as a resource for the business. This would support viewing the IS as an enabler for competitive advantage.

A strategic planning approach, which contains a five-step process suggested by Porter and Millare (1985), shows the potential of obtaining competitive advantage for an organisation. The steps assess information intensity, determine the role of IS in the industry structure, identify and rank the way in which IS might create competitive advantage, investigate how IS can create new business and generate competitive advantage. In doing so, there are three key points for management suggested by Robson to judge and use IS strategically. These are the critical relationships between the functioning of IS activity and operations on a daily basis, the critical connections between applications planned or being generated and future competitiveness, and the extent of the information intensity of the products and functional area (Robson, 1997; Levy, 2000; Hinton, 2006; Mäkipää, 2006; Basahel and Irani, 2008a; 2009f). There are many strategies that can be supported by IS to be used in organisations as presented in Table 2.1.

Strategy type	IS support and use	Reference(s)
Cost leadership	The organisation can obtain a competitive advantage from its customers or suppliers through reducing the cost of a product/service.	Laudon *et al*., 2004; Turban *et al*., 1997; Ward and Peppard, 2002
Growth	Through increasing profitability in the long term by increasing market share, obtaining more customers, or increasing sales, organisations grow.	Galliers *et al*., 2003; Turban *et al*., 1997
Alliances	Collaboration between an organisation and its partners can focus on core business and increasing growth.	Laudon *et al*., 2004; Turban *et al*., 1997; Saglietto, 2009
Innovation	Through creating new products/services, improving old ones, or improving the production process, organisations can obtain a competitive advantage. Innovation in IS may help.	Turban *et al*., 1997; Burgelman *et al*., 2008
Improve internal efficiency	Through improvement in business programmes, such as employee and customer satisfaction, quality, productivity, or improvement in decision-making and management activities, and by decreasing time to market, organisations can improve efficiency.	Laudon *et al*., 2004; Turban *et al*., 1997; Premkumar *et al*., 1994
Customer-orientation approaches	To increase the competition in the market, the focus should be on customer satisfaction. Organisational strategy should also focus on the customer.	Galliers *et al*., 2003; Laudon *et al*., 2004; Turban *et al*., 1997; Emdad *et al*., 2009
Differentiation	Through unique features, high quality, special services, or all of these, an organisation can be different from its competitors.	Laudon *et al*., 2004; Turban *et al*., 1997; Ward and Peppard, 2002

Table 2.1: Strategies that can be supported by strategic IS

It is considered that integration is the price of entry for running the business (Shore, 2006). From Table 2.1, strategic advantages can be obtained by creating strategies such as cost leadership, differentiation, growth, alliances, innovation, improved internal efficiency and customer-orientated approaches. These strategic advantages can be sustained in two ways. Firstly, an inward system, which is invisible to competitors and relies on secret information, can be used. This will be sustainable as long as an organisation retains the secret or competitors do not build a more advanced system. Secondly, the creation of a complex system which is too comprehensive, innovative and expensive to be duplicated can be used (Turban et al., 1997; Emdad et al., 2009).

Table 2.2 shows the components of strategic alignment between business and IS/IT. From both Tables 2.1 and 2.2, the connection between the type of strategy and components of strategic alignment are connected, as the goals of the organisation impact the selection of strategy type and infrastructure of organisation. This strategy type and infrastructure will

influence the other strategic alignment components such as process, governance and scope. This influences the CIO and top management team decisions through IS/IT strategic adoption.

			Business	IS/IT
Goals and Mission	Strategy	Scope	This shows the business environment with regard to its product/service. This means its markets, products/services, competitors and so on.	Core systems which contain technologies and applications.
		Competencies	Set of distinctive factors such as brand and R & D. These factors distinguish organisations from other competitors and these may become critical success factors or core competencies to create competitive advantages.	They are capabilities which come from systems to distinct IT services for all levels of management.
		Governance	It organises organisational relationships internally (management, stockholders) and externally (government, competitors, partners).	It reflects IT relationships both inside (IT management, other organisations' activities) and outside (service providers) for controlling resources, risks and responsibilities.
	Infrastructure	Architecture	This is the organisational structure. This describes how it organises its business and shows its hierarchy.	It expresses the policies, priorities and choices to create IT platform. This platform contains software, hardware, applications and data management as an integrative system.
		Process	It expresses the work flow within the organisation's activities and how to improve processes and specify value added activities.	It organises the work flow within IT activity. In other words, it organises the work flow within managing IT infrastructure.
		Skills	It emphasises human resource activities for employment process, motivation, training and culture.	It considers the requirements of IT employees, motivation, training and culture.

Table 2.2: Components of IS-business Strategic Alignment (Robson, 1997; Turban *et al*., 2005; Clark, 2006)

2.2.1 Roles and Dimensions of Strategic Information Systems

The IS strategic plan tries to achieve two issues. Firstly, it aims to obtain direction for IS by clearly identifying the route that IS should follow, and this is the IS mission (Robson, 1997). This mission should be directed by efficiency, effectiveness and competitiveness (Turban et al., 2005, Applegate et al., 2008). Secondly, this route should contain a formalised set of

benchmarks (Robson, 1997). Turban et al. (2005) suggested that there are three objectives of an IS/IT strategic plan: alignment with the business strategic plan, enabling users, applications and databases to be networked and integrated by providing IS/IT architecture and supporting IS/IT projects to be completed on time, within budget and have the required functionality by efficiently allocating IS/IT development resources for these projects (Wieringa et al., 2005; Hinton, 2006). There are three core elements of IS strategy. The first is a clear statement of IS objectives. The second is that both current organisational capabilities and problems resulting from current practices should be listed and evaluated. Third, the implementation plan shows the route to follow and knowledge of the start point as milestones (Robson, 1997). So, there are two parts to strategic planning. The short-term part explains the 'how' of the plan; this part needs to review and show technological change. The second part is the long-term part that refers to directing the 'what' of the plan. The most common things that affect the objectives of an IS plan are major corporate changes, external competitive opportunities and threats, and evolutionary changes in IS maturity (Sledgianowski et al., 2004).

In business, it has been suggested that strategy is an arrangement of activities to help organisations to deliver services or products in a way that satisfies customers or users who have their own objectives and constraints or financial issues (important stakeholders) (Mullins, 2005). Strategy, by accident or design, attempts to develop resources, reach targets or deliver services or products (Haberberg and Rieple, 2001). For this reason, it is called strategic management. A case study by Irani (2002) found that there is a positive relationship between the justification of information systems to operational stakeholders and the level of commitment to the project success.

Strategic management considers the processes and products necessary to ensure the future of an organisation. This process is called planning when the product is the strategy itself (Clarke, 2006). Johnson and Scholes mentioned that strategic decisions are concerned with 'the scope of an organisation's activities, the matching of an organisation's activities to its environment, the matching of an organisation's activities to its resource capability, the allocation and reallocation of major resources in an organisation, the values, expectations and goals of those influencing strategies, the direction in which an organisation will move in the long–term and the implications of change throughout the organisation' (Robson, 1997, p. 5). It seems that strategic management is the decision-making process that supports an organisation in aligning its internal capabilities with its environment, opportunities and/or threats.

Johnson and Scholes (1993) built a strategic management process model which creates strategy and planning via strategic analysis, strategic choice and strategic implementation (Robson, 1997). It concerns the whole organisation, even when it is a day-to-day operating matter, in order to deliver its long-term plan and development (Bartenschlager et al., 2009). According to the size and type of the firm, this is the responsibility of different stakeholders (Robson, 1997, Cash et al., 2008). Brown (2005) suggested that strategic management development (SMD) encourages both strategic capability and performance within an organisation. He mentioned that there are four ways in which SMD may evolve according to the level of change within an organisation. He also explained that an organisation moves from one level to another. These levels are low, emerging, developed and mature. The organisation becomes experienced by transforming from one level to another. In order to do so, managers need to become familiar with the organisation's environment. Stacey argued this by adding that managers also require an understanding of how to react to changes and processes (Bonn, 2001). For doing so, an understanding of the roles of IS to meet these changes and processes is required.

2.2.1.1 Roles of Strategic Information Systems

Many researchers have suggested IS/IT as part of the strategy of firms, in accordance with IS/IT roles (Premkumar et al., 1992; Henderson and Venkatraman, 1999; Morgan, 2002). These roles are administrative, operational and competitive. The scope of IS/IT automation of accounting and control functions expresses the administrative role. This role requires the deployment of an efficient IS/IT platform for administration and control regarding the strategic management of the organisation. The operational role creates and deploys technology within the organisation, and this in turn helps to achieve capability of automating the business processes of the administrative activities. The deployment of IT infrastructure is the requirement of this role. This requirement helps in the selection of the business strategy (Henderson and Venkatraman, 1999; Morgan, 2002; Laumann et al., 2009). The competitive role focuses on efficiency. It increases the capability of IS/IT attributes to achieve new sources of competitive advantage in the market by deployment of new IS/IT applications. This role has a significant impact on organisational transformation (Henderson and Venkatraman, 1999; Luftman and Brier, 1999; Prahalad et al., 2002). It supports an organisation's ability to increase its IS/ IT capability through understanding the dimensions of IS for the organisation and its situations.

2.2.1.2 Dimensions of strategic information systems

There are many categorisations of IS strategic adoption dimensions in terms of IS-business integration. Papp (1999) suggested that there are two dimensions in most alignment models. These are the 'fit' which considers both the external and internal environment of an organisation, and 'linkage' which is the business-IT alignment.

There are five dimensions of SISP effectiveness. These are alignment, analysis, cooperation, improvement in capabilities and contribution. However, these dimensions of SISP effectiveness are influenced by six process dimensions of SISP. These are comprehensiveness, formalisation, focus, flow, participation and consistency. There is also a three-stage model to evaluate these dimensions and their effectiveness. This model contains three stages: preliminary, evolving and mature. It has been argued that there should be a balance between rationality and adaptability to permit the process to be effective in its ability to both manage the organisation in the short term while simultaneously creating future technology and markets (Segars et al., 1999; Grover et al., 2005).

2.2.2 Approaches to Adopt Strategic Information Systems

Information is a critical resource when it allows an organisation to manage other activities (Ciborra, 1994). Strategy might be said to be governed by rules and policies (Horn, 1998; Mullins, 2005) and connected to the organisation, according to its personnel, economic strength, knowledge, learning and resources (Haberberg and Rieple, 2001). Turban et al. (2005) and Pathak et al. (2008) suggested that there are some criteria that help in the selection of approaches. These are database format and portability, application and data storage, scope of services, support services and integration. Every aspect needs to be integrated to achieve the goals of the organisation. Thus, there are no formulae to produce the strategy. Quinn and Mintzberg suggested:

> *'There is no single universally accepted definition of strategy. There is no one best way to create strategy, nor is there one best form of organisation. The world is full of contradictions and the effective strategist is the one who can live with contradictions, learn to appreciate their causes and effects and reconcile them sufficiently for effective action. No single model or theory can*

> *incorporate all the factors that influence major business decisions or the possible combinations of these factors that could be faced. Nor can anyone anticipate the bizarre changes that occur in real world environments, or, even more important, the impacts of your own or other creative innovations.'*
>
> *Robson (1997, p. 5)*

In strategic management, there are strategic thinking, strategic planning and embedding of strategy as approaches to formulation of strategy. All these approaches support each other to create a successful strategy. A number of researchers, such as Mintzberg and Garratt (1994), argue that strategic thinking relates to creativity and strategic planning relates to analysis, while embedding of strategy relates to shared understanding within an organisation and acceptance of strategic choice throughout the organisation (Bonn, 2001; Acur et al., 2006). Heracleous (1998) mentioned that strategic thinking and strategic planning are different, but both are interrelated and both are important to effective strategic management (Bonn, 2001).

There are two well known, familiar approaches to IS strategies. These are the impact and the alignment. In the impact strategy, there are two models: the market positioning and value-added chain. These strategies are well documented approaches and support achieving competitive advantage. However, it has been explained that in the alignment strategy, there are several stages to follow. These are the stages of growth management, data architecture and critical success factors. It has been suggested that these are three guises of SISP complexity. The same has also been said about contingency approaches and how similar they are to previous approaches when they are evaluated by other researchers (Burn, 1991). So, SISP can lead to IS/IT-business alignment (Burn and Szeto, 2000).

Turban et al. (2005) suggested some other approaches of IS strategic adoption. Firstly, there are those connecting some function of an organisation from off-the-shelf packages with business processes in order to obtain functional integration. Secondly, there are those using Enterprise Resources Planning (ERP) software, so an organisation can connect its processes with such software or build its own systems integration processes. Also, process-centric integration is an approach which integrates back-office with front-office operations. This approach is treated as a business process.

In their study, Lee and Bai (2003) explained that there are four elements in the evaluation of IS strategic adoption approaches. Firstly, there is the technology mode. This mode is more related to technical issues such as automation. Secondly, there is the alignment mode, which relates to business issues such as business strategies and resources allocation. The impact mode is the third. This mode is associated with competitive issues such as innovation. The final mode is fit. This mode relates to organisational issues such as organisational learning.

Based on this analysis, it appears that no comprehensive and general approach for IS strategic adoption exists, other than that there should be a connection between those elements of an organisation that allocate its important alignment elements at a strategic level as presented in Table 2.2. Thus, the organisation can create a model that supports its integration by building a good planning team that contains members from both business and IS/IT. Stough et al. (2000) reported the importance of the team in the planning process by describing the 'virtual team' and how it can involve technology to support the team through the planning process. This team is important to understand different factors of IS strategic adoption. Understanding these factors is a critical issue that needs to be more researched and considered empirically to improve the theoretical gap in the literature.

2.2.3 IS Strategic Adoption Team and CIO's Relationship

Many researchers such as Earl (1996), Willcocks et al. (1997) and Galliers et al. (2003) expressed the importance of the relationship between the CIO and other chief business officers as a board team in the IS strategic adoption. It noted that communication among senior managers who govern the IS is critical when IS is treated as a strategic unit. This can be reached through several ways as suggested by Weill et al. (2004). These are:

- Collaboration between business and IS/IT senior managers on business-oriented IS/IT decisions such as investment and business applications. Integrated business-IS/IT committees and IS/IT membership in the process team are examples of mechanisms of this type of collaboration.
- Strategic thinking of business-IS/IT people is important as well as collaboration.

Through such ways, the role and governance of IS/IT within the business could be understood by other business units who will commit to the IS/IT strategic value. So the IS/IT governance[3] consists of IS/IT decisions as well as people who make these decisions (Weill et al., 2004; Kearns, 2004a).

The leadership skills of the CIO are important in building the IS/IT-business relationship, as these skills provide the CIO with the ability and capability to improve the realisation of IS/IT value by business senior managers (Broadbent et al., 2005). Communicating the strategic value of IS/IT to other senior managers allows them to allocate IS/IT strategic arrangements such as benefits, requirements and drivers that are discussed later in this chapter. This allocation of different arrangements can be completed through different strategic planning techniques that classified in this chapter.

2.2.4 Levels of IS Strategic Adoption

Many studies, such as Henry Mintzberg's and Jane Water's in 1985 and Quinn's in 1982, showed that there are deliberate and emergent strategies. A deliberate strategy results from senior managers' conceptions. They work as planners in order to meet challenges facing their organisation and its complexity. Thus, systematic analyses of the organisational environment and its resources are essential to this type of strategy. However, an emergent strategy is one conceived by lower-level managers, without direct interaction from senior managers (Haberberg and Rieple, 2001; Horn, 1998), when both senior and operational managers are responsible for strategic management to guide the direction of the organisation (Robson, 1997; Southon et al., 1999).

Also, there are three levels of strategy: corporate, business and functional (Robson, 1997; Haberberg and Rieple, 2001; Joyce and Woods, 2001; Hinton, 2006). Corporate strategy pertains in an organisation with more than one business. It seeks to determine the businesses that are suitable for the organisation and to link them to others. A single business focuses on what to sell and to whom and on competitive advantage. Functional strategy relates to every activity within a business, and comprises marketing strategy, operational strategy and so on (Haberberg and Rieple, 2001). It is said that competitive advantage can be obtained by functional integration of IT opportunities (Burn and Szeto, 2000).

[3] IS/IT governance is defined as 'specifying the decision rights and accountability framework to encourage desirable behaviour in the use of IT' (Weill and Ross, 2004, p. 8).

There are also five modes of strategy-making introduced by Hart in 1992 (Brown, 2005). Firstly, there is the command mode, which is mainly controlled by strong leaders and which is mostly within a small organisation with a simple environment. Secondly, there is the symbolic mode, which introduces a long–term vision. Thirdly, there is the rational mode, which comprehensively covers the strategic plan and control system. This is mostly found within large organisations where strategic planning can be established within stable environments. The fourth is the trans-active mode, which relies on a high level of communication between employees learning cross functions within mature organisations and complex environments. Finally, there is the generative mode, which supports entrepreneurship and innovation even within day-to-day activities. This mode of strategy is mostly found within firms that have turbulent environments and complex markets. An empirical work by Hart provides evidence that higher organisational performance can be obtained by developing competence in multiple modes of the strategy-making process (Brown, 2005; Cash et al., 2008). So, as presented in Section 2.2.3 and this section, there is a connection between level and team in IS strategic adoption. In other words, the strategy team decides which type and level of strategy it will use and how it can be used, and these decisions will help in the improvement of integration by shifting from one level of integration to another.

There are three conceptualisation processes for IS strategic integration. The first is the way-to-way reciprocal integration between the BP and the ISP by King and Zmud. The second is Synnott's conceptualisation of ISP with BP at five different levels: no planning, stand-alone planning, reactive planning, linked planning and integrated planning. Goldsmith's conceptualisation is the third. This joins both Porter's value chain and competitive forces framework. It has been reported that there are four types of ISP: separate planning with administrative integration, one-way linked planning with sequential integration, two-way linked planning with reciprocal integration and integrated planning with full integration. This classification leads to different types of integration such as systems, functions, data, applications and process integration (Teo and King, 1997; Hinton, 2006).

Schmidt (2000) introduced four levels of integration. The first is point-to-point integration. This level relies on infrastructure that allows exchange of information between applications, but there is no link to business intelligence of the infrastructure. The second is structural integration. This level is more advanced in exchanging information between applications by standardising and controlling this information via using middleware tools. The third is process

integration. Organisations of this type manage to move information between applications instead of sharing the information. External integration is the final level. Here, organisations use real-time business applications to obtain external integration. So, the organisation is defined by transforming its business processes and using new customer-focused structures (Mendoza et al., 2006). Similar levels of integration systems are described by Turban et al. (2005) as internal and external integrations. The internal integration is among different applications and databases within the organisation, whereas the external integration is among different applications and databases between the organisation and its partners. The external integration can be supported by inter-organisational information systems (IOS) (Themistocleous et al., 2004).

There are many types of IOS such as B2B trading systems, global systems, electronic funds transfer (EFT), groupware, integrated messaging, shared databases and systems that support virtual corporations. These types can be applied with regard to the business activities. These can also be supported by many technologies such as electronic data interchange (EDI), extranets, Extensible Markup Language (XML) and web services (Turban et al., 2005; Mäkipää, 2006). Table 2.3 shows the classification of strategic integration levels.

Dimension	Basis for Levels	Level Names	Reference
Evaluation	Strategic performance and environmental changes	Low, emerging, developed, and mature	Brown (2005)
	Evaluation of SISP dimensions	Preliminary, evolving, and mature	Grover and Segars (2005)
	Evaluation of IS planning approaches	Technology mode, align mode, impact mode, and fit mode	Lee and Bai (2003)
Stages (movement)	Integration progresses by Synnott	No planning, standalone planning, reactive planning, linked planning, and integrative planning	Teo and King (1997)
	Business transformation by Schmidt (2000)	Point-to-point integration, structural integration, process integration, and external integration	Mendoza *et al.* (2006)
	Level of relationships: internal and external	Internal and external integration	Turban *et al.* (2005)

Table 2.3: A classification of strategic integration levels and dimensions through IS strategic adoption

From Table 2.3 it can be shown that the strategic IS reflected by IS integration. This integration can be internal, external or both. These integration levels are important in considering the IS strategic adoption arrangements (benefits, requirements and drivers) as well as in the global dimension when organisations serve global markets. These arrangements

are part from the factors of IS strategic adoption model that are proposed in Chapter 3. As mentioned earlier, these arrangements need more consideration in the literature as well as empirical testing, especially in global organisations.

2.2.5 Systems Infrastructure and Information Systems Strategic Adoption

In order to build IS/IT infrastructure, a business area definition is required to select suitable strategy planning techniques. This infrastructure represents the connection between business processes and their data supports for every business unit. These processes can be automated to serve a project and the related data. Therefore, the relationships between processes and data show the business model. This model can be created by using different tools, because of the complexity of matrices in business models. IS strategic adoption and reporting documentation can be influenced by the tools used in the planning process, because they can be provided by these tools as well (Robson, 1997, Wieringa et al., 2005; Shirazi et al., 2007; Laumann et al., 2009).

There are many technologies such as Enterprise Resource Planning (ERP), intranet and data warehousing that are used to support integration through the IS infrastructure. Consequently, it is crucial to improve Enterprise Application Integration (EAI) (Mendoza et al., 2006; Themistocleous et al., 2006; Johansson et al., 2009). Feeny suggested an electronic opportunity (e-opportunity) framework that contains three strategic ideas. These are: (a) electronic operations (e-operations), (b) electronic marketing (e-marketing) and (c) electronic vision (e- vision) opportunities. The e-operation opportunity focuses on using web technology to change strategy for business. It manages itself and supplies its chain during the peak of production and its core product or service. The e- marketing opportunity is concerned with web-based initiatives that relate to changing the strategic way of interaction with customers. The e-vision opportunity expresses the new business ideas, which creates ways of understanding customers' needs (Willcocks et al., 2000). This model shows the connection between roles, elements, approaches and levels of integration in the new era of IS which is e-commerce.

In most cases, the IT architecture contains a firm's list of technology standards. Some organisations use IT architecture as a tool for aligning IS/IT and business strategy. So, IS/IT organizes logic for components such as applications, data and infrastructure technology. It arranges policies and technical choices that may support the business strategy. Nevertheless,

well-designed IT architecture points out the IS/IT capabilities that are more critical to the business goals. A case study by Johnson & Johnson (2002) gives an example of how a company focuses on its ability to define and align IS/IT and business strategy by accumulating architecture–related experiences. Ross mentioned that the ability of a firm to define its core processes is critical to creating effective, rationalised data architecture. From this standpoint, management must decide which activities should be included and which should not. Also, management must determine the data these activities rely on and how they share it (Ross, 2003; Temponi et al., 2009). Delta Airlines management, for example, determined two processes, customer experience and operation (Ross, 2003).

Organisational strategy can be affected by IS/IT strategy, because the architecture of IT is an important element in the alignment of strategies (Earl, 1996, Shirazi et al., 2007). A study relying on 40 case studies defines and aligns IS/IT and business strategy by using experience in a cumulative way. To do so, an organisation should create competency from its IT architecture. This study identifies four architecture stages: application silo architecture, standardised technology architecture, rationalised data architecture and modular architecture. Every stage has its own competency. IT architecture is the detail of policies and standards to build infrastructure technologies, databases and applications. This is called a city plan. In some cases, IT architecture is an organisational logic for data, application and infrastructure which are organised by specific policies and standards. So, it may help the organisation to succeed in integrating its technology with its business plan. The IT competency is the firm's ability to create exchange forces between its activities in totally integrating the business plan and the IT plan (Ross, 2003). It is suggested that infrastructure can be a driver for roles such as utility, dependence and enabling (Ciborra et al., 2000).

2.3 Models of Information Systems Strategic Adoption

The framework for a corporate level strategy deals with corporate level information needs, suitable systems architecture that maximises the benefits of internal expertise and builds relations with suppliers, and organisational arrangements to build connections between business activity strategies and business strategy to obtain the organisational goals (Robson, 1997, Shirazi et al., 2007). There are two dimensions to IT planning: planning for a whole organisation and for an individual application (Turban et al., 1997). So, there are two parts in this section which are general models and planning process models.

It has been noted that there are two types of SISP model: impact and alignment. The impact models such as value change analysis and critical success factors focus on tasks and processes of the organisation, whereas the alignment models such as business systems planning, strategic systems planning, information engineering and Method 1 focus on the alignment of the IS plan with the business plan (Palanisamy, 2005). However, this research divides SISP models into two categories in the following subsections. This categorisation of SISP presents the gap in the literature. This gap presented in allocation the factors that impact SISP adoption especially in global organisations and the relationship between these factors as the conceptual proposed model presented in Chapter 3.

2.3.1 General Models

IS/IT strategy has various definitions. Such variation in definitions comes from different models aiming to achieve IS strategic adoption. These are strategic alignment models (SAM) by Henderson and Venkatraman (year), and the organisational fit framework (OFF) by Earl (year). The latter is a theory base. It is based on two dimensions: the need for compatibility between both the internal and the external for strategic choice and the need for functional integration between IS/IT and the organisation. It is also based on action research and teaching (Earl, 1996).

There are some similarities and differences between these two framework structures. For example, both have four dimensions within their relationships. As for differences, SAM may be more conceptual, whereas OFF may be more managerial (Earl, 1996). The following sub-sections demonstrate both models.

2.3.1.1 The organisational fit framework (OFF)

Earl's (year) framework expresses IS/IT strategy by providing a formal approach that helps to identify and conceptualise the questions relating to it. It provides a high-level checklist that supports the integration between IS/IT strategy and business strategy. Thus, it helps the management of both IS/IT and business to see the point of integration and participation and to develop suitable processes. The first domain in Earl's framework is the organisational strategy that contains the business strategy and organisational choices. This is the clarification process. The business strategy expresses the mission of the firm, its competitive position and

the analysis of the competitive issues explained in Porter's framework. The organisational choice is concerned with organisational structure, the system of management and the formal processes and polices which show how the firm is managed (Earl, 1996).

IS strategy is the second domain. This domain covers alignment and opportunity issues. The alignment is concerned with identifying applications that support the business strategy. Earl says that identifying them in IS/IT strategy may result in successful arguments for both clarification processes and searching for targets as inputs from the organisational strategy set. These might support the discovery of IS/IT opportunities. The opportunity question relates to innovation that might be enabled by the use of new technology. This may support doing business differently or developing a new business. These opportunities appear to be developed within management processes (Earl, 1996, Burgelman et al., 2008).

The IT strategy is the third domain in Earl's framework. It concerns the scope and architecture. The scope covers the type of technology that should be used in IS strategy. The architecture emphasises the technology framework which drives, shapes and controls the IT infrastructure (Earl, 1996).

The final domain in Earl's framework is information management (IM) strategy. It expresses the roles and relationships which should be defined in managing IS/IT activities. The roles cover the responsibility and authority of people for information resource policies and actions, inside or outside the IS function, at various levels in the firm. Feeny, Earl and Edwards suggested that organisational design is mostly the structure or vertical dimension. The structure defines the units in the firm, their individual reporting relationships and the allocation of responsibilities and authority (Earl, 1996; Mäkipää, 2006).

2.3.1.2 The strategic alignment models (SAM)

The SAM represents a differentiation between two perspectives of IT as internal (infrastructure and process) and external (strategy). This may support and shape business policy. There are two levels of integration of IT. The first is the strategic integration with business strategy by representing the IT capability. The second is the operational integration by connecting the infrastructure and processes of both IT and organisation. In SAM there are four domains: business strategy, IT strategy, organisational infrastructure and process, and IT

infrastructure and process. There are two levels: external (scope, competencies and governance) and internal (infrastructure, skills and process) for every domain (Avison et al., 2004).

Other models such as Porter (2001) argue that the Internet has a negative impact on profitability, because it leads to increased competition (Evans et al., 1999; Turban et al., 2005; Moore et al., 2007). In Porter's model, the Internet increases the threat for most firms, because it lowers the barriers such as the need for sales' forces and stores to sell products or services physically. It does so through websites that offer products or services (Turban et al., 2005; Laudon and Laudon, 2004). This threatens industries with intermediary roles such as travel agencies. In addition, it reduces geographical issues and crosses international boundaries (Turban et al., 2005). It also emphasised the point that organisations should position themselves in the external marketplace rather than determine their internal structure to accomplish their market-positioning strategy (Burn and Szeto, 2000). The power of suppliers and the power of customers are examples of Porter's (2001) arguments.

In terms of the bargaining power of suppliers, the Internet may have an impact on suppliers in two ways. First, it may reduce the supplier's power, because it enables buyers to compare prices more easily. On the other hand, it may increase the power of suppliers, because organisations that need to achieve digital exchange also need to connect with suppliers who may have control of switching cost (Turban et al., 2005; Laudon and Laudon, 2004, Mohdzain et al., 2007).

As regards the bargaining power of customers, the Internet enables buyers to compare suppliers of products or services so that buyers can easily move from one offer to another (Turban et al., 2005). Regarding the threat of substitute products or services, the Internet may have a great impact on information-based industries, such as music, newspapers and books, because digitalised information can replace material goods. With regard to rivalry among existing firms in an industry, the Internet uses applications for communication, so it is easy for competitors to see improvements in applications and to follow them (Turban et al., 2005; Laudon and Laudon, 2004).

Even though these different general models considered some important issues and factors such as business strategy, IT infrastructure and people skills, they do not categorise these factors according to how each organisation's environment and situations. The differences in

organisations affect many issues such as top management support to IS strategic adoption and level of IS strategic adoption reached. The allocation of these factors is important to identify the required planning techniques that should be applied in the IS strategic adoption process.

2.3.2 Process Models for Information Systems Strategic Adoption

The process of IS application development considers building and implementing the applications (Turban et al., 2005). There are many frameworks that consider top-down ISS - BS alignment. Ward (1987) built a framework using a rational approach. His framework shows how to combine different models to reach the target of alignment. It relates to the competitive situation of the organisation, as explained by Porter. As such, it is more suitable for system business unit. There are three points suggested by Ward about default relationships. Firstly, there is low cost that leads to scarce resources and free markets. Secondly, there is differentiation which tends to lead to monopoly and the leading edge. Finally, there is the focus/niche which leads to secondary business strategies. Ward argued that to be appropriate, the IS strategy should be consistent with the business strategy. He suggested that this consistency comes from the consistency of strategy process, maturity of IS management and the importance of IS as strategic analytical tools for the organisation (Waema et al., 1990; Robson, 1997).

The five SISP stages are planning the SISP processes, analysing the current environment, conceiving strategy alternatives, selecting strategy and planning strategy implementation (Newkirk, Lederer and Srinivasan, 2003). A study focusing on the implementation of the IS plan applied findings from such research to indicate the failure in the implementation part of SISP. SISP supports selecting applications that are suitable for fulfilling an organisation's current and future needs. It has been noted that there are five stages: strategic awareness, situation analysis, strategy conception, strategy formulation and strategy implementation planning. It is also described as a system containing input, processing and output (Hartono et al., 2003; Newkirk et al., 2006).

Recommendation systems that fail in the descriptive detail that is needed for actual system implementation were studied by Hevner et al. (2000), and so they produced a new system**.** They believed that the alignment between the business plan and information systems plan is the object of SISP. Therefore, they introduced the ‘box structured’ method. The major

characteristic of this method is that it is scale-free and can show the full range from high-level to low-level abstractions. This method uses techniques such as entity relationship diagrams and data flow diagrams. This method contains six process steps. The main point here is to identify the most important processes within an organisation and then start to analyse them by using the 'black box' definition, state box description and clear box description. It is believed this might support innovation within the organisation. It is also believed that this method supports SISP with important advantages like ease of use, natural form of representation, rigorous description method, integration of Critical Business Processes (CBP) in a box structure usage hierarchy with some representation for IS planning and IS implementation. The importance of this study is expressed in the progress of this method from its start and how it can make use of the improvement of new techniques of IS within it (Hevner et al., 2000).

A model and methodology that may support integration between business strategies and IS strategy was developed by Pant and HSU. There are comparative features of SISP methodologies such as value chain analysis, critical success factors, business systems planning, strategic systems planning, information engineering and Method 1. There is an explanation for problems at every stage of SISP. The most common output problems, for instance, are finalising a plan for implementing IS strategy due to a lack of top-management commitment and obtaining the level of analysis necessary to build SISP. There are three expanded analytic points that support this research. These points are managing the external environment, maximising the internal networking of processes and resources, and transforming them into a three-dimensional enterprise. The idea of this research model is to break down the strategic goals into sub-goals and sub-sub-goals. The methodology of this research is linked to the organisation's value chain by using a matrix (Pant and HSU, 1999).

Earl's method (1989) suggested that multiple methods can be used to develop IS strategy. It suggested that IS can be strategic in three ways: IS evolves through delivering products/services; business strategy relies on IT to be implemented; and IS creates new strategic opportunities. These levels of importance lead to consideration of which ISS approach to follow. These approaches are top-down, bottom-up and inside-out. So, the nature of the organisation, the importance of IS and the organisation's situation are important (Robson, 1997).

A model of IT application acquisition by Turban et al. (2005) contains five steps:

- Planning for and justifying information systems: IS planning should be aligned with other business activities in order to enable them. Also, there is a need to analyse the application in order to express the right functionality that can be measured beneficially and so validate its cost. This process may need high investment. The result of this planning process is the application profile. This process is mostly managed in-house in contrast to next processes which may be outsourced.
- IT architecture creation is a systems analysis approach: the focus of this process is to present the IT architecture. This means that the capabilities of the specific application should introduce the organisation's information needs. Thus, it is a guide for SISP and it affects the IS portfolio as a first process.
- Selection of a development option and acquisition of the application: there are many options that support IT application development. There are in-house systems, off-the-shelf systems, software rental, joining/forming a partnership in order to use their applications, jointing an e-marketplace as a third party or using more than one option.
- Installing, connecting and more: in this process, the application should be connected to the organisation's databases via the organisation's technology such as the intranet or extranet. Then the application goes through the testing process. If it succeeds, it will be deployed.
- Operation and maintenance: this process is to keep the systems running easily and follow technology changes. This can managed in-house or outsourced.

Thus, the development management team should consider the whole process, suppliers, business partners and evaluation of the system's performance. Considering the first two steps, the IS architecture is a framework for both IT application and infrastructure. Koontz (2000) suggested a six-step process for building IT architecture:

- Business goals and vision: this considers business architecture as discussed at the first stage of application development.
- Information architecture: this step considers the information that is necessary to achieve the goals. Thus, identifying the information where available or sourcing new information is required. Users should be involved in this process.
- Data architecture: after the identification of information, data sources should be considered in order to build the data architecture.

- Application architecture: this step is to build the conceptual framework for the application. This is done by considering the components or modules of the applications that will be the users' interface with the data.
- Technical architecture: this step considers the requirements of hardware and software that support the analysis process.
- Organisational architecture: this step considers the human resources and the procedures of the previous steps. The constraints which should be examined here are legal, administrative and financial.

Wetherbe (1993) created a four-stage planning model. The four major activities are strategic planning, requirement analysis, resource allocation and project planning. Table 2.4 shows these activities with their descriptions. These activities come from four basic general issues that should be addressed when planning IS. These are integrating the business plan with the IS plan, building IT architecture, allocating IS development and operational resources between competing applications in an efficient way and planning IS projects to be completed on time, within budget and their specific functionalities (Turban et al., 1997).

Major IT planning activity	Description
Strategic IT planning	Establishing the relationship between the overall organisational plan and the IT plan.
Information requirements analysis	Identifying broad, organisational information requirements to establish strategic information architecture that can be used to direct specific application development projects.
Resource allocation	Allocation of both IT application development resources and operational resources.
Project planning	Developing a plan that expresses schedules and resources requirements for specific information systems projects.

Table 2.4: Four major activities of a four-stage planning model (Turban *et al*., 1997, p: 524)

It said that most organisations apply one of these four stages according to the problems they face, rather than applying the model in a systematic way as a stage-by-stage process. This will affect which methodology they should apply in the planning process (Turban et al., 1997). From Table 2.4, it is apparent that the CIO-business managers' relationships are important in all the stages, as they have different roles and requirements. As described in this section, there are many process models for strategic IS adoption as shown in Table 2.5.

Model	Focus	Process	Author
Top-down ISS - BS integration	Competitive and rational approach	Combines different models	Ward (1987)
Multiple methods	nature of the organisation, the importance of IS and the organisation situation	approaches are top-down, bottom-up and inside-out	Earl (1989)
5 SISP	Comprehensiveness and effectiveness in SISP stages	processes, analysing the current environment, conceiving strategy alternatives, selecting strategy and planning strategy implementation	Newkirk *et al*. (2003)
5 SISP	implementation of IS plan	Strategic awareness, situation analysis, strategy conception, strategy formulation and strategy implementation planning	Harton *et al*. (2003); Newkirk *et al*. (2006)
Box structured method	Detail needed for the actual system implementation	identify the most important processes within an organisation and then start to analyse them by using black box definition, state box description and clear box description	Hevner *et al*. (2000)
SISP model	Organisation's value chain	Managing external environment, maximising the internal networking of processes and resources, and transforming into a three - dimensional enterprise	Pant *et al*. (1999)
Model of IT application acquisition	Application	Planning for and justifying information systems, IT architecture creation, select a development option and acquire the application, installing, connecting and more and operation and maintenance	Turban *et al*. (2005)
6-step building IT architecture	Architecture	Business goals and vision, information architecture, data architecture, application architecture, technical architecture and organisational architecture	Koontz (2000)
Four- stage model	Strategic planning	Strategic planning, requirement analysis, resource allocation and project planning	Wetherbe (1993)

Table 2.5: Classification of process models for IS strategic adoption

These models are important as sources for various processes of planning that influence the adoption and evaluation of IS strategic adoption. From Table 2.5, it can be seen that most of these models focus on a specific goal, benefit or requirement. Thus, they outline general adoption processes that lead to the model goal, such as application, architecture or implementation. Although these models discuss different general planning processes, they focus mostly on core business processes and do not consider the different factors which

consider the value of IS strategic adoption as strategic starting point for other different factors or arrangements such as requirements and drivers. Since the adoption of strategic IS requires more understanding of IS value to the business, it needs more cooperation and collaboration between IS senior managers and business senior managers. This collaboration can support IS strategic adoption as presented in Section 2.2.3. These arrangements or factors are important in identifying the appropriate IS adoption process according to the organisation's situation. Understanding the organisation's situation helps the planning team identify the appropriate planning techniques. These arrangements require different strategic techniques that are shared between IS senior managers and business senior managers, and this presented in the following sections.

2.4 Evaluation of the Need for IS Strategic Adoption

Because developing strategies for business or even for IS, as a business component, is difficult, managers look for ways to understand the nature of IS strategic adoption, ways to evaluate the adoption process in the current situation (Robson, 1997; Mullins, 2005), and how to plan in a continuous process (Philip, 2007).

Drazin and Van de Ven (1985) proposed three approaches to test strategic alignment: natural selection, private interaction, and system approaches. Natural selection focuses on examination of the relationship between IS/IT and the strategy of the organisation. It does not examine performance, whereas private interactions do so by testing the interaction between IS/IT factors and strategy. Therefore, both business strategy and IS/IT should be composed into elements that can be examined separately. The system approaches are multivariable analyses that test patterns of consistency among various strategies, IS/IT characteristics, and their influence on performance (Premkumar et al., 1994; Hackney et al., 1999). To obtain a high-quality evaluation process is to understand the benefits and conflicts of IS within the organisation at a strategic level (Wilson, 1991; Ward et al., 2006; Berghout et al., 2009). These conflicts can be considered as the arrangements of IS strategic adoption and their relationships. These arrangements presented in this thesis are benefits, requirements and drivers. The next sections discuss these arrangements in more detail.

2.4.1 Benefits of IS Strategic adoption

Identifying and understanding the strategic value of IS/IT for an organisation are considered important in adoption of IS strategically (Earl, 1996; Brown, 2006). Ward et al. (2006) suggested that a people-centric approach can be applied to consider the benefits that can be provided by IS/IT for organisation. The benefits of IS/IT can be measured by improvements in the performance of roles and tasks within the organisation. A matrix, called the success probability matrix, can be used to show the benefits of IS strategic adoption. This matrix indicates the importance of executive skills and commitment because they play a crucial role in IS strategic adoption. It is estimated that delivering the IS plan and obtaining the benefits of the formalised planning process takes four to five years. Obtaining real business benefits requires learning how to plan effectively and strategically within an organisation and aligning the IS plan with the business plan (Robson, 1997; Clarke, 2006). Studies have shown that the relationship between the chief executive officer (CEO) and chief information officer (CIO) is an important factor in the success of the IS strategic adoption (Lee and Bai, 2003; Tai et al., 2000).

IS-business strategic integration supports the coordination of work that is related to different parts of the organisation, and measuring integration highlights the current level of integration. Many studies have applied different models to examine this issue. One of these is the framework of critical success factors (CSFs) by Mendoza et al. (2006).

Management of information resources is an efficient and effective way to express the underpinning of integration of IS/IT activities in an organisation (Earl, 1996; Cunha and Figueiredo, 2000). IT/IS strategy must align with the overall business strategy in a relevant way so that IT/IS activity and other activities work to obtain the same targets by using their competencies. Thus, the main task of IT/IS strategy is to create information system applications that fit the goals and priorities of the firm (Dhillon, 2005; Turban et al., 2005).

Another benefit of IS strategic adoption is innovation. Innovation is extracting value from IS/IT in business practices (Carr, 2003; Power, 2006; Cash et al., 2008; Silvius, 2008). The adoption of new technologies is directly related to the adoption of innovation (Power, 2006; Burgelman et al., 2008).

There are many benefits for adoption of IS strategic alignment, such as creating standards, reducing costs, increasing the productivity of employees, supporting collaboration and the sharing of information, and customer services and satisfaction (Shore, 2006). Similarly, there are many benefits to using global IS (Turban et al., 2005; Deresky, 2008):

- Finding an acceptable cost for effective communication;
- Overcoming the challenges of distance, time, language, and culture;
- Using databases of business partners and supporting collaboration in one project between different users and locations.

Coordination is also an extremely important factor in IS strategic adoption for global strategy. Issue such as simultaneous implementation on a global scale, responsiveness to markets and governments, and the worldwide transfer of learning and innovation are important in global organisations. In such organisations, every geographical unit has a specific role in the business. Bartlett and Ghoshal present a transnational organisation that shows an integrated network with intensive and complex interactions among physically remote units that are interdependent. However, even this organisation is both centralised and decentralised. The broad scope for applying IS is an important reason to be involved in global competitive business strategy because IS supports collaborative information sharing, problem solving, cooperative support, resource sharing, and collective action and implementation (Earl, 1996; Ward and Peppard, 2002; Mohdzain et al., 2007; Applegate et al., 2008).

Global efficiency, local responsiveness, and transfer of learning are important issues to consider in global operations. Global efficiency means that the activities of a firm should be coordinated and integrated to reach appropriate economies of scale. On this point, a key issue is collecting comparative performance information for different locations around the world to help in decision-making for allocation of resources. A global data network may be a solution that could help manage data. Such a data network could be built according to the requirements of the organisation as communication functions or as standard application systems used to ease transferring activities and people or to develop common systems to achieve economies of scale (Waema et al., 1990; Earl, 1996; Weill and Ross, 2004; Bleistein et al., 2005). Standards of data used as communication to aid local responsiveness depend on a variety of requirements for delivering a product according to local, legal, or market conditions. This responsiveness needs to be planned and developed at the global level (Shore, 2006; Benson et al., 2004; Earl, 1996).

The transfer of learning is a crucial requirement for coordination. This activity has many dimensions, including research and development, and marketing and services. Communication networks support transferring knowledge between professionals. These networks provide technologies such as electronic mail and video conferencing to encourage informal dialogue, which supports knowledge transfer over different locations and situations (Earl, 1996; Mendoza et al., 2006; Mutch, 2008).

External alliances between organisations where different skills and cultures exist is an important contribution of IS strategic adoption. Inter-organisational information systems can show the applicability of external alliances. Value-adding partnerships between manufacturers and retailers and global information partnerships are examples of inter-organisational IS (Evans et al., 1999; Dhillon, 2005; Hunter et al., 2006; Saglietto, 2009).

There are tangible benefits, such as inventory reduction, personnel reduction, and productivity improvement, as well as intangible benefits, such as information visibility, new or improved processes, and standardisation benefits for systems integration (Turban et al., 2005). IS benefits have been classified as strategic, tactical, and operational in financial, non-financial, tangible, and intangible measurements. Improved growth and success, leadership in a new technology, improved market share, market leadership, and enhanced competitive advantage are examples of the strategic benefits of IS (Irani, 2002). Table 2.6 presents a classification of the benefits of IS strategic adoption. The set of delivery requirements might need different approaches and methods to internationalise them that can be applied by service providers (Hackney et al., 1999; Jack et al., 2006). As mentioned in Section 2.4.2 and 2.4.3, the classification of IS strategic drivers and requirements considers the global perspective, alignment and competitiveness as strategic focuses. However, the classification of IS strategic benefits considers the alignment and competitiveness as well as strategic analysis. Thus, the strategic analysis focus mandates that organisations understand the contribution of IS for core business process, mission and vision. On the other hand, both alignment and competitiveness would justify the IS goals, as mentioned earlier.

Focus	Strategic Benefit	Reference
Strategic Analysis	Support decision-making process	Laudon and Laudon (2004); Robson (1997)
	Increase organisation efficiency	Earl (1996); Cunha and Figueiredo (2000); Weill and Ross (2004); Benson *et al*. (2004); Ward and Peppard (2002)
	Improve open culture of organisation	Ward and Peppard (2002); Irani *et al*. (2005); Hunter *et al*. (2006)
	Enable users	Laudon and Laudon (2004); Robson (1997); Alert (2009)
	Increase productivity of employees	Shore (2006); Turban *et al*. (2005)
	Support coordination of work	Mendoza *et al*. (2006); Earl (1996) Weill and Ross (2004)
	Reduce cost	Apte *et al*. (1990); Shore (2006); Benson *et al*. (2004); Ward and Peppard (2002); Pearlson *et al*. (2000)
	Interface and support different organisational levels	Laudon and Laudon (2004); Turban *et al*. (2005); Dhillon (2005)
	Improve growth and success	Irani (2002); Benson *et al*. (2004); Ward and Peppard (2002)
	Create new strategic opportunities	Robson (1997); Earl (1996); Benson *et al*. (2004); Ward and Peppard (2002)
	Increase quality	Shore (2006); Irani *et al*. (2005); Benson *et al*. (2004)
	Offer new strategic options	Irani *et al*. (2005)
	Support reactions to changes	Laudon and Laudon (2004); Irani *et al*. (2005); Levy *et al*. (2000)
	Support organisational teamwork	Benson *et al*. (2004); Laudon and Laudon (2004); Irani *et al*. (2005)
	Increase organisation effectiveness	Earl (1996); Cunha and Figueiredo (2000)
	Support collaboration and sharing information	Shore (2006); Weill and Ross (2004); Ward and Peppard (2002)
Competitiveness	Develop/produce new market	Laudon and Laudon (2004); Pearlson *et al*. (2000); Robson (1997)
	Develop/produce new product/service	Robson (1997); Pearlson *et al*. (2000); Weill and Ross (2004); Benson *et al*. (2004)
	Obtain competitive advantage	Ward and Peppard (2002); Robson (1997); Applegate *et al*. (2008)
	Increase organisation competitiveness	Turban *et al*. (2005); Ward and Peppard (2002); Laudon and Laudon (2004)
	Display market leadership	Weill and Ross (2004); Irani (2002)
	Support innovation	Carr (2003); Power (2006); Weill and Ross (2004); Benson *et al*. (2004); Ward and Peppard (2002); Burgel *et al*. (2008)
	Increase customer services and satisfaction	Weill and Ross (2004); Ward and Peppard (2002)
	Become a leader in new technology	Irani (2002)
	Improve the relationship with customers	Turban *et al*. (2005) Weill and Ross (2004); Ward and Peppard (2002); Laudon *et al*. (2004)
	Enhance competitive advantage	Ward and Peppard (2002); Laudon and Laudon (2004); Irani (2002)
	Improve market share	Irani (2002); Laudon and Laudon (2004)
	Become responsible locally (markets, government)	Weill and Ross (2004); Earl (1996)
Aligning	Integration of IS strategic plan with business strategic plan	Robson (1997); Galliers and Leidner, (2003); Benson *et al*. (2004); Ward and Peppard (2002)
	Improve the relationship with suppliers	Ward and Peppard (2002); Laudon and Laudon (2004); Pearlson *et al*. (2000)
	Improve resource control	Robson (1997); Levy *et al*. (2000)
	Integrate or become independent of IS function	Turban *et al*. (2005); Hinton (2006)
	Improve global efficiency	Earl (1996); Mohdzain *et al*. (2007)
	Support global organisation	Shore (2006); Galliers and Leidner (2003); Mohdzain *et al*. (2007)
	Attain global alliance	Earl (1996); Mohdzain *et al*. (2007); Saglietto (2009)
	Improve resource creativity	Robson (1997)
	Improve resource flexibility	Weill and Ross (2004); Robson (1997)
	Improve resource learning	Robson (1997)
	Create standards	Shore (2006); Turban *et al*. (2005); Benson *et al*. (2004)
	Improve knowledge	Mutch, (2008); Galliers and Leidner (2003); Robson (1997)
	Compose by integrating smaller systems	Turban *et al*. (2005)
	Support learning transfer	Earl (1996)

Table 2.6: The classification of benefits of IS strategic adoption according to strategic focus

Having considered the normative literature for the benefits of IS strategic adoption, some published case studies have been analysed which identify and validate the benefits of IS strategic adopting. Table 2.7 validates these benefits of IS strategic adoption through the published case studies.

Strategic Benefit	Case Studies					
	Skandia Re-insurance	Insurance Company	Adidas	General Motors (GM)	Piper Jaffray Companies	International Chemical
Develop/produce new product/service	✓		✓			✓
Develop/produce new market	✓		✓	✓		✓
Support decision-making process	✓	✓	✓	✓	✓	✓
Obtain competitive advantage	✓				✓	
Increase organisation efficiency		✓	✓	✓	✓	✓
Increase organisation effectiveness		✓	✓	✓	✓	✓
Increase organisation competitiveness	✓		✓	✓	✓	✓
Integrate IS–business strategic plan		✓	✓	✓		✓
Enable users		✓	✓	✓	✓	✓
Improve relationship with customers	✓	✓	✓			✓
Improve relationship with suppliers			✓	✓		✓
Compose by integrating smaller systems						
Integrate or become independent of IS function		✓		✓		✓
Interface and support different organisational levels		✓	✓	✓	✓	✓
Support coordination of work		✓	✓			✓
Support innovation				✓		✓
Create standards	✓		✓	✓	✓	✓
Reduce cost		✓	✓	✓		✓
Increase productivity of employees			✓	✓		✓
Support collaboration and sharing of information		✓	✓		✓	✓
Increase customer services and satisfaction	✓		✓			✓
Improve growth and success			✓	✓		✓
Lead in new technology					✓	
Display market leadership	✓			✓	✓	
Enhance competitive advantage	✓			✓	✓	
Improve market share	✓		✓	✓	✓	✓
Create new strategic opportunities			✓			✓
Increase quality						✓
Support global organisation	✓		✓	✓		✓
Offer new strategic options						✓
Support reactions to changes			✓			
Support organisational teamwork		✓	✓	✓	✓	✓
Improve open culture of organization		✓	✓	✓		✓
Improve resource control			✓			✓
Improve resource creativity						✓
Improve resource flexibility			✓	✓	✓	✓
Improve resource learning		✓		✓		✓
Improve knowledge	✓			✓		✓
Attain global efficiency			✓	✓		✓
Increase local responsiveness (markets, government)	✓				✓	✓
Create global alliance				✓		✓
Support learning transfer						✓

Table 2.7: A validation of IS strategic adopting benefits through published case studies

2.4.2 Requirements for Adoption of Strategic IS

This section considers the internal capabilities or requirements that influence the adoption of SISP within an organisation. As a result of strategic analysis of the organisational environment, a number of capabilities can be stated by senior managers of the organisation. These capabilities could be accounted through the senior managers sights. Ward and Daniel (2006) in their book on benefits management described the phenomenon of internal forces or drivers for needed change within the organisation context. These drivers are a result of senior managers' views. They suggested that characteristics and procedures of an organisational system are key elements in designing the IS strategy (Davis, 1982; Wetherbe, 1993; Brown, 2006). Luftman (2000) and Sledgianowski et al. (2005) considered what they called enablers and inhibitors for IS-business strategic alignment. The CIO as a member of the senior management team would count the capabilities that influence IS/IT activity from the perspective of other members of the team. By doing so, the CIO could account all different capabilities and their relationships that influence his/her decisions through the adoption of IS strategically as well as justify these relationships to other members of the team. The author of this thesis considers the requirements as the internal capabilities of an organisation where the organisation could control these capabilities from the view of CIO who should be aware of these requirements as well as other senior managers.

The characteristics of functional IS may be important to evaluate in the adoption of IS at the strategic level. Some characteristics such as being composed of smaller systems, integrated or independent, interfacing and supportive of different organisational levels are important in strategic information systems (Turban et al., 2005; Hinton, 2006). Therefore, building system integration is an expensive and complex project. Its costs and benefits need to be critically analysed (Apte et al., 1990; Wilson, 1991; Berghout et al., 2009).

It has been suggested that maturity of alignment concerns the relationships between IT as function and other business functions by connecting strategies with each other. Evolutionary and dynamic processes are important for reaching alignment. Senior management support, good working relationships, strong leadership, appropriate prioritisation, trust, effective communication, and understanding the business and technical environment are crucial IT requirements. Luftman created five levels of strategic alignment maturity: initial/ad hoc process, commitment process, established focused process, improved/managed process and optimised process. Each of these levels contains six criteria, which are communication

maturity, competency/value measurement maturity, governance maturity, partnership maturity, scope and architecture maturity and skills maturity (Luftman, 2000; Sledgianowski et al., 2004). The following subsections discuss these requirements considered in this research.

2.4.2.1 Communication maturity

This requirement tends to improve the exchange of knowledge, information, discussion and ideas between IS/IT executives and other business unit executives. This creates greater understanding of each other's activities and established trust. This requirement supports communication approaches such as announcements, committees, meeting channels, reports and workshops. All these approaches are important in developing and controlling the process of IS/IT strategic adoption (Luftman, 2000; Weill et al., 2004; Moor et al., 2007). It reported that it is important to identify the communication strategy for a project to provide the organisation with attentions and implications of the project in the right time (Willcocks et al., 1997; Ward et al., 2006). The team managing an IS/IT strategic adoption project needs to agree about the appropriate communication strategies for their project.

2.4.2.2 Competency measurement maturity

In order to demonstrate IS/IT value to the business, a greater understanding of the business is required on the part of the IS/IT people. Conversely, the business needs to understand how IS/IT can contribute. Thus, there is a need for IS/IT and business value metrics to be connected. This understanding of business-IS/IT value supports the acceptance of IS/IT contribution and commitment by top managers. This measurement of value requires understanding the criteria for measurement, their factors and the lessons learned from applying such criteria (Benson et al., 2004, Sledgianowski et al., 2005). Ward and Daniel (2006) discussed the balancing of external and internal contexts in the sense of competency. They considered a model suggested by Treacy and Wiersma (1993) for strategy development. This model considers the connection between the external context (competitive forces) and internal context (resources-based view) of the organisation through three general activities: operational excellence, customer intimacy and product leadership (Ward et al., 2006). From these, the CIO's understanding of the business is an important requirement to develop the IS/IT plan.

2.4.2.3 Governance maturity

This requirement organises the participation of the CIO and other business units' executives through a formal process of discussion and review of resource priorities and allocation. This process is important in allocation of what decisions and who are responsible for these decisions for IS/IT contribution (Luftman et al., 1999; Weill et al., 2004). These decisions and people responsible are the governance matrix arrangements where five IS/IT decisions are interrelated. These IS/IT decisions are: a) addressing the role of IS/IT in the business (IS/IT principles), b) identifying the requirements of integration and standardisation (IS/IT architecture), c) deciding the core services and their sharing (IS/IT infrastructure), d) allocating the business applications (business application needs), and e) selecting the projects and their funding (IS/IT investment and prioritisation) (Weill et al., 2004; Brown, 2006). From these issues, it is clear that participations from top managers are required.

2.4.2.4 Partnership maturity

This requirement considers the relationship between IS/IT managers and business unit managers. In this regard the top managers' acceptance of IS/IT as a strategic activity is important. This would support the participation of IS/IT in developing business strategy through developing trust between IS/IT activity and other business activities (Luftman, 2000; Broadbent et al., 2005). The trust supports sharing risks related to the IS/IT activity. This relationship demands more communication between IS/IT managers and other business unit managers. Sharing knowledge and strategic approaches could reduce the culture gap between IS/IT people and business people (Galliers et al., 2003, Turban et al., 2005).Thus, such a relationship requires CIO and CEO attention as they have an important role in supporting the IS/IT-business relationship.

2.4.2.5 Scope and architecture maturity

Ross (2003) states that well-designed IT architecture points out the IS/IT capabilities that are more critical to the business goals. The IT architecture contains a firm's list of technology standards. Some organisations use IT architecture as a tool for aligning IS/IT and business strategy. Consequently, IS/IT organizes logic for components such as applications, data and infrastructure technology. It arranges policies and technical choices that may support the business strategy. This means that the IS/IT role covers both front and back offices of the organisation, providing flexible infrastructure that supports business partners and customers, effective evaluation and application of emerging technologies, and customizable solutions for

customer needs (Turban et al., 1997; Luftman, 2000). It is clear that businesses should understand the IS/IT architecture and deliver the business goals to the IS/IT managers to facilitate the development of appropriate IS/IT scope and architecture.

2.4.2.6 Skills maturity

Whatever the organisation's nature, processes and situation, it must manage its resources effectively. One of the most important resources is human resources, and managing people within an organisation and their related decisions are essential for the business strategy. By doing so, the organisation can design an effective structure, allocate the suitable people for the structure, identify roles and relationships of work, and secure optimal work arrangements (Galleirs et al., 2003; Mullins, 2005). In this sense, considering people skills is important at both the organisational level and the activities level. These skills are not only related to the personal level but also to organisational issues such as culture and social environment. The people skills allow the organisation to meet environmental changes, business innovation and learning (Laudon et al., 2004; Sledgianowski et al., 2005). Consequently, this requirement is important in developing the IS/IT plan from the CIO's point of view, as the people of the organisation are the users who can benefit from IS/IT.

2.4.2.7 Senior management support and commitment

The support of top management for an IS/IT plan will have a positive impact on its success because it ensures a connection of IS/IT with the business plan. The role of strategic IS/IT is important evidence for top management support for an IS/IT plan (Kearns, 2004a; Broadbent et al., 2005). The participation of the CEO in developing an IS/IT plan is crucial. This support can be obtained when top management is aware of IS/IT strategic values. This awareness supports the use of IS/IT strategically (Ward et al., 2002; Galleirs et al., 2003). Top management's participation in strategic IS/IT empowers the IS/IT-business strategic alignment. From this alignment, the justification of IS/IT investment for the business strategies can be demonstrated from the business objectives (Avison et al., 2004). In doing so, the exchange of ideas, knowledge and experience between the CIO and other top managers is critical to connect the business objectives and IS/IT capabilities.

2.4.2.8 Good working relations

This requirement starts with a good working relationship between the CEO and CIO, because this relationship is the basis for a complex planning process (Tai et al., 2000; Laudon et al., 2004; Denford et al., 2009). This relationship would support the CIO and other business units'

executives. By doing so, the relationship between the IS/IT people and business people may improve. These relationships between IS/IT activity and other business activities could support more communications. As a result, building trust between business activities and IS/IT activity would improve (Robson, 1997; Sledgianowski et al., 2005). This may increase the understanding of different groups' issues such as norms, objectives and autonomy within the organisation, and so increase the acceptance of the IS/IT contribution.

2.4.2.9 Strong leadership

Willcocks et al. (1997) stated that IS/IT leadership is important in IS/IT-business alignment. This leadership is important in planning different organisation arrangements such as structures, processes and staffing in terms of goals, challenges and inter-relationship between these arrangements. Furthermore, the IS/IT leadership can influence the perspective of business on the IS/IT role and contribution by sharing the IS/IT vision, values and culture. The CIO oversees IS/IT activity such as operations, architecture and applications. The IS/IT leadership can go far by combining other business units' executives (Weill et al., 2004; Broadbent et al., 2005). The IS/IT leadership is crucial for many reasons: a) ensuring top management involvement in the IS/IT planning, b) ensuring the fit of IS/IT-business strategies, c) supporting communications between different management levels such as top and middle, and d) shifting user attitudes to IS/IT acceptance and implementation (Ward et al., 2002). From these it is clear that the IS/IT leadership has an important influence on the IS/IT capabilities and delivery of these capabilities to the business.

2.4.2.10 Understanding technical environment

When considering the technical environment, the IT architecture is the most important issue, because it contains the organisation's list of technology standards. It is a crucial tool for aligning IS/IT and business strategy (Laudon et al., 2004; Brown, 2006). The IS/IT architecture organizes logic for components such as applications, data and infrastructure technology. It arranges policies and technical choices that may support the business strategy. It stated that well-designed IT architecture points out the IS/IT capabilities that are critical to the business goals. Ross mentioned that the ability of an organisation to define its core processes is critical to creating an effective data architecture. From this standpoint, management must decide which activities should be included and which should not. Also, management must determine the data these activities rely on and how they share them (Ross, 2003; Temponi et al., 2009). Consequently, the CIO requires other business participations to understand the core business processes that should considered for IS/IT architecture.

2.4.2.11 Understanding organisation environment

The organisation environment is the base for resources and delivering the services. It comprises an internal environment with issues such as culture, structure, resources and management and an external environment with issues such as customers, competitors, government and culture. All these issues should be considered in different relationships that influence the organisation strategy (Galliers et al., 2003; Turban et al., 2005). It reported that IS/IT may support the organisation in recognizing and reacting to changes in its external environment through environmental scanning (Laudon et al., 2004). Analysis of the external environment could consider: a) influences from the environment, b) the nature of the environment, c) the core environmental factor, d) he competitive position of the organisation, and e) the core opportunities and threats (Robson, 1997). As a result of the external environment forces analysis, change in the internal environment can emerge. This change requires resources analysis for the organisation to react effectively (Robson, 1997; Ward et al., 2006). Ward and Daniel (2006) identified some change types such as: a) design or redesign of new process, b) new roles and responsibilities, c) new teams, groups or divisions and, d) new arrangement of governance. It is clear that the CIO's participation in change management is crucial.

2.4.2.12 Planning process flexibility

The planning process of an organisation should have a scope. The planning process should consider the whole organisation or smaller systems as business units. These business units reflect the strategic activities of the organisation. By doing so, the planning process reflects the strategic activities relationships (Laudon et al., 2004; Turban et al., 2005). It was reported that there are some general reasons for IS/IT strategic adoption process: a) improving the IS/IT-business alignment through the contribution and investment of IS/IT strategic adoption, b) using IS/IT to obtain competitive advantage through business opportunities, c) developing flexible IS/IT infrastructure for the organisation's future to build cost effectiveness, and d) allocating the suitable resources and competencies to diffuse IS/IT effectively throughout the organisation (Teo et al., 1997; Ward et al., 2002). From this and the previous section, the analysis process to manage changes in the organisation environment through planning process and organisation resources is crucial. Consequently, managing the changes requires flexible planning and an understanding of the business environment by the top managers.

2.4.2.13 Adoptable planning model and process

Managing organisation resources effectively and competitively requires understanding the organisational environment. Effective analysis of the environment provides maximum benefit and reduces risks. Building relationships between different resources to meet organisational goals is important. These relationships help the organisation to be controlled, creative, flexible and learning. Furthermore, these relationships support the organisation's allocation of the core business processes. There is a need to consider these processes in the adoption model of the organisation by analysing them and considering the role of IS/IT in supporting the integration of these processes. This role of IS/IT can be supported by techniques and tools of strategic adoption. These techniques and tools may help to develop the business model of an organisation (Robson, 1997; Hackney et al., 1999; Galliers et al., 2003). This business model supports managers by simulating business problems and allowing managers to experiment with different solutions. Changing the variables of the model in experimentation is easier than changing them in real time, and after all, models may deal with uncertainty by using 'what-if' roles or risk calculations (Brown, 2005; Harris et al., 2008). Developing such a model requires many capabilities such as communications, understanding the business environment and top management commitment. These may support senior managers to interact effectively to manage the organisation situation.

Table 2.8 classifies the requirements for IS strategic adoption. The symbol (✓) indicates that the requirement have been classified for influence the focus. The classifications of IS strategic requirements in this research consider the strategic focuses[4] (global, competitiveness, alignment) based on Shore's (2006) suggestions for managing global organisations. The justification of these focuses is the research focus on global IS strategy. Nevertheless, the main goals of IS strategy are the alignment (internal and external of IS) and supporting the business to obtain and sustain competitive advantage with other business units.

[4] Strategic focus means the directions or motivations for strategic management to obtain good performance in the right area of planning.

Strategic requirement	Global	Integration	Competitive	Reference
Communication maturity	✓	✓	✓	Luftman (2000); Galliers and Leidner (2003); Moore *et al*. (2007), Ariyachandra *et al*. (2008)
Competency/value measurement maturity	✓	✓	✓	Silvius, (2008); Benson *et al*. (2004); Ward and Peppard, (2002); Luftman (2000)
Governance maturity	✓	✓		Weill and Ross (2004); Laudon and Laudon (2004); Luftman (2000); (Magdaleno *et al*. (2008); Bartenschlager *et al*. (2009)
Partnership maturity	✓	✓	✓	Evans *et al*. (1999) ; Benson *et al*. (2004); Ward and Peppard (2002); Laudon and Laudon (2004); Luftman (2000) ; Mäkipää (2006)
Scope and architecture maturity	✓	✓	✓	Luftman (2000); Ciborra and Associates (2000); Prahalad *et al*. (2002); Weill and Ross (2004)
Skills maturity	✓	✓	✓	Luftman (2000); Galliers and Leidner (2003); Weill and Ross (2004); Laudon and Laudon (2004); Ariyachandra *et al*. (2008)
Senior management support and commitment	✓	✓	✓	Luftman (2000); Benson *et al*. (2004); Gottschalk (1999)
Good working relations		✓		Laudon and Laudon (2004) ; Luftman (2000); Magdaleno *et al*. (2008); Mäkipää (2006)
Strong leadership	✓	✓	✓	Laudon and Laudon (2004); Luftman (2000); Denford *et al*. (2009); Villarreal *et al*. (2009)
Understanding technical environment	✓	✓	✓	Ward and Peppard, (2002); Laudon and Laudon (2004); Luftman (2000)
Understanding both internal and external environment of organisation	✓	✓	✓	Newkirk *et al*. (2003); Pant and Hsu (1999); Ward and Peppard (2002); Laudon and Laudon (2004)
Planning process flexibility	✓	✓	✓	Robson (1997); Galliers *et al*. (2003); Laudon and Laudon (2004) ; Premkumar *et al*. (1992); Spil *et al*. (2006)
Adaptable planning model and process	✓	✓	✓	Benson *et al*. (2004); Laudon and Laudon (2004); Robson (1997); Ariyachandra *et al*. (2008)

Table 2.8: The classification of IS strategic adoption requirements

From Table 2.8, it can be concluded that these requirements must connect with each other to achieve the benefits. The planning team (top management) should recognise the requirements' relation to each other in order to identify suitable planning techniques. After reviewing and categorising the literature on IS strategic adopting requirements, some published case studies have been analysed to identify and validate the requirements of IS strategic adopting, as well as their relationship. Table 2.9 shows the validation of these requirements through case studies.

Case study	Reference	Requirements											
		Communication maturity	Competency measurement maturity	Governance maturity	Partnership maturity	Scope and architecture maturity	Skills maturity	Senior management support and commitment	Strong leadership	Understanding technical environment	Understanding environment	Planning process flexibility	Adaptable planning model and process
Skandia Re-insurance	Earl (1996)							✓					
Insurance Company	Galliers and Leidner (2003)	✓			✓	✓		✓			✓	✓	
Adidas	Retail Technology Quarterly (2005)	✓		✓	✓	✓	✓	✓				✓	✓
General Motors (GM)	Hoffman (2007)	✓		✓	✓	✓	✓	✓	✓		✓	✓	✓
Piper Jaffray Companies	Darling (1996)	✓		✓	✓	✓		✓		✓	✓	✓	
International Chemical	Sledgianowski and Luftman (2006)	✓	✓	✓	✓	✓	✓	✓			✓	✓	✓

Table 2.9: A classification of IS strategic adoption requirements through published case studies

2.4.3 Drivers of IS Strategic Adoption

This section considers the external forces that influence the adoption of strategic IS within an organisation. These forces or drivers could be accounted through the senior managers' views (Ward and Daniel, 2006). In addition, the CIO, as a member of the senior management team, would account for the forces that influence IS/IT activity as well as the whole organisation. By doing so, CIO could take into account all different drivers and their relationships that influence his/her decisions through the adoption of SISP as well as justify these relationships to other members of the team. The classifications of IS strategic drivers in this research consider the strategic focus (global, competitiveness, alignment) based on Shore's (2006) suggestions for managing global organisations. The justification of these focuses is the research focus on global IS strategy. Nevertheless, the main goals of IS strategy are the alignment (internal and external of IS) and supporting the business to obtain and sustain competitive advantage with other business units.

There are some important drivers for adopting strategic IS: reducing cost and increasing effectiveness of business processes and reducing time. A comprehensive framework proposed by Ives et al. (1993) applies global business drivers such as joint resources, risk reduction, global products, quality, suppliers, and customers to obtain value from different scope and scale in global economics (Turban et al., 1997; Evans et al., 1999; Harris et al., 2008). The next subsections discuss these drivers.

2.4.3.1 User politics

The user roles are important factors that influence the adoption of SISP (Robson, 1997; Willcocks et al., 1997; Galliers et al, 2003; Turban et al, 2005). The user in this research context considers the relationships between IS/IT activity and other business activity. This relationship considers the trust and communication between IS/IT and business users (Ward et al., 2002). The differences in backgrounds, interests and priorities are factors that influence the IS-business users' relationships as reported by Laudon et al., (2004). From these points, it is clear that the CIO needs to seek the views of different users of their business units. From the view of the CIO, the user politics impact the CIO's contribution to the business strategy and drive his/her decisions on IS activity.

2.4.3.2 Time

Completion of strategic objectives requires continuous focus on the target date of the planning progress. This illustrates the importance of the time horizon for business executives (Robson, 1997; Galliers et al., 2003; McManus et al., 2007). It was suggested that lead time is a factor in organisational strategic adoption. The lead time is the time between developing the strategic goals and their establishment. This time contains the important decisions for the future of the organisation (Harrison, 1995). The scope of strategic goals and future decisions emphasises the position of the organisation in the market and issues such as product/service, competitors and markets (Bonn et al., 1996; Luftman et al., 1999). The business executives drive the target time for the completion of IS/IT projects and this influences the CIO's decisions. Consequently, the time constraints force the CIO to understand the business to cope with its goals.

2.4.3.3 Budget and cost

This driver is important in the sense of evaluating the investment of IS adoption (Acur et al., 2006; McManus et al., 2007). Galliers et al. (2003) suggested five categories for IS adoption: a) mandatory investment, such as reporting from accounting systems within the organisation; b) performance investment, such as supporting sales people with equipment that increases their performance; c) investment for competitive edge, such as applying systems that increase the market share of the organisation; d) infrastructure investments, such as applying systems that support the flexibility of the infrastructure to face the future changes; and e) research investments, such as creating or developing specific criteria for IS projects. All these types of IS/IT adoption requires budget and cost analysis (Ward et al., 2003). There are two types of cost for IS as has been suggested by Irani (2002). These are direct and indirect. It is said that the indirect costs of a project are more significant and could be described as the organisational and human dimensions. They are also supported in identification and analysis but difficult to control (Irani, 2002; Ezingeard et al., 1998). The cost can be used to benchmark the progressing of IS strategic adoption, as it reflects projects consisting of IS and other business activities collaboration (Brown, 2006). So, the benchmarking can be developed by business senior managers who measure their value of IS. Consequently, the decisions of those business senior managers impact the IS senior manager decisions.

2.4.3.4 IT architecture

Positioning IS as a strategic business unit supports the use of information architecture as a tool for planning and implementing IS. There are many types of architecture such as application, data and business systems architectures. An effective and valuable information architecture integrates all these types of architectures through targeted design, development and use (Willcocks et al., 1997; Brown, 2006). Information architecture is defined as 'a set of high-level models which complements the business plan in IT-related matters and serves as a tool for IS planning and a blueprint for IS plan implementation' (Willcocks et al., 1997, p. 342). Thus, the information architecture consists of two core architectures: data and application. These two architectures are supported by the IT architecture. It was suggested that to develop IT architecture, two critical pieces of information are required: a) the business needs for information and b) the existing and planned IT infrastructure and applications of the organisation (Turban et al., 2005). Consequently, the IT architecture provides the organisation with technical aspects for the IS/IT strategic applications. Thus, new technologies may drive the IS strategic adoption by forcing the CIO to adopt these new technologies to cope with market forces or increase the effectiveness and efficiency of the organisation processes.

2.4.3.5 Business processes

Business processes are continually driven by information about products, services and customers. As businesses desire to respond quickly to market changes, core process integration is required. This integration of processes is top management decisions through planning of business (Laudon et al., 2004; Weill et al., 2004). These decisions relate to cross functional processes. Inter-organisational IS (IOS) is a system that allows transfer of information both external and internal to the organisation. This means it supports organisational operation, communications and collaboration. IOS thus helps reduce the cost and improve the effectiveness and timeliness of business processes. As a result, effective partnerships, improved customer relationships, and profitable global business can be supported (Turban et al., 2005). From these points, it is clear that clarifying the core business processes is a top management issue that should be a concern of the CIO.

2.4.3.6 Executives' skills and commitment

As any business strategy needs approval from the top management team, the IS/IT as strategic unit needs approval for its investment. The approval process require participation from the top managers who approve the IS/IT plan. This participation confirms that the creative ideas and strategic priorities have been considered by top management (Weill et al., 2004; Campbell et al., 2005). This participation from senior managers recognizes the shift of the IS unit from back office support to the strategic level. This strategic level considers the industrial position in IS contribution (Galliers et al., 2003; Kearns, 2004a).

2.4.3.7 Global business

Global business applications are required to survive in a global business environment. These applications can be supported through IS global applications. These IS applications support data service industries through speeding up the transmission such as ordering and invoicing of massages (Mirchandani et al., 2004; Turban et al.,2005). They support top management in two ways: a) improving the organisation functions such as distributing, strategic planning and inventory control, and b) facilitating global production, which can impact manufacturing, R&D and design. The global IS addresses differences in country-specific business environments, availability of resources and technological environments (Galliers et al., 2003; Sledgianowski et al., 2005). Thus, the impact of IS strategic adoption in a global organisation can drive the decision-making process of the CIO and his involvement with the top management team.

2.4.3.8 Nature of the organisation

Organisation size is an important factor in the strategic decision-making process. The variety of resources, functions and complexity among large, medium and small organisations can influence the decision-making process. Size is also important in agreeing on the organisation strategy as the number of stockholders differs. The owners of a small business, for example, decide the business strategy, whereas in a large organisation, different senior managers need to agree on the business strategy. Furthermore, many other issues such as international vs. national and single vs. multiple industries are important factors for the nature of the organisation (Robson, 1997; Ward et al., 2002; Weill et al., 2004; Kearns et al., 2004b). So, the CIO should be aware of his/her organisation's nature as this drives his/her planning decisions to cope with the business plan.

2.4.3.9 Importance of IS

The goal of IS strategic adoption is to clarify and identify how IS can contribute to the business plan to increase corporate performance. Three important issues should be considered to adopt strategic IS: the business plan, the perceived role of IS/IT in the organisation, and ability to use and implement IS. These can help top management to recognize the value of IS/IT to the organisation and then invest in it (Sledgianowski et al., 2005; Ariyachandra et al., 2008).

2.4.3.10 Organisation situation

The need for IS adoption in an organisation depends on current business issues (core operational) and react to change future goals as strategic level. These create opportunities and threats for the adoption of strategic IS/IT. These can be achieved through in-depth understanding of business and IS/IT environments. The goal of understanding the current organisation situation is to define the start point for planning (Ward et al., 2002; Acur et al., 2006). From this it can be demonstrated that business and IS/IT analysis requires collaboration between top business managers as well as the CIO to define strategic IS/IT adoption issues such as benefits, requirements and drivers. Consequently, collaboration between the top business managers and the CIO facilitates IS contribution to the business and improvement of the organisation's performance.

2.4.3.11 Joint resources

Understanding the available resources to develop business strategy is important issue to drive the strategic decisions of top managers. It suggested that resources can be the base for business planning to measure the achievements of organisation (Brown, 2004; Mullins, 2005). Also, considering the abilities and competencies of the organisation through doing things in unique way can be important resources. It suggested that strategic thinking can be important to balance and integrate between the resources and capabilities and environment of the organisation for long term success. This can be reached through understanding many organisational issues such as culture, skills and knowledge and their relationships (Bonn, 1996; Mullins, 2005). So, successful IS/IT strategic adoption would be through allocation the IS/IT benefits and values and how to align these to the organisation resources and capabilities (Ward et al., 2002; Ward et al., 2006). From these issues the sharing of ideas between the CIO and other business units' executives are important to align the benefits, capabilities and

resources. Consequently, this alignment process of resources and benefits will force the decisions of the CIO through IS/IT adoption.

2.4.3.12 Risk reduction

Measurement and evaluation of IS/IT investment are intended to reduce the risk of this investment from the management perspective. These measurement and evaluation tools can collect quantitative and qualitative data to examine the value of IS/IT to the organisation. However, it has been reported that there are no reliable measures for measuring the IS/IT impact (Weill et al., 2004). Galliers et al. (2003) suggested some IS/IT evaluation problems such as a) inappropriate measures, b) budgeting practices that hide the full cost, c) understanding human and organisational costs, d) overstating costs, e) dismissing intangible benefits, and f) poor risk investigation. They expressed that the most common reason for failure of an IS/IT investment is a disconnect between the organisational information needs and IS/IT needs. This issue relates to strategic alignment issues such as business-IS/IT integration that should considered by the top management team responsible for strategic planning.

2.4.3.13 Global product/service

As mentioned in the global business section, organisations benefit from data services to speed up there messages' transmission through IS/IT systems. The organisation management can also benefit from IS/IT global systems as mentioned earlier (Galliers et al., 2003). It has been reported that, when organisations operate globally, the importance of the IS/IT contribution increases. There are many benefits of global IS: a) effective communication support for interaction among widely distributed partners speaking different languages, b) effective collaboration to overtake differences such as distance, time and culture, and c) exchange of information through a shared database (Laudon et al., 2004; Turban et al., 2005). All these issues relate to the strategic business level, and consequently collaboration between the CIO with other executive officers is necessary.

2.4.3.14 Quality

Efforts to measure IS/IT productivity are intended to improve the planning, managing and use of IS/IT in an organisation. Quality improvement considers many issues such as the business situation, appropriate criteria and metrics, managerial and stakeholder judgement and process, motivated evaluators and assessment culture. However, a number of studies note difficulties

and limitations in measuring IS/IT performance (Willcocks et al., 1997; Weill et al., 2004). Nevertheless, there are many ways of IS/IT evaluation tools such as technical, finance, non-financial and organisational measurements (Willcocks et al., 1997; Kearns et al., 2004b). From these points, it can be seen that the opinions of all stakeholders views should be consulted in determining performance metrics for the IS/IT unit. Their relationship with the CIO is important in understanding each others' roles and process.

2.4.3.15 Suppliers

The role of suppliers is important in business strategies. These roles deal with cost, customer, and supply chain management (Laudon et al., 2004). Turban et al. (2005) presented four areas of IT/IS support: in-house logistics and material management, planning production and operations, computer-integrated manufacturing, and product life cycle management. These comprise inventory management, quality control, material requirement planning, manufacturing resource planning, and computer integrated manufacturing. An inventory system, for example, can be managed by IS/IT material systems (Turban et al., 2005). The suppliers (vendors) of IS/IT services or products are also important in IS/IT strategic adoption (Ward et al., 2002). The value of these vendors needs to be considered not only by the CIO but also by other business executives who commit to the IS/IT investment.

2.4.3.16 Corporate customers

Marketing focus has changed from mass and segmented marketing to customization (Laudon et al., 2004). IT/ IS has a high impact on marketing and sales (Applegate et al., 1999). There are three suggested groups of relationships between marketing channel systems and IT /IS. These are customer relations, distribution channels and in-store innovations, and marketing management (Turban et al., 1997). Customer relationship management (CRM) contains customer profiles, prospective customer lists and marketing databases, with customisation, personalisation, and advertising and promotions. So, there are many types of CRM applications, such as customer-facing applications, customer-touching applications, customer-centric intelligence applications and online networking applications. Electronic CRM (e-CRM) is also important as IT/ IS support. E-CRM means using any electronic touch-points, for instance web browsers and Internet, to manage customer relationships (Turban et al., 2005). Distribution channels and in-store innovations are ways chosen to distribute products or services. IT strongly supports distribution in some industries, such as digital products and services (Turban et al., 2005).

Marketing management is also supported by IT/IS. It is supported by building applications that help to make decisions in many companies. These applications involve pricing of products or services, sales person productivity, sales force automation, profitability analysis, sales analysis and trends, new products, services and market planning, and web-based systems in marketing (Turban et al., 2005). All the above applications and relations work on the basis of supply and demand so as to address market changes (Earl, 1996). Such decisions need to be made on the strategic level where top managers develop organisation vision and goals. Therefore, participation from executives is important to deliver appropriate decisions. These decisions drive the IS/IT strategic plan as business enabler.

Table 2.10 shows a classification of IS strategic adoption drivers as one factor of IS strategic adoption mentioned in Figure 2.1. The symbol (✓) indicates that the driver has been classified for influence the focus.

Strategic driver	Global	Integration	Competitive	Reference
Users' politics	✓	✓		Galliers *et al*., 2003; Hartono *et al*., 2003; Robson, 1997; Gottschalk, 1999; Alert, 2009
Time	✓	✓	✓	Hartono *et al*., 2003; Robson, 1997
Budget and cost	✓	✓	✓	Hartono *et al*., 2003; Robson, 1997; Ward and Peppard, 2002; Weill *et al*., 2004
IT architecture	✓	✓	✓	Ciborra *et al*., 2000; Luftman, 2000; Robson, 1997; Prahalad *et al*., 2002 ; Weill *et al*., 2004; Shirazi *et al*2007
Business process (cost, time, effectiveness)	✓	✓	✓	Galliers *et al*., 2003; Laudon *et al*., 2004; Pant and Hsu, 1999; Turban *et al*., 2005
Executive skills and commitments	✓	✓	✓	Benson, 2000; Gottschalk, 1999; Prahalad *et al*., 2002; Laudon *et al*., 2004; Robson, 1997; Pant and Hsu, 1999
Global business and geography	✓	✓	✓	Laudon *et al*., 2004; Newkrik *et al*., 2003; Shore, 2006
Nature of the organisation	✓	✓	✓	Robson, 1997; Newkrik *et al*., 2003
Importance of IS	✓	✓	✓	Laudon *et al*., 2004; Robson, 1997; Premkumar *et al*., 1992
Organisational situation	✓	✓	✓	Newkrik *et al*., 2003; Robson, 1997; Ward and Peppard, 2002
Joint resources	✓	✓	✓	Benson, 2000; Luftman, 2000; Gottschalk, 1999; Turban *et al*., 1997
Risk reduction	✓	✓	✓	Robson, 1997; Turban *et al*., 1997
Global product/service	✓		✓	Turban *et al*., 1997; Ward and Peppard, 2002
Quality	✓	✓		Galliers *et al*., 2003; Turban *et al*., 1997;Weill *et al*., 2004 ; Premkumar *et al*., 1992
Suppliers	✓	✓	✓	Laudon *et al*., 2004; Turban *et al*., 1997; Ward and Peppard, 2002
Corporate customers	✓	✓	✓	Benson, 2000; Turban *et al*., 1997

Table 2.10: The classification of drivers for IS strategic adoption

As shown earlier in this section, most of these drivers have an influence on each other. So they are connected and this needs to be considered in the IS strategic adoption. Budget and time drivers for example may influence by executives skills and commitments. As both budget and time are important drivers for CIO in adoption of IS/IT strategically and without commitments from other members of the board team there will not enough budget and time to cope with organisation vision and goals. So, the drivers play an important role in the adoption and evaluation of IS strategic techniques as explained in Section 2.5.1.

After considering and classifying the literature on IS strategic adopting drivers, some published case studies have been analysed to identify and validate the drivers of IS strategic adoption, as well as their relationship. Table 2.11 shows the validation of IS strategic adoption drivers through published case studies.

Case study	Reference	Drivers															
		Users' politics	Time	Budget and cost	IT architecture	Business process	Executive skills and commitments	Global business and geographical spread	Nature of the organisation	Importance of IS	Organisation situation	Joint resources	Risk reduction	Global product/service	Quality	Suppliers	Corporate customers
Skandia Re-insurance	Earl (1996)			✓	✓			✓					✓	✓			
A Insurance Company	Galliers (2003)	✓	✓		✓		✓			✓	✓	✓					
Adidas	Retail Technology Quarterly (2005)	✓	✓		✓	✓	✓	✓		✓	✓	✓		✓			✓
General Motors (GM)	Hoffman (2007)	✓	✓	✓	✓	✓	✓	✓		✓		✓		✓		✓	
Piper Jaffray Companies	Darling (1996)	✓			✓		✓	✓		✓		✓				✓	
International Chemical	Sledgianowski and Luftman (2006)	✓		✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓

Table 2.11: The validation of IS strategic adoption drivers through published case studies

2.5 Difficulties of Information Systems Strategic Adoption

There are frameworks such as Critical Success Factors, Value Chain Analysis, Business System Planning, and McFarlan's (1984) adaptation of Porter's Competitive Strategy Framework to support IS strategic adoption and integration (Henderson and Venkatraman, 1999). The first framework is for the administrative role, the second is for the operational role, and the third (characterised by the deployment of IT applications) is for the competitive role. Henderson and Venkatraman (1999) argued that these frameworks fail in two ways. Firstly, they fail in the lack of articulation in the basic logic (the need of IT/IS capabilities and the organisational complexities of organisational transformation). Such transformation, indeed, requires the advantage of technological capabilities. Secondly, they fail to address the business as external and internal at the same time, when both are requirements in the process of transformation by new and powerful IS/IT capabilities. However, these frameworks are helpful in pointing out the appearance of interconnection between IS/IT capabilities and the organisation's actions.

A number of reasons have been suggested for IS failure, such as neglect of the organisational aspect in SISP frameworks which are more related to technical aspects and which comprise most SISP studies. In short, they suffer from an absence of examining the relationships between organisational aspects and effectiveness of SISP (Lee and Bai, 2003).

A study by Newkirk, Lederer and Srinivasan (2003), which aimed to examine the relationship between comprehensiveness and effectiveness of the five SISP stages (see Section 2.3.2), mentioned that too little SISP could be caused by incomplete understanding of the external competitive environment, internal organisational environment and emerging information technology. This tends not to produce a suitable strategy, because of the absence of a suitable alternative. In contrast, too much SISP is extremely time-intensive. This may lead to planning without covering new changes in both external and internal organisational environments.

It has been mentioned above that there are a number of reasons for the failure of SISP. Such reasons include the development's duration, user politics, cost estimates, poor integration in planning governmental legislation, and IS groups. It has been suggested that the future research should focus on the level of analysis that is needed to facilitate SISP implementation. Thus, the adoption stage is very important in SISP, and there is a need to understand this issue in order to make progress (Hartono et al., 2003).

All these points of view are considered in a national organisation, whereas a global organisation faces more challenges, including geographical issues and centralisation or decentralisation issues. However, there are four elements that need to be brought together: the managing group of business units, business practices, legacy systems and managers (Shore, 2006). The difficulty of adoption of global IS comes from differences in culture, economics, political and legal systems of different countries (Turban et al., 2005; Hunter et al., 2006). From this section, two important points would be considered as a gap in the literature of IS strategic adoption. The first is understanding the relationships among arrangements such as benefits, requirements and drivers of IS strategic adoption from top management views. These arrangements support understanding the environment of the business as well as IS strategic contribution by the board team which including CIO through classifying these arrangements according to the organisation situation. So, the CIO should be aware of forces (drivers) and capabilities (requirements) that influence the IS strategic adoption. By doing so, the level of analysis for IS strategic adoption may be improved in since of combination between business and IS arrangements that considered earlier and, b) the global perspective of the business would be considered as important issue to IS strategic adoption, because the global arrangements (benefits, requirements and drivers) have characters that impact the business strategy as well as IS strategic adoption.

2.5.1 The Need for Strategic Techniques in IS Strategic Adoption

IS/IT can provide techniques and tools that may help to build the business model of an organisation (Robson, 1997; Hackney et al., 1999). This business model supports managers by simulating a situation or the solution to a problem, as discussed previously (Harris et al., 2008). Such a model would draw a picture of the relationship between different arrangements of IS strategic adoption for the board team as mentioned in Section 2.2.3.

There are many headings that can be used to categorise the techniques that may be used to support strategic adoption. These techniques follow a model of adoption or decision-making process, their focus of attention such as opportunities, identifying origin, perspective view and current business problem (Robson, 1997; Hackney et al., 1999). Another way to group these techniques is to meet the goals of efficiency, effectiveness, competitiveness, business alignment or business impact. They can also be grouped according to awareness, opportunity or positioning framework as Earl (year) does. Generally, all these techniques are grouped according to the judgment of their use, because they overlap and can be applied in many ways. Thus, care should be taken in choosing them for application (Robson, 1997).

There are some key factors that may support obtaining competitive advantage from IS. The availability of techniques for using IS strategically is an example. Another example is understanding the extent to which the business environment has been affected by the information revolution—understanding IS strategic adoption processes in terms of generating, developing, implementing and planning. If IS strategic adoption is treated as a system that has input, process and output, then the techniques are important as inputs and outputs in order to reach new approaches of adoption by the application of the process (Robson, 1997; Hackney et al., 1999). This may be useful in an unstable environment which needs to act effectively and efficiently in the face of any changes in the environment. Thus, these strategic techniques can involve the arrangements mentioned earlier to increase the understanding of the business and IS environments for the board. By doing so, the CIO would understand the business and the other board member would understand the IS contribution. Thus, more effective and efficient decisions about IS investment would be made. This was mentioned in the previous section about the level of analysis and availability of techniques. This gap will be discussed in Chapter 3 through the developing of the proposed framework for evaluation of IS strategic adoption techniques.

2.5.2 Information Systems Strategic Adoption Methods, Techniques and Tools

The details of planning are very important in building strategy. When organisations wish to create IS strategic adoption, they should have a framework for IS adoption. This framework contains the tools, methods and techniques of planning in a flexible and adaptable to reach goals as presented in Table 2.12. So, the information systems strategy (ISS) is an outcome of IS process planning. In short, this framework organises the important analyses that should be done to produce the ISS. At the same time the framework avoid depth of detail of data and specific systems, because such detail needs tools which may not be a direct part of the ISS adoption process. From this point of view, there are many approaches or methodologies of IS strategic adoption. The nature of the methodology contains many tasks which need techniques to be completed in order to generate the deliverables. In order to create an effective methodology that can support management to plan, review and control an IS strategic adoption project, there should be a standard set of techniques and supportive tools to facilitate these projects (Robson, 1997; Fitzgerald, 1997; Galliers et al., 2003).

Classification	Intention/Effect		Nature of the Planning Environment		Nature of the Planning Process			
Type of Frame-work	Business Impact	Business Alignment	Socio-technical	Develop-mental	Top-down	Bottom-up	Innovative	Eclectic
Focusing of Framework	Impact of IS strategy upon business strategy.	The business strategy is the basis of IS strategy.	The business strategy is seen as two entities: IS strategy and environment. The change management plays an important action in the strategic management. There are three dimensions for decentralization of IS: organisational, physical and responsibility.		There are many approaches such as Ward's strategic information system planning, King's strategy set transformation and critical success factors can be used in this nature. Earl's classification of IS strategy process shows a number of ways of the ongoing process. These are infrastructure led (bottom-up), business led (top-down) and mixed.			
Suggested Tools & Techniques	• Competitive forces (Porter, 1979; McFarlan, 1984). • Competitive strategies (Porter, 1980) • Value chain (Porter, 1985; Rackoff, 1985) • Consumer resource life (Ivas & Learmonth, 1984). • Impact of IS/IT (Parsons, 1983). • Strategic opportunities (Benjamin, 1984). • Ends-means analysis tool.	Critical success factors analysis. Business system planning. Strategy set transformation.	Critical success factors analysis. Business system planning. Growth stages.					

Table 2.12: A classification of IS strategic adoption frameworks (adopted from Robson, 1997)

Many researchers (Grant and King, 1982; Hax and Majluf, 1984; and Haber and Schendel, 1978) have indicated that maximising competitive advantage should be the focus of business strategy (Henderson and Venkatraman, 1999; Ambrosini and Bowman, 2003), and every activity should have a target period of time, mostly short term (Haberberg and Rieple, 2001). Activities may vary according to factors affecting future business (Haberberg and Rieple, 2001). King (1978) mentioned that IS/IT strategy is a functional strategy (Henderson and Venkatraman, 1999; Ward et al., 2002). The focus has been on strategic information systems planning (SISP) approaches, the use of Mintsberg's models and stage of growth analysis which relate to Nolan, with organisational theory, in order to obtain an organisational fit for IS (Burn, 1991). Thus, there are many techniques that can be used in IS strategic adoption processes. From these it can be seen that a business needs a framework for IS strategic adoption. This framework needs methods, techniques and tools that may support IS-business alignment and IS strategic adoption. So, there is a classification of the Systems Development Life Cycle (SDLC) methods according to their processes, advantages and disadvantages as Appendix C shows. Also, there is a classification of tools depending on their dimensions, advantages and disadvantages as classified in Appendix D. These both classifications support the researcher to link the different factors of IS strategic adoption conceptual model proposed in Chapter 3. Nevertheless, they support the researcher in the data collection method through the case studies in this research by understanding the issues that related to IS strategic adoption and how it can apply in organisation.

In addition, there is a classification of techniques depending on their focus (strategic analysis, competitiveness and alignment), benefits, advantages and disadvantages as presented in Table 2.13. The symbol (✓) indicates that the technique have been classified for support the focus. However, the symbol (✗) indicates that the technique have not been classified for support the focus.

Technique	Strategic Analysis (strategic planning process)	Competitiveness-Focused (objective-focused)	Alignment-Focused (relationship to business strategy)	Benefit	Advantages	Disadvantages	References
SWOT	✓	×	×	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*. (2004)
Opportunity Categorising	✓	✓	×	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); Johnson *et al.* (2008)
Strategic Importance Matrix	✓	×	✓	Shows the importance of IS to the business	Gives advice about business value from IS	Shows the value after the fact, need to develop application	Robson (1997); Johnson *et al.* (2008)
Benefit Level Matrix	✓	×	×	Helps to evaluate the systems regarding the different benefits and organisational impacts	Shows the dynamic nature of IS related to competitive advantage	Lack in supporting strategic level	Robson (1997)
5-Forced Model	✓	✓	×	Emphasises Porter's model to distinguish the important force to the organisation and showing the suitable opportunity	Supports organisation with current situation, opportunities, and threats	More related to external environment than internal one	Robson (1997); Brumec *et al*. (2004); Johnson *et al.* (2008)

Generic Business Strategies	✓	✓	✓	Supports the tendency of the strategy to cost leadership, differentiation, and focus by IS	Useful in planning and familiar in practice	Relies on 5-Forced model	Robson (1997); Johnson *et al.* (2008)
Information Intensity Matrix	✓	×	×	Advises where IS is critical to the organisation	Supports the organisation to measure the importance of IS, details of where and how the importance factors	Relies somewhat on Porter's value chain model	Robson (1997); Johnson *et al.* (2008)
Impact Categorising	×	✓	×	Models can be used strategically in competitive marketplaces or in 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); Johnson *et al.* (2008)
Industry Analysis	×	✓	×	Relates to future opportunities of IS	Contributes to the competitive opportunities of product/service, markets, and economies of production	Focus on competitive perspective as external environment	Robson (1997); Johnson *et al.* (2008)
Strategic Thrusts	×	✓	✓	Facilitates the process of making strategic choices	Generator of strategic option can work as an aligning or impact technique.	Can be used in the stage of building alternative strategies	Robson (1997); Johnson *et al.* (2008)
Strategy-Set Transformation	×	✓	✓	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	×	×	✓	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 on strategy and using technology, such as software and flexibility	Needs more time to build a model for a specific organisation, for software, which can be neglected, and for human and political issues	Robson (1997); Johnson *et al.* (2008)

Critical Success Factors	×	×	✓	A technique serving key decisions by providing information requirements and aligning techniques	Flexibility regarding organisation 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 for defining critical factors	Avison *et al.* (2003); Robson (1997); Thomas *et al.* (2002); Brumec *et al.* (2004); Johnson *et al.* (2008)
Critical Set Analysis	×	×	✓	An aligning technique	Helps to align IS vision with senior manager vision	Difficult to use in business impact or business re-engineering techniques	Robson (1997)
Business Systems Planning	×	×	✓	A process for structure-planning approaches	Shows bottom-up view of information	Needs centralised environment	Robson (1997); Brumec *et al.* (2004)
Lateral Thinking	✓	×	✓	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); Johnson *et al.* (2008)
Scenario Planning	✓	×	×	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); Thomas *et al.* (2002); Johnson *et al.* (2008)
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	✓	×	×	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); Johnson *et al.* (2008)

Balanced Scorecard Analysis	✓	×	×	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 and Peppard (2002); Brumec *et al*. (2004); Huang *et al*. (2007)
Process Analysis	✓	✓	✓	Expresses core processes and connects the process effectiveness to drivers	Utilitises decision-making for process options	In some cases, needs radical changes, which may affect some organisational issues such as structure, people, and culture.	Ward and Peppard (2002)
Stage of growth	✓	×	✓	IT planning model	Basic for SISP methodology	No strong empirical support	Turban *et al*. (1997)

Table 2.13: A Classification of IS strategic adoption techniques

From Table 2.13 it appears that different techniques have different use as they have different focus and benefits. As mentioned earlier, different techniques are required to improve the understanding of different organisational issues or situations. Nevertheless, connections between these techniques and different arrangements (benefits, requirements and drivers) of IS adoption are crucial during the IS strategic adoption to improve the effectiveness and efficiency of decision making. These connections will be presented in Chapter 3 of this thesis as a proposed framework for evaluation of IS strategic adoption techniques. This framework is a factor in the conceptual proposed model for IS strategic adoption presented in Chapter 3.

2.6 Conclusions

This chapter reviewed the comprehensive literature in the IS strategic adoption area to identify research issues. In doing so, the researcher identified and verified a gap in the literature dealing with the absence of theoretical models for IS strategic adoption as presented in Section 2.5. This gap considered in two levels: a) the absence of building relationships between different arrangements such as benefits, requirements and drivers of business and IS in global dimension and, b) the absence of these arrangements with different IS strategic adoption techniques. The justification for this is that strategic information systems needs more research in the areas of adoption and evaluation as presented in Section 2.5. Additionally, this chapter reviewed the literature on strategic information systems adoption and argued the nature of IS strategic adoption. In short, this chapter:

- classified SISP drivers;
- classified SISP requirements;
- classified SISP benefits;
- classified process models for IS strategic adoption;
- classified SISP methods;
- classified SISP tools and
- classified SISP techniques.

Most of the terms in the IS strategic adoption area argued the case for IS-business integration, but each term proposes a different SISP approach. So, there is a need to describe the dimensions, roles and approaches of IS strategic adoption. By doing so, classifications of IS strategic adoption drivers, requirements and benefits are proposed that will simplify the confusion about strategic IS. The classifications will allow planners to better understand the process of IS strategic adoption as well as apply a suitable model, techniques and tools. The

proposed classifications are based on a comprehensive literature review, as well as on published case studies on IS strategic adoption. They divide strategic focus into three distinct areas:

- global focus;
- integration focus and
- competitiveness focus.

The classifications of IS strategic adoption factors or arrangements (e.g., drivers and requirements) consider the strategic focus (global, competitiveness, alignment). The justification for this is the research focus on global IS strategy (strategic focus). Nevertheless, the main goals of IS strategy are alignment (integration focus) and supporting the business to obtain and sustain competitive advantage with other business units (competitiveness focus).

Based on these novel taxonomies, planners can better navigate and understand the IS strategic adoption area. Furthermore, planners will better understand the focus of each IS strategic adoption factor in terms of adoption and evaluation, as the taxonomies map the factors with the categories of strategic focus. Even though the proposed taxonomies describe the factors of IS strategic adoption (e.g., drivers and requirements) that are categorised according to strategic focus (e.g., global, integration and competitiveness), they do not describe any classification of process models for IS strategic adoption. Consequently, the chapter reviews general and process models that are applied through IS strategic adoption. As presented in the section, most of these models consider the alignment and its progress stages, where IS strategic adoption require further aims such as meeting the environmental changes and solving problems.

Therefore, on the basis of published case studies on strategic IS, the researcher recognises and describes all potential match changes of drivers, requirements and benefits that are applied for SISP. By doing so, the researcher counts relative gap in IS strategic adoption area, since its arrangements (drivers, requirements and benefits) have not yet been explained in IS strategic adoption literature in terms of their relationships to other factors such as planning team, IS strategy and IS strategic techniques. The proposed classifications of IS strategic adoption drivers, requirements and benefits could help researchers and planners to understand the IS strategic adoption area. Additionally, the classifications could be employed as evaluation criteria while evaluating the IS strategic adoption techniques and thus support organisations to adopt a suitable set of its techniques. Therefore, exploring the IS strategic adoption methods, tools and techniques is required.

The researcher proposes taxonomies of these methods, tools and techniques. These classifications map advantages and disadvantages of these methods, tools and techniques to show how they could contribute in the IS strategic adoption process. These categorisations provide clarification and help researchers to analyse the methods, tools and techniques of IS strategic adoption. Two important research issues emerged from the literature review presented in this chapter. First, there is the issue of a theoretical gap in the IS strategic adoption area regarding its different arrangements (benefits, requirements and drivers) in global dimension. Secondly, there is the issue of confusion about IS strategic adoption techniques. These techniques present a major obstacle to IS strategic adoption. Moreover, no single strategic technique could apply in all IS strategic adoption processes. Therefore, a variety of combinations of IS strategic adoption techniques are required. The above-mentioned research issues that emerged from the literature review are discussed in the next chapter.

Chapter 3: A Conceptual Model for Adoption and Evaluation of Strategic Information Systems

3.0 Introduction

Chapter two focused on arguing the nature of strategic information systems planning. Further, classifications of its benefits, requirements, drivers, tools, methods and techniques were demonstrated. The important issues that emerged from Chapter 2 are considered to be the research agenda for this thesis. These issues are as follows:

- In existing theoretical models that explain the adoption of SISP (Table 2.5), there is an absence of research and theoretical models that consider IS strategic adoption comprehensively. This was presented in sections 2.3.1 and 2.3.2. Further research is needed on the theoretical side and more detail from empirical work to justify the theoretical side. With the strategic dimension in mind as well as the changeable environment for business, this research considers the organisational dimension of strategic information systems planning and its importance in the strategic alignment of IS-business strategies.

- Planning techniques present a challenge if not a difficulty in the adoption of SISP. Given changeable environments, different needs demand different approaches to strategic planning between different industries and even organisations in the same industry faced with limited resources and increasing competition, while at the same time there is a multiplicity of techniques can be combined to support the organisation in adopting SISP. The multiple uses and different focus of these techniques plus the fact that no one technique can be used to deal with all the planning problems means

that an understanding of how to combine different techniques through the planning process is required.

This chapter seeks to:

- Explain the application of strategic planning techniques in the area of strategic information systems planning.
- Build a conceptual model for evaluation and adoption of strategic information systems adoption.

In attempting this, the first intention is to develop a framework that supports evaluation of strategic planning techniques. This framework is based on an inclusive set of evaluation criteria. These criteria consider most of the misunderstandings around SISP. As a result, this evaluation framework forms part of the novel proposed model for adoption and evaluation of SISP. This novel model considers several factors as well as the evaluation framework that may contribute to the adoption and evaluation of SISP.

This chapter consists of several sections. The first section discusses selecting an appropriate technique from different techniques in support of this research by connecting the theoretical part with the empirical part. The next section considers Business Systems Planning as the chosen technique for this purpose in more detail. The third section considers the categorising of IS strategic requirements from Chapter 2. In this section the relationship between IS strategic benefits and IS strategic requirements is developed. The following section explains the drivers of strategic information planning which were discussed in Chapter 2. Then the requirements and drivers of IS strategic planning involved in developing the evaluation framework for IS strategic techniques is presented. The final section presents the proposed model for adoption and evaluation of SISP. This model can be used as a tool for decision-makers during the planning process of IS. In addition, it can support other researchers in understanding and analysing the adoption and evaluation of SISP.

3.1 Adoption of Strategic Information Systems Adoption Methodologies

From Section 2.6.1, in Chapter 2, it could be seen that there are many techniques used in SISP. Among these, the most advanced one from the perspective of a structured planning process and business is Business System Planning (BSP) (Lee and Bai, 2003).

Selecting a specific technique is difficult for two reasons. Firstly, there is the changeable nature of the business environment which affects the strategic planning process on the one hand. On the other hand, there is the challenge of combining more than one technique in the planning process. Many techniques with different planning processes increase the challenge of deciding which one of these techniques is the most appropriate. Therefore, there are many factors that affect technique evaluation. This evaluation relies on the benefits, requirements and drivers of IS as shown in Chapter 2. Thus, there is a need to apply a technique that can be combined with other techniques. This may support the flexibility of the planning process. For these reasons, the BSP technique has been chosen in this research. Nevertheless, such research needs processes that encourage researchers to collect empirical data from case studies. By doing so, a better understanding of real life SISP can be gained. As has been reported, BSP has been improved since its establishment in the mid-1970s through empirical applying , whereas other techniques such as Stages of Growth has not been applied in empirical studies very often (Robson, 1997; Reading, 2004).

As mentioned in Section 2.6.1, the level of detailed analysis is also an important reason for this research as against SDLC methodologies which need more detail of organisations since there are more project planning methods than strategic planning methods. There are many types of problems in IS management. These problems can be dealt with by using the available techniques. These problems are null approach, by-product, total study and key indicators (Fitzgerald, 1997; Hackney *et al*., 1999). So, BSP as a structured technique supports the researcher conducting case studies through a greater understanding of planning milestones and can be a roadmap for the necessary data as well as the research question.

3.2 Business System Planning (BSP)

This technique was developed by IBM for internal use and then in the mid-1970s it was sold to its customers. This technique has many equivalents such as enterprise modelling and information resource management (Robson, 1997). Principally, it relies on both business

processes and data classes which are the basis of information architecture. This architecture supports planning teams in defining organisational databases and applications that support business strategies (Turban *et al*., 1997; Shirazi *et al*., 2007). It is a structured approach for planning and so it works in structured organisations. This means that it works in organisational environments or physically centralised organisations. So, it may be better applied in 'command and control' organisations instead of 'motivate and lead' ones. It also supports seeking more detail of the organisation by the planning team. This process consists of a number of clearly defined stages (see Figure 3.1).

The process starts by identifying the required data structures. When an organisation sees its information as a resource, it should be managed from an overall organisational viewpoint. So, this technique supplies a bottom-up view of information. This approach relies on the organisation's 'enterprise data'. The result of this process is a projection of long-term needs. So, it reflects the benefits of the database for the business strategy. Both senior management commitment and improvement of IS functional performance can be created by BSP (Robson, 1997; Reading, 2004). This technique is connected with other techniques such as critical success factors.

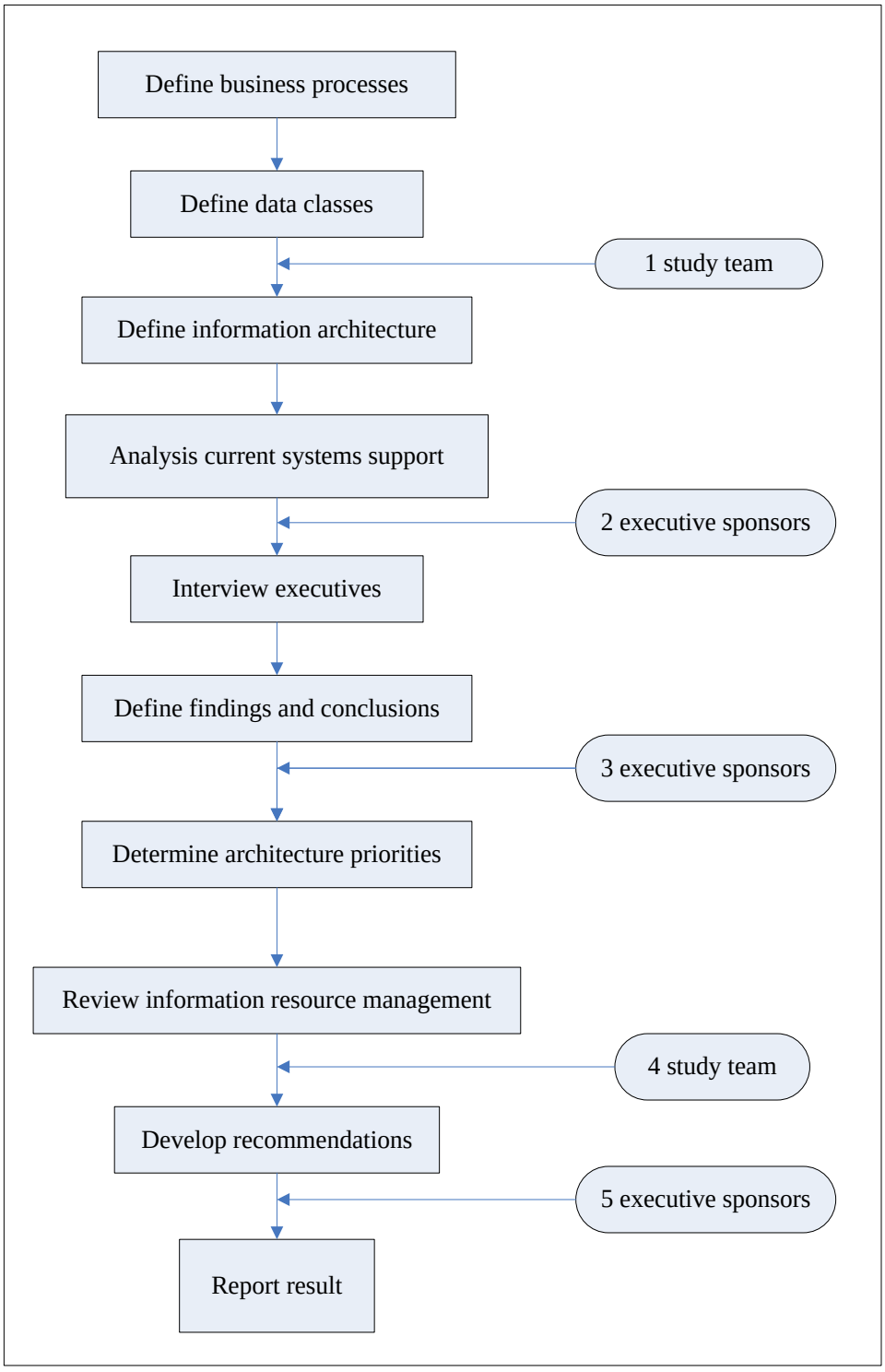

Figure 3.1: Stages of BSP technique with its five milestones (Turban et al., 1997, p: 527)

3.2.1 Critical Success Factors (CSF)

These are factors that managers need to realise in order to successfully complete an activity. There are three stages that may support the obtaining of strategic information requirements. These stages are determining the importance of critical success factors, the critical decisions to be made and the required information that should support those decisions. This technique is more business-alignment than business- impact in its perspective. The CSF is specific to the business project. In other words, it differs from one industry to another, from one organisation to another in the same industry and even from time to time. However, there are five crucial factors that should be considered as identifying CSF for managers (Robson, 1997). These are:

- Industry.
- Competitive strategy/industry position.
- Environmental factors.
- Temporal factors.
- Managerial position.

CSF deals more with control than strategic planning, because such factors require information which is difficult to obtain. But when it relates to control the information required can be obtained from many sources such as industry structure, competitive strategy, industry position and business environment. It has been argued that the objectives of the strategy should be clear before starting the CSF analysis (Reading, 2004; Luftman *et al*., 1993). This analysis can be explained by using 'key performance indicators' or 'measures'. So, CSF should be clear to senior and IS managers and should be reliable.

The main strength of CSF analysis is its planning support because, critically, it is the activity that builds management insights. It also keeps the organisation strategically focused. On the other hand, its weakness is its need for high-level skills and from the perspective of the interviewer - how does it abstract the CSF from senior managers? (Robson, 1997; Reading, 2004). From these it seems that CSF is strongly connected with BSP in the milestone points where control is needed. This is for the data class in BSP. As for business process re-engineering (BPR), it supports the process in the BSP model.

3.2.2 Business Re-engineering

Three key stages have been suggested for development of IS strategy. These are translating business goals to align IS with business, defining business goals to impact business re-engineering and redesigning the business process to improve it (Al-Mashari *et al*., 1999; Eardley, 2008).

There are many terms such as business process re-engineering (BPR), business process redesign and business redesign for business re-engineering. They are defined by Smith (1996) as '*the fundamental rethinking and radical redesign of an entire business – its processes, jobs, organisational structures, management systems, values and beliefs*' (Robson, 1997, p: 272).

It is said that the nature of survival changes quality, innovation and service instead of cost, control and growth. There is a similarity between BPR and total quality management (TQM) in the way that they both help to remove the cause of faults in the process rather than detect it when it occurs. There are four key factors that affect business process where IS has to be effective and efficient as suggested by Tapscott and Caston (1993). These are new enterprises, new geo-political orders, new technologies and new business environments. These forces for change shift the whole environment (internal and external) of an organisation from personal to group computing, from island systems to integrated systems and from internal to enterprise computing. This shift leads to some changes. These are business process redesign, organisational transformation and re-casting external relationships (Robson, 1997; Cash *et al*., 2008).

There are seven key drivers suggested for information shift. The first driver is the productivity of knowledge and service workers. The important motive here is to reduce cost and increase performance. The second driver is quality. Here information is the basis for the product/service instead of production. So, consistency and predictability are important. They can be applied by motivating workers, involvement of suppliers and performance measurements which are supported by IS. Responsiveness is the third driver. It is the time between the occurrence of an opportunity and action to take advantage of it. So, the global market has important impact on opportunities and threats. The fourth driver is globalisation. This shows the response to the world economy and the world as a marketplace. In addition,

there is the independence for 'regions' treatment. So, production and communication technologies support this. Outsourcing is the fifth driver. This shows to what extent the organisation can rely upon its relationship with suppliers. This type of organisation has high-quality technical infrastructure that connects it with customers and suppliers. In addition, the labour force could be flexible according to the organisation's need. This is what has been called a 'shamrock' organisation where the key resources are supported by suppliers. The sixth driver is alliances. This refers to changes in the environment of organisations. These changes push organisations to ally with each other in order to deal with threats or take a competitive advantage. Finally, there are social and environmental responsibilities. These relate to the importance of the individual where autonomy and empowerment are key factors. The individual is the tool that supports the organisation to reach its goals (Robson, 1997, Eardley, 2008).

BPR initiatives are undertaken to improve competitive health by reducing cost and improving customer service. As Kelly (1996) reported, the specific aims of BPR are grouped into cost or service objectives. Using this via IS has an important impact on an organisation type, staff skills needed, creating appropriate training and reward systems, and management roles.

IS can transform a business in the way it shifts it from defining the process and its requirements to how this process can be defined by using IS. This focuses on the impact of redesigning the work around quality, cost and time as Hammer said (1990). There is an important difference between business re-engineering and process re-engineering. This difference is that of taking a wider view of the process over the whole business while the latter focuses on an individual process. Business redesigning is holistic and requires creative thinking about customers who can be satisfied by delivering value to them. Also, it is difficult to plan it in advance or execute it in short, apprehensive stages. This relates to strategic management in terms of its approach to creative thinking, risk and uncertainty. So it can deal with unstructured problems or situations. Kotter (1995) suggested some the main problems that cause BPR to fail in organisations. These are ignoring the importance of: alliances, clear vision, systematic planning, long-term evaluation and an organisation's culture. All these relate to strategic management.

Earl (1996) suggested that there are important issues such as the size and scope of a project in developing strategic studies. Work routine, resource dependencies and human resource policies are affected by BPR. At a strategic level, there are four perspectives to be considered

in building planning integration: organisational processes, strategy, IS and change management and control.

On the process side, aspects to consider are organisational structures with radical or incremental change, work-role behaviour, resources interdependence, task interdependence, human resource policies and rewards. Another view suggests that goal rules and procedures are the foundation of routine. While others have suggested that processes are the co-ordination systems for controlling resource dependencies in organisations. There are two dimensions of business processes to consider. Firstly, there is the structure and specific order of work. Secondly, there are the processes that cross organisational boundaries as the system dynamic. The objective of the process is value added for the customer.

On the strategy side there are various points to consider: sources of competitive advantage, organisational performance and models of strategic planning process. In the case of organisational performance, there are both external market factors in forecasting organisational performance and internal factors. The external factors such as industry structure and resources of the firm affect strategy design. The resources divide into tangibles such as competitive advantage, and intangibles such as knowledge, core competencies and learning. Most strategic planning models are presented in two ways. The first considers the formulation strategy and its implementation as separable activities, whereas the second treats strategy formulation and implementation as incremental.

On the IS side, the integration phenomenon addresses IS importance. This comes in building relationships between business units and activities. On the side of change management and control, the most important aspect of BPR (radical or incremental change) functions better when the firm is able to start this change. So, control and performance management can be drivers for desired process behaviour and strategic renewal.

IS across functions within organisations is an important contribution in using BPR, because BPR focuses on core business processes. This type of process normally has an effect upon more than one business unit (Temponi *et al*., 2009). So, BPR can be named as re-aligning in the way that it connects the core processes of an organisation to support customer service, product development, production and revenue generation. There are other features of BPR.

These include the use of IT solutions to fit the business, impress processes, using pilot project approaches, and the requirement for top management commitment and communication of the plan. In addition, there are other factors which relate to the competitive environment of an organisation. These factors focus on customers, creation of comprehensive motivational programmes and an emphasis on training, redefining jobs, cross-functional teams and supporting empowerment. Tapscott and Caston (1993) suggested that IS strategic planning continues the learning process. Therefore, the BPR is important in the way that it supports response to change.

3.2.3 Change Management

There is a crucial connection between technological change and organisational change. Because changing the organisation is important, it characterises the successful project as managing the project and setting the right goals. So, organisational change supports the strategic potential of change. Management style, for example, reflects this by centralising or decentralising decision-making (Ashurst *et al*., 2009).

Both approaches, the strategy and operation of setting the goals of a project, which senior managers support are important factors. It has been suggested that change should have goals that connect to the strategic vision of the organisation (Earl, 1996, Tai *et al*., 2000).

All these techniques can provide IS benefits, requirements, drivers and processes. In addition, these techniques can support the research by understanding the way that organisations apply them. The following two sections consider the requirements and drivers of IS strategic planning.

3.3 Strategic Requirements of Strategic Information Systems

As mentioned in Section 2.4, there are different categories of strategic requirements, including integration requirements, global requirements, and competitiveness requirements. Different requirements have been classified in a wide range of literature into similar sections (see Table 3.1). Given different requirements, the planning team needs to identify how it can group the requirements of an organisation. One way of doing this is through understanding the benefits that can be obtained from IS. Section 2.4.1 presented a classification of the benefits of IS for strategic levels. This categorisation was obtained from a wide range of

literature on strategic information systems. Through this classification, a taxonomy of requirements against benefits has been created to understand which requirements are needed to obtain specific benefits. Table 3.2 presents this categorisation together with symbols that are used in the classification: (●: fully supported), (⭘: partly supported), and (○: not supported). *Fully supported* means that specific benefits are supported by a specific requirement, whereas *not supported* means the specific benefits are not supported by this specific requirement. The classification *partly supported* means that the specific benefit is partly supported by this specific requirement. This taxonomy supports decision-makers to understand and group the SISP benefits through their appropriate SISP requirements. By doing so, the planners can use the requirements as criteria that consider the SISP benefits as well. So, planners can reduce the number of criteria for evaluation of SISP techniques and then improve the IS planning process.

These requirements must connect with each other to achieve the benefits. The planning team should recognise the requirements relation to each other in order to identify suitable planning techniques. From Table 3.1, the description of the requirement supports the researcher in two ways: (a) understanding how a SISP requirement could be connected to a SISP benefit. Developing different groups of requirements supports decision-makers as well as other researchers to understand SISP better. The reason for grouping SISP requirements against SISP benefits is to reduce the number of criteria that could be used by the planners to evaluate SISP techniques. Moreover, the importance of connecting SISP benefits and requirements comes from the idea that both are resources that could be controlled by organisations. This means they are both (benefits and requirements) parts of the internal environment of the organisation. (b) Understanding how to collect data from real-life environments through generating interview agenda (see Appendix B).

Strategic Requirement	Description
Communication maturity	There are some issues that can be used to measure communication, such as an understanding of business by IS/IT, an understanding of IS/IT by business, inter/intra-organisational, learning, protocol rigidity, knowledge sharing, and liaison effectiveness (Luftman, 2000; Galliers and Leidner, 2003; Moore *et al*., 2007; Ariyachandra *et al*., 2008).
Competency/value measurement maturity	IS/IT metrics, business metrics, balanced metrics, service-level agreements, benchmarking, formal assessments, and continuous improvement are methods of measuring competency (Silvius, 2008; Benson *et al*., 2004; Ward and Peppard, 2002; Luftman, 2000).
Governance maturity	Business strategic planning, IS/IT strategic planning, reporting structure, budgetary control, IS/IT investment management, steering committees, and prioritisation processes are ways of measuring governance (Weill and Ross, 2004; Laudon and Laudon, 2004; Luftman, 2000; Magdaleno *et al*., 2008; Bartenschlager *et al*., 2009).
Partnership maturity	Business perception of IS/IT value, role of IS/IT in strategic business planning, shared goals/risks/rewards/penalties, IS/IT program management, relationship/trust style, and business sponsors are methods of measuring partnership (Evans *et al*., 1999; Benson *et al*., 2004; Ward and Peppard, 2002; Laudon and Laudon , 2004; Luftman, 2000; Mäkipää, 2006).
Scope and architecture maturity	Traditional/enabler/external standards, articulation, architectural integration (functional organisation, enterprise, and inter-enterprise), architectural transparency, and flexibility of managing emerging technology measure scope and architectural maturity (Luftman, 2000; Ciborra and Associates, 2000; Prahalad *et al*., 2002; Weill and Ross, 2004).
Skills maturity	Innovation/entrepreneurship, locus of power, management style, change readiness, career crossover, education/cross-training, and social/political/trusting environment measure skills maturity (Luftman, 2000; Galliers and Leidner, 2003; Weill and Ross, 2004; Laudon and Laudon, 2004; Ariyachandra *et al*., 2008).
Senior management support and commitment	This is the importance of top management contribution in the strategic planning process (Luftman, 2000; Benson *et al*., 2004).
Good working relations	This consists of many issues, such as norms and autonomy of different group members (Laudon and Laudon, 2004; Luftman, 2000; Magdaleno *et al*., 2008; Mäkipää, 2006)
Strong leadership	This expresses the importance of the chief information officer (CIO) (Laudon and Laudon, 2004; Luftman, 2000; Denford *et al*., 2009; Villarreal, *et al*., 2009).
Understanding technical environment	This stresses the importance of the architecture of IT and its current opportunities (Ward and Peppard, 2002; Laudon and Laudon, 2004; Luftman, 2000).
Understanding both internal and external environment of organisation	These express issues such as organisational culture, teamwork, competitors, and technology (Newkirk *et al*., 2003; Pant and Hsu, 1999; Ward and Peppard, 2002; Laudon and Laudon, 2004).
Planning process flexibility	Flexibility is the ability of IS/IT to meet the changes with suitable actions (Premkumar *et al*., 1992; Robson, 1997; Galliers and Leidner, 2003; Laudon and Laudon, 2004; Spil *et al*., 2006).
Adaptable planning model and process	The suitability of the planning model (context) to the organisation situation is adaptable (Benson *et al*., 2004; Laudon and Laudon, 2004; Robson, 1997; Ariyachandra *et al*., 2008).

Table 3.1: The requirements of information systems adoption process and their description

Requirement \ Benefits	Develop/ produce new product/service	Develop/produce new market	Support decision making process	Obtain competitive advantage	Increase of organisation efficiency	Increase of organisation effectiveness	Increase of organisation competitiveness	Integration of IS strategic plan with business strategic plan	Enable users	Improve the relationship with customers	Improve the relationship with suppliers	Frequently composed smaller systems	Integrated or independent IS function	Interface and supporting different organisational levels	Support coordination of work	Support innovation	Create standards	Reduce cost	Increase productivity of employees	Support collaboration and sharing information	Customer service and satisfaction	Improve growth and success	Leader in new technology	Market leadership	Enhance competitive advantage	Improve market share	Create new strategic opportunities	Increase quality	Support global organisation	Offer new strategic options	Support reaction to changes	Support organisational teamwork	Improve open culture of organisation	Improve resource control	Improve resource creativity	Improve resource flexibility	Improve resource learning	Improve knowledge	Global efficiency	Local responsiveness	Global alliance	Support learning transfer
Communication maturity	○	○	●	○	●	●	○	●	●	●	●	○	●	●	●	○	○	○	○	●	●	○	○	○	○	○	○	●	○	●	●	●	●	○	○	●	●	●	●	●	●	●
Competency/value measurement maturity	●	●	●	●	●	●	●	●	○	○	○	●	●	●	●	●	●	○	○	○	●	○	○	●	○	●	○	●	○	○	●	●	●	○	●	●	●	●	●	○	○	○
Governance maturity	●	●	●	●	●	●	●	●	●	●	●	○	●	●	●	○	●	●	○	●	●	●	○	●	○	●	●	●	●	●	○	●	●	●	●	○	●	●	●	●	●	●	●
Partnership maturity	●	●	●	○	●	●	●	●	●	●	●	●	●	●	●	○	●	●	●	●	●	●	○	●	○	●	●	●	●	○	○	●	●	○	●	●	●	●	●	●	●	●	●
Scope and architecture maturity	○	○	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	○	○	●	●	●	●	○	●	○	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Skills maturity	●	●	●	●	●	●	○	○	●	○	○	○	○	●	●	●	●	●	●	●	●	○	●	●	●	○	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Senior management support and commitment	●	●	●	○	●	●	●	●	●	○	○	○	●	●	●	●	○	●	●	●	○	●	●	○	●	○	●	●	●	●	●	●	●	○	○	○	○	●	●	●	●	●	●
Strong leadership	○	○	○	○	○	○	○	●	○	○	○	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Understanding technical environment	○	○	○	○	○	○	○	○	●	●	●	○	●	●	○	○	○	○	○	●	○	○	●	○	○	○	○	○	●	○	○	○	○	○	○	○	○	●	●	●	●	●
Understanding both internal and external environment of organisation	●	●	●	●	●	●	●	●	●	●	●	●	●	○	○	●	○	○	○	●	●	●	●	●	●	●	○	●	●	●	●	○	●	○	○	○	○	○	●	●	●	●	○
Planning process flexibility	○	○	●	○	●	●	○	●	○	○	○	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	●	○	●	○	○	○	●	●	●	○	○	○	○	○
Adaptable planning model and process	○	○	●	○	●	●	○	●	●	●	●	○	○	○	●	●	●	○	●	●	●	●	●	○	○	●	●	●	●	●	●	○	●	●	●	●	●	●	●	●	●	●	●

Table 3.2: A novel taxonomy of IS strategic requirements compared to IS strategic benefits

3.4 Strategic Drivers of Strategic Information Systems

Section 2.3.3 presented a classification of IS drivers. These drivers classify according to competitiveness, integration and global business. A strategic level and not operational level of organisation, as a focus of this dissertation, leads the author to consider these visions in the classification. All the drivers should align with organisational capabilities as well as organisational visions and goals. Table 3.3 presents these drivers with their descriptions. From Table 3.3 the description of the SISP drivers supports the researcher in two ways: (a) understanding how SISP drivers can influence the adoption of SISP. This would support decision-makers as well as other researchers to e understand SISP better. The importance of SISP drivers comes from the idea that they are resources that cannot not be controlled by organisations. This means they are (SISP drivers) part of the external environment of the organisation. (b) Understanding how to collect data from real-life environments through generating real interview agenda.

Driver	Description
Users' politics	Users are important to succeed in any project in the way that they accept or reject implementation of such projects, especially in the strategic projects related to business units. Therefore, their support and contributions are important (Galliers *et al*., 2003; Hartono *et al*., 2003; Robson, 1997; Alert, 2009).
Time	Time is an important driver for many reasons such as time to reach market, planning time , time for implementation of plan, and time to deliver services. All these can place an organisation as a market leader (Hartono *et al*., 2003; Robson, 1997).
Budget and cost	This driver can be used as a measurement of success or failure of IS investment (Hartono *et al*., 1997; Robson, 1997; Ward and Peppard, 2002; Weill *et al*., 2004).
IT architecture	The IT architecture is crucial in many roles such as utility, dependence, and enabling. Also, the technical issues play important parts in this driver (Ciborra *et al*., 2000; Luftman, 2000; Robson, 1997; Prahalad *et al*., 2002; Weill *et al*., 2004).
Business process (cost, time, effectiveness)	The processes are important for inter-organisational information systems (IOS) success. They reduce cost, save time, and increase effectiveness (Galliers *et al*., 2003; Laudon *et al*., 2004; Pant and Hsu, 1999; Turban *et al*., 2005).
Executive skills and commitments	The executives lead the important projects in the organisation to support and tailor them. Their skills in management and analysis are important as well (Benson, 2000; Laudon *et al*., 2004; Pant and Hsu, 1999; Robson, 1997).
Global business and geography	The boundaries of business should receive attention from the planning team to obtain realistic and successful planning and implementation with consideration of issues such as legal, cultural, political, and religious, and different geographical areas (Laudon *et al*., 2004; Newkrik *et al*., 2003; Shore, 2006).
Nature of the organisation	This is a very important driver because it affects and relates to the importance of IS. Service organisations are different from production organisations. Types of industries are also different. Therefore, application of IS would be different too (Newkrik *et al*., 2003; Robson, 1997, Tai *et al*., 2000).
Importance of IS	As mentioned regarding the nature of organisational drivers, the importance of IS relies on the extent to which an organisation relies on information. Therefore, it is different from one industry to another. Moreover, it is different from time to time for the same organisation (Laudon *et al*., 2004; Robson, 1997; Premkumar *et al*., 1992).
Organisation situation	This driver affects organisational actions against changes and solving problems because the organisation faces changeable environments that differ from time to time. This needs flexible control and creative planning (Newkrik *et al*., 2003; Robson, 1997; Ward and Peppard, 2002).
Joint resources	This driver expresses to what extent a firm can create collaboration between its resources such as employees, suppliers, and its business units (Benson, 2000; Luftman, 2000; Turban *et al*., 1997).
Risk reduction	The ability of a firm to avoid and manage risk situations by availability of information (Robson, 1997; Turban *et al*., 1997).
Global product/service	As regards global business, global product/service can be affected by many issues. Therefore, planners must differentiate between regions for product/service issues such as marketing, finance, standards, and so on (Turban *et al*., 1997; Ward and Peppard, 2002).
Quality	This driver supports control by developing standards, milestones, and processes of performance (Galliers *et al*., 2003; Turban *et al*., 1997; Weill *et al*., 2004; Premkumar *et al*., 1992).
Suppliers	This driver expresses the relationship between the organisation and its suppliers, as the latter can affect the former in many ways such as cost of materials, systems integrations, creativity, and information (Laudon *et al*., 2004; Turban *et al*., 1997; Ward and Peppard, 2002).
Corporate customers	The relationship between the firm and its customers is crucial in the planning process in different ways such as competitiveness, customer satisfaction, customer information, and customer services (Benson, 2000; Turban *et al*., 1997).

Table 3.3: The drivers of strategic information systems and their description

As shown in the description part, most of these drivers have an influence on each other. So they are connected and this needs to be considered in the planning process. They play an important role in the evaluation of planning techniques.

3.5 Evaluation Framework for Evaluating Strategic Information Systems Techniques

From the literature review (Chapter 2) and sections 2.4 and 2.5 detailed in this research, it is clear that there is a need for a framework for the evaluation of IS strategic planning techniques, in order to support the planning team in making decisions. Therefore, this section presents the evaluation framework of information systems strategic planning techniques. This evaluation framework has been developed to fill the current gap presented in chapter 2 through sections 2.3, 2.4 and 2.5. The requirements and drivers at strategic levels are used as criteria that need to be considered in the strategic planning of IS, as Ezingeard *et al*. (2007) stated. As indicated in Sections 3.2 and 3.3, the requirements and drivers will be applied in this framework. In this framework, the symbols (✓) and (✗) are given. (✓) means that the technique can support the analysis of the requirement and driver; whereas (✗) means that the technique cannot support the analysis of the requirement and driver (see Table 3.4).

Technique	Requirement													Driver																
	Communication maturity	Competency measurement maturity	Governance maturity	Partnership maturity	Scope and architecture maturity	Skills maturity	Senior management support and commitment	Strong leadership	Understanding technical environment	Understanding environment	Planning process flexibility	Adaptable planning model and process	Users' politics	Time	Budget and cost	IT architecture	Business process	Executive skills and commitments	Global business and geographical information	Nature of the organisation	Importance of IS	Organisation situation	Joint resources	Risk reduction	Global product/service	Quality	Suppliers	Corporate customers
SWOT	×	✓	×	×	✓	✓	✓	×	✓	✓	×	×	✓	×	×	✓	✓	✓	✓	✓	✓	✓	×	✓	✓	✓	×	×
Opportunity categorising	×	✓	×	×	✓	×	✓	×	✓	✓	×	×	×	×	×	✓	✓	✓	✓	✓	✓	✓	×	×	✓	×	×	×
Strategic importance matrix	×	✓	×	×	×	×	✓	×	×	×	×	×	×	×	×	✓	×	✓	✓	✓	✓	✓	×	×	✓	×	×	×
Benefit level matrix	✓	✓	✓	✓	×	×	✓	×	×	×	✓	×	×	✓	✓	✓	✓	✓	✓	✓	✓	✓	×	×	✓	✓	×	×
5 Forced model	✓	✓	✓	✓	✓	×	✓	×	×	✓	×	✓	×	×	✓	✓	✓	✓	✓	✓	×	✓	✓	×	✓	✓	✓	✓
Generic business strategies	×	✓	✓	×	✓	×	✓	×	×	✓	×	×	×	×	✓	✓	×	✓	✓	✓	✓	×	×	×	✓	×	×	×
Information intensity matrix	×	×	×	×	×	×	×	×	×	×	✓	×	×	×	×	×	✓	✓	×	✓	✓	×	×	×	×	×	×	×
Impact categorising	×	✓	✓	✓	✓	×	✓	×	✓	✓	×	×	×	×	✓	✓	✓	✓	✓	✓	✓	✓	✓	×	✓	✓	✓	✓
Industry analysis	×	✓	×	×	×	×	×	×	✓	✓	✓	×	×	×	×	✓	×	✓	✓	✓	✓	✓	×	×	✓	×	×	×
Strategic thrusts	×	✓	×	✓	✓	✓	✓	×	✓	✓	✓	✓	×	×	×	✓	✓	✓	✓	✓	×	✓	✓	×	✓	×	✓	✓
Strategy set transformation	✓	×	✓	✓	✓	✓	✓	×	✓	✓	✓	✓	✓	×	×	✓	✓	✓	✓	✓	×	✓	✓	×	×	×	×	×
Business modelling	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	×	✓	✓	✓	✓	✓	×	✓	✓	✓	✓	✓	✓	✓
Critical success factors	✓	×	×	×	✓	✓	✓	×	✓	✓	✓	✓	✓	×	×	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Critical set analysis	✓	×	×	×	✓	✓	✓	×	✓	✓	✓	×	×	×	×	×	✓	✓	×	×	✓	×	×	×	×	×	×	×
Lateral thinking	✓	×	×	✓	✓	✓	✓	×	✓	✓	×	×	✓	×	×	✓	×	✓	✓	×	×	✓	×	×	×	×	×	×
Business system planning	✓	×	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	×	×	✓	✓	✓	✓	✓	×	✓	✓	×	✓	✓	✓	✓
Scenario planning	✓	×	✓	✓	✓	✓	✓	×	✓	✓	✓	✓	×	×	×	✓	✓	✓	✓	✓	×	✓	×	×	✓	×	✓	✓
Case-based reasoning	✓	×	×	×	×	✓	✓	×	✓	✓	×	×	×	×	×	✓	✓	✓	✓	✓	×	✓	×	×	×	×	×	×
Cost–benefit analysis	✓	✓	×	✓	✓	✓	✓	✓	×	×	✓	×	✓	✓	✓	✓	✓	✓	✓	✓	×	✓	✓	✓	✓	✓	✓	✓
Balanced scorecard analysis	✓	✓	×	✓	×	✓	✓	✓	×	×	×	×	✓	×	×	✓	✓	✓	✓	✓	×	✓	✓	×	✓	×	✓	✓
Process analysis	✓	×	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	×	×	✓	✓	✓	✓	✓	×	✓	✓	✓	✓	✓	✓	✓
Stage of growth	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	×	×	✓	✓	✓	✓	✓	×	✓	✓	×	✓	✓	✓	✓

Table 3.4: The proposed framework for the evaluation of IS adoption techniques

3.5.1 The Evaluation of IS Strategic Adoption Techniques against Strategic Focus

In order to evaluate the techniques, they need to be divided according to their use and applicability. This may support increasing the effectiveness and efficiency of decision-making in the planning process. In Section 2.6.1, especially in Table 2.14, the techniques were classified with regard to strategic analysis, competitiveness and alignment as dimensions of strategic planning. Table 3.5 presents the strategy focus with appropriate techniques. This supports the evaluation of the techniques against IS requirements and drivers. This classification of techniques against strategic focus is derived from Table 2.14.

		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

Table 3.5: The strategy focus and appropriate techniques

3.5.2 The Evaluation of Techniques against IS Requirements

In this section, the requirements have been evaluated against the strategic focus. So, there are techniques in the strategic analysis that are also appropriate to the competitiveness and alignment focuses that can support communication maturity. This means that the planning team connects the planning process with the strategic focus, and its requirement then conducts the suitable technique. Table 3.6 presents the IS requirements and strategy focuses.

Requirement	Technique		
	Strategic Analysis	Competitiveness	Alignment
Communication Maturity	• 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, • lateral thinking	• 5 Forced model, • strategy set transformation, • case-based reasoning, • process analysis.	• Strategy set transformation, • business modelling, • critical set analysis, • critical success factors , • business system planning, • case-based reasoning, • process analysis, • stage of growth, • lateral thinking
Competency/Value Measurement Maturity	• SWOT, • opportunity categorising, • strategic importance matrix, • benefit level matrix, • 5 forced model, • generic business strategies, • cost-benefit analysis, • balanced scorecard analysis, • stage of growth	• Opportunity categorising, • 5 forced model, • generic business strategies, • impact categorising, • strategic thrusts	• Strategic importance matrix, • generic business strategies, • strategic thrusts, • business modelling, • stage of growth
Governance Maturity	• Benefit level matrix, • 5 forced model, • generic business strategies, • business system planning, • scenario planning, • process analysis, • stage of growth	• 5 Forced model, • generic business strategies, • impact categorising, • strategy set transformation, • process analysis	• Generic business strategies, • strategy set transformation, • business modelling, • business systems planning, • process analysis, • stage of growth
Partnership Maturity	• Benefit level matrix, • 5 forced model, • business systems planning, • scenario planning, • cost-benefit analysis, • balanced scorecard analysis, • process analysis, • stage of growth, • lateral thinking	• 5 Forced model, • impact categorising, • strategic thrusts, • strategy set transformation, • process analysis	• Strategic thrusts, • strategy set transformation, • business modelling, • business systems planning, • process analysis, • stage of growth, • lateral thinking
Scope and Architecture Maturity	• SWOT, • opportunity categorising, • 5 forced model, • generic business strategies, • critical success factors, • business system planning, • scenario planning, • cost-benefit analysis, • process analysis, • stage of growth, • lateral thinking	• Opportunity categorising, • 5 forced model, • generic business strategies, • impact categorising, • strategic thrusts, • strategy set transformation, • process analysis	• Generic business strategies, • strategic thrusts, • strategy set transformation, • business modelling, • critical success factors , • critical set analysis, • business systems planning, • process analysis, • stage of growth, • lateral thinking
Skills Maturity	• SWOT, • critical success factors, • business system planning, • scenario planning, • case-based reasoning, • cost-benefit analysis, • balanced scorecard analysis, • process analysis, • stage of growth, • lateral thinking	• 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, • case-based reasoning, • process analysis, • stage of growth, • lateral thinking

Senior Management Support And Commitment	• SWOT, • opportunity categorising, • strategic importance matrix, • benefit level matrix, • 5 forced model, • generic business strategies, • critical success factors, • business systems planning, • case-based reasoning • scenario planning, • cost-benefit analysis, • balanced scorecard analysis, • process analysis, • stage of growth, • lateral thinking	• Opportunity categorising, • 5 forced model, • generic business strategies, • impact categorising, • 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, • case-based reasoning, • process analysis, • stage of growth • lateral thinking
Strong Leadership	• Business system planning, • cost-benefit analysis, • balanced scorecard analysis, • process analysis, • stage of growth	• Process analysis	• Business modelling, • business system planning, • process analysis, • stage of growth
Understanding Technical Environment	• SWOT, • opportunity categorising, • critical success factors, • business system planning, • scenario planning, • case-based reasoning, • process analysis, • stage of growth, • lateral thinking	• Opportunity categorising, • impact categorising, • industry analysis, • 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, • case-based reasoning, • process analysis, • stage of growth, • lateral thinking
Understanding both Internal and External Environment of Organisation	• SWOT, • Opportunity categorising, • 5 forced model, • generic business strategies, • critical success factors, • business system planning, • scenario planning, • case-based reasoning, • process analysis, • stage of growth, • lateral thinking	• Opportunity categorising, • 5 forced model, • generic business strategies, • impact categorising, • industry analysis, • strategic thrusts, • strategy set transformation, • case-based reasoning, • process analysis	• Generic business strategies, • strategic thrusts, • strategy set transformation, • business modelling, • critical success factors, • critical set analysis, • business system planning, • case-based reasoning, • process analysis, • stage of growth, • lateral thinking
Planning Process Flexibility	• Benefit level matrix, • information intensity matrix, • critical success factors, • business system planning, • scenario planning, • cost-benefit analysis, • process analysis, • stage of growth	• Industry analysis, • strategic thrusts, • strategy set transformation, • process analysis	• Strategic thrusts, • strategy set transformation, • business modelling, • critical success factors, • critical set analysis, • business system planning, • process analysis, • stage of growth
Adaptable Planning Model and Process	• 5 Forced model, • critical success factors, • business system planning, • scenario planning, • process analysis, • stage of growth	• 5 Forced model, • 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

Table 3.6: A taxonomy of IS requirements with the strategy focuses and their techniques

3.5.3 The Evaluation of 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 requirements as well as drivers to support the evaluation of techniques. Not all IS planning techniques can be used for all the strategic focuses. For example, the SWOT analysis technique can be used for users' political driver in the strategic analysis focus, but it cannot be used in the competitiveness focus. Table 3.7 presents these strategic drivers with the strategic 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 Commitment	• 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 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, • critical set analysis, • business system planning, • lateral thinking, • case-based reasoning, • process 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 Organisation	• 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
Organisation 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

Table 3.7: A taxonomy of IS drivers with the strategy focuses and their techniques

3.6 The Conceptual Novel Model for Adoption of Strategic Information Systems

Due to the limitations in strategic IS planning process literature, this research considers some models for both general IS strategic and process IS planning models. As mentioned in Section 2.3, the former (such as SAM) are those proposed by Henderson and Venkatraman (1999), and the latter (such as Four Stage Model) are those by Wetherbe (1993). These models do not consider the benefits, requirements and drivers of the planning process. This leads the author of this thesis to present a novel model for the adoption of strategic information systems planning as a contribution to the research (see Figure 3.2).

The general models of strategic IS consider every aspect which includes business strategies, technologies, and internal and external environments of an organisation. Existing models for IS planning process focus more on the stages of the process. As mentioned in the realistic view, the planning team need to be aware of the factors in both types of model. Moreover, the planning team should be involved in applying different techniques, tools and methodologies that support the planning process. So, this research contributes in two ways. Firstly, by developing a combination between two types of model (general, process) via combining benefits, requirements and drivers. Secondly, by developing a framework for evaluating IS strategic planning techniques. This framework encourages the planning team to accept the possibility of applying different planning techniques in different situations. From this point of view, the author considers the benefits, requirements, drivers, IS strategies, planning team, techniques, methods and tools to be the conceptual model factors. *These factors of the novel model are described as follows:*

3.6.1 **Benefits:** these are important because of their influence on requirements and drivers. Most of the models presented in Section 2.5 emphasised obtaining specific benefits. At the general level, the organisational fit framework, for example, relates more to functional integration as suggested by Earl. In the process of planning, such as 5 SISP by Harton et al (2003), it relates more to IS plan implementation. So, this factor (benefits) becomes wider by recognising different benefits such as business benefits, IS benefits and global benefits.

3.6.2 **Requirements:** as there are a variety of benefits, so there are also a variety of requirements. These include competitive requirements, integration requirements and global requirements. Integration requirements are examples of IS requirements, where IS integration is an important stage in the planning process. However, these requirements go with the drivers to support the evaluation of planning techniques.

3.6.3 **Drivers:** this factor affects the strategy in the way it is analysed and implementated because the drivers influence the decision to apply specific techniques. The researcher emphasises competitive, integration and global drivers in this thesis to present the novel model. There are some models that focus on specific drivers such as business, IS and global dimensions. The comprehensive framework proposed by Ives et al (1993), which applies global business drivers, is an example.

3.6.4 **Evaluation framework of techniques:** this factor supports the planning team to evaluate IS strategic planning techniques against the requirements and drivers. It also supports the identification of suitable tools that can serve the applied technique. Also, this framework

supports the combination of more than one technique to deal with the variety of requirements and drivers. It further supports the evaluation of the method (SDLC methodologies) to be applied when the prioritisation of the project is completed because the project needs more detail and needs to deal with different levels of requirements and drivers at operational levels.

3.6.5 **IS strategy:** the importance of this factor lies in control, implementation and learning from its feedback to the planning team. This holder/factor also connects with the method (SDLC methodologies) because the IS strategy consists of projects that have different applications.

3.6.6 **Planning team:** The planning team is a vital factor that affects the adoption and evaluation of the SISP process. In Chapter 2 it was considered that the management development team should understand the whole process, including suppliers, business partners and evaluation of the system's performance. The role of the planning team is not simple because there is no comprehensive and general approach for strategic planning of IS, particularly when there should be connection between the elements of an organisation which allocates its important IS elements at the strategic level. So, an organisation can create a model that supports its IS planning by building a good planning team. Because the strategy team decides which type and level of strategy will be involved and how it can be used, this may help in the improvement of IS strategic planning by shifting from one level of planning to another by using resources in an appropriate and efficient way.

3.6.7 **IS strategic planning tools:** This significant factor supports deep analysis of data. These data are important as input into SISP techniques (Robson, 1997), so strategic planning tools (see Appendix D) support the planning team in terms of deep analysis of issues that influence strategic techniques (Avison et al., 2003). The details of planning are very important for building strategy. When organisations wish to create IS strategic integration, they need frameworks for planning of this type. These frameworks contain the tools and techniques of planning in flexible and adaptable processes to reach goals. Therefore, this factor comprises roles of IS analysis in the business as they come from different stakeholders. These stakeholders implement the strategy.

3.6.8 Systems development life cycle (SDLC) methods: Every organisation considers a specific set of processes supported by techniques and tools. These processes aim to develop information systems; whatever the goal of the method, there are sequences in the processes. This important factor thus supports the planning team in controlling the process of planning. The methods (see Appendix C) are chosen by an organisation influenced by IT projects and the IS approach (such as impact, alignment, increments) of the organisation in developing IT. It also impacts IT strategy (Avison et al., 2003). Therefore, this factor plays an important role in strategic planning techniques, tools, and stakeholders.

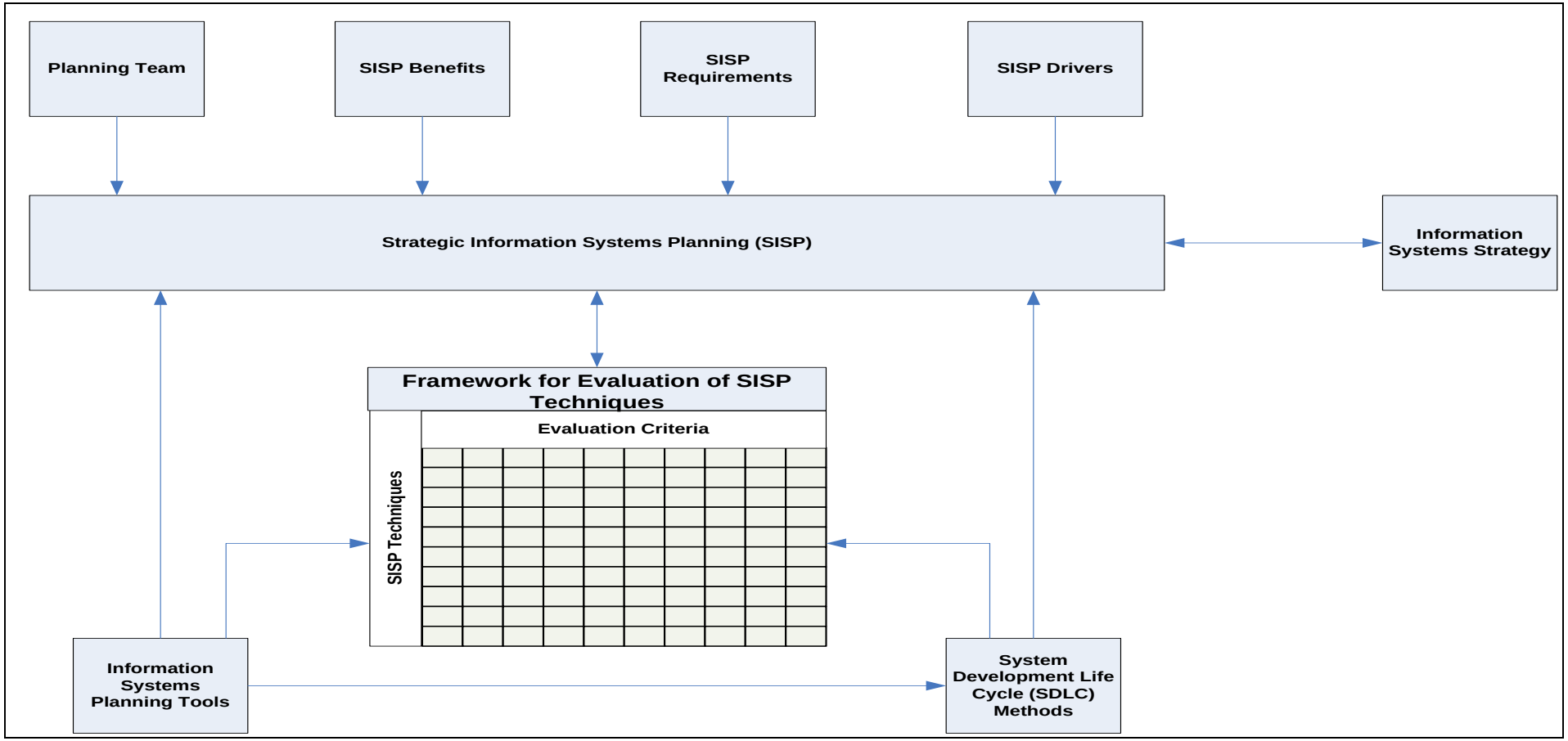

Figure 3.2: The proposed conceptual novel model for the adoption of strategic information systems

3.7 Conclusion

This research recognised a gap in the literature review dealing with the lack of theoretical models for SISP adoption and evaluation in global organisations as well as strategic confusion about SISP techniques. Confusion about these techniques currently constitutes a major difficulty in SISP adoption. This chapter started with a discussion about applying Business Systems Planning (BSP) techniques as a structured planning process to be the proposed basis for the investigation of the proposed novel model of this thesis. The limitation of this technique was also discussed and solutions proposed. The adoptability of this technique and its connections with other techniques such as CSF and other management systems such as BPR and change management were considered. These are the reasons behind applying BSP techniques in this research. So, the researcher proposes to investigate SISP within the case studies via both the structure and comprehensiveness of process. In doing so, the researcher has reviewed various models for the adoption and evaluation of SISP. Thus, the researcher has attempted to analyse the factors in these models that can support the adoption and evaluation of IS strategic planning. Accordingly, in these models different factors have been applied to support the adoption and evaluation of IS strategic planning. The author has identified eight factors: (a) SISP Benefits, (b) SISP drivers, (c) SISP requirements, (d) planning team, (e) SISP techniques, (f) SISP methods, (j) SISP tools, and (h) IS strategy. This has enabled the researcher to develop a proposed conceptual model for the adoption and evaluation of SISP. This proposed model can be used as a tool for further investigation in SISP adoption and evaluation in different organisations. In addition, this proposed model can be used as a tool for decision- makers within organisations while deciding whether to adopt SISP. In Section 3.3, the novel framework for the evaluation of IS strategic planning techniques was presented. This framework consists of three parts:

- **The strategic focus*:*** this part divides the techniques into strategic analysis techniques, competitiveness techniques and alignment techniques. This classification is proposed through IS planning process dimensions as they are the focus of this study as described in Section 2.2.3.
- **The IS requirements:** this part focused on strategic level requirements to be used as criteria for the evaluation of IS strategic planning techniques (see Table 2.6).
- **The IS drivers:** this part of framework discussed and described the strategic drivers for planning IS. They are grouped into competitive drivers, integration drivers and global business drivers as criteria of IS strategic planning techniques (see Table 2.3).

This section also considered the evaluation of requirements and drivers of IS at a strategic level side by side with techniques through the different focuses (strategic analysis, competitiveness and alignment). These evaluations explain the novel framework. This framework supports the planning team in the decision-making process for the evaluation of IS strategic planning techniques.

In Chapter 4 the author presents the research methodology applied to investigate the proposed model for SISP adoption and evaluation.

Chapter 4: Research Methodology

4.0 Introduction

This chapter is concerned with the research methodology of this thesis. It describes, selects and justifies the appropriate research methodology for the work presented here. In addition, the context of common research methods employed in the IS area are considered. The first section of this chapter deals with research philosophies such as positivism and interpretivism. As a result of Section 4.1, the interpretivist approach was justified as an appropriate research approach for this thesis. After that, a rationale for the qualitative and case study research strategies is presented. Then the framework for conducting the empirical work is presented as empirical research methodology. Finally, the case study protocol is presented as transformation of the empirical research methodology. This protocol works as an action plan for data collection from case study organisations.

4.1 Research Approach

Saunders *et al*., (2007) defined research as a process of systematic detection to improve knowledge. Accordingly, research is based on logical relationships. There is a need to explain the data-gathering methods and to analyse the data to answer the research questions or objectives (Saunders *et al*., 2007; Irani *et al*., 2008). They suggested that business and management research should be the result of both theoretical and practical issues. They distinguish between basic research, which is a more scientific approach, and applied research, which is a more practical approach. According to Saunders *et al*. (2007), there are four layers in the research 'onion', before the choice of data collection method is made. These are research philosophy, research approach, research strategy, and time horizon. There are three research philosophies. These are positivism, critical and interpretivism. Table 4.1 presents an explanation of these different philosophies of research.

Research philosophy	Explanation
Positivism	• There are five principles in positivism (Bryman and Bell, 2007): phenomenalism, deductivism, inductivism, objective and scientific statement. • Positivism can apply in IS through some forms such as propositions, quantitative variables, hypothesis and studying phenomena within a specific sample (Orlikowski and Baroudi, 1991)
Critical	• People produce social reality in historical form as the critical philosophy supposes (Mayers and Avison, 2002). • Many forms of social, cultural and political powers can impact on the ability of people to act against social and economic changes (Mayers and Avison, 2002). • Social assessment has been viewed as the main task for critical research (Mayers and Avison, 2002).
Interpretivism	• Social constructions such as consciousness, shared meanings, language, documents, tools and other artefacts can lead to knowledge of reality as interpretivism (Galliers, 1992; Klein *et al*., 1999). • The complexity of human sense as the situation emerges can be demonstrated and conducted through interpretivist research. (Kaplan and Maxwell, 1994; Klein *et al*., 1999). • The context of the IS and process can be understood by interpretivist research when both IS and context influence each other (Walsham, 1995a).

Table 4.1: Different research philosophies

The research approach contains two domains: deduction and induction. The deductive approach, characterised by scientific principles as moving from theory to data, attempts to explain the relationships between variables, gathering quantitative data, more control on data validity, and operationalisation of concepts to ensure clarity of definition. It also attempts to ensure highly structured approaches, the researcher's independence of what is being searched and the importance of generalising by selecting sufficient sample size. Induction, however, is characterised by the importance of human aspects that relate to the research issue, understanding of the research context, gathering qualitative data, flexibility to change the research structure during the research process and less attention to generalisation. There is the possibility of merging the two approaches, depending on the research issue (Saunders *et al*., 2007). So, deciding the research approach is vital to the design of the research process (Walsham *et al*., 1994; Miles and Huberman, 1994; Irani *et al*., 2006). At the same time IS is a multidisciplinary science because it connects to a variety of issues such as management, society and engineering. This increases the complexity of selecting a suitable approach. As shown in Chapters 2 and 3, the phenomenon of SISP is a strategic issue. This means that it relates to business strategy as well as the strategic planning process of IS. There are many dimensions to cover, such as managerial, behavioural and strategic. The result of positive SISP requires the fit of IT/IS strategy with business strategy, in what Chenhall (2005) defines as the alignment of manufacturing by its clear links with strategy and other functions. This may lead to high

strategic performance. The measurement of performance is an important factor in the assessment of the strategic fit of IT/IS with a business plan. Chan *et al*. (1992) noted that:

> 'two key factors directly impacting company performance are business strategy and IS strategic fit (the alignment between business strategy and IS strategy)'
>
> *Chan et al., (1992, pp. 191)*

Brown and Hagel later argued that Carr's article suggests the importance of IT in day-to-day operations becomes its reliability and security (Carr, 2003). Thus, there is a need to understand SISP issues using the 'how' and 'why' questions, and to understand the factors that may affect the SISP process (degree of measurement purpose) using the 'what', 'why' and 'how' questions. In short, there is a need for an inductive approach.

An interpretive research approach has been applied to this research. The rationale for this is as follows:

- There are many issues such as managerial, social, cultural and strategic in the focal theory presented in Chapters 2 and 3 linked to the adoption of strategic information systems planning. These issues confirm the multiple, complex and interrelated characters of SISP factors. Therefore, the organisational, strategic and cultural context has an impact on the factors that influence the adoption of SISP. Consequently, two points need to be addressed for the author to select an appropriate research approach: understanding the process of adoption SISP and the factors that influence this adoption. For these reasons the researcher of this thesis considers Interpretivism as the appropriate research philosophy. This philosophy is exploratory in its nature. Table 4.1 and Section 1.3 where the research objectives are stated explain this choice.
- From Table 4.1, positivism is not appropriate for this research for many reasons such as absence of research hypothesis and scientific measures of variables. From Section 3.6 where the adoption of SISP was explained, there are no independent facts and values to suppose this knowledge could be measured. So, positivism could not be applied in the context of this research.

4.2 Qualitative Research

Examining a phenomenon through events needs consideration of the interaction of different variables such as people, time and culture that impact the phenomenon. Clearly, differences between circumstances occur. The unsuitability of applying quantitative research methods, which are unable to consider the difference between natural science objects and people merged during this research. In addition, quantitative research methods can be used in information research when they distinguish changes in human behaviour, because human beings influence information systems research as stated by Irani *et al*. (1999; 2006). However, this research is involved with human beings as decision-makers who influence the adoption and evaluation of SISP. So, people such as executives, managers and projects leaders are involved in this study and this indicates the appropriateness of qualitative research methods.

As presented in Chapter 1, the objectives of this thesis are related to strategic management issues. So, the factors of privacy and subjectivity are important to consider as they affect most of the data required. This expresses the need of research methods that consider these factors. Furthermore, the research method selected must consider the nature of top management decisions since individual knowledge is directed by the organisational situation. In addition, in-depth understanding of the SISP process required rich empirical data. This is supported by the qualitative methods presented in Table 4.2.

Bryman *et al*. (2007) stated the features of both quantitative and qualitative methods as presented in Table 4.2. These features could be advantages and disadvantages according to the research question and objectives. Consequently, the selection of appropriate methods relies on the research question and data.

Dimension	Qualitative	Quantitative
Concepts	Research development	Operationalised
Approach	Unstructured, driven and open	Structurally driven
Focus	Connects events, activities, factors and people interpretation	Change in social world by static style
Relation between field and researcher	In-depth investigation by close view of the event	General with no deep investigation of subject
Relation between respondent and researcher	Close and direct contact	Indirect contact
Findings	Deep and rich data	General and specific data with no attention to time or place, inflexible and reliable

Table 4.2: Features of quantitative and qualitative research methods

Many researchers (Miles and Huberman, 1994; Bryman *et al*., 2007) have suggested that the qualitative method is more words than numbers. Furthermore, the relationship between the theory and research as inductive using qualitative methods has been questioned. This is in terms of the developed theory without the research (Bryman *et al*., 2007; Kuechler *et al*., 2009). The interpretation of qualitative method as epistemological position is another concern, because qualitative research connects to the social world through investigation of the interpretation of events by participants. The qualitative method can be constructionist in terms of ontological dimension, since the interaction between individuals is the basis for social properties (Bryman *et al*., 2007; Creswell, 2008).

Corbin and Strauss (2008) reported that qualitative methods can reflect many types of research such as people's lives, lived experiences, behaviours, emotions, feelings, organisational functioning, social movements, cultural phenomena and interaction between nations. They considered many reasons for carrying out qualitative research:

- Researcher preferences and experience: as some researchers are oriented and temperamentally suited to doing such work.
- Nature of the research problem or question: for example, questions relating to understanding the nature of people's experiences in the research focus.
- Novel understanding of a given area: this method helps to gain familiarity or explore substantive areas.
- Phenomena with complex details: such events are hard to learn about using more conservative research methods.

Table 4.3 presents some advantages of qualitative methods for IS research.

Advantages of qualitative method	Reference
• The researcher can understand the nature and complexity of the process of the study focus	Benbasat *et al*. (1987); Creswell (2008)
• SISP techniques, as part of the research contribution, within the field of IS need more understanding and insights from real life experience	Benbasat *et al*. (1987)
• Developing theories from practice by studying the IS in its natural situation through leading edge learning	Benbasat *et al*. (1987); Kuechler *et al*. (2009)

Table 4.3: Advantages of qualitative research methods

However, Table 4.4 presents some disadvantages that need to be considered in applying this method.

Disadvantages	Reference
• More attention to the process of data collection is required because qualitative data is typically textual and rich, this may be lost during interpretation of the data. So, the researcher needs to pay more attention to the following points : ▪ Ability to control data collection process ▪ Ability to deduct needed data ▪ Ability to repeat required data for triangulation ▪ Ability to generalise.	Miles and Huberman (1994); Lee (1998)
• Attention to analysis stage since rich and multifaceted data can be variously interpreted. This could lead to researcher bias.	Cornford *et al*. (2005); Creswell (2008)
• Problems such as controlling observations and deductions connected to validation and verifying the research goals can be affected by changing situations during the data collection process. This change could be caused by dynamic cases.	Cornford *et al*. (2005); Creswell (2008)

Table 4.4: Disadvantages of qualitative research methods

From the sequence of the research knowledge (Chapters 2 and 3), the research question (Chapter 1), Table 3.6, Table 3.7 and Figure 3.2, the qualitative method seems the most appropriate for this study. *This is further explained in the following points*:

- The researcher intends to understand the adoption of SISP through the people who work in it. In short, consideration of SISP adoption in its multi-faceted natural state. This also encouraged the author to learn from real life adoption of SISP.
- The researcher's aim is to study the adoption of the SISP process in depth, which is complex, and the qualitative method supports the researcher in conducting the adoption of SISP through; 'where', 'what' and 'why' questions.

- The researcher considered the disadvantages of qualitative methods such as bias as an important issue in conducting this research. So, the triangulation of data was considered to avoid bias and Section 4.5 configures this issue.

4.3 Research Strategy

After considering interpretivism as the research philosophy (see Section 4.1) and adopting a qualitative research approach (see Section 4.2), this section starts an with explanation of some research strategies to select from and justifies the appropriate research strategy for this research.

The research strategy, involving experiments, surveys, case studies, grounded theory and action research should be chosen according to the research questions and objectives. The experimental strategy is a traditional form of research for both natural and social sciences research. It is characterised by the need for a hypothesis, individual samples from a known population, allocation of samples under different experimental conditions, introduction of planned change on one or more than one experimental variable, a small number of measured variables and other control variables (Miles and Huberman, 1994; Saunders *et al*., 2007). The survey strategy is more related to the deductive approach (Saunders *et al*., 2007). It facilitates gathering a large amount of data from a large population mostly by the use of questionnaires, and collecting standard data for analysis and comparison. It gives more control to the research process. However, it is time-consuming, because it needs to be designed, piloted and analysed. Many other methods are also used in the survey strategy. Such methods include structured observation and structured interviews with standard questions (Saunders *et al*., 2007; Bryman *et al*., 2007). The case study strategy is more practical for business and management research. It uses empirical investigation of a specific phenomenon in a real life environment, in addition to multi-source methods of data collection. It helps to achieve greater understanding of the research context and process. It supports why, what and how questions. That is because of the ability to use multiple methods, such as interviews, questionnaires and documents to collect data. Saunders *et al*. (2007) argue that the case study could be a constructive strategy for examining theories. The main criticism of using the case study is that it is unscientific and anecdotal (Miles and Huberman, 1994; Walsham *et al*., 1994). Grounded theory is more than just a building theory. It may use both deductive and inductive approaches. The data collected using this strategy can be examined to achieve a new framework or theory (Bryman *et al*., 2007). Action research is another strategy. It has three themes: change management as a purpose, the involvement of employees as practitioners with researchers and results that inform another context. What distinguishes it from other

strategies is the action of change, because it describes, understands, and explains the research results as other strategies and applies the results to the action of change (Saunders *et al*., 2007).

The fourth layer in the research 'onion' is the time horizon. This layer relates to the time that the research takes. What is important here is the research question, because it depends on the strategy that has been chosen to undertake the research. There are two approaches. Firstly, there is the cross-sectional study. This approach relates to the study of a particular phenomenon at a particular time. It mostly uses the questionnaire technique and may use qualitative methods in the case study (interview technique). The second is the longitudinal study. This approach relates to change and development in the research phenomenon (Saunders *et al*., 2007).

4.3.1 Case Study

The case study, which is an idiographic research method (Cornford *et al*., 2005), is a research strategy in which real life IS might be studied within an organisation. Through the IS community the case study strategy has been demonstrated as a valid research strategy as Klein and Myers (1999) stated. As Chan *et al*. (1992) noted: '*to obtain a rich and detailed understanding of strategy from multiple viewpoints, consider the case studies or historical approaches*' (Chan *et al*., 1992, p: 194). Nevertheless, the case study has been considered to examine a phenomenon extensively in its natural situation. This is through applying multiple methods such as interview, observation, written materials and data collection of different entities to collect the required information (Yin, 2003; Irani *et al*., 1999; Walsham, 1995b). As indicated above, qualitative methods are used, because of the importance of understanding issues such as the process of IS planning that merit in-depth understanding. So, there is a need to answer questions of why and how using interviews as well as other data collection methods. It is also important to understand factors that relate to SISP adoption and evaluation, to answer the 'what' question. The researcher must spend time in 'the field' to understand the issues (Walsham, 1995b; Cornford *et al*., 2005; Rosemann *et al*., 2008). As mentioned in Section 4.0, the main objective of the empirical part of this research is to consider SISP adoption and evaluation. Therefore, access to the reality of IT implementation is sought, so as to understand the actual world of managers, their perspectives and practices. In other words, investigation is required; in as much depth as possible, as to what managers actually think about the importance of SISP. This is accomplished by applying different data collection methods as validated in Section 4.4.2. Many characteristics have been stated for case studies and Table 4.5 presents these characteristics.

Characteristic	Reference
Newly emerging events are the focus of the investigation.	Benbasat *et al.* (1987); Yin (2003)
Flexible planning control is required.	Yin (2003), Cornford *et al*. (2005)
In-depth investigation for complex issue.	Yin (2003), Bryman *et al*. (2007)
Assessment of one or more entities.	Benbasat *et al*. (1987) ; Cornford *et al*. (2005)
Triangulation of data collection methods.	Yin (2003)
Flexibility to develop new themes by the researcher through changing the selected data collection method.	Benbasat *et al*. (1987)
Supporting knowledge-building process through different types such as taxonomies, examination and hypothesis building.	Saunders *et al*. (2007) ; Bryman *et al*. (2007)
For in-depth investigation, operational level of events can be focused on by different types of questions such as 'how', 'why' and 'what'. With this in mind a time horizon can be considered.	Benbasat *et al.* (1987); Yin (2003)
The investigation maturity impacts the results of the study.	Benbasat *et al*. (1987)

Table 4.5: The characteristics of case studies

4.3.2 Case Study Type

There are many types of case study such as exploratory, descriptive and explanatory reported by Yin (2003). The research question is the deciding factor when considering the differentiation between these types. From this classification of case study types, this research considers the exploratory case study. This is because the focus is on the questions 'what' (such as what are the factors that impact the adoption of SISP), and 'how' (such as how to involve SISP in developing business strategies) in conducting this research. As a result, new concepts of SISP are defined and developed, and these support the theory and the case for additional research.

4.3.3 Single or Multiple Case Studies

The research strategy for the case study could be single or multiple cases. The selection of which should be applied for the research is important before collecting the data to tackle the research question. A full picture of organisational planning change and adoption and evaluation of SISP could be illustrated by a single case study, as it supports rich data collection in an organisational context. However, given the part of the research question about the adoption and evaluation of SISP, the author would avoid a single case study for two particular reasons. Firstly, to overcome the changed environment of strategic planning in different organisations as well as different

industries. This leads to the second reason which considers the replication procedures that support the developed conceptual framework (Chapter 3). Because the difference between the literal replication (the similar factors for SISP in multiple case studies) and theoretical replication (the dissimilar factors for SISP in multiple case studies) can be stated by examining SISP in different industries. So, a single case study in this research would not allow the researcher to collect adequate data for the adoption and evaluation of SISP. Consequently, the multiple case study methodology is a more appropriate fit for this thesis. The evidence would be more compelling, and it would increase the robustness of the overall study (Herriot and Firestone, 1983; Yin, 2003). Bryman and Bell (2007) reported that the multiple case study method is commonly applied in business and management research. However, extensive resources and time would be needed to conduct multiple case studies (Yin, 2003). So, the importance of the number of cases clearly needs to be balanced with the research question and its data requirements.

Many studies have argued the number of cases that should be conducted in IS research. Eisenhardt (1989), for example, considered the multiple case numbers should not to be less than four or more than ten. Another study by Gable (1994) suggested that there should not be more than five case studies. With the research question in mind, this thesis adopted two global organisations that are involved in the SISP process. This number of cases was limited to two for many reasons such as different industries for inquiry, limited access because data is confidential at a strategic level, the timescale for the research plus the fact that future work can consider different industries or even different organisations in the same industry.

4.4 Investigational Research Methodology

From Sections 4.3.1 and 4.3.3, the rationale for multiple cases was identified, and empirical research methodology considered which undertakes real-life procedures. Many studies such as those by Yin (2003), Saunders *et al*., (2007) and Bryman *et al*., (2007) support identifying these procedures prior conducting the case studies. Jankowicz (2005) suggested three stages to be followed in qualitative research: research design, case study data collection and case study data analysis. The author considers these stages of research methodology appropriate for this thesis and Figure 4.1 presents these stages based on this research question.

4.4.1 Research Design

The first stage in the empirical research method is the research design. This stage is the first independent part. The researcher started with understanding the area of the research to be investigated through examination of appropriate literature. So, important issues for the adoption of SISP were identified. Figure 4.1 presents the sequence of the empirical research methodology.

The conceptual research model was then developed. This conceptual model is the basis for the empirical method. So, the empirical method is to investigate the conceptual model holders (factors). Then, the research design applied the qualitative research method through multiple cases to collect the empirical data. The research strategy (multiple case studies) is justified in Section 4.3.3. Then, the case study protocol is developed from the research design. This protocol works as a tool to complete the investigation process as presented in Section 4.6. *The application of such a tool is justified as follows:*

- Developing a manageable format for data collecting tasks
- Controlling the necessary data collection
- Controlling the progress of the data collection process
- Developing knowledge through a tracking path
- Developing a map that can be followed to accomplish similar conclusions.

The data that is required by the units of analysis is the basis for the qualitative research method as the action plan (case study protocol) presents. Thus, an interview agenda is the format for this method. This agenda consists of series of questions that relate to the units of analysis. It was designed to direct the investigator through structured interviews, supported by both semi-structured and unstructured interviews. For the reasons of triangulation, multiple methods such as observation, archival documents, consultancy reports, electronic documents and organisational web sites were also used.

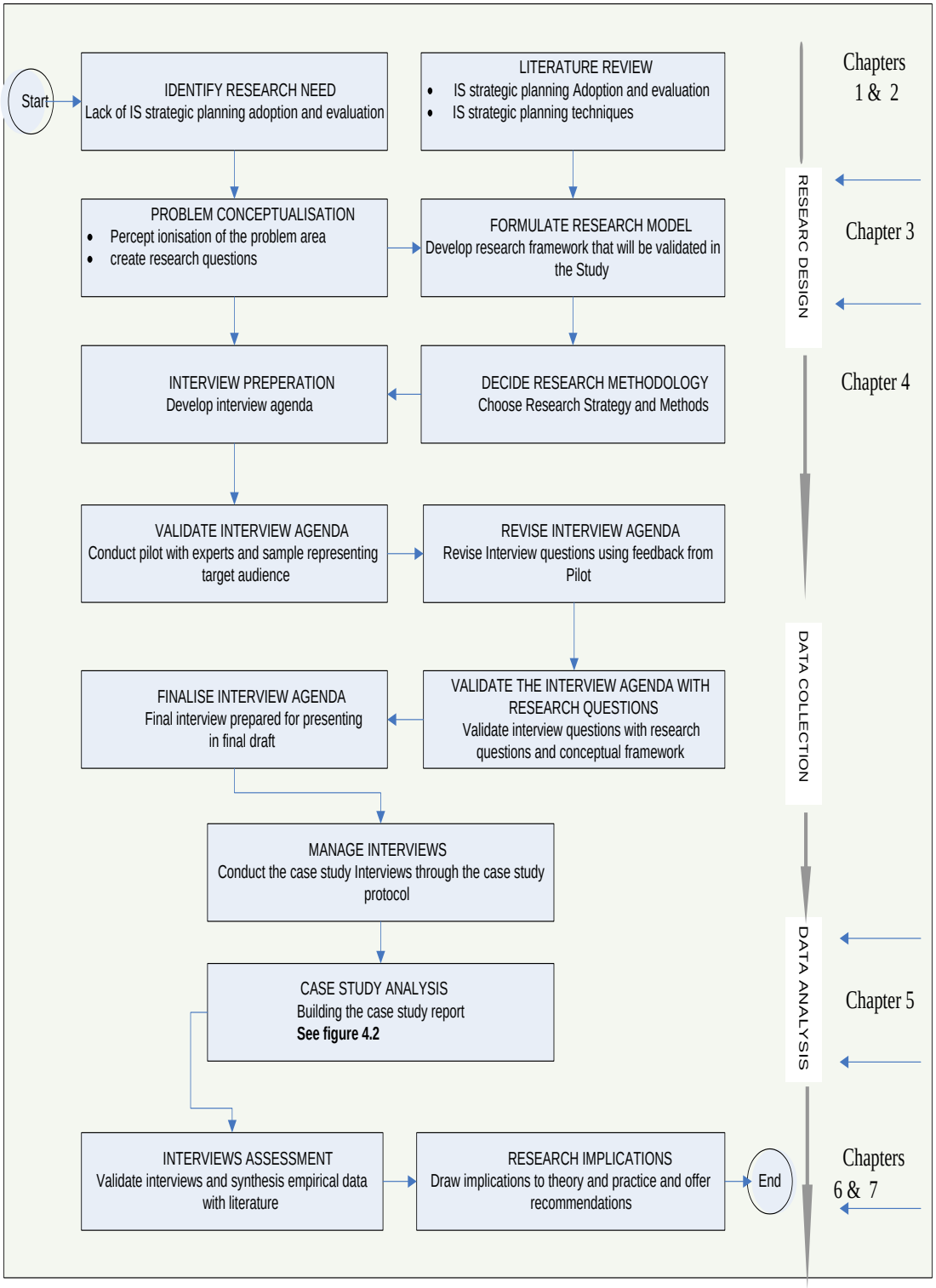

Figure 4.1: The research methodology process

4.4.2 Data Collection

The second part of the research design is the data collection. In this part multiple data collection methods are used in conducting the case studies. Applying different methods for data collection is supported by case findings and reports with validity and reliability (Yin, 2003; Bryman *et al*., 2007; Irani *et al*., 2008). In the case study strategy many sources of evidence can be used as Yin (2003) reported. Such sources embrace: documentation; archival records; interviews; observation and physical artefacts. These sources have both strengths, and weaknesses and examples of these sources are given in the case studies of this thesis. *From Table 4.6 the sources used for data collection in this research are:*

- documentation;
- archival records;
- interviews;
- direct observation;
- participant observation; and,
- Physical artefacts.

Sources of Evidence	Strengths (Yin, 2003)	Weaknesses (Yin, 2003)	Employment of sources in this thesis
Documentation	• Stable can be reviewed repeatedly. • Unobtrusive – not created as a result of the case study. • Exact–contains exact names, references and details of the events. • Broad coverage–long span of time, many events and settings.	• Retrievability - can be low • Biased selectivity, if collection is incomplete. • Reporting bias- reflects (unknown) bias of author. • Access - many be deliberately blocked.	• Reports from the case study organisations under investigation. • Reference material from the case study organisations and other websites. • Various publications such as brochures. • Newspaper and magazine articles.
Archival Records	[Same as above for documentation] • Precise and quantitative	[Same as above for documentation] • Accessibility due to privacy reasons	• Deliverables on earlier interconnectivity projects within the case study organisations. • Case study organisations records.
Interviews	• Targeted-focuses directly on case study topic. • Insightful-provides perceived casual inferences.	• Bias due to poorly constructed questions. • Response bias. • Inaccuracies due to poor recall. • Reflexivity-interviewee gives what interviewer wants to hear.	• Structured interview • Semi-structured interview • Unstructured interview
Direct Observation	• Reality-covers events in real-time. • Contextual-covers context of events.	• Time consuming. • Selectivity-unless broad coverage. • Reflexivity-event may proceed differently because it is being observed. • Cost-hours needed by human observers.	• Through meetings with the interviewees of the case study organisations
Participant Observation	[Same as above for direct observation]. • Insights into interpersonal behaviour and motives.	[Same as above for direct observation]. • Bias due to investigator's manipulation of events.	• Straightforward participation with arranged meeting between different groups of participants.
Physical Artifacts	• Insights into cultural features. • Insights into technical operations.	• Selectivity. • Availability.	• Hardware and software equipment such as CDs and electronic files.

Table 4.6: Six Sources of Evidence: Strengths and Weaknesses and their employment in case studies in this research

However, the main source or method for the data collection in this research was interviews. Given that an interpretive philosophical approach is the basis for this research, it supported the use of interviews as a major data source. The interview method takes account of: the actions and events that participants face during the interview time, their interpretations and, the comparisons of participants' views and objectives of other participants (Walsham, 1995b; Hannabuss, 1996). As Denzin and Lincoln (2007) reported, the main method for data collection in the qualitative research approach is the interview. Nachmias and Nachmias (1996) state that '*The interview is a face-to-face interpersonal role situation designed to elicit answers pertinent to the research hypotheses*' (Nachmias and Nachmias, 1996, p232). In addition, different forms such as telephone interviews and group interviews can be carried out for data collection as mentioned by Frey and Fontana (1991). Furthermore, Cohen *et al*., (2003) and Hannabuss (1996) state that the interview enables participants to discuss their interpretations of actions and the world that they live in. The main purpose of the interview is to collect data through direct verbal interaction. The interview is more suitable for complex issues, because there is the opportunity of interaction between the interviewee and interviewer. This enables greater understanding. Interviews enable prioritising of important issues. So, the interviewer can spend more time on important issues (Cornford *et al*., 2005; Jarratt, 1996). There are three types of interviews, namely structured, semi-structured and unstructured interviews (Cornford *et al*., 2005; Jarratt, 1996). The most important difference between them is the nature of the questions. This means that they are affected by factors such as focus, priority and answering time. Frey and Fontana (1991) reported that there is no optimum duration for conducting interviews.

There are different numbers of interviews in the case studies conducted in this research. This relates to the opportunity of collecting the required data to support the research question in every case. Additionally, the number of interviews was governed by many reasons. Firstly, the research focus considers specific units where not everyone can provide the necessary data for the research. In this case a coordinator from each case study was contacted and met. These coordinators were senior management (assistants to chief executives) because the nature of the research question required high-level management data. They helped to specify those employees who could provide the data for the research. This was after discussion of the research- business proposal with both coordinators. Secondly, the data was collected until point where new sources could not add any data-value to the research question. So, Table 4.7 presents the people who were interviewed in each organisation with their title. After the key points of the research had been indicated, a discussion of different questions with the coordinators was carried out in order to determine the key informants within the organisation as mentioned earlier. Then, they were contacted to check availability and meeting times were scheduled. The lists of questions were piloted by the coordinators who advised on the clarity of the interview agenda. However, the interviewees played an important role as decision-makers through the

strategic planning process, since they were engaged in the adoption, evaluation and implementation of the SISP process. This supports the richness of understanding of the SISP phenomenon within both cases.

As mentioned earlier, the investigation process through the case studies combined applying the interview with other methods mentioned in Table 4.6. The interviews followed a given agenda. All the crucial matters of SISP considered in Chapters 2 and 3 were stated in the interview agenda. So, the issues considered in the Agenda are spread over two sections:

- **General information:** in this part general information about the organisation under investigation was collected. This included: number of employees within the organisation; core business of the organisation; nature of the organisation and, since a global business, number of subsidiaries and, business units within the organisation. Nevertheless, some issues such as the role of individuals, conditions of the organisation and general information about the SISP projects were managed by the interviewee. Such information was collected through open-ended questions, so the interviewees had time to consider their responses. This type of question is known as the semi-structured interview.
- **Strategic planning information:** through this part data about information systems planning and its factors was collected. Such data included: motivation for adoption of SISP; difficulties before the adoption of SISP; types of strategies that are supported by IS; type of roles IS activity is involved in within the organisation, the planning team within the organisation, benefits of SISP, drivers of SISP, requirements of SISP and, techniques for SISP.

The structured interview was the main for source of data for the agenda, while semi-structured and unstructured were used as needed. This meant the researcher followed the agenda with structured questions and if any points needed to be clarified or discussed, semi-structured questions were applied. So, the semi-structured questions considered issues that were not stated in the interview agenda. Unstructured interviews took place during breaks or out of the office. These unstructured questions were not recorded as such discussions were not on the agenda, and because they centred around issues such as ambition, job satisfaction and so on. On the other hand, both structured and semi-structured were tape recorded and transcribed. This process of recording and transcribing helped the investigator to focus on collecting the data by saving time for both interviewees and interviewer. As the interviewees were in senior management positions, their time was limited.

case study	Interviewee position	Interviewee syncopate	Type of interview
X airlines	Senior Communication Systems engineer	CIS	• Face-to-face • Email
	Vice President	VIP	• Face-to-face
	Chief IT Support (Coordinator)	CIS	• Face-to-face • Telephone • Email
	Systems Manager	ISP	• Face-to-face • Email
	Senior Manager IT Network Planning (international project leader)	GNP	• Face-to-face
	Information Systems Specialist (ERP projects leader)	ERP	• Face-to-face • Telephone • Email
	Senior Specialist (systems integration project leader)	IP	• Face-to-face • Group interview
	External Consultancy	ECON	• Face-to-face • Group interview
Y bank	Director Strategic Planning (coordinator)	DSP	• Face-to-face • Telephone • Email
	Director IT	CIO	• Face-to-face • Email
	Advisor to the President	AP	• Face-to-face • Telephone
	Internal Consultancy	ICON	• Face-to-face • Group interview • Email
	Deputy Director of Strategic Planning	DDP	• Face-to-face • Group interview

Table 4.7: Summary of the design of data collection through interviews

4.4.3 Data Analysis

The third part in the empirical research is the data analysis. The case study reports developed from analysed empirical data was triangulated. Since qualitative data is basically not numerical by nature, the difficulty of an unformulated form of analysis emerges (Miles and Huberman, 1994; Cornford *et al*., 2005; Fisher, 2004). So, investigation and interpretation of participants' words and actions exist in this research. Many researchers such as Galal (2001); Irani *et al*., (1999); Ramanathan (2009) have used such an analysis method. Qualitative data analysis is defined by Bogden and Biklen (1998) as managing the data. This includes organising the data, breaking it into manageable units, searching for patterns, discovering what is important and what is to be learned and deciding how to report it to others (Bogden and Biklen, 1998). However, in this study, Nvivo software for qualitative data analysing was used to support developing the coding system for data analysis. Therefore, the empirical data was processed through an inductive

approach to draw out the findings of this research. These findings were used to develop the empirical evidence reports that support the model for adoption and evaluation of SISP.

4.5 Triangulation of Data

Validity and reliability are important issues for research findings and should be considered within interpretive research. This means validating the results and triangulation. Four types of triangulations have been reported by Yin (2003) as follows:

- data
- investigator
- theory
- methodological

Collecting the data from various sources is data triangulation. Investigator triangulation means is there is more than one researcher engaged in the research. The third type is theory triangulation which means interpreting the same data set from more than one perspective of different theories. Finally, there is the methodological triangulation which aims to investigate a particular issue by applying different methods of research. As Janesick (2000); Baskerville *et al*., (2002) and Irani *et al*., (2006) explained, interdisciplinary triangulation considers the investigation of issues linked to more than one discipline. Table 4.8 shows that this research engaged some triangulation types such as data, methodological and interdisciplinary. These types were applied according to the research strategy design.

Case study	Type of Triangulation used	Sources for triangulations
X airlines	Data	• Reports • Interviews • Deliverables • Organisational records • Observations
	Methodological	• Documentation • Archival records • Interviews • Observations • Physical artifacts
	Interdisciplinary	• Information Systems • Strategy • Management • Culture
Y bank	Data	• Reports • Interviews • Deliverables • Organisational records • Observations
	Methodological	• Documentation • Archival records • Interviews • Observations • Physical artifacts
	Interdisciplinary	• Information Systems • Strategy • Management • Culture

Table 4.8: Types of triangulation employed in the study

4.6 Case Study Protocol

The case study protocol aims to increase the case research reliability and to control data collection from a single case study by the investigator, even if the case is part from multiple-cases. There are many reasons for the case study protocol. They support the researcher (Yin, 2003):

- To focus on the case study subject.
- To conduct the case study in a rigorous way. By defining issues such as the audience, participants, necessary data and time before starting the empirical work.

From the case study protocol procedures, Yin (2003) and Maimbo *et al*., (2005) addressed the importance of the case study questions and explained the boundaries. These questions reflect the researcher's real line of inquiry. The outline of these questions and their position in this thesis are summarised in Table 4.9.

Level of question	Type of Questions	References in the thesis
Level 1	Questions asked of specific interviewees.	The interview agenda (Appendix B)
Level 2	Questions asked in an individual case study.	Sections 4.6.1, 4.6.2,
Level 3	Questions asked across multiple case studies.	Section 4.6.3
Level 4	Questions asked about the entire study	Section 1.3
Level 5	Questions about the recommendations and conclusions beyond the scope of the study	Sections 7.1, 7.3, 7.4

Table 4.9: Levels of case study questions in multiple case investigations (Yin, 2003)

With the study questions in mind, the case study protocol consists of: an overview of the case study project, field procedures, case study questions, and guidance for the case study report (Yin, 2003; Maimbo *et al*., 2005).

4.6.1 Overview of the Case Study Project

The purpose of this research is to contribute to the strategic planning process of IS by comprehensively understanding the SISP process with attention to its features (benefits, requirements, drivers, techniques, SDLC methods, tools, and IS strategy). Consequently, it supports other researchers by adding more factors (holders) or attributes of these entities of the conceptual model or by exchanging their experience with proposed cases. From this point of view, the research subjects are considered in order to collect the required data to understand the adoption and evaluation of the SISP process through the data collection resources. These matters are:

- To identify the adopted process of decision-making for SISP within the case study organisations.
- To classify the benefits, requirements, and drivers considered in the SISP adoption within the case studies.
- To identify organisational factors such as the planning team related to SISP adoption in the organisations.
- To classify the SISP techniques in the literature and those adopted in the organisations described in the case studies.
- To discover the appropriateness of these factors for addition in a conceptual model for SISP adoption.

4.6.2 Field Procedures of the Research

With the case study strategy, it is important to compare the real-life adoption results with the research data. Hence, the action plan for data collection is crucial in case of a change in the data collection environment. Such changes could affect the case quality. Interviewee behaviour and availability of documents from historical archives are examples of such changes. Therefore, this procedure is explicit in the action plan of multi-case studies (airline industry and banking industry). This action plan consists of:

- Identifying the interviewees. This research focuses on SISP, so the interviewees were senior executives, planners, and project managers, since investigating IS at a strategic level needs more knowledge about IS planning process, techniques and tools. Therefore, IS/IT managers, IS planners, global project managers, consultants (internal and external) and IT integration project managers were interviewed as major stakeholders in the SISP process (see Table 4.7). In addition, top management, such as senior executives, were interviewed as they influence the decision-making process about adoption IS at a strategic level (Luftman, 2000; Benson *et al*., 2004; Gottschalk, 1999).
- Then, identifying data collection methods. As mentioned earlier, the interview was the primary data collection method. The interviews followed the interview agenda (Appendix B). All these interviews were recorded, transcribed and reviewed by the interviewees for validity. Nevertheless, archived documents, reports, and organisation's websites are examples of other methods that were used (see Table 4.8). Different methods of data collection and similar questions asked of different interviewees increase the triangulation of data and avoid bias in collecting data.
- The researcher was aware of any change in the data collection environment such as a change in the interview time or the cancellation of a meeting. The researcher prepared a timetable for data collection to organise the data collection process. This timetable contained dates, time, interview length, and location. Such a timetable is important in managing any changes during the data collection process. It is also important because high-level management have no spare time and some time between interviews is needed. This provides an opportunity to review the data collected and if there is any additional data that needs to be considered in subsequent interviews. This timetable was agreed by the coordinator within each organisation. This also supported the researcher in identifying the appropriate interviewees with counting any cancelation or delay through the data collection process.
- Ethical issues. The researcher is aware of the agreement with the interviewees as they return to the organisation itself to publish the information or not. At the same time, suitable and

complete information needs to be obtained by the researcher to complete the research. For this reason, the organisations are called X airlines and Y bank for confidentiality.

Many skills are required to conduct interviews. These skills work to connect the theoretical work with data collection. So, considering the interview agenda as a research guide during data collection is important. In addition, some opportunities during the interviews can be of advantage to the research and the investigator should be aware of such opportunities such as obtaining documents and knowing other interviewees. So, flexibility is needed to know when to apply different types of interview (structured, semi-structured and unstructured). Nevertheless, such flexibility requires a confident relationship with the interviewees. This confidence can be obtained through explaining to the interviewees the confidentially of their data. So, the researcher starts with general questions such as the interviewee's position and his/her business unit within the organisation. The confidence is also important in recording the interviews. The interviewees are asked if their interviews can be recorded and told that they will receive a transcribed draft to review for comment.

4.6.3 Questions in the Case Study

Four levels of questions were developed in order to keep focused on the data collection and explaining the reasons for these questions. These questions work as prompts to the interviewer to be in the right data collection mode so that they do not relate to the interviewees. They also support the interviewer in preparing for the interviews and they support the researcher to consider the appropriate data. Gathering this data is important in investigating the adoption and evaluation of SISP. Table 4.10 summarises these questions.

Question level	Question
1	What are the factors applied by the case organisations that affect the decision-making process for evaluating the adoption of the SISP process?
2	What are the factors associated with the SISP process?
3	What are the benefits, requirements, and drivers in SISP process adoption?
4	What are the evaluation criteria used by the case organisations through the evaluation of SISP techniques?

Table 4.10: Research questions of this thesis

4.6.4 Output Format of the Research

The analysis and output format of empirical data will be presented in this section. Because enormous amounts of data are collected through the data collection process for case studies, consideration of the data output format and analysis would be helpful. The researcher collected data in parallel with the research questions in order to avoid confusion when organising the huge amount of data collected. This was completed by connecting the interview questions with the research questions. This strategy increased the value of the research yield. The case study structure is presented in Figure 4.2.

1.0 Background of the organisation

1.1 Background of the strategic information systems planning problem

1.2 Motivation for SISP process adoption
- Global business
- Strategic alignment
- Customer orientation

1.3 SISP process adoption
- IS infrastructure
- Planning team
- IS impact

1.4 Evaluating SISP techniques

1.4.1 The proposed framework for evaluation of SISP techniques
- Requirements
- Benefits
- Drivers
- Requirements vs. strategic focus
- Drivers vs. strategic focus
- Techniques vs. strategic focus

Figure 4.2: The case study structure for analysis

4.7 Conclusions

This chapter aimed to present the rationale for applying a suitable research methodology for this research. So, the research methodology of this thesis is presented in this chapter. Different epistemological standpoints and their fittingness to this research were considered. In doing so, a justification for adoption of an interpretivist standpoint for this research was stated. Based on the research question and objectives considered in Chapter 1, which deals with generating a model as references for the adoption and evaluation of SISP, the decision for involving interpretivism was made. Then a discussion of quantitative and qualitative approaches was considered. The

appropriateness of a qualitative approach was presented in Section 4.2. There were many reasons for this such as nature of the research problem and question which are the adoption and evaluation of SISP and the complex details of SISP processes.

After considering the research approach, the research strategy was considered in Section 4.3. In this section different selection criteria were presented to select the appropriate strategy for this research, and the reasons for selecting the case study strategy for this research were set out. Additionally, to understand and explore the issue of SISP adoption the use of multiple case studies was justified in Section 4.3.3. Nevertheless, Section 4.4.2 presented a discussion of appropriate research methods for data collection in this research. As a result, a diversity of data collection methods such as interviews, documentation, observation and physical artefacts were employed to conduct this research.

The following section considered the empirical research methodology in this research. In Section 4.5 the triangulation for this research was stated. After that, the case study protocol was presented. This protocol works as an operational action plan to facilitate the empirical work. This expresses the perspectives of the case studies in order to share this research experience and conclusions with others in understanding the issue of strategic information systems planning adoption.

Chapter 5: Case Studies' Analysis and Research Findings

5.0 Introduction

In Chapters 2 and 3 the need for more investigation and analysis of the adoption of strategic information systems planning (SISP) in firms was established. A novel model for adoption of SISP is proposed to satisfy that need. This proposed model contains factors that influence the adoption and evaluation of SISP. These factors are:

- SISP team,
- SISP benefits,
- SISP requirements,
- SISP drivers,
- Framework for evaluation of SISP techniques,
- SISP tools,
- SISP methods and,
- IS strategy.

In Chapter 4, the research methodology was discussed and a rationale for the selected methods for conducting this research was presented. This chapter uses the selected research methodology to examine the conceptual model for adoption of SISP as presented in Chapter 3. Empirical data collected from two global organisations are analysed and presented in this chapter. This thesis considers two global organisations to gather enough data to justify the proposed conceptual model (Chapter 3). As discussed in Chapter 4, there are reasons for considering more than one organisation. Observing the phenomenon of adoption of SISP or strategic IS/IT adoption within case study

organisational settings to present the research findings is the object of this research. With this in mind, the case study strategy employed in this research was to collect the necessary data, and every case was examined to obtain perspectives such as human behaviour and organisational behaviour during the adoption of SISP without the intention of drawing comparisons in this research. Therefore, drawing parallels in the outcomes has been left to the reader (see **Figure 4.2**). This chapter concluded with comparison between the research case studies to improve the understanding of the strategic IS adoption.

5.1 Case Study One (X airlines)

In this section considers of the X airlines (case study 1) description, analysis and report presented.

5.1.1 Background to the Organisation

X airlines is a global airline and started in the airline industry in the Nineties. It has around 24,000 employees including 700 in the IT function. It consists of 240 loops including IT loops. X airlines has around 50 offices worldwide, located in Europe, Africa, Asia and North America. An annual report states that X moved 18 million passengers in 2008. The operation of international cargo in X reached 208.670 tons, whereas internal cargo was 53.157 tons in 2008. X airlines also has an interest in an enormous number of partnership companies around the world. Its air fleet was around 91 planes in 2008. X airlines performs a variety of services such as people transport, cargo, package holidays and other services. The company is soon to be fully privatised, and its activities are divided into six business sectors, namely: cargo, catering, ground handling, IT/IS, training and marketing. All these business units come under the parent company. The company is called *X airlines* here to maintain confidentiality.

5.1.2 Background to Strategic Information Systems Adoption Problems

Due to the increased competition within the airline industry, the business has developed into a complex environment where planning needs to be comprehensive. X airlines believes that comprehensive and integrated planning is needed to sustain its position in the industry, especially in its focus on the global dimension. Consequently, engaging IS as a strategic unit within the strategic planning process of the organisation as a whole has become vital. Not only this, but the new vision of the company to become fully privatised is also important, as mentioned in Section 5.1.1.

X airlines believes that its IT is involved with cost centres. Every section has its own budget, identifies its requirements and attempts to get a budget to realise its plans, and then goes to the IT function. There is no comprehensive and complete view of IT. Every section brings its requests, and IT works to meet them. This has made it difficult and increased costs. Sometimes the administration cannot undertake the necessary planning for an automation budget. They are used to demanding simple solutions or identifying unsuitable solutions that do not follow given standards. Therefore, strategic planning is a major difficulty. There is no overall consideration of budgets. There are no major projects. Regarding master planning, IT has the ability to involve planning apart from the processes. This means IT is attempting to have its own budget and justification as a separate business unit. Marketing, for example, can make a clear justification and budget. IT makes budgets for things common to all sectors. The difficulty appears to lie in finding an appropriate justification of its development and planning. Such development and planning require understanding issues such as benefits, requirements and drivers of strategic IS/IT adoption. This is discussed more in the following sections.

X airlines has used IT planning for many years, but the problem was how to link planning to reality. Strategic planning used to be in isolation from business. It was IT planning without attention to IT as a business unit. Therefore, the absence of integrated IS planning with other business units of X airlines, rather than individual IT planning for every business unit, has caused some problems for the company.

Some of most important results of strategic IS/IT adoption are the critical business unit applications. The critical applications in X are outdated and no longer maintainable, and core airline functions need to be migrated to new platforms to allow for better support of key business processes. Consequently, there is a weakness in decision-making, governing information and mapping functionality to service.

Accordingly, the challenge comes from the misunderstanding of top administration and executives about the meaning of strategic planning and its value. Being in senior management, this issue is a big challenge for them. However, with recent arrival of a new CEO, things began to change. He had a clear vision of strategic planning which was communicated to the lowest level of management. There is now consideration of the significance of the strategic planning. The remaining problem is the tools: the translation of the strategic planning into reality. This means that managers need to develop some kind of knowledge in order to translate strategic planning into reality as big challenge. The second is the skills development.

Financial support and the IT budget is another challenge. It was limited in the past. There were many strategies, but insufficient funding available. The lack of both human and financial resources leads to a lack in inter-organisational and intra-organisational collaboration as strategic communication. Nonetheless, planning strategically for global business without appropriate decision-making is causing the company to lose its competitiveness as a global company. Because there is insufficient data for decision-making, the benefits, requirements and drivers for the strategic planning of the IS/IT in the company have not been identified. This results in a misuse of IS/IT. Hence, increase the competitiveness of the company.

There are a huge number of systems that are not connected to each other strategically. This lack of integrated systems wastes resources. This technical problem clearly appears in connecting the company internally and externally, because there is a need for high-level communication both inter- and intra-organisationally. Table 5.1 summarises these problems.

Some IS Strategic problems of X airlines
• Every business unit has its own IS planning.
• Problems with IS/IT standards.
• Problems with understanding comprehensive IS planning.
• Problems with IS strategic justification.
• Problems with IS strategic benefits.
• Problems with IS strategic requirements.
• Problems with IS strategic drivers.
• Problems with planning mechanism.
• Problems with critical applications for core business processes.
• Problems with IS funding.
• Problems with strategic integration.

Table 5.1: Problems of IS strategic adoption in X airlines

These problems mentioned in Table 5.1 are connected to each other in many ways. Problems with strategic integration, for example, are caused by the fact that every business unit has its own IS planning. This causes many other problems in understanding different factors such as benefits, requirements and drivers. These factors are based on single units instead of alignment of these factors among all the business units. These alignment issues do cause problems with standards of services, applications and IT systems. From these problems extrapolated from the empirical data from X airlines, many factors that encourage adopting strategic information systems comprehensively are evident and discussed in detail in the following sections. Such factors include:

- Support for improved strategic IS planning. This support can be obtained from different sources such as consultancies and IT suppliers such as Amadeus, Sabre and SAP (see Figure 5.5). This factor (support) can be seen in the IS/IT domain in strategic, managerial and technical issues.
- Measuring performance of IS function as critical factors. This performance can be evaluated by means of various metrics, both financial and non-financial.
- IS cost as an important factor to consider in since of lacking IS planning and then misused of organisation resources such as people, technical and operational.

5.1.3 Motivation for Strategic IS Process Adoption

X airlines started applying the SISP process in the Nineties. The basis of this process was the **i**ndividual requirements of different business units. This was focused on technical requirements to support the projects of different business units. Nevertheless, there were no specific steps or roles for the IT planning. Consequently, X airlines designed IT support systems rather than strategic systems. These IT systems were connected to the business units via connectors. Those connectors were located in the different business units and they transferred the technical requirements of these business units' projects. Therefore, the IT strategy was separated from the business strategy rather than being integrated with it. Figure 5.1 shows this separated process of IS strategic adoption in X airlines as explained by ISP when he was asked to clarify the role of IT in X.

The level of planning was addressed in Chapters 2 and 3 where problems such as missed opportunities and difficult management control are presented. From the perspective of X, there is global business motivation, strategic alignment motivation and customer orientation motivation to adopt and evaluate SISP processes.

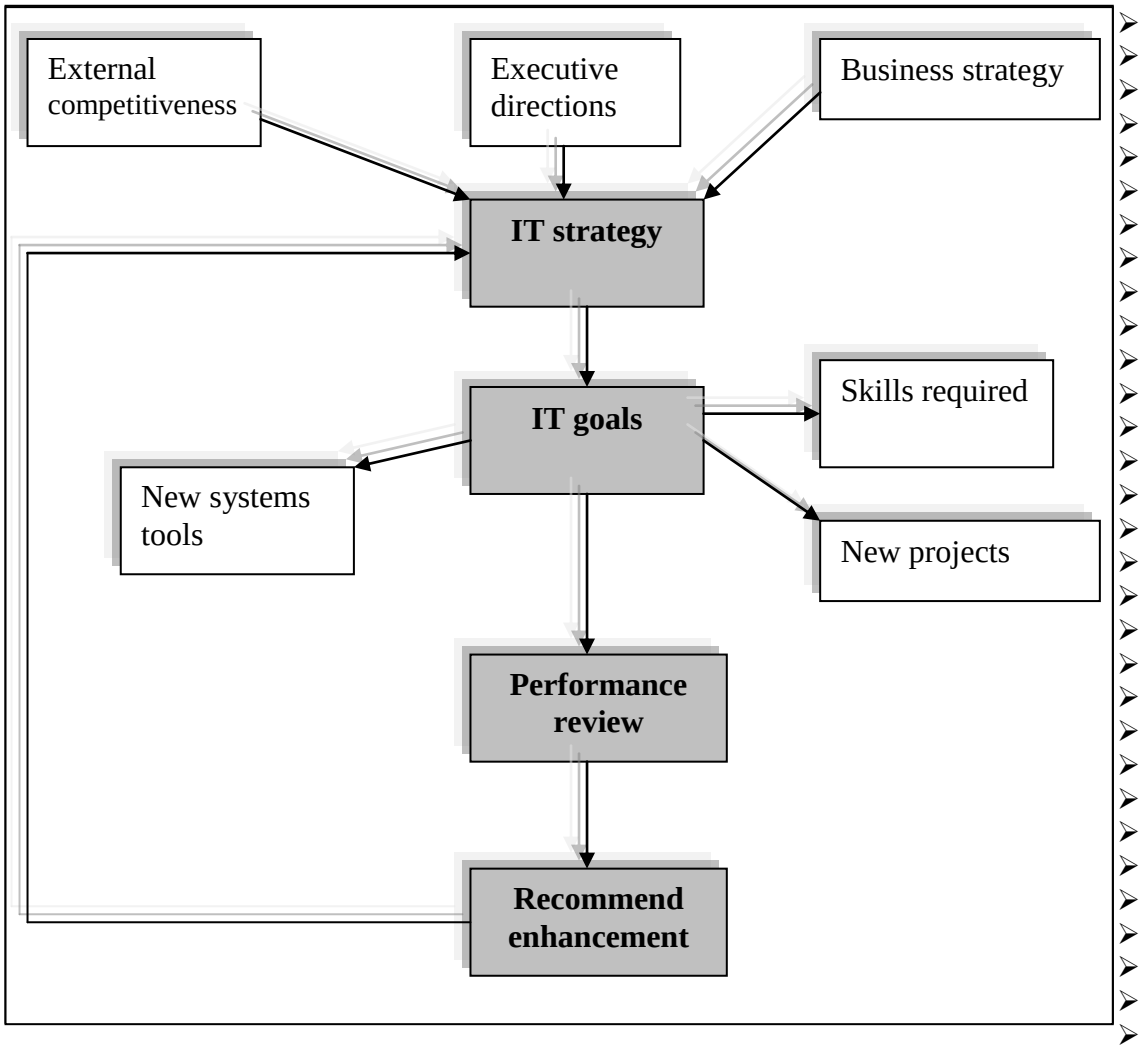

Figure 5.1: Misalignment of strategic IS adoption in X airlines (source: from ISP interview)

5.1.3.1 Global business and IS strategic adoption

X airlines believes that they needs more focus on strategic and integrated planning of the business. This started by understanding the need for a comprehensive plan for the business. The IT diagnostics and master plan project has defined the meaning of comprehensive, in order to bring X's IT back to industry standard. Therefore, two important motivations are strategic alignment and growth as demonstrated by the strategic document. Thus, IT could support X airlines development, manpower, and distant management development while saving costs. As a major airline, X has ambitions to be a

leader in the region and one of the major airlines in the world. Annually, X serves eighteen million passengers in essential sectors. X knows that it is almost impossible to work without IT. IT is like the nerve system of its major business units. There would be no marketing, no operation and no maintenance without IT. The IT plays a key role in facilitating the management of all sectors of the company. There are now ambitious initiatives, plans, and funds devoted to support the basic operations of the company. All of these support the organisation's strategic plan to realise the vision and objectives through IT. Hence, IT/IS is important as an administrative enabler as well as strategically.

IT was one of the first sections to begin making strategic plans. With the coming of the new CEO, IT began modernising its programs, systems and infrastructure, and so the strategic plan for modernised information technology (IT master plan) appeared as presented in the IT master plan document. A big budget was given to it. Consultants were hired. Studies and recommendations were made and network bids began for modernising the systems. The project is now known as the global project. There are now many consultancies redeveloping systems such as reservations and boarding. The plan will take five years to complete, as explained by the IP. From this it can be shown that senior management support and commitment is an important requirement for the development of IS/IT strategy. The old CEO of X treated IT as a support service that handles technical issues for the company. IT provided the different business units with technical support as required. However, the new CEO has a different view of IT. He treats IT as an important strategic unit in the business that can improve and enhance the business.

Internally and externally, no doubt, there is strong competition in which X is a leader in cost management. Where aviation is used in a specific sector, city or continent, there must be what are known as field optimisations: or how to use X's fleet adequately. Needs are always according to competition: if X has flights to station1 – station2 – station3, X needs systems that provide the means to achieve the highest commercial return. All this is done through systems in field transportation, tabulating, maintenance and reservation and cancellation processes. X is based in a country which has a high rate of cancellation of reservations. From experience, X knows that it needs to book 430 passengers on a flight which can only carry 400 passengers. As a result, X uses systems that assist airline planning, e.g., departure control systems, from which X derives future forecasts of growth and information about customer preference for external or internal flights (GNP, personal communication, date).

X believes that it does not currently have the systems that would help it to innovate in reservation and business integration. It now has a strategic plan and in three years, X plans to have its systems in line with international requirements. This was discussed more by ERP who emphasised that in five

years X aims to be a leading IT performer in the airline business. X did not have enterprise resource planning (ERP), but it is now bringing in ERP solutions. X did not have a high-quality reservations system or systems integration, but it is aiming in that direction. Similarly, X does not have fully-integrated IT architecture. In the planned systems this will all be available to improve internal efficiency. However, X needs to hire highly skilled people who can assess its situation and current IT systems to plan correctly. People skills is an important requirement that should be considered in IS/IT adoption; otherwise, consultancies may fill the gap of weak skills within an organisation. The e-commerce implementation, for example, is a marketing unit responsibility with outsourced support. The e-commerce systems need collaboration between business activities that should be involved and not only one activity with one supplier.

All these issues are caused by two important factors that may responsible for X's IT improvement as mentioned by the ISP. Firstly, X does not believe that the drivers and motivations are as strong as required. There are external factors at work. First, there is the trend towards privatisation. The business now directs IT about what to provide in order to match business and service processes. Side by side with globalisation, these should help the business improve fast. Secondly, some airlines change their practices in different seasons. Unless the company exploits those systems that will allow it to function flexibly, it will not succeed. Without the systems that can meet its needs and vary its pricing system, the company will not be able to compete with other companies. All such systems and activities need top management support and communication maturity as important factors for IT success. These factors are currently extremely weak; an example of this is marketing's control of e-commerce systems as noted above. Given both factors discussed the need for understanding of requirements and drivers that influence the adoption of strategic IS, it is important to develop a flexible plan and systems that could support the business changes as discussed in Chapter 2 (see Galliers et al., 2003).

5.1.3.2 Strategic alignment

It was reported by the IP that X airlines does not currently have an IT strategy as a part of the business. As for the IT itself, there are many strategies that could assist the business. Firstly, X may be outsourcing whenever possible rather than reinventing the wheel. There are certain things which are not core business in IT, including equipment and radio maintenance. These are outsourced and recorded in X's business. Secondly, X needs to reduce the process of internal development in the rudimentary solution, to utilise it as much as it can. Third, never mind the business delay if X has the best IT. X must have the ability to meet the business deadline in the right way. Though it takes X seven to eight months, currently X cannot do something quickly that the business wants so as to

cover its needs. X needs to evolve into the optimum solution. X does not have to be perfect after seven months. IT can deliver something within one month. Then X evolves to be perfect. All the other business functions depend on the automation provided by the IT. Without automation such as messaging systems, IT systems (PCs, printers and network), reporting and IP telephone, other functions will not be able to perform effectively. From this it can be seen that IT in X is functioning more like technical support than a business enabler. IT management in X is focusing on technical issues that serve the business rather than understanding the business itself, and then sharing the ideas with business management to align the IT with business needs. This view of analysis is considered in Figure 5.1, which shows the misalignment of IT-business. As a result of this, executives' skills and commitment can be important drivers for the IT plan and its involvement in the business, and this was considered in Chapter 2 by Benson (2000) and Laudon et al. (2004).

One of the IT objectives is to help administration to be more effective and more productive as reported by CIS, and this is the view of the new CEO. It is also to help an administrative unit called the Operation Control Centre. This centre helps to prepare the planes as required in the marketplace. IT coordinates these tasks and plays a key role, which will be enhanced in the future. Indeed, within the business, IT performs the business process design. The implementation which IT may perform in the new systems is to be completed in the business process design. And what does IT do? What is the extra process involved in the business? It focuses on the efficiency and effectiveness, in addition to the internal enhancement of the process and its governors. It uses the IT network in system services support. All these help in having an efficient IT shop. Thus, not only the IT equipment but also the process of business is important to consider in the IT plan. This is one of the main weak points in the IT master plan of X. In this paragraph more than one requirement such as planning process flexibility and adaptable planning model and process were mentioned to connect the IT with the business. These requirements are supported by other requirements that focus on understanding the business environment and process. All these requirements were considered in Chapters 2 and 3 by many researchers such as Spil et al. (2006) and Robson (1997). From the previous paragraph and this one, it can be concluded that executives' skills, knowledge and commitment to IT is important as well as they are different.

As a result of the new CEO view, good IT systems have been designed in X airlines to support innovation, which means that the IT landscape at X will completely change in less than three years, as the ECON mentioned. The CIS mentioned that everything will change, including communications, systems, networks and equipment, and new technology will provide the support to improve internal efficiency and effectiveness. So, currently IT is at the transitional stage. In the future, it may support entering into alliances. The current systems prevent appropriate alliances

because they require a clear vision of the interactions between each part. There must be some kind of integration. Current systems are so old that they do not do the job they are supposed to. Modern systems such as ERP, process operation standard, boarding points and quality may improve internal efficiency.

In order to carry out strategic planning, IT must be integrated with the company's strategy, although there is a great transformation in the business alignment with IT. The company is now transforming itself into a number of companies. It is starting to think about profit. At the beginning, its target was to serve the national market. Planes were flying in great numbers between city 1 and city 2, but the organisation never thought about profitability. X did not fly very long distances. To increase profitability, the concept is now different. The company must now depend on its own technical and management abilities without relying on the government any more, which has been the case until recently, the ISP reported.

From this section, many issues were considered to understand the IT-business alignment. These issues include the executives' skills and support, planning process flexibility, adoptable planning model and understanding the business environment and processes. All these were divided and considered in Chapters 2 and 3 where the proposed conceptual model developed. At the end of this section and after discussion, the situation of IT-business alignment in X was considered as a strategic level problem. The attention to serving the customer by the IT department to help the company privatise and so reduce the cost to maximise the profit was important to X airlines, and this is discussed in the next section.

5.1.3.3 Customer orientation

X airlines has carried out a strategic analysis and has now divided into four main centres of activity as reported in the strategic document. These are public, royal, business and religious services. The public one is the low cost area which might have changed, but the royal, business and religious areas are the key cost centres. The IT function struggles to maximise the benefits (the investment of IT and the business objectives), but maximising the benefits does not necessarily mean minimising the costs. It may be the cost of quality. Internally, there is the transformation of IT and a new organisation to match the business demands. At the same time, the architecture or organisation of IT contributes to support the organisation. This is the future view of X airlines. There will be more than one airline within X as discussed by GNP. This will lower aviation costs, and, at the same time, the IT can serve other airlines. These will take place in the newly formed organisation. There will be one general manager responsible for operations and development. Now there are new divisions such as IT commercial, IT business demand, operation and development. In the future, new IS customer

oriented, especially that those new companies (subsidiaries of X airlines) will require IT do well for high quality services in the business. As for IT, it will be a services provider and X will be its customer. So, collaboration at the strategic planning level is required between the IT function and X airlines. This illustrated by the partnership maturity as a requirement for strategic IS/IT adoption in Chapter 2. This partnership between the IT and other business activities and subsidiaries of X airlines needed to produce the strategic plan of X as well as the IT strategic plan. This can support the scope and architecture maturity requirement to increase the IT-business integration.

The IT strategic plan evaluated some suppliers who could provide the new systems for X. As a result, systems have been introduced in finance, human resource and payroll, training, sales and marketing, materials management, aircraft, general maintenance and technical departments. Detailed specifications were given to ensure that requirements could be met. Preparation and reliability of these systems are important in the strategic planning process as presented in the strategic planning document. An understanding the requirements and drivers that were discussed in Chapters 2 and 3 was not apparent from the strategic documents or interviewees' discussion about developing the IT strategic plan. This can be attributed to the technical view of IT function that had defined the activities of the IT staff as well as their knowledge of and experience in technical aspects. As a result, the skills they have are not in strategic analysis and business views. This caused them to respond to technical requirements rather than strategic-level requirements. X therefore was seeking to obtain support and consultancies from suppliers and vendors. However, X needs to understand its strategic situation and its IT capabilities so it can cooperate with its suppliers and vendors more successfully. This situation is an important driver because it supports the decisions of changes and solving problems at the strategic level. This driver was stated and discussed in Chapter 2. Both suppliers and vendors are important as they impact the strategic business processes of X.

5.1.4 Strategic IS Process Adoption

This part of the analysis considers the process which connects infrastructure, people and management. This section describes X's IS infrastructure, its planning team and the impact of IS.

5.1.4.1 IS/IT infrastructure

X does not have a fully integrated standard infrastructure under one administration as demonstrated by the GNP. As a result, there are deficiencies, though there are major contracts out for the development of the infrastructure. The administration is centralised. The blueprint for this one centralised integrated infrastructure by IT is presented in Figure 5.2.

The ERP interviewer describes the process of the relationship between IT and the users. Considering the IT infrastructure, or user requirements in X, IT studies the requests and decides whether it can carry out a physical study. Accordingly, IT drafts an initial design and cost of the project. IT begins this stage and waits until the users have an approved budget. Then IT begins the basic design of the project. It creates the specifications and sends them to the relevant administration. The winning bid will be studied, assessed and decided upon. IT is concerned with the price but it is not the biggest factor in the process. When the entrepreneurs begin working, IT becomes their supervisor on systems, installations and testing, giving them an initial approval certificate, and a receipt certificate when the project is completed. From this it can be understood that IT in X functions as a technical provider and trainer for technologies. This impacts the relationship between IT and other business activities in terms of trust and team working, because other units simply give an order for a project that should developed by IT. These projects in most cases are programming projects and in some cases reports.

The new vision of X, as explained by the ERP, is to build modern end-user IT infrastructure and IT production to enable new applications and processes, as Figure 5.3 shows; renewal of three major infrastructure areas for solution design, engineering and managed services will upgrade X's infrastructure to support future application platforms. In July 2008, Sun Microsystems's official website (www.sun.com) reported that X had upgraded its IT infrastructure by deploying a SAP solution through an inclusive ERP solution in four dimensions: corporate, marketing, operation and e-business systems. The goal of this upgrade was storage and backup solutions for production and disaster recovery. All the infrastructure processes are now co-centralised. The strategic control is centralised and the IT will be world-class to serve X as the IT provides the network and other administration and services.

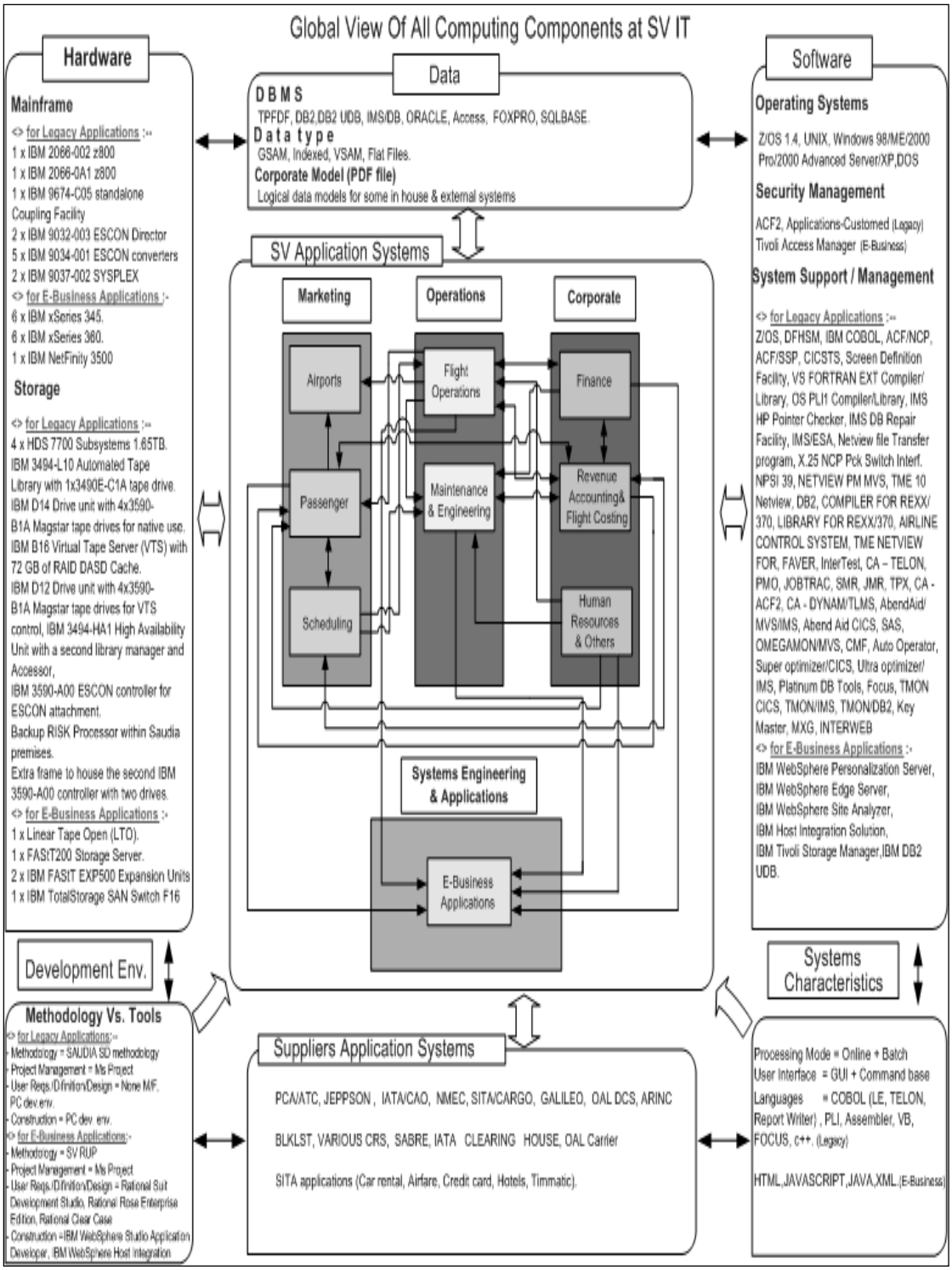

Figure 5.2: X's IT infrastructure (Source: electronic document of IT in X)

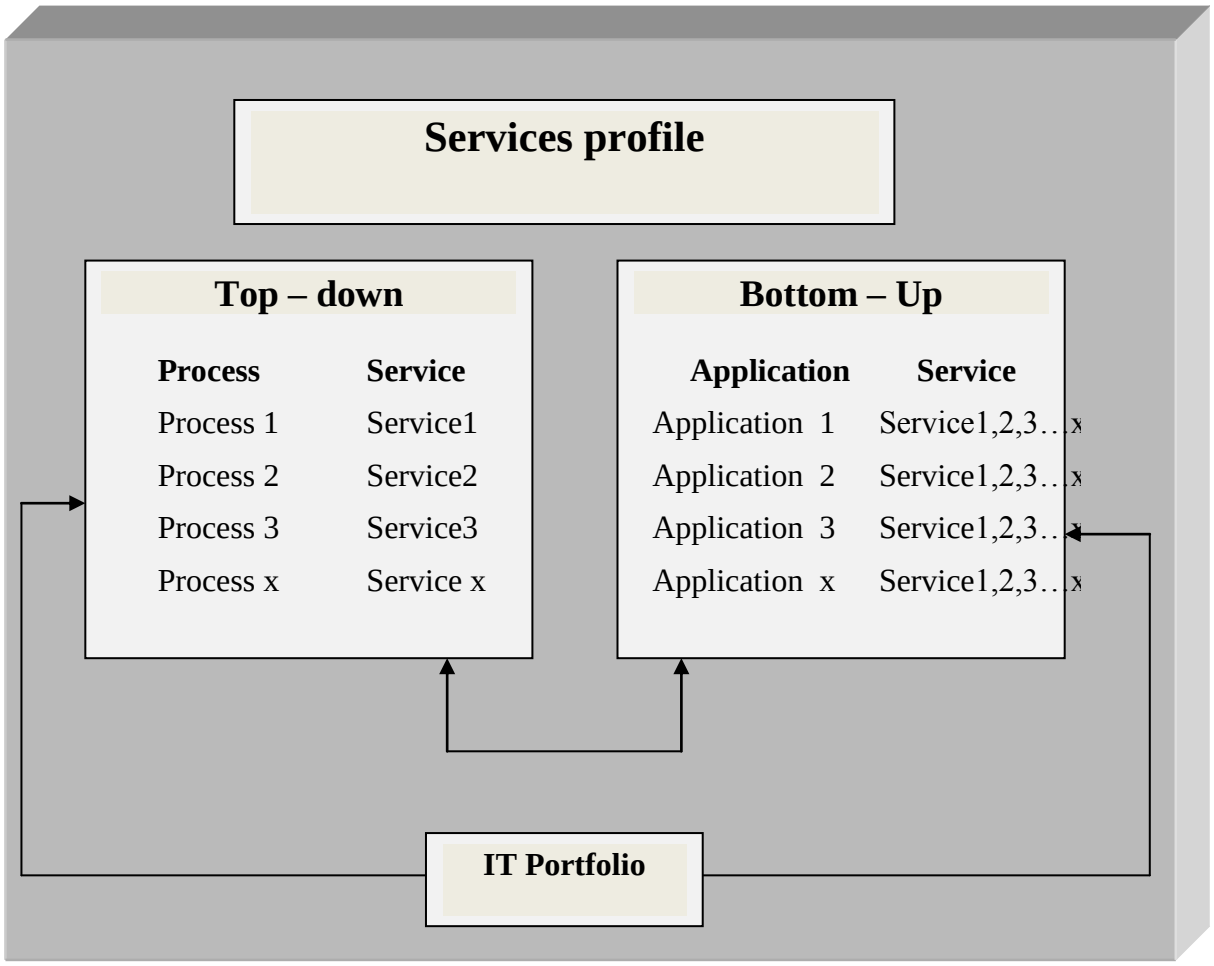

Figure 5.3: X's services profile for processes and applications (source: from ERP interview)

5.1.4.2 Planning team

The most important goal for IT is to serve X. X airlines has a management team for planning and marketing its key policies. This team carries out extensive studies, although sometimes, consultants are brought in to carry out studies. Then IT takes appropriate action depending on the team's decision.

The IT master plan has been endorsed by the IT Steering Committee. Figure 5.4 presents the overall planning team which contains different teams according to the type or level of responsibility required, as documented in the strategic planning document of X. This explains the teams with their members' titles and numbers. Every business unit is represented by someone who is responsible for identifying requirements of his unit. So, the connection between the business and IT is achieved via the master plan through the Automation Support Group (ASG).

Recently, IT stands at the top of the planning process, as stated by the ISP. Its team plays an important role in business planning. Every unit has representatives in the team including IT. There is also a privatisation team that considers the IT contribution. There is also an administrative team called the infrastructure strategy team. This team meets weekly but it does not have a clear remit.

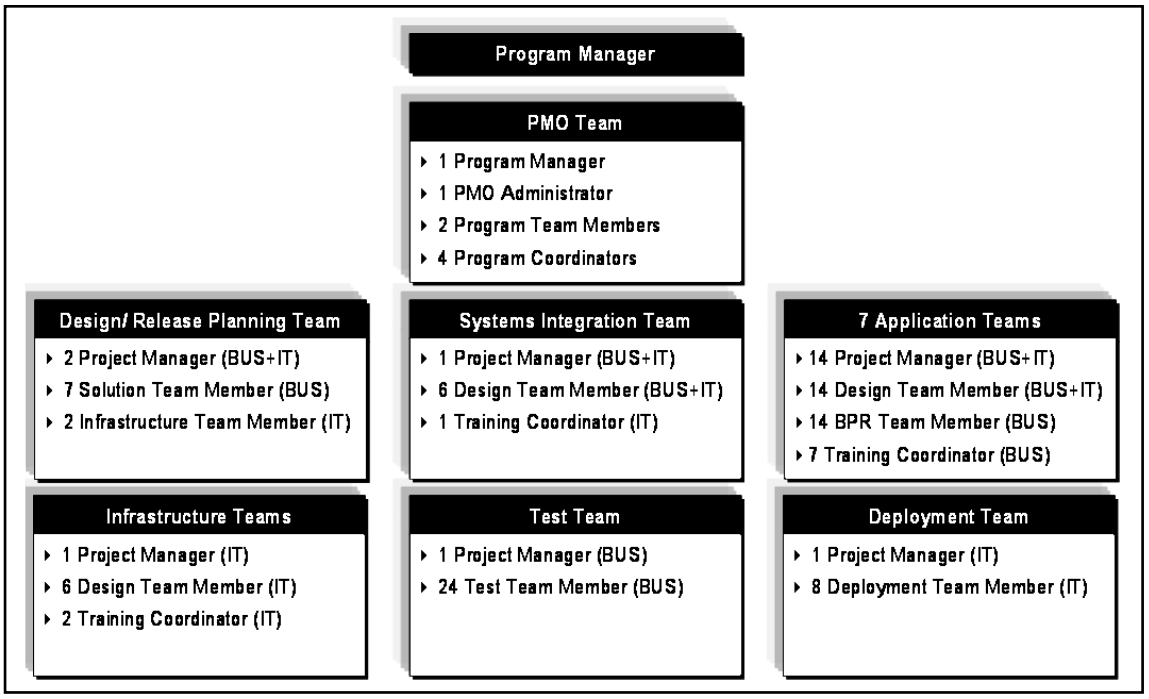

Figure 5.4: The planning team for the overall IT master plan in X (Source: electronic document for discussion of the IT master plan of IT in X)

There are many reports to the IT general manager from different planning groups. Additionally, every business activity has its IT administration which has its own management style as per work needs and remit.

5.1.4.3 IS impact

X believes that if a change needs to be made, which takes a year, it is likely to take four or five years without IT. During that time, it can lose a market. The IT is the tool with which the organisation implements strategic ideas, as explained by the IP. For example, X cannot make a profit or privatise unless it has automated tools. X cannot make a profit without a fleet, maintenance, a back office and reports. All these things are enabled through IT. So IT has a big impact on the organisation and its future viability.

X believes that, when employees are working on a new technology, they will feel motivated and that this, in turn, makes it easier to focus on the process of how to make the right decisions at the right time. It improves a lot of things: process, business and services. So, there is the effect on the

utilisation of resources and on supporting the business needs. All parties focus on achieving organisational objectives.

X considers that IT has had a positive impact, but there is a drawback due to the fact that X is in the stage of privatisation. Employees do not know whether to go or stay. However, X hopes that new job opportunities will be created for good employees so that they can compete with those who will inevitably come from abroad in the new situation. Any change at this stage will have an impact and this needs attention. Many employees have already left. X is one of the biggest companies in the country, and any improvements and changes will not show up quickly. However, internally X will see results of its IT strategic planning and comprehensive changes in the organisation more quickly, as reported by the CIS.

X has a planning research department, but it is mainly for marketing. In IT there is a planning department. Also every sector and administration has its own plan. X has contracts with suppliers for IT strategic planning (outsourcing) to be applied throughout the organisation. The master plan, which evaluates different suppliers, details what these suppliers (consultancies) must achieve as explained earlier in the customer orientation section. The IT strategic plan extends for three years. In this plan, IT presents the organisation's current IT strategy to senior management and the strategy develops through due process as discussed by the ISP. First, IT identifies the goals. Then it develops a list of projects that support the specific goals. In between these stages, there are so-called strategic moves. These might include some projects and some sub-projects. The IT goal is to serve the X airline in the global context. The concerned company (supplier or consultant) came to X, as a specialist company, and identified strategic projects to X. It assessed the administrative systems and identified the commercial projects. The purpose was to see whether the company could serve privatisation and compete with other companies. The agreed methodology for the process contains goals, strategic moves and supports. Currently, IT reviews its strategy every six months: it reviews how far it has achieved its objectives, writes reports and evaluates them. This is what IT then uses in the next planning phase. IT decides a methodology: the projects' policies and procedures by goals, projects, strategic moves, and supporters' projects as presented in Table 5.2.

Process	Explanation
Goals	Main Projects
Strategic moves	Group of Projects for every main project
Supporters	Sub-Projects

Table 5.2: The process of SISP in X (source: from ISP interview)

As reflected in the strategic planning document, this process is undertaken with the guidance of a consultant company in strategic planning. This consultancy met the chairman, reviewed the other airlines' projects in strategic planning, performed benchmarking, studied the local market and customers' impressions of X airlines and their tastes in general, considered the infrastructure and its strengths and weaknesses, visited the civil aviation authorities and created a strategic plan for the development and transformation of IT organisation to become an effective and efficient service provider to all strategic business units of the company. X now deals with every strategy concerning IT administration using this process. Table 5.3 shows the roles of IT in X from different interviewees' standpoints. Because it is difficult to interview most of X's stakeholders, the interviews considered those stakeholders who adopt, evaluate and implement SISP techniques in X, as explained in Chapter 4. These interviewees are an information systems planner (ISP), the enterprise resource planning project leader (ERP), an integration planner (IP), communication information systems project leader (CIS) and global network planning project leader (GNP). Because there are three levels of participation in describing the roles of IT within X, the author has used the Miles and Huberman (1994) scales for its similarities as fully participant (●), partly participant (⭘) and non-participant (○).

Role	Description				
	ISP	ERP	IP	CIS	GNP
Administrative	⭘	●	●	●	●
Operational	⭘	●	○	●	●
Competitiveness	⭘	○	○	○	○

Table 5.3: The roles of IT in X by the interviewees' views

From Table 5.3 it can be seen that most of the interviewees considered the IT role as administrative with full participation, whereas four of them considered the IT role as a non-participant in the competitive role. For the operational role, three of the interviewees considered IT as fully participating, one partly participating and the integration planner as not participating. When asked to explain this he said:

> *'I think in IT, this is happening in reality. You are only a solution provider. And the solution may not be an automatic solution. You must have a deeper understanding of the business. You must know the business. The IT should be that role. It should be part of the solution provision not system preparer. These are the things I believe to be required of them.'*

It is also can be seen that the CIS, ERP and GNP have a similar view of the IT role. As the CIS explained: *'IT is operational. We've not reached the competitive stage yet'.*

During this period of comprehensive change, an external consultant was employed to help the organisation in the strategic planning. It also helped the IT function. The approach was created around the idea that there was time for sitting and making strategic plans. One of the principles of the strategic planning process was that it takes time. This was necessary to reach sound solutions and achieve two goals: transformation of IT and a landscape for application. The first is now under implementation and the other will be implemented in three years as reported by ERP. X believes that there will be quick results, including the redesign of the infrastructure. The external consultant cooperates with IT to identify the required functionality to map or match the business environment within X, as shown in Figure 5.5. The coloured lines in Figure 5.5 explain the relationships between different systems. They do so to make up the technical specifications and assess suppliers or providers. The reason is that X now has new partners and companies providing projects at the local level. The IT employees help in preparing the methodology and the framework to facilitate this. X thinks that strategic planning is not necessarily in the detail. This will take place during implementation in three years' time. That means IT does not develop benefits, requirements and drivers of strategic IS adoption instead of categorising applications so they can be grouped logically, then transferring them into services, to support the business side and executives' vision as a (top–down) approach. So, there are two approaches. Consequently, when there is a business process, IT can map it with the services to achieve the objectives of this process. This means IT in X is still taking orders from other business activities to develop applications and not sharing the planning process with them, so there is no understanding of the IT situation in X. As presented in Chapters 2 and 3, it is important to share the IT capabilities with other business activities at the strategic level to create an integrated plan.

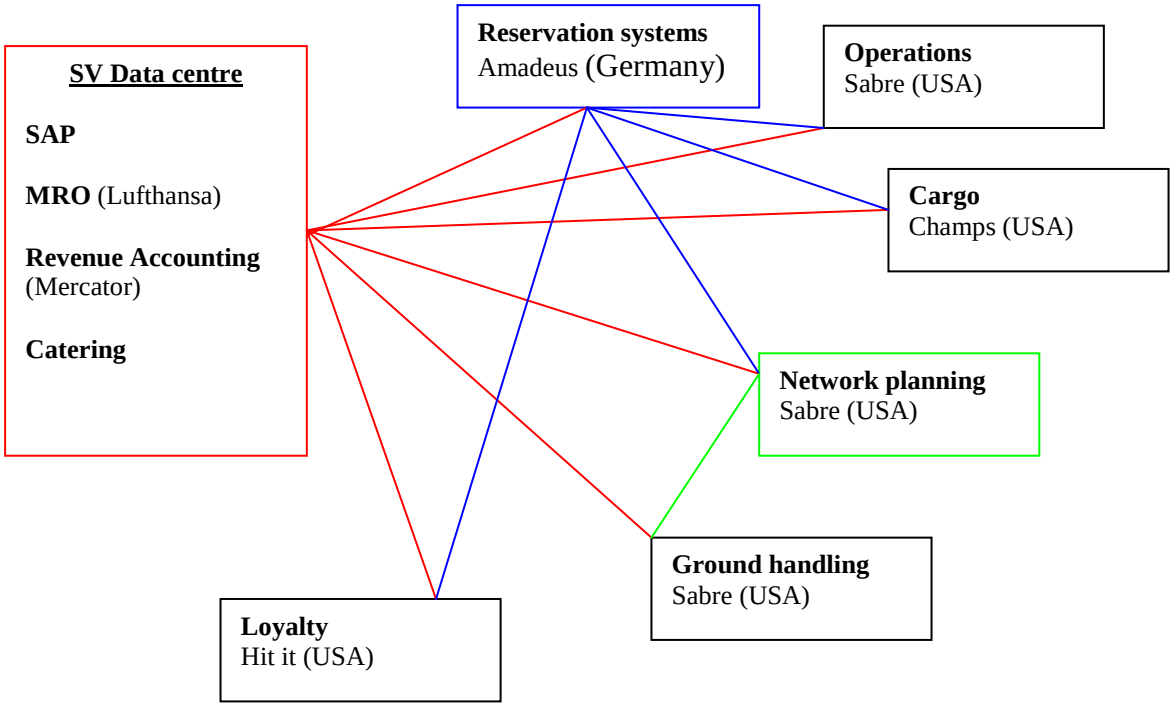

Figure 5.5: The required functionality that matches the business environment within X
(source: from IP interview)

X believes that its IT has not reached the stage of coordination of other business units yet as reported by the ISP. He explains that its master plan has three stages. It goes from stage to stage until it reaches the desired situation. This process will take three years to be ready for implementation. IT itself will be strategic, ready to implement and sell these services to other airlines and to manage other business activities in three years. The previous strategic vision of IT was non-operational. The IT was facing a financial dilemma. They used to say that unless something was operational, it would not get funding. Most of the IT projects were non-operational. They were not like marketing, maintenance and air operations. Most of the IT projects were born to die or suffocate because they did not find management support. Now with the arrival of the new CEO, things seem different. In most of his views reported in the media, he has stated that the function of IT is to gain a competitive edge. The proof is that IT is now in an IT transformation program. This CEO has devoted 630 million dollars to improving the IT, as reported by the ISP. This gives an indication about what he anticipates and the role which he wants it to perform in the immediate future. IT is the arm for competing with other companies as stated by the ERP interviewee:

> *'The budgets of projects were not in IT hands to be pro-active in serving modern technology. They were in the hands of those benefiting from the service. IT was only supervisory. Now, with the modern strategic planning, all funding is in the hands of the IT. In the near future things will change and will become active.'*

X believes that IT is not just an enabler. It should lead the business. As mentioned in the IS impact section by the integration planner quotation, IT believes that what is happening in reality is that IT is only a solution provider, and the solution may not be an automatic solution. IT must have a deeper understanding of the business. IT should be part of the solution provision, not a system preparer, because IT supports different types of business strategies, as presented earlier in this thesis (Chapter 2). These are the issues X believes are required in the IT transformation stage. These issues require special training in strategic management as well as IS planning for the IT employees who are accustomed to providing technical support only.

5.1.5 Evaluation of Strategic Information Systems Adoption Techniques

As mentioned earlier, X is planning to become a private company. This means it has to be more competitive in order to make a profit. X was heavily government-subsidised. It was not really looking for profit but the situation has changed with more competitors entering the market and the increasing costs of the operation. As a result of the privatisation trend, X decided to improve its IT function to form a sub-company to support X and other airlines. In doing so, X has attempted to evaluate its IT strategically and to understand its strategic contribution. This evaluation needs to apply techniques that support the understanding of X's situation. This evaluation considered both internal and external skills required (as mentioned in the section on the planning team) to complete it and design the new IT strategic role. Consequently, the researcher considered the strategy focus to understand the situation as mentioned in Chapter 2. This focus is the main objective of the IS strategic planning process. This focus is about strategic analysis, competition and integration.

- *Strategic analysis:* with the new trend of X to be a private company and the transfer of the IT function to a sub-company, a new strategic trend of analysis is required. This analysis stage may support X in identifying its new environment both internally and externally. Nevertheless, it may also help X to identify core business processes and how can IT contribute to them successfully.
- *Competition analysis:* as mentioned earlier, with new competitors in the national arena and the improvement of competitors in the international dimension, X seeks to re-position itself both nationally and internationally. The IT strategy needs to parallel X's vision of the competition in order to understand how it can support this changing competitive environment.
- *Integration analysis:* as mentioned in both the strategic analysis and competition analysis, X is moving into new a stage with its strategic planning. This move needs to consider the contribution of the IS/IT strategic role. Collaboration between the core processes, sub-

companies, sub-business units and different departments is required. These collaborations need to consider all levels including data, applications and systems of IS/IT integration.

There are more strategy focuses in X, but the researcher is concerned with the strategic focus that relates to IS/IT strategic planning. So, when the ISP was asked to explain, 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, you outsource whenever it is possible. Second, you need to reduce the process of internal development in the rudimentary solution, to utilise it as much as you can. Third, never mind delay, but we must meet the deadline in the right way.'*

It appears that X had problems in understanding and applying the IS/IT strategic planning techniques. X has more experience with strategic analysis focus than competitive and aligning focuses. Nonetheless, there is confusion in applying different techniques in different situations as needed, and there is a weakness in considering strategic planning techniques in the aligning strategy focus. Table 5.4 shows a summary of the evaluation of strategic analysis techniques for X.

		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.
	Aligning	Benefit level matrix, strategy set transformation, stage of growth.

Table 5.4: Summary of the evaluation of IS strategic adoption techniques at X airlines

From this summary it appears that X lacked skills for applying strategic planning techniques for its IS/IT activity. Consequently, obtaining support from a consultancy experienced with applying strategic planning techniques for IS/IT was required. The master plan noted some methods such as development life cycle. It also mentioned some tools such as information flow for process redesign (these methods and tools were considered in Chapters 2 and 3). All these methods and tools were suggested by consultancies. Understanding applying strategic planning techniques is important in the whole process of planning, because of different situations from time to time and from one level of planning to another. As mentioned in Chapter 2, there is no single format for designing strategy, given the differences between organisations, environments, culture and available resources. These planning techniques help planners to be aware of all strategic planning issues. Different interviewees have different views of these techniques. Some of the interviewees had no idea about these planning

techniques and others had very limited information about them. This led X to design a master plan. This is general and comprehensive IS/IT plan. This plan is concerned with criteria that support evaluation technology suppliers. It is a plan for outsourcing. Thus, X sought consultants who had experience in conducting such an evaluation. However, X itself needs a team who understand the requirements, drivers and benefits of IS/IT strategic planning to deliver this information to the consultancy team and work alongside it.

5.1.5.1 The Proposed Framework for Evaluation of the Strategic IS Techniques

As proposed in Chapter 3, the framework for evaluation of SISP techniques was considered to evaluate the assessment of SISP techniques from the viewpoint of different stakeholders. Because it was very difficult to interview most of X's stakeholders, the interviews considered those stakeholders who adopt, evaluate and implement SISP techniques in X, as explained in Chapter 4. The review of the SISP criteria from interviewees' insights (ISP, ERP, IP, CIS, GNP) is explained in the IS impact Section (5.1.4). These procedures consider the benefits, requirements and drivers of SISP process evaluation in the following sections.

❖ **Requirements**

Requirement	ISP	ERP	IP	CIS	GNP
Communication maturity	●	●	●	●	●
Competency/value measurement maturity	●	⊙	●	⊙	●
Governance maturity	⊙	●	●	●	●
Partnership maturity	⊙	●	●	⊙	●
Scope and architecture maturity	●	⊙	●	●	⊙
Skills maturity	●	●	⊙	●	●
Senior management support and commitment	●	●	●	●	●
Good working relations	⊙	⊙	●	●	●
Strong leadership	●	●	●	●	●
Appropriate priorities	●	●	●	●	●
Trust	●	●	⊙	●	●
Understanding the business	●	●	●	●	●
Understanding technical environment	●	●	⊙	●	●
Understanding both internal and external environment of organisation	●	●	●	⊙	●
Planning process flexibility	●	⊙	●	⊙	●
Adaptable planning model and process	●	●	●	⊙	●
Other –business strategy	●	○	○	○	○

Table 5.5: Strategic IS adoption requirements from interviewees' insights regarding X

Table 5.5 illustrates the fact that there are some similar views between the interviewees and some differences, but interviewees tend to agree regarding SISP requirements. Most of these requirements are considered to be of high importance within the X planning process. The differences between the interviewees' insights are due to competency measurement maturity, partnership maturity, good

working relations and planning process flexibility. As the GNP said when he was asked about partnership maturity, '*In the past relationships were short. Now there are long-term relationships*'.

Regarding governance maturity, the interviewees had different views. GNB ranked it as highly important, whereas ISP ranked it with medium importance. GNB explained his answer about governance maturity as follows: *'"T"' Consultancy Company, for example, must be in place to coordinate work between us and other administrations or companies'*.

Other requirements such as communication maturity, senior management support and commitment, strong leadership and understanding the business were agreed by all the interviewees as being of high importance.

The business strategy was suggested by interviewees to be SISP process requirements. These requirements were considered in the literature review (Henderson and Venkatraman, 1999; Morgan, 2002).

- **Benefits**

The interviewees were asked to verify the benefits of implementing the SISP process. The integration planner (IP) stated that:

> *'In general the benefits of strategy are more related to the business than with technology. IT technology has relationships with competitive advantage, the market share and improving customer satisfaction. This is where IT concentrates. The idea of hardware and software is tactical.'*

He also mentioned that:

> *'The aim of the overall system integration project is to be completely sure that all applications concerning IT are properly connected, that they transmit information amongst these systems without involvements or gaps and that they use the best technologies in this field or what is known as the enterprise service architecture which will be special for new IT in installing systems perfectly and globally. Previously, communication between systems was immediate. If I needed information I asked for it directly. If you have 10 systems you've to make10 programs so as to make the information available. Now the information transmits to media wave bus which conveys it. We attempt to apply this new system concept and technology.'*

This was also agreed on by all the other interviewees.

A summary of interviewees' comments about the benefits of SISP is presented in Table 5.6. These benefits were classified as strategic analysis, competitiveness and integration. From Figure 5.6 the following conclusions can be drawn:

- ***Strategic analysis benefits of X***

Table 5.6 demonstrates that there are similarities and differences in the interviewees' views, but the similarities mostly concern SISP benefits. Most of these benefits are considered to be highly important within X's planning process. The most significant differences are between the GNP and other interviewees and are about coping with improving an open culture in the organisation, increasing productivity of employees, interface and support of different organisational levels and supporting reactions to change.

- ***Competitiveness benefits of X***

It can be seen from Table 5.6 that there are similarities in the interviewees' views about the competitive benefits. The differences are more concerned with SISP benefits, where there is a clear difference between the GNP and other interviewees' views. Most of these benefits are considered to be of high importance within X's planning process. Although the GNP ranked all the benefits between medium and low importance, most of these benefits were ranked with high importance by other interviewees. In this category, the only benefit of supporting innovation ranked with low importance was from the IP, whereas other interviewees ranked it with medium importance.

- ***Integration benefits of X***

In this category of benefits, there are similarities in the interviewees' views as Table 5.6 shows. The differences are more to share concerning to integration benefits are clearly different between most the interviewees' insights. Most of these benefits are considered to be medium and low importance within X's planning process. Although most of the benefits ranked between medium and low importance, creating standard benefits ranked with high importance from most of the interviewees.

Strategy focus	Strategic Benefit	ISP	ERP	IP	CIS	GNP
Strategic Analysis	Support decision-making process	●	●	●	●	⊙
	Increase organisation efficiency	●	●	●	●	⊙
	Improve open culture of organisation	⊙	⊙	●	●	○
	Enable users	●	●	●	●	⊙
	Increase productivity of employees	●	⊙	●	●	○
	Support coordination of work	⊙	●	⊙	⊙	⊙
	Reduce cost	●	⊙	●	●	⊙
	Interface and support different organisational levels	⊙	●	●	⊙	○
	Improve growth and success	●	⊙	●	●	⊙
	Create new strategic opportunities	●	●	●	●	⊙
	Increase quality	●	⊙	●	●	⊙
	Offer new strategic options	⊙	●	●	●	⊙
	Support reactions to changes	●	⊙	●	●	○
	Support organisational teamwork	●	⊙	⊙	●	⊙
	Increase organisation effectiveness	●	●	●	●	⊙
	Support collaboration and sharing information	●	⊙	●	⊙	⊙
Competitiveness	Develop/produce new markets	●	⊙	⊙	●	○
	Develop/produce new products/services	●	●	●	●	○
	Obtain competitive advantage	●	●	●	●	○
	Increase organisation competitiveness	●	●	●	●	○
	Display market leadership	●	⊙	●	●	○
	Support innovation	⊙	⊙	○	⊙	⊙
	Increase customer services and satisfaction	●	⊙	●	●	⊙
	Become a leader in new technology	⊙	⊙	⊙	●	○
	Improve the relationship with customers	●	⊙	●	●	⊙
	Enhance competitive advantage	●	●	●	●	⊙
	Improve market share	●	⊙	●	●	⊙
	Become responsible locally (markets, government)	●	●	●	●	⊙
Aligning	Integration of IS strategic plan with business strategic plan	●	●	●	●	⊙
	Improve the relationship with suppliers	●	●	●	⊙	⊙
	Improve resource control	⊙	⊙	⊙	⊙	○
	Integrate or become independent of IS function	●	●	●	⊙	⊙
	Improve global efficiency	⊙	⊙	●	●	○
	Support global organisation	⊙	●	●	●	⊙
	Attain global alliances	●	⊙	●	●	⊙
	Improve resource creativity	⊙	⊙	○	⊙	○
	Improve resource flexibility	⊙	⊙	⊙	⊙	○
	Improve resource learning	⊙	⊙	●	⊙	○
	Create standards	●	●	●	●	⊙
	Improve knowledge	⊙	●	●	⊙	⊙
	Compose by integrating smaller systems	⊙	⊙	●	⊙	⊙
	Support learning transfer	⊙	⊙	⊙	⊙	⊙

Table 5.6: A summary of interviewees' views about the benefits of strategic IS adoption in X

❖ **Drivers**

Table 5.7 reviews SISP drivers from interviewees' responses (ISP, ERP, IP, CIS, GNP) as the interview agenda shows (Appendix B). These interviews were based on the proposed framework presented in Chapter 3. This framework for evaluation of SISP techniques was considered to evaluate the assessment of SISP techniques from the viewpoints of different stakeholders.

Driver	ISP	ERP	IP	CIS	GNP
Users politics	⊙	●	⊙	●	●
Time	●	⊙	●	●	⊙
budget and cost	●	⊙	●	●	●
IT architecture	●	●	⊙	●	●
Business process (cost, time, effectiveness)	●	●	⊙	⊙	●
Executive skills and commitment	●	●	⊙	⊙	●
Global business &geographical spread	⊙	●	●	●	⊙
Nature of the organisation	⊙	⊙	●	●	⊙
Importance of IS	●	●	●	●	●
Organisation situation	⊙	⊙	●	●	●
Joint resources	⊙	⊙	⊙	●	⊙
Risk reduction	⊙	⊙	○	⊙	●
Global products/services	●	⊙	●	●	⊙
Quality	●	⊙	⊙	●	●
Suppliers	●	⊙	○	●	⊙
Corporate customers	●	●	○	●	●
Other – skills	●				
Other – Infrastructure	●				
Other – technology trends					●

Table 5.7: IS strategic adoption drivers from interviewees' views in X

There are some similar views between the interviewees and some differences as is shown in Table 5.7, but most of these drivers are considered to be of high or medium importance within X's planning process. So far, the main difference between the interviewees' views is coping with so many drivers such as time, user politics, suppliers, and corporate customers. As the IP said when he was asked about the time:

> *'Time is very important in the process of planning, and we are struggling with time. We have a ceiling under which we move and we do not have an open time frame. The CEO has sent messages to all sectors of the company that we have to be a private company by the year 2010. This means that we've a very challenging time frame.'*

The GNP said about the time: *'Making a system takes time. To have a fully integrated system meeting the purpose you've not to speed up'*.

Regarding risk reduction as a driver, the interviewees had different views on this. ISP, ERP and CIS ranked it as of medium importance, whereas GNP ranked it with high importance. Meanwhile, IP ranked it with low importance. IP explained his answer about risk reduction as follows:

> *'Projects want to take risks. The trend is that they are becoming risk takers. The risk is not high priority. To take risks is dangerous. It means a complete change of the reservation system, complete change in aviation and labour system, complete change in*

human resources system and complete change in maintenance system at the same time. Yes, it is risky, but this is not a consideration.'

All the interviewees were agreed about the importance of IS as a driver with high importance. Other drivers such as skills, infrastructure and technology trends were suggested by interviewees to be considered as SISP process drivers.

❖ **Requirements vs strategic focus**

After considering the benefits, requirements and drivers of SISP, the interviewees were requested to evaluate the techniques of SISP, applying the strategic focus categories of criteria classified in Chapter 3. Table 5.8 shows the interviewees' views regarding SISP requirements to assess SISP techniques. The author has used the Miles and Huberman (1994) scales with its rankings of high importance (●), medium importance (⭘) and low importance (○), because there are three levels of importance in describing SISP requirements within X. The empty cells indicate that there is no available information from the interviewees.

Requirement	Strategy focus											
	Strategic analysis				Competitiveness				Aligning			
	ISP	IP	CIS	GNP	ISP	IP	CIS	GNP	ISP	IP	CIS	GNP
Communication maturity		●	●	●	●	●	●		●	●	●	
Competency/value measurement maturity		●		●	●	●		●		●		●
Governance maturity		●	●	●	●	●		●	●	●	●	●
Partnership maturity		●		●	●	●			●			
Scope and architecture maturity		●	●		●					●	●	●
Skills maturity	●	●	●	●	●	●	●		●	●	●	●
Senior management support and commitment	●	●	●	●	●	●	●		●	●	●	●
Good working relations		●		●		●	●	●	●	●		●
Strong leadership	●	●	●	●	●	●	●	●	●	●	●	●
Understanding technical environment	●	●	●	●	●	●	●	●	●	●	●	
Understanding both internal and external environment of organisation	●	●	●	●	●	●	●	●	●	●	●	●
Planning process flexibility		●		●	●	●	●	●		●	●	●
Adaptable planning model and process		●	●	●	●	●				●		●

Table 5.8: strategic IS adoption requirements to assess IS strategic techniques from interviewees views of X airlines

Although the connection between the strategic focus and the SISP requirements is one of the criteria for evaluating SISP techniques for X, not all the interviewees were able to complete this task. The ERP (who only redirected this task to ISP and all other stakeholders) was the only one to not complete the task. So, Table 5.8 presented the connection between the strategic focus and the SISP requirements of X.

- ***Strategic analysis focus vs requirements:***

From Table 5.8 it can be seen that there are some similarities and differences between the interviewees' views. Most of these views give a ranking of high importance. Even though most of the interviewees' views were different, they were all agreed on some requirements such as skills maturity, senior management support and commitment, strong leadership, understanding the technical environment and understanding both the internal and external environment of the organisation. Nevertheless, the ISP considered these requirements only in this focus, whereas other interviewees considered most of the requirements.

- ***Competitiveness focus vs requirements:***

Interestingly, both the CIS and GNP did not consider some requirements such as partnership maturity, scope and architecture maturity and adaptable planning model and process in this focus, whereas other

interviewees considered most of the requirements. The scope and architecture maturity as a requirement was only considered by ISP in this focus. The similarities between ISP and IP were obvious in most of the requirements.

- ***Aligning focus vs requirements:***

Despite the fact that most of the interviewees' comments were similar as regards some requirements, they were all agreed on some requirements such as governance maturity, skills maturity, senior management support and commitment, strong leadership, and understanding both the internal and external environment of the organisation as of high importance. Nonetheless, IP, CIS and GNP did not consider partnership maturity, whereas ISP considered it to be of high importance.

❖ Drivers vs strategic focus

The interviewees were required to evaluate the drivers of SISP applying the strategic focus categories of criteria classified in Chapter 3. Table 5.9 shows the interviewees' views concerning SISP drivers to assess SISP techniques.

Driver	Strategy focus											
	Strategic analysis				Competitiveness				Aligning			
	ISP	IP	CIS	GNP	ISP	IP	CIS	GNP	ISP	IP	CIS	GNP
users politics	●	●	●			●				●	●	●
Time		●	●	●	●	●	●	●	●	●	●	●
Budget and cost	●		●	●	●	●		●	●	●		●
IT architecture	●	●	●	●	●		⊙	●	●	●	●	●
Business process (cost, time, effectiveness)	●	●		●	●	●	●	●	●	●	●	●
Executive skills and commitment	●	●	●	●	●	●			●	●		●
Global business and geographical spread	●	●	●		●	●		●	●	●		
Nature of the organisation		●	●	●	●	●			●	●		●
Importance of IS		●	●	●	●	●	●	●	●	●	●	●
Organisation situation	●	●	●	●		●	●	●		●		●
Joint resources		●		●		●		●	●	●		●
Risk reduction	●	○	●	●		●				●		●
Global products/services		●	●		●	●		●		●		
Quality	●	●	●	●	●	●		●	●	●		●
Suppliers	●	●	⊙	●	●	●		●	●	●		
Corporate customers	●	●	●	●	●	●		●	●	●		●

Table 5.9: Strategic IS adoption drivers to assess IS strategic techniques from interviewees views of X airlines

While the connection between the strategic focus and SISP drivers is one of the criteria for evaluating SISP techniques in 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). Table 5.9 shows the connection between the strategic focus and SISP drivers of X.

- ***Strategic analysis focus vs drivers:***

From Table 5.9 it can be seen that there are some similarities and differences between the interviewees' views. Even though most of the interviewees' views were different, they were all agreed on some drivers such as executive skills and commitment, organisation situation, quality and corporate customers, to which they gave a high importance ranking. Even so, IP gave risk reduction a low importance ranking, while all other interviewees gave it a high importance ranking.

- ***Competitiveness focus vs drivers:***

Once again, it can be observed from Table 5.9 that there are some similarities and differences between the interviewees' views. Most of these factors were given a high importance ranking. Although, most of the interviewees' views were different, they were all agreed on some drivers such as time, business process and the importance of IS. Nevertheless, only IP considered both user politics and risk reduction to be of high importance ranking in this focus. The IT architecture as driver was considered by CIS to be of medium importance ranking in this focus.

- ***Aligning focus vs drivers:***

Here again, there are some similarities and differences between the interviewees' views, as Table 5.9 shows. Most of these views give a high importance ranking. Despite the fact that most of the interviewees' views were similar in some drivers, they were all agreed on some drivers such as time, business process and the importance of IS, which were ranked as having high importance. However, IP, CIS and GNP did not consider suppliers, whereas ISP considered it highly important. Also, both CIS and GNP did not consider the global business and geographical driver, when ISP and IP gave these factors a high importance ranking. Nevertheless, IP was the only one who considered global products/services as highly important.

❖ Techniques vs strategic focus

After considering the benefits, requirements and drivers of SISP vs strategic focus, the interviewees were requested to evaluate the techniques of SISP, applying the strategic focus categories of criteria classified in Chapter 3. Table 5.10 shows the interviewees' views concerning SISP techniques. The author has used the Miles and Huberman (1994) scales with its rankings of high importance (●), medium importance (⭘) and low importance (○), because there are three levels of importance in

describing the techniques of SISP within X. The empty cells mean that there is no available information from the interviewees.

Technique	Strategy focus					
	Strategic analysis		Competitiveness		Aligning	
	ISP	IP	ISP	IP	ISP	IP
SWOT	○	●		●		●
Opportunity categorising	●			●		
Strategic importance matrix		●	●			
Benefit level matrix	●	●		●	●	●
5 forced model	○			●		
Generic business strategies	●	●		●		
Information intensity matrix	○	●		●		●
Impact categorising	○	●		●		●
Industry analysis	○	●		●		
Strategic thrusts			○			
Strategy set transformation		●		●	○	●
Business modelling	●					●
Critical success factors		●	●	●		●
Critical set analysis	●					
Lateral thinking			○			
Business systems planning	○	●	○			●
Scenario planning	○	●		●		●
Case-based reasoning	○					
Cost-benefit analysis	●					
Balanced scorecard analysis	●					
Process analysis	●					
stage of growth					●	

Table 5.10: strategic IS adoption focus to assess IS strategic techniques from interviewees views of X airlines

Although the connection between the strategic focus and SISP techniques is one of the criteria for evaluating SISP techniques for X, most of the interviewees did not complete this task. Only ISP and IP completed the task. Table 5.10 presents the connection between the strategic focus and SISP techniques of X.

It is obvious that the outcomes show that there is a difficulty considering all the evaluation criteria using a single technique. The organisation should consider all the evaluation criteria in combination instead of separately in the evaluation of SISP techniques, as has been shown through the analysis sequences.

The interviewees stated their awareness on the grouping of the evaluation criteria of SISP techniques as comprehensive. They mentioned that it provided a valuable proposed framework which could power decision-making for the adoption and implementation of SISP techniques by improving the

understanding of the evaluation criteria for SISP techniques by the planning team. Indeed, some of the interviewees asked to keep a copy of the interview agenda and to deliver the recommendations of the case study to them. As ERP mentioned when he was asked to add any benefits, requirements or drivers, he answered: *'What we have discussed is comprehensive'.*

5.2 Case Study Two (Y bank)

In this section considers of the X airlines (case study 1) description, analysis and report presented.

5.2.1 Background to the Organisation

In 1975, the Y bank was established as an international financial institution. It now has around 1,000 employees in total. Y bank has around 56 international members. The group consists of a corporation for the development of the private sector, a corporation for insurance of investment and export credit, a research and training institute, an international trade finance corporation, and world 'W' foundation. The main objective of the Bank is to encourage economic development and social progress of its partners. Its main activities are financing public and private sector projects, trade operations, technical assistance for project development and ability building delivered by Y. It has been called *Y bank* here to maintain confidentiality.

5.2.2 Background to Strategic Information Systems Adoption Problem

Y believes that the right data is a critical resource for any strategy, because without the correct information, an organisation would just be writing literature, since the strategy seeks to establish high-quality parameters which the organisation can use to implement its strategy. For example, if Y bank was to prepare its strategy now in an unsystematic way, then Y would consider it had not developed a strategy. So Y has to ensure that it has a system that is reliable for its future plans. In the case of Y, there are some issues because Y does not have integrated systems. Its systems have been provided by a supplier. For instance, if a loan is supposed to be paid by Y, the moment the loan is paid by the finance department, all the accounting entries are generated, but the rest of the contents are not updated. Therefore, Y does not have a good and reliable information system, and to have a good reliable information system Y has to develop the framework within which it describes its requirements: what does Y need now and in the immediate future? Once Y can define that, it can evaluate what kind of tools, software or mechanisms it should consider in order to develop the system. This was supported by CIO interviewee when he was asked to explain the process of developing strategy, and he said:

> *'The bank used to have strategic planning, but it wasn't as detailed and comprehensive as the IT strategy. One of the challenges is to get the right thing to do, the plan to the team and after that to get the plan as presented to the management, and then to get the plan as presented to the board. The other thing is the success of the plan. It is a challenge by itself.'*

Y believes that it cannot consider IS without an innovation strategy. That is why all its initiatives concerning developing structure are an ongoing process. Innovation applies the parameter of competition. The company which is not innovating by investing and developing will lose competitiveness, and sooner or later will go out of business. The CIO interviewee explained this by giving the following example:

> *'Take the car market for instance, twenty years ago nobody would have said that the Japanese car would rival the US car. In ten years many markets will be looking for Chinese products. A few years ago, Chinese products were not market leaders. Now their products are competing in the digital markets.'*

One of the main challenges for the bank is the acceptance of using new technology. If employees are used to working with certain processes, that may create problems when Y develops new ones, as employees may persist because they are used to the old processes. When there is a new technology, Y has been uncertain whether to change completely from one technology to another, but this is one of the important factors of any IT planning. Y has to manage the changes, to consider the users and explain the benefits to them.

Y thinks that the costs of IT projects are extremely high. Real cost evaluation is needed; otherwise, the costs will be unexpected. Y started an IT plan at a cost of nearly 8 million dollars. The IT was established by outsourcing with a regional supplier. Two years later, when the supplier was unable to continue, Y stopped the project and started another project. Y estimates the difference in two years could be between 25–29 million dollars.

The CIO reported that when he was asked to explain the cost factor in more details he mentioned that, Y started its IT project at a projected cost of 29 million dollars. Its earlier supplier had made proposals that could not be resourced at a price Y was willing to pay. Then a consultant (F) was hired by Y from abroad at a cost of at least 1,000 Euros per day. If Y hired 25 consultants for a year, the cost would run into millions. All the numbers which IT predicts about resources will increase in the future. Hardware is now widely available and cheap, but some systems are expensive. One system may cost IT three million dollars altogether. But planning must take account of this because the price of

systems is rising. Soon the allocated amount will not suffice for ongoing projects. So, when estimating, Y needs to consider the future as well as the present situation. It needs to evaluate the cost estimate accordingly; what were the costs a year or two ago and what will they be in be in five years' time? Then IT will approach the real cost. The scenario which was costing 25 million dollars is not going to meet Y's requirements and IT is going to ask for more money. Most planners do not pay sufficient attention to this point. At the same time, it is almost impossible to predict IT after three years, nor what will happen in two years.

5.2.3 Motivation for Strategic IS Process Adoption

Y believes that strategic planning is necessary and cannot work without strategic planning. There must be planning to cope with change for up to five years, as well as one- to three-year horizon planning. Y considers strategic planning as essential because of the changes in technology and change in people. This research considers the international business domain, the requirements of global business motivation, IS integration motivation and IS impact motivation, within Y bank.

5.2.3.1 Global business and IS strategic adoption

Y believes that an institution like itself with diverse clients, expansion plans, and other challenges cannot survive without positioning itself strategically. So, to survive, it is critical to understand what kind of services should be provided, what different resources are available, how Y plans to develop in the context of the business, and draw all these plans together in Y over different countries. So Y needs to position itself; it has to be strategic. Nevertheless, Y is the only institution that works on 'S' (a religious role) in its sector and is the leader in that area. But if Y wants to continue to be the leader in this sector, it cannot do it without a strategy even if 'S' is monopolised by Y as described by the AP.
In the global sphere, Y's plans are different. There is knowledge transfer, new technologies, competencies, different environments, but Y has limited planning resources. Also, in terms of challenges, Y cannot work alone. Not all member countries are goals for Y alone. Its organisation in Africa, for example, deals with the African Development Bank and the one in Asia deals with the Asian Development Bank. There will be different ways of doing business. There will be a lot of coordination that has to be done, and this requires enormous resources. When its resources are scarce, Y will have difficulty focusing on all these projects. That is because a lot of activities are not integrated. So this will be a global difficulty for Y. The other issue might be logistical: the way Y operates. There will also be difficulties in terms of good staff. This is not easy because it is an area where there is huge demand for highly skilled staff. It is a difficulty because of the geographical location of Y. Even if Y employs staff from other countries, this will be difficult to sustain. The other part is unlike the rest of the institutions. That is because in all the institutions—World Bank, African

Development Bank, Asian Development Bank—there are non-regional members like the United States and Europe. It is tendency for these countries to provide financial support, but the majority is already poor. There are always limited resources. However, compared with others, Y is still a young institution with many issues to consider in its strategic plan. The DDP expresses this as follows:

> *'We are opening branches all over the world . . . . If you need more harmonisation, for example, it's easy for an organisation to do so, because countries themselves, the members have to do that. So you have to develop on your own until you have the capacity to do that. If you want to grow IT you must have IT.'*

Y has its objectives, so the mechanisms Y applies will have outcomes. Y manages the directive and IT considers the results, thus Y depends on and influences by these results. Consequently Y has its quantitative benchmarks against which it can assess what it does. Likewise, for IT if Y stated to deal with its financial area and operation area, there are different benchmarks. Y considers that it has very clear plans which change in timeline any budget if it desires to have a performance function system. Project management is an example to look at all these areas of functions and Y is not on time, Y can miss one or two targets. Subsequently Y strategic milestone is the benchmark. Its Y guide for performance the DDP mentioned. As mentioned in Chapter 2, the assessment of progress in the strategic adoption of IS/IT is required to understand the IT capabilities and situation and how IT can be fit to the organisation's situation.

5.2.3.2 Strategic alignment and IS strategic adoption

The alliance is based on partnership as Y believes; because all these banks (development banks) have discovered that none of them can work alone. Y can only do it through partnerships. Y has to build relationships with partners on the ground. The ICON described this as follows:

> *'This is the way we operate. You've got to harmonise policies or procedures – that you cannot just do easily. Sometimes we have common institutional arrangements with African, Asian and US development institutions. These things are always done using technology. We also have the same – for example, a country database. It is based on the database of the World Bank. It has a format which uses IT.'*

Internally, Y has to adapt its structure, because different sets of IT require different types of organisation. Y has to look at the best economic structure which can help it test its IT strategy. Y also has to adapt it staffing policies, and it also has to acquire a system of the highest standard. Lastly, its clients expect to get timely information. It is critical that IT provides information in the best way so

that in the end Y will be able to assess its improvement. Y positions itself whenever it sends a payment to client, whenever clients ask Y for a statement of a loan. Then IT will notice a link between Y's strategy and the output in the service IT provides to clients.

It also reported by the CIO that Y believes that it is necessary to use different technical support such as wireless technology. The use of technology is very important in terms of communications such as reporting. The Y bank presents its annual report to more than 22 countries and this includes planning and forecasting. This explains the integrating report systems and the need for decision support systems for managers to improve the efficiency and effectiveness of the business process as mentioned in Chapter 2.

IT in Y as an administrative activity does not see any movement in the country (where the head office is located) in terms of strategic planning movement for technology, as the CIO interviewee said: *'There are no workshops telling us where IT is going in economics'*.

This is where the national culture[5] can contribute in organisational strategic planning. For example, educational planners state that by 2020 every student in the country should have a laptop. That is a kind of delivered planning. It does not contain real planning and it contains no real strategy, as the interviewee explained. A very important aspect of strategy is that administration must adopt the plan. All the technology staff have their views about the national plan. Another explanation given by CIO is population. He said:

> *'Now as soon as you join the International Trade Organisation you lose. That is because all our industry is built on a weak labour system. If Europe and America together cannot match China, are we going to compete in similar industries? Therefore, the Investment Institution has included petrochemicals in the strategic plan and focused on communications and transportation, not on the industry of cars or tanks. What have they done?'*

He also mentioned:

> *'Another thing, in strategic planning, the state must be international. The story of privacy is not successful at all. The economy must be great, and open, in order to support the population. Our population is now X millions. The country must be opened up. We also*

[5] National culture is the culture for one country, so, it is different from one country to another. There are many factors such as legal systems, language, values, education, political systems and religion that affect the national culture (Mullins, 2005).

have a global source of power and therefore we must be international. The strategic planning is basic and important. I cannot look into departments and ministries, but I don't see any output: there is no workshop on strategic planning. If you look at the issue comprehensively, you will discover a lot of things in companies, the state or society. All these things interact in the issue of strategic planning. In X country where the bank is, there is a strategic planning office at the ministry of planning, but I don't know whether it applies such plans or not.'

When Y carries out strategic planning, IT considers the organisation's plans, its place, its products and strategies. The aligning process normally continues throughout the lifespan of the plan. It must also be adaptable, because the organisation can change its focus in the middle of a plan. For example, there is a new company: the Trade and Funding Firm (a new organisation in the Y group). This was not in the current plan. The plan must be adaptable to serve the organisation. All these things must integrate together in a system.

5.2.3.3 Customer orientation and IS strategic adoption

The DDP explained the relationship between the IT and other business activities in Y by saying that understanding the customer is crucial. Y cannot operate with services which are not for immediate sale. When IT does a finance project for Y, the moment a contract is signed, this project for Y will be financed with, say, 20 million dollars. IT has to issue the bids, issue the tender and hire the contractors. IT has to build, control and report on bids. So it is a direct and long-term relationship. From the time the project is approved to the time IT has finished implementing may take several years. This type of relationship is an important requirement to adopt strategic IS/IT in order to build trust between different business activities so they can work with each other effectively. This leads to more integration between the IT and business.

5.2.4 Strategic IS Process Adoption

Y supports its members as developer. For example, if Member1 needs to buy a project from Member 2, Y can cover the amount of money for the project. If Oil 1 (Oil organisation) desires to sell one - million - raw of oil's gallons to Member1, which needs to sell rubber, and Oil 1 is supposed to buy the rubber from Member1 but does not have the cash, Y can finance it. In short, Y's role is to finance the development. Development is its main activity, as well as trade generation. So, the strategic process of doing the business in Y needs to be flexible in order to meet different projects as well as different countries. This was mentioned in the literature by Laudon et al. (2004) and Ariyachandra et al. (2008)

as planning process flexibility and adoptable planning model and process requirements for IS/IT strategic adoption.

Therefore, Y has to put a value on its vision by asking 'what' and 'why' questions. Some of these questions are interrelated. If Y has vision and objectives, then it can develop its strategy. The process of strategy considers the internal processes. They are inclusive processes, because they are inter-departmental processes. Once the board of directors presents the guidelines, management develops the strategy, which is coordinated by its strategic planning department if it is considering an overall strategy for the bank. There is a cycle of different steps considered by the strategic planning department. Figure 5.6 presents the IT strategic adoption process in Y, as the strategic plan document supports the process as explained by the interviewees.

Figure 5.6: The IT strategic adoption process in Y (source: strategic document from Y)

Y believes that its IT Strategic Plan was based on the strategic objectives of the Y Group and the long-term objectives of each business unit. The plan considers all Y Group Members, and its moderately challenging scenario includes acquiring, customising/developing 33 systems over the next five years (of which three are already in progress), in order to build a robust IT environment. These systems may be categorised as Core Business Systems (18 systems), Performance & Strategic Management Systems (three systems) and Support Systems (12 systems). As shown in Figure 5.7**,** the identified IT systems will be implemented based on a phased approach. Each phase is built to set a certain layer within the whole IT environment. The following phase (and related layer) is then built on top of its predecessor. *Based on that phased approach, the phases are identified as follows (resource: IT strategic document):*

1. Standardisation of Hardware (HW) and Software (SW) Platforms.
2. Build Integrated Pillar Business Systems (including Core Business and Support Systems).
3. Implement Enterprise Strategic Planning Systems.

4. Implement Information Sharing and Collaboration Systems.
5. Implement E-Business & Knowledge Management Systems.

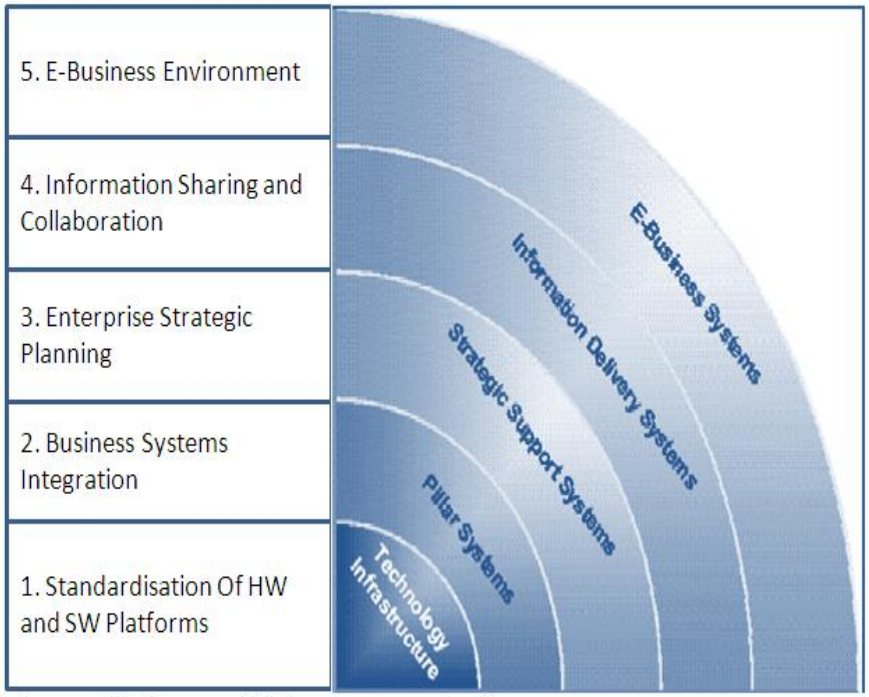

Figure 5.7: Layers of IT environment in Y

There is always planning in Y bank. This was normally an annual process. However, more recently Y decided to work on a five-year plan. Y is now in the last year of this plan. This year Y started to formulate another plan for the coming five years. Y considers that its difficulties are similar to IT planning everywhere with the rapid improvements in technology, so, the vision is limited. Some organisations plan for three years. That is because a lot can happen in one year. Currently, Y has decided to adopt both five-year and three-year plans. Among the difficulties are resources and planning the marketing process. The IT strategic adoption which started five years ago is described by the CIO interviewee as follows:

> *'There wasn't a process before then. We started the process and we did an analysis. After that we identified the opportunities, how you capitalise on the strengths, how to protect ourselves, how to get the data.'*

IT believes that Y's strategic business processes are developed in three areas as described by the AP: operational, financial, and corporate. In the corporate area, Y has human resources, administration and so on. So each area has its own process. In the case of Y, operations deal with projects and so they are what may be called one unit in the relationship. Because Y supports its membership with development

projects as one of its main objectives, a member can identify a project, then initiate three to six steps within the planning process and then go for implementation of the project. These processes include identification, preparation, technical assessment, economic, and financial assessment. Then Y has to approve the project and to finance it as agreed by the board of directors. Then Y starts implementation and realises the project on the ground. Then the project goes into a post-implementation phase to review it, and establish if the reality matches the theory. This is how Y evaluates projects. In general it is an operational process. It takes place at a high level through several departments. Y has the treasury, which manages the cash and the relationship with the financial world, the banking, and the rating agencies. This is how a financial project operates. At the time of implementation, all the payments due to Y will be generated. The payments have to be processed while they have to manage the finance resources of the bank.

Y has in the same finance complex the finance department, which involves the accounting and the financial movement, and the budget. The budget is crucial in the strategy planning. Now, there are accounting and finance budget as well as planning and strategic department. So the link at this strategic planning department is three to five years. In this time of three to five years, IT intends to plan, generate and acquire resources: internal resources and external resources. To use these resources in order to finance legally, Y retains this number of staff in different areas. So Y has the finance resources, operational objectives, human resources, and the project support resources. This explains the matter of the complex. Then Y has the last area, which is the corporate side which deals with human resources, equipment, training, development, and performance. All these activities are under the big umbrella of what it calls the vision. Thus, IT still has levels to improve in terms of strategy, in terms of operation, in terms of alignment, and in terms of scaling this activity.

The DDP stated that the plan is not fixed. It changes every year. For example, IT believes that Y has advanced technological infrastructure, but needs to know how to capitalise on it, how to serve the organisation. IT considers the requirements, thinks about how to achieve them, states strategic objectives, the information technology, and detailed objectives, and finally IT identifies the cost. It is a plan for many projects, over many years, and IT states the cost according to the time line. One of the projects which IT planned estimated its cost at 7 million dollars. Then IT devised three or four scenarios to give options to the administration. The second scenario cost 11 million dollars. The third scenario will cost 9 million dollars. Yet another will cost less, only 7 million dollars. Then IT discusses the measurements: how does IT measure its progress, the operational course, and hardware/software requirements. Basically, it is a balanced scorecard. Every year Y modifies it.

The SWOT (strengths, weaknesses, opportunities, threats) strategic analysis technique is the basis for every process as it is reported in the IT strategic plan document. CIO in Y believes:

> *'If you don't have SWOT, you cannot plan for anything. It is the basis for any planning in which you consider the weaknesses, strengths and threats. You cannot do any strategic planning without SWOT analysis, then you identify where you want to go and plan the strategies that will enable you reach your goal. Among other things, there is the opportunity, categorising, and so on. Years later when you identify weaknesses, you must create strategies to remedy them, you must capitalise on the strengths and increase them. Secondly, you must protect yourself from competition, from outside threats. Finally, if there are opportunities which you cannot exploit, think how to make use of them.'*

This implementation cycle means a complete plan. The most important thing is how to involve strategic planning methods, techniques and tools to complete the process and how to avoid the theoretical side for the operational side. Y can bring a number of the organisation's directors and advise them about any weaknesses. They may point out 200 to 300 weaknesses. Clearly, IT cannot deal with all these. Indeed, some of these may involve personal issues which are outside the system. Some are about parity and equity. IT believes that when considering weaknesses, they must be objective. However, most of the literature about strategic planning is theoretical not practical. Suggestions must be serious and capable of implementation. For example, sometimes the bank is unable to hire consultants because of the entry visa system of the country. Should IT appoint unqualified persons or should it appoint people without a visa? These are the sort of everyday occurrences that are not easy to resolve. IT tries to solve them and suggest solutions. As a result SWOT analysis is the basis of planning. It helps Y to position itself. In a SWOT analysis, Y must identify the practical weaknesses and strengths and not to leave it to a written document. Writing does not solve a problem alone. Big plans are the most difficult. Partly, the process in a SWOT analysis requires strategies for how to solve this or that problem, how to develop this strength and so on. Then Y starts the grouping. This happens annually, but it is not an automatic process. Then Y initiates a dialogue to establish the merits of different points of view. What are the estimates for the next three or five years? Y may suggest Z million dollars and have a discussion about the feasibility of various scenarios. In the planning process, Y needs to focus on things such as costs, time and deliverables. This is the most important thing in planning and in aligning strategies. This is the process of strategic planning that Y believes it follows. Nevertheless, Y follows an 'incremental development' approach to the methodology of a project's life cycle. This approach is supported by techniques such as scenarios and business modelling techniques and, also by tools such as data flow and work flow. These methodologies, techniques and tools were stated in Chapters 2 and 3.

5.2.4.1 IS/IT infrastructure

Y has a centralised IT infrastructure, the CIO reported. The IT administration which provides information in the bank serves all the groups in the bank. IT provides the equipment, training and systems. This does not mean that some independent companies of the group do not have their own equipment, but they largely depend on the IT in Y. To increase its efficiency, to produce new technologies such as a wireless network, a good infrastructure is needed. This may support Y in improving financial statements, considering basic data, operations, and access to systems all over the world. IT aims to develop mail through mobiles for Y's users. This improvement in the infrastructure is crucial to support the management of the global environment within the organisation.

5.2.4.2 Planning team

As part of the strategic planning process, a team of IT professionals such as the IT Strategic Adoption Team constituted from the IT Department and members of other Y group departments prepared the Y Group Information Strategic Plan. The plan covers IT activities over the next five years. Y considers the term "Information Technology" to mean the technology infrastructure, the information systems, and the information services through its strategy. Y also has an administrative department for strategic planning. Additionally, there is a department for developing the bank, which is in the final stage of the process of reorganising and developing the bank. This team has different members, from departments such as IT, finance, treasury, operations and so on. The team controlling the project contains about 10 to 12 managers from the bank. IT also has its technical team working with the consultant team; it contains about 15 to 16 people at two levels as mentioned in the strategic planning document.

Y believes that if IT does not have standards, this is because it depends on what it is using. The CIO explained that if it is using SAP, for example, it will have a different structure. If it is using customised software, it will have a different structure. Every program may have a different structure. But the standard structure is to move from technical to management to strategy. Strategy supervision is with top management. It is a committee chaired by the vice president, but Y will decide other strategies within it. Then Y needs to have a management supervision committee which can be a team committee, to manage the program. IT ensures the program which has been defined is produced within a specified time limit. This is the role of the committee. Then IT has the authority to carry out the technical specification. Then there are the users. When the users agree upon their requirements, IT then moves into implementation. If the users are not satisfied, IT goes back to the requirements, modifies, adapts and changes whatever is needed. In short, the users define what they want and the board of directors has to approve the strategy and management has to implement it, via the technical people on the ground, and finally the users validate it. This is the general strategy of Y for IT.

Y has a strategic planning team for the corporate level as observed by the researcher. It is called 'The Strategic Planning Office of Y' and was set up two or three years ago. This team works under a president and it meets regularly. This might be to develop a strategy, an issue, an operation, and so on. Y needs to notice what the planning team is doing or not doing; part of that is the assessment process, and follow up also comes in here. From this point, Y might need to change this or that in a continuous process as Figure 5.8 presents. There is also learning from the experience of others, for example, from the vision and new strategy in the Asian Bank and in the African Bank. It is important to reflect that Y has benefitted from others' experience. Y has already embarked on this process; for example, new ideas, technical support have come from other countries.

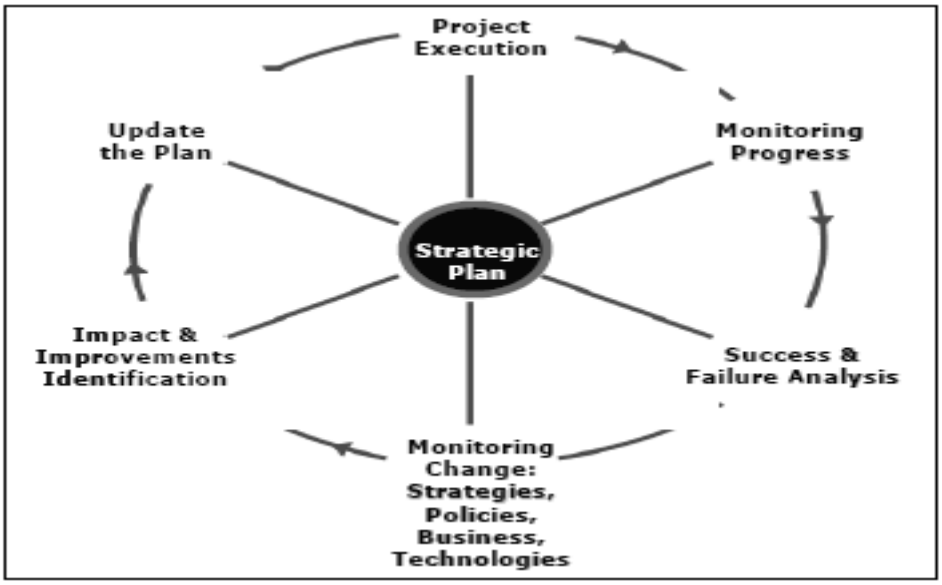

Figure 5.8: The ongoing process of IT strategic adoption in Y (source: IT strategic document)

Y believes that it now has a very comprehensive planning program. For example, the IT department identified the direction it considered appropriate for the future and this has now been accepted and approved. Thus IT has begun the reform process. Then IT will report back to the bank. This administration considers there are three key features: CIO leadership, CEO/CIO relationship; and the commitment of CEO to IT. These relationships are supported by the strategic plan document in three scenarios for the Y group. IT's strategic plan was presented at a meeting of board executive directors by the CIO. This meeting was chaired by the CEO. IT is responsible for the international plan for technology. With regard to the overall plan of Y, the president of the bank discussed the contribution of IT with CIO. This emphasised the senior management support and commitment as requirement for adoption IS in strategic level as mentioned in Chapter 2.

5.2.4.3 IS impact

Y believes that any institution has to perform as well as possible if it is to minimise costs and maximise output. So the relationship between costs should be to invest, minimise costs, and maximise output. That is the elementary way of managing anything. This considers the impact of IT costs on Y. Nevertheless, this presents to what extent the 'cost' factor is important in Chapter 2.

Y thinks that the activity of the bank cannot be compared with that of manufacturing companies. A manufacturing company competes with other companies in the marketplace and every organisation is selling the same product. The firm that has the best product and largest number of orders is more competitive. That is not the competitive environment for Y bank because there are not hundreds of development banks. There are development banks such as the American Development Bank and European Bank for Construction and Development: in total six development banks. They do more or less the same thing, except that Y does the financing of trade. Trade financing is not done by any of the other five banks. That is the distinguishing feature of Y. Other than that, they operate in the same way. From this, the impact of IT on the competitiveness of Y is not as great as its internal impact on the business process, as discussed in the following paragraph.

IT in Y believes that the user is important to strategic planning success. First, IT has to listen to its consumers in terms of what they expect of its service. Second, IT has to listen to its consumers in order to understand them, to understand the qualities they expect from the service. The bank strategy has a different culture in this respect. If IT is looking at a group of strategies, for example, it will want to improve the quality of its delivery service. If IT does not listen to customers, then Y's strategy is misaligned. Not only this, but Y also has, in designing the strategy, to understand very well what its operating environment is or it will miss the business. For example, if Y goes into Asia, it will see that the Asian market is now driven by financial institutions. In focusing on say, X area, people there may be in need of food, and discussion with them about industry is not valuable because no one will listen to Y. The priorities Y has in the former Soviet Union are different from its priorities in Africa, which are different again from those in South Asia, which are again different from those in the Middle East, and so on. If Y now went into Pakistan, it is clear that priorities there would totally different from priorities in Indonesia. So Y has to understand its various operating environments before it comes back to IT strategy.

The CIO expresses that, when Y makes a plan, the IT plan is separate from the other plans. Y believes that investment in technology serves the business and also it does not want to import anything new unless it serves the business. Having a separate strategic plan for the bank from the IT is illogical and will not succeed. The IT must support the strategic plan of the bank. At present, Y is trying to reduce

costs in order to compete with other banks in supporting trade. In the case of differentiation, Y tries to secure technology which makes the bank perform better in using modern technology. IT development supports the bank improvement. There will be more business, development and services in the markets. International efficiency is a natural thing in IT.

Y is in competition with other banks in the trade sector as a group member. Competition is extremely high. The method which the bank follows must change. This is part of the strategic planning that has taken place in the bank. It is very important and Y wishes it success in its trade sector. IT thinks there is such thing in the states' (memberships of Y) planning. States normally make plans every five years, but IT is not sure about how these are used. Because there are strategies, for instance, concerning technology in the bank itself, dependent on in-house IT, rather than consultancies. The IT department has strategies for training employees. It is an integrated plan. Part of the service delivered by IT includes reports to the top administration; reports to administration managers, and reports to employees and all these reports help administration to organise information and support the organisation's governance.

An 'e-Business environment' is a combination of information technology infrastructures and applications with the Internet medium (including the World Wide Web, intranets, and extranets) to support business activities. Building a robust and cost-effective e-Business environment will contribute to the achievement of the strategic objectives of Y Group, and it will have significant positive impacts on how Y's activities are performed. These include (source: strategic document from Y):

1. Improving client satisfaction and strengthening the relationship with them, which will lead to the creation of new business opportunities.
2. Improving efficiency and overall corporate performance through automating business processes and optimising communication.
3. Improving the decision-making process, through the delivery of accurate and up-to-date information to the right individuals at the right time.
4. Facilitating maintenance and operation of IT systems.

Part of the IS impact is its roles, because the roles explain the IS contribution. Y believes that its IT deals with administration, and requesting and proposing services. It is administrative, partly operational, and partly competitive. No administration within Y looks to outsourcing as a solution. IT desires Y to be competitive in the internal work environment. All these roles are effective in the bank are presented in Table 5.11.

Role	Description		
	CIO	AP	DDP
Administrative	⊙	⊙	⊙
Operational	⊙	⊙	⊙
Competitiveness	⊙	○	○

Table 5.11: The roles of IT in Y by the interviewees' views

Y considers its IT as a strategic function. If Y does not have IT to monitor and organise information, then Y cannot carry out this function. When DDP was asked to explain the competitive role of IT, he said:

> *'Z services (a religious role) is something very specific for us. We do this kind of thing to encourage people, but this means that you have to have a model and success so that you can change the debate for the development. So you're expected to have a new model. So we create different ways so that you'll become a leader in development.'*

5.2.5 Evaluation of Strategic Information Systems Adoption Techniques

Because Y is a development bank that started a new private sector for trade, this means it needs to be more competitive in order to make a profit. This competition can be both internal and external. It was not really looking at the cost of the development project, but the situation is changing with more competitors within the market with low cost control as well as different global economics. In addition, the high cost of the operation has increased. As a result of global trends, Y decided to improve its IT function to be a strategic activity that supports Y to improve performance. So Y has attempted to evaluate its IT strategically and to understand its strategic contribution. This evaluation needs to apply techniques that support the understanding of Y's situation. This evaluation considered both the internal and external environments in order to complete it and design the new IT strategic role. So, the researcher considered the strategy focuses to understand the situation as mentioned in Chapter 2. These focuses are the most objective of the IS strategic planning process. These focuses consider strategic analysis, competition and integration.

- **Strategic analysis:** with the movement of Y to be a cost leader in the global market and the transfer of the IT function there is a need for strategic analysis. This analysis phase might support Y to identify its new environment both internally and externally. It may also support Y to understand the extent to which the analysis phase need to be done for IT in order to identify the core business processes and how IT can contribute to them successfully.

- **Competition analysis:** as stated earlier with the new trade sector in the Y group, it now has competitors in the international environment, so Y plans to re-position itself in terms of both cost leadership and international competition. Thus, the IT strategy should be in parallel with the competitive vision of Y in order to understand how IT can support the changing competitive environment of Y both internally and externally.

- **Integration analysis:** as mentioned above, Y is moving in a new way in its strategic planning. This move needs to consider the contribution of the IS/IT strategic role. Collaboration between the core processes, sub-companies, sub-business units and different departments is required at all levels including data, applications and systems of IS/IT integration.

There are other strategic focuses in Y, but this study is concerned with the strategy focuses that relates to IS/IT strategic planning. When AP was asked to explain, he said that:

> *'In the global sphere: our plans are different and they are global. There is also the changing of knowledge, technology, competency, knowing what is going on, our ability to supply resources, the limitation of resources for planning.'*

Also the DDP said:

> *'There are strategies, for instance, concerning the settlement of technology in the bank, which depend on us, not on consultancy firms. We have strategies for the employees' self-training. Now they write their reports themselves. The strategies are many. It is an integrating plan. It is necessary that it must support the business and it mustn't be a separate plan.'*

It appears that Y had no problems in understanding and applying the IS/IT strategic planning techniques, as Y has a strategic planning department which has experience in applying different planning techniques. In addition, Y has more experience in strategic analysis focus and the competitive focus than aligning focuses. Nonetheless, there is confusion in applying the different techniques in different situations as needed, and there is a weakness in considering strategic planning techniques in the aligning strategy focus. Table 5.12 shows a summary of the evaluation of strategic analysis techniques used in Y.

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

Table 5.12: A summary of the evaluation of strategic adoption techniques at Y bank

From this result, it appears that Y has the skills for applying strategic planning techniques for its IS/IT activity. Consequently, obtaining support from a consultancy experienced in applying strategic planning techniques for IS/IT is not really required. Understanding the application of strategic planning techniques is important in the whole process of planning, because of different situations that arise and when moving from one level of planning to another. As mentioned in Chapter 2 there is no single format for designing strategy, so these planning techniques encourage planners to be aware of all strategic planning issues. However, different interviewees had different views of these techniques. Some of the interviewees had no idea about these planning techniques, and others had very good information. Nevertheless, Y has designed what it calls a strategic plan. This is an IS/IT general and comprehensive plan. This plan is more concerned with criteria that support strategic analysis and planning scenarios. It is a plan for investment and considers cost scenarios. However, Y should have a team who understand the requirements, drivers and benefits of IS/IT strategic planning to apply this information to the strategic techniques and work alongside them.

5.2.5.1 The Proposed Framework for Evaluation of Strategic IS Techniques

As proposed in Chapter 3, the framework for evaluation of SISP techniques is concerned with evaluation of the assessment of SISP techniques from the viewpoint of different stakeholders. Because it would have been difficult to interview most of Y's stakeholders, the interviews considered the stakeholders who adopt, evaluate and implement the SISP techniques in Y as explained in Chapter 4. The interviews considered SISP techniques and so on. So, the reviews of the SISP criteria are from interviewees' views (CIO, DDP) as explained in the IS impact (Section 5.1.4). The author has used the Miles and Huberman (1994) scales with its rankings of high importance (●), medium importance (⭘) and low importance (○), because there are three levels of importance in describing the criteria of SISP within Y. The empty cells mean that there is no available information from the interviewees.

These procedures consider the benefits, requirements and drivers of SISP process evaluation in the following sections.

❖ **Requirements**

Requirement	CIO	DDP
Communication maturity	●	●
Competency/value measurement maturity	●	●
Governance maturity	●	●
Partnership maturity	●	●
Scope and architecture maturity	○	○
Skills maturity	●	●
Senior management support and commitment	●	●
Good working relations	○	●
Strong leadership	●	●
Appropriate priorities	●	●
Trust	○	●
Understanding the business	●	●
Understanding technical environment	●	●
Understanding both internal and external environment of organisation	●	●
Planning process flexibility	●	●
Adaptable planning model and process	●	●
Other –business strategy	●	
Other – data and information	●	
Other – documentation	●	

Table 5.13: strategic IS adoption requirements from interviewees' views in Y

From Table 5.13, it can be seen that there are some similar views between the interviewees and some differences, but there are many similarities regarding SISP requirements. Most of these requirements are considered to be highly important within Y's planning process. So far, the differences between the interviewees' views are coping with good working relations and trust. As the DDP said when he was asked about partnership maturity: *'Sometimes we have common institutional arrangements with African, Asian and US development institutions. These things are always done using technology.'*

The DDP ranked good working relations and trust as highly important, whereas the CIO ranked these with medium importance. The CIO explained his answer about governance maturity as follows: *'Every year the administration presents a news project. One year we decided to plan work for five years . . . . That is because in one year changes take place'.*

There are also requirements such as communication maturity, senior management support and commitment, strong leadership and understanding the business that were agreed by all the interviewees to be highly important, whereas, all the interviewees ranked the scope and architecture maturity requirement as of medium importance.

Other requirements such as business strategy, data and information, and documentation were suggested by the interviewees to be considered as SISP process requirements. These requirements were considered in the literature review (Henderson and Venkatraman, 1999; Morgan, 2002).

❖ **Benefits**

The interviewees were asked to verify the benefits of implementing SISP processes for Y. CIO stated: *'This is part of the IT process. I'm trying to give you examples of the outside strategic planning. The IT is part of the strategic planning'.*

A summary of Y's views about the benefits of SISP is presented in Table 5.14. These benefits were classified as strategic analysis, competitiveness and integration. From this table the following conclusions can be drawn:

➢ ***Strategic analysis benefits of Y***

From Table 5.14, it can be seen that there are similarities and differences in the interviewees' views, but strong similarities concerning SISP benefits. Most of these benefits are considered to be highly important within Y's planning process. Although the most significant differences are between the CIO and DDP's views, they are coping with increased organisational efficiency and reducing costs.

➢ ***Competitiveness benefits of Y***

It can be shown from Table 5.14 that there are similarities in the interviewees' views about the competitive benefits. The main difference concerned obtaining competitive advantage as a benefit of SISP. Most of these benefits are considered to be highly important within Y's planning process. The DDP ranked competitive advantage as of medium importance whereas CIO ranked it as of high importance.

➢ ***Integration benefits of Y***

In this category of benefits, the similarities in the interviewees' views are more noticeable, as Table 5.14 shows. The differences concern: a) improve resource control and b) integrate or become independent of IS function. Most of these benefits are considered to be highly important within Y's planning process.

Strategy focus	Strategic Benefit	CIO	DDP
Strategic Analysis	Support decision-making process	●	●
	Increase organisational efficiency	●	○
	Improve open culture of organisation	●	●
	Enable users	●	●
	Increase productivity of employees	●	●
	Support coordination of work	●	●
	Reduce cost	●	○
	Interface and support different organisational levels	●	●
	Improve growth and success	●	●
	Create new strategic opportunities	●	●
	Increase quality	●	●
	Offer new strategic options	●	●
	Support reactions to changes	●	●
	Support organisational teamwork	●	●
	Increase organisational effectiveness	●	●
	Support collaboration and sharing information	●	●
Competitiveness	Develop/produce new markets	●	●
	Develop/produce new products/services	●	●
	Obtain competitive advantage	●	○
	Increase organisation's competitiveness	●	●
	Display market leadership	●	●
	Support innovation	●	●
	Increase customer services and satisfaction	●	●
	Become a leader in new technology	●	●
	Improve the relationship with customers	●	●
	Enhance competitive advantage	●	●
	Improve market share	●	●
	Become responsible locally (markets, government)	●	●
Aligning	Integration of IS strategic plan with business strategic plan	●	●
	Improve the relationship with suppliers	●	●
	Improve resource control	●	○
	Integrate or become independent of IS function	●	○
	Improve global efficiency	●	●
	Support global organisation	●	●
	Attain global alliances	●	●
	Improve resource creativity	●	●
	Improve resource flexibility	●	●
	Improve resource learning	●	●
	Create standards	●	●
	Improve knowledge	●	●
	Compose by integrating smaller systems	●	●
	Support learning transfer	●	●

Table 5.14: A summary of interviewees' views about the benefits of strategic IS adoption in Y

❖ **Drivers**

Table 5.15 reviews the SISP drivers from interviewees' comments (CIO, DDP) as the interview agenda shows (Appendix B). These interviews were based on the proposed framework presented in

Chapter 3. This framework for evaluation of SISP techniques was to evaluate the assessment of SISP techniques from the viewpoint of different stakeholders.

Driver	CIO	DDP
Users politics	⊙	○
Time	●	●
Budget and cost	●	●
IT architecture	●	⊙
Business process (cost, time, effectiveness)	●	○
Executive skills and commitment	●	●
Global business and geographical spread	⊙	●
Nature of the organisation	⊙	⊙
Importance of IS	●	○
Organisational situation	⊙	⊙
Joint resources	⊙	●
Risk reduction	⊙	○
Global products/services	⊙	●
Quality	●	●
Suppliers	⊙	●
Corporate customers	●	●
Other – skills & people	●	
Other – technology trends	●	

Table 5.15: Strategic IS adoption drivers from interviewees' views in Y

Again, there are both similar and different views between the interviewees as shown in Table 5.15, but there are fewer similarities regarding SISP drivers. Most of these drivers are considered to be either highly important or of medium importance within Y's planning process. The differences between the interviewees' views of coping with many drivers included: user politics, IT architecture, business process, global business and geographical spread, importance of IS, joint resources, risk reduction, global products\services and suppliers. As the DDP said when they were asked about the global business: *'In the global sphere: our plans are different and they are global. There is also the difference of knowledge and technology'. The AP said at the time: 'In general, there are global benefits for any strategy to have a clear compass directing its structure. You've a clear light which shows you the way. It's the general purpose of any strategy.'*

With regard to the business process and importance of IS as drivers, the interviewees had different views. CIO ranked it as highly important, whereas DDP ranked it with low importance. The CIO explained his answer about both business process and the importance of IS as drivers as follows:

> *'The information technology supports the strategic plan of the bank. Now we are trying to reduce the cost leadership. Therefore, the bank will be able to compete with the other banks. In the case of differentiation, we try to get technology which makes the bank better in using modern technology. We move in the direction the bank wishes to go. These developments, of course, move the bank on. There will be more business,*

development and services in the markets. International efficiency is a natural thing in IT.'

The interviewees agreed about the time, cost, executive skills, quality and corporate customers as drivers with high importance. Other drivers such as skills and technology trends were suggested by interviewees to be considered as SISP process drivers.

❖ **Requirements vs strategic focus**

After considering the benefits, requirements and drivers of SISP, the interviewees were requested to evaluate the techniques of SISP applying the strategic focus categories of criteria classified in Chapter 3. Table 5.16 shows the interviewees' views concerning SISP requirements to assess SISP techniques. The author has used the Miles and Huberman (1994) scales for with its rankings of high importance (●), medium importance (⭘) and low importance (○), because there are three levels of importance in describing the requirements of SISP within Y. The empty cells mean that there is no available information from the interviewees.

Requirement	Strategy focus					
	Strategic analysis		Competitiveness		Aligning	
	CIO	DDP	CIO	DDP	CIO	DDP
Communication maturity	●	●	●	⭘	●	●
Competency/value measurement maturity	●	○	●	●	●	●
Governance maturity	●	●	●	○	●	●
Partnership maturity	●	●	●		●	●
Scope and architecture maturity	●	●	●	●	●	●
Skills maturity	●	●	●		●	●
Senior management support and commitment	●	●	●		●	●
Good working relations	●	●	●		●	●
Strong leadership	●	●	●		●	●
Understanding technical environment	●	●	●	●	●	
Understanding both internal and external environment of organisation	●	●	●	●	●	
Planning process flexibility	●		●		●	●
Adaptable planning model and process	●		●		●	●

Table 5.16: Strategic IS adoption requirements to assess IS strategic techniques from interviewees views of Y

Although the connection between the strategic focus and the SISP requirements is one of the criteria for evaluating SISP techniques for Y, not all the interviewees were able to complete this task. Only the AP (who redirected this task to DDP and CIO) completed the task. So, Table 5.16 presents the connection between the strategic focus and SISP requirements of Y.

- ***Strategic analysis focus vs requirements***

From Table 5.16, it can be seen that there are more similarities than differences between the interviewees' views. Most of these views give a high importance ranking. They both agreed on most of the requirements with high importance. Nevertheless, the CIO considered these requirements only in this focus, whereas DDP considered most of the requirements without the planning process flexibility and adaptable planning model and process as requirements.

- ***Competitiveness focus vs requirements***

It can be seen from Table 5.16 that there are some similarities and differences between the interviewees' views. Most of these views give a high importance ranking. Even though most of the interviewees' views were different, they agreed on some requirements such as competency measurement, scope architecture maturity, understanding technical environment and understanding both the internal and external environment of the organisation. Nevertheless, the DDP did not consider some requirements such as partnership maturity, skills maturity, senior management support, good working relations, strong leadership, planning process flexibility and adoptable planning model and process in this focus, whereas CIO considered all of the requirements. The governance maturity and communication maturity as requirements were considered by DDP in this focus as of low importance and medium importance, respectively.

- ***Aligning focus vs requirements***

There are some similarities and differences between the interviewees' views, as Table 5.16 illustrated. Most of these views give a high importance ranking. Despite the fact that the interviewees' views were similar in most requirements, they were not agreed on some requirements such as understanding the technical environment, and understanding both the internal and external environment of the organisation which was ranked with high importance by CIO, whereas the DDP did not consider them in the aligning focus.

❖ Drivers vs strategic focus

The interviewees were required to evaluate the drivers of SISP applying the strategic focus categories of criteria classified in Chapter 3. Table 5.17 shows the interviewees' views concerning SISP drivers for assessing SISP techniques in Y.

Driver	Strategy focus					
	Strategic analysis		Competitiveness		Aligning	
	CIO	DDP	CIO	DDP	CIO	DDP
Users politics	●	○	●	○	●	○
Time	●	●	●	⊙	●	●
budget and cost	●	○	●	●	●	⊙
IT architecture	●		●		●	
Business process (cost, time, effectiveness)	●		●		●	●
Executive skills and commitment	●	●	●	●	●	●
Global business and geographical spread	●	●	●	●	●	●
Nature of the organisation	●	●	●	●	●	●
Importance of IS	●		●		●	
Organisational situation	●	●	●	●	●	●
Joint resources	●	●	●	●	●	●
Risk reduction	●	●	●	●	●	●
Global products/services	●	●	●	●	●	●
Quality	●	●	●	●	●	●
Suppliers	●	●	●	●	●	●
Corporate customers	●	●	●	●	●	●

Table 5.17: Strategic IS adoption drivers to assess IS strategic techniques from interviewees views of Y

While the connection between the strategic focus and the SISP drivers is one of the criteria for evaluating SISP techniques for Y, not all the interviewees were able to complete this task. All the interviewees completed the task of drivers vs strategic focus, notwithstanding the AP who redirected this task to CIO. Table 5.17 demonstrates the connection between the strategic focus and SISP drivers of Y.

- ***Strategic analysis focus vs drivers***

From Table 5.17, it can be seen that there are some similarities and differences between the interviewees' views. Most of these views give a high importance ranking. Even though most of the interviewees' insights were similar, they were not agreed on some drivers such as IT architecture and business process which were ranked with high importance by CIO while the DDP did not rank them. Nonetheless, the DDP considered user politics and budget and cost to be of low importance.

- ***Competitiveness focus vs drivers***

It can be observed from Table 5.17 that there are some similarities and differences between the interviewees' views. Most of these views give a high importance ranking. Although the interviewees' views were not that different, they disagreed on some drivers such as IT architecture, business process and the importance of IS. Nevertheless, the DDP considered user politics to be of low importance and time as a requirement with medium importance in this focus, whereas CIO considered them all to be of high importance.

- ***Aligning focus vs drivers***

There are some similarities and differences between the interviewees' views, as Table 5.17 shows. Most of these views gave a high importance ranking. Despite the fact that the interviewees' insights were similar on some drivers, they disagreed on certain drivers such as IT architecture and the importance of IS with no ranking by the DDP. However, the CIO considered all the drivers to be of high importance. Also, the DDP considered the user politics driver to be of low importance and, the budget and cost driver to be of medium importance.

❖ Techniques vs strategic focus

After considering the benefits, requirements and drivers of SISP vs strategic focus, the interviewees were requested to evaluate the techniques of SISP applying the strategic focus categories of criteria classified in Chapter 3. Table 5.18 shows the interviewees' views on SISP techniques. The author has used the Miles and Huberman (1994) scales with its rankings of high importance (●), medium importance (❍) and low importance (○), because there are three levels of importance in describing the techniques of SISP within Y. The empty cells mean that there is no available information from the interviewees.

Technique	Strategy focus					
	Strategic analysis		Competitiveness		Aligning	
	CIO	DDP	CIO	DDP	CIO	DDP
SWOT	●	●				
Opportunity categorising	●	●	●		●	
Strategic importance matrix	●	●		●	●	●
Benefit level matrix	●				●	●
5 forced model				●		
Generic business strategies						
Information intensity matrix						
Impact categorising		●		●		●
Industry analysis	●	●	●	●		
Strategic thrusts		●		●		●
Strategy set transformation				●		●
Business modelling	●	●	●	●	●	●
Critical success factors	●	●	●	●	●	●
Critical set analysis		●		●		●
Lateral thinking				●		●
Business systems planning	●		●	●	●	
Scenario planning		●		●		●
Case-based reasoning			●			●
Cost-benefit analysis		●	●	●	●	●
Balanced scorecard analysis	●	●		●		●
Process analysis	●					●
stage of growth	●	●	●			

Table 5.18: Strategic IS adoption focus to assess IS strategic techniques from interviewees views of Y

Although the connection between the strategic focus and SISP techniques is one of the criteria for evaluating SISP techniques for Y, not all the interviewees were able to complete this task. Only the CIO and DDP completed the task. Table 5.18 presents the connection between the strategic focus and SISP techniques of Y.

It appears that an organisation considered the evaluation criteria of SISP comprehensively in order to apply suitable planning techniques. As no single planning technique can consider all the evaluation criteria, the interviewees stated their awareness on the grouping of the evaluation criteria of SISP techniques. The value of the proposed framework for empowering decision-makers to adopt and implement SISP techniques by improved understanding of the evaluation criteria for SISP techniques by the planning team was mentioned by the interviewees.

5.3 Comparison between Two Cases (X airlines and Y bank)

In this section, a comparison between both cases in this thesis is generated. This comparison between cases will provide a better understanding of the adoption of strategic IS in different environments or organisations. It is based on two cases (X airlines and Y bank). As this research considers the adoption of strategic IS, the comparison considers some issues such as strategic IS in global business, IS strategic alignment, customer approach in strategic IS, strategic IS infrastructure, strategic IS planning team, strategic IS impact, strategic benefits of IS, strategic requirements of IS, and strategic drivers of IS. Comparison of additional factors to the proposed conceptual model of this research are also presented in this section. These issues support the need to understand the involvement of strategic IS in different firms where data has been collected to present this comparison. In this section, IS and IT are used interchangeably.

5.3.1 Global business and strategic IS adoption

In this section the relationship between global business strategies and strategic IS considered through many issues such as integrated planning and facilitating management in both case studies.

5.3.1.1 Integrated planning and strategic IS adoption

Both case studies, X and Y, consider the importance of IS-business strategic integration and its global effect. X airlines believes that global business needs more focus on strategic and integrated planning of the business and IT. This started by understanding the need for a comprehensive plan for the business. So, the IS/IT diagnostics and master plan project has defined the meaning of comprehensive in order to bring X's IS/IT back to industry standard. Therefore, two important motivations and focuses are strategic alignment and growth. However, Y considers a huge number of global business projects that need a significant amount of coordination. This coordination requires enormous resources. When these resources are scarce, Y will have difficulty focusing on all these projects. That is because a lot of activities are needed to be integrated. So this will be a global focus for Y. This global strategic adoption process from Y objectives requires mechanisms for IS/IT involvement.

5.3.1.2 Facilitating management and IS strategic adoption

The IS/IT plays a key role in facilitating the management of all sectors of X airlines. There are now ambitious initiatives, plans, and funds devoted to support the basic operations of the company. All of these support the organisation's strategic plan to match the vision and objectives through IS/IT. IS/IT

is important as an administrative enabler in this time, as well as strategically in the future. Table 5.3 presented views of interviewees about the IS roles in X. Most of the interviewees agreed that IS has administrative and operational roles within X, but it does not have a competitive role; in the global environment, however, Y's plans are changeable. There is knowledge transfer, new technologies, competencies, and different environments, but Y has limited planning resources. Also, in terms of challenges, Y works with other partners as it cannot work alone. IT thus plays an important role in Y bank. With differences in countries, projects, partners, and resources, Y and its IT face different challenges. From Table 5.11, most of the participants agreed that IT has partly administrative and operational roles in Y, and it does not have a competitive role. From this, it can be seen that both cases consider the IS roles as administrative and operational and not competitive.

5.3.1.3 Global and external factors for IS strategic adoption

The challenges of global business for X are caused by two important factors that may be responsible for X's IT improvement. X does not believe that the requirements and motivations are as strong as required. There are external factors at work. First, there is the trend towards privatisation. The business now tells IT what to provide in order to match business and service processes. Side by side with globalisation, these should help the business improve quickly. Second, some airlines change their practices in different seasons. Unless the company exploits those systems that will allow it to function flexibly, it will not succeed. Without the systems that can meet its needs and vary its pricing system, the company will not be able to compete with other companies. All such systems and activities need top management support and communication maturity as important factors for IT success. These factors are currently extremely weak; an example of this is marketing's control of e-commerce systems as noted earlier. Y believes that an institution like itself, with diverse clients, expansion plans, and other challenges, cannot survive without positioning itself strategically. To survive, it is critical to understand what kind of services should be provided, what different resources are available, how Y plans to develop in the context of the business, and then to draw all these plans together in Y over different countries. So Y needs to position itself; it has to be strategic and understand strategic requirements, drivers, and motivations.

5.3.2 Alignment and IS strategic adoption

In this section the relationship between business alignments and strategic IS considered through many issues such as importance of IS, business strategy and customer orientation in both case studies.

5.3.2.1 Importance of IS in IS strategic adoption

Although X knows that it is almost impossible to work without IT, it had not an IT strategy as a part of the business. As for the IT itself, there are many strategies that could assist the business in terms of technology. X intends to outsource technologies, so there are more concerns about technology than core business processes in IT, including equipment and radio maintenance. In addition, X can take advantage of marketing decision systems that assist with IT strategic adoption. When Y carries out strategic planning of the business, IT considers the organisation's plans, products, and strategies. The aligning process normally continues throughout the lifespan of the plan. It must also be adaptable because the organisation can change its focus in the middle of a plan.

5.3.2.2 Business strategy and IS strategic adoption

X airlines does not currently have the systems that would aid it in innovating in reservation. The reservation is main systems in X business. Current systems preclude appropriate alliances between different business activities to improve reservation systems efficiency. That is because they necessitate a clear vision of the interactions between each component part of business organization. Modern systems such as ERP, process operation standard, boarding points, and quality may ameliorate internal efficiency. That means IT categorises applications so that they can be grouped logically, then transfers them into services to support the business side and executives' vision as a (top-down) approach. When there is a business process, it can map it with the services to achieve the objectives of this process, consequently. In the external alliance for X, these internal systems are of importance. In three years time, X plans to have its systems in line with international requirements, and it now has a master plan for this. In doing so, it is aiming in that direction as X did not have systems integrating. Accordingly, X is now bringing in ERP solutions to improve the internal integration of its activities. On the other hand, as Y considers that all other Banks (development banks) have discovered that none of them can work alone, and so the alliance is based on partnership. Y has to build relationships with partners on the work ground. Through partnerships, Y bank can improve its business efficiency. These partnerships require internal integration of the business activities. Because many of Y's activities are not fully integrated, Y faces difficulty controlling all of its projects when its resources are scarce. The integration of business activities necessitates enormous resources and consequently, a good deal of coordination must be done. Subsequently, to reach IT-business integration, Y considers many systems mentioned earlier to align core business processes through categorising its systems in support and core systems.

5.3.3 Customer orientation and strategic IS adoption

Customer consideration has been emphasised by both case study organisations. X airlines has carried out a strategic analysis and has now divided into four main centres of activity. These are public, royal, business, and religious services. The IT function struggles to maximise the benefits (the investment of IT and the business objectives), but maximising the benefits does not necessarily mean minimising the costs. It may be the cost of quality. Internally, there is the transformation of IT and a new organisation to match the business demands. At the same time, the architecture or organisation of IT contributes to the organisation. This is an important current issue for the future of X. There will be more than one airline within X. This will lower aviation costs and at the same time, the IT can serve other airlines. These will take place in the newly formed organisation. As for IT, it will be a services provider and X will be its customer. So, collaboration at the strategic planning level is required between the IT function and X. In the same way, Y believes that understanding customers is crucial. Y cannot operate with services which are not for immediate sale. When IT does a finance project for Y, the moment a contract is signed, this project for Y will be financed. IT has to issue the bids, issue the tender, and hire the contractors. IT has to build, control, and report on bids. So it is a direct and long-term relationship. From the time the project is approved to the time IT has finished implementing may take several years. Y believes that an institution like itself with diverse clients, expansion plans, and other challenges cannot survive without positioning itself strategically. So, to survive, it is critical to understand what kind of services should be provided, what different resources are available, how Y plans to develop in the context of the business, and how to draw all these plans together in Y over different countries. So Y needs to position itself; it must be strategically considered.

5.3.4 IT infrastructure and IS strategic adoption

In this section the relationship between IT infrastructure and strategic IS considered through many issues such as centralise and decentralise IT infrastructure, business process design and planning team in both case studies.

5.3.4.1 Centralised and decentralised IT infrastructure

X does not have a fully integrated standard infrastructure under one administration. As a consequence, there are deficiencies, though there are major contracts out for the development of the infrastructure. The administration is centralised. All of the infrastructure processes are now co-centralised. All of the other business functions depend on the automation provided by the IT. Without automation, such as messaging systems, IT systems (PCs, printers and network), reporting, and IP telephone, other

functions will not be able to perform effectively once Y has a centralised IT infrastructure. The IT administration, which provides information in the bank, serves all of the bank subsidiaries. The IT also provides the equipment, training, and systems. This does not mean that some independent companies of the group do not have their own equipment, but they largely depend on the IT in Y.

5.3.4.2 Business process design and IT infrastructure

X airlines considers that there will be quick consequences including the redesign of the infrastructure for business requirements. This was necessary to reach acceptable solutions, as basic steps, and to move in two ways: a) transformation of IT and b) a landscape for application. The external advisers collaborate with IT to identify the required functionality to map. The IT employees help in preparing the methodology and the framework to facilitate this. They do so to specify the technical specifications and appraise providers. X thinks that strategic adoption is not necessarily in the details. This is one of the main weak points considered in the IT master plan in X because it will take place during implementation in three years time. Indeed, within the business, IT performs the business process design. The implementation which IT may perform in the new systems is to be completed in the business process design. And what does IT do what is the extra process involved in the business concern. It centers on the efficiency and effectiveness in addition to the internal enhancement of the process and its governors. It uses the IT network in system services support. All of these help in having an efficient IT shop. Not only the IT equipment, but also the process of business, is important to consider in the IT plan. In a similar way, Y bank believes that its IT does not have comprehensive standards; this is because it depends on technical infrastructure. However, the standard structure is to move from technical to management to strategy. If Y is using SAP, for example, it will have a different structure. If it is using customised software, it will have a different structure. Different systems may have a different structure. Y considers that it is necessary to use different technical support, such as wireless technology. The use of technology is very important in terms of communications, such as reporting, because the Y bank presents its annual report to more than 22 countries, which includes planning and forecasting of future projects.

5.3.5 Planning team and IS strategic adoption

The IT master plan has been authorised by the IT Steering Committee in X airlines. There are different teams according to the type or level of responsibility required in X and its IT to present this IT master plan. Every business unit is represented by someone who is responsible to identify requirements of his/her unit of measurement. Accordingly, the connection between the business and IT is achieved via the master plan through the Automation Support Group (ASG). There is also a

privatisation team that considers the IT contribution as the organisation situation necessitates. The attention to IT in X airlines comes with the arrival of the new CEO. This attention to IT in X presented as modernising its programs, systems and infrastructure and so the strategic plan of modernised information technology (IT master plan) appeared. A big budget was given to it. IT now stands at the top of the planning process. This means that in business planning, the IT planning team plays an important role. However, as part of the business strategic adoption process in Y, a team of IT professionals, such as the IT Strategic Adoption Team constituted from the IT Department, and members of other Y group departments, prepare the Y Group Information Strategic Plan. The plan covers Information Technology activities over the next five years. Additionally, there is a department for developing the bank, which is in the final stage of the process of reorganising and developing the bank. This team has different members, from departments such as IT, finance, treasury, operations, and so on. Y considers the term "Information Technology" to mean the technology infrastructure, the information systems, and the information services throughout its strategy. Hence, it is the IT department that identified the direction it considered appropriate for the future and it is the IT department that will determine when this direction has been accepted and approved. The IT starts the reform process of this direction. IT will the report back to the bank. The commitment of the chief executive officer to IT and its administration considers that there are two key features in CIO leadership: the CEO and CIO relationships. These relationships are supported by the strategic plan document in three scenarios for the Y group. The IT strategic plan was then presented to the board of executive directors by the CIO. Although the processes of developing the strategic adoption teams of IT in the cases are different, both cases present the importance of CEO commitment and support to IT strategic adoption.

5.3.6 IS impact and strategic IS adoption

In this section the relationship between IS impact and strategic IS considered through many issues such as organisation impact and IS role.

5.3.6.1 Strategic IS adoption and organisation impact

X considers that it has had positive impacts. These impacts consider people, business process, and organisation. X states that new technology motivates employees and makes it easier for them to focus on the process of how to make the right decisions at the right time. As a result, there is the consequence on the usage of resources and on supporting the business needs. This helps to achieve organisational objectives through all parties focusing on these objectives and processes. Although these are positive impacts, there are drawbacks due to the fact that X is in the stage of privatisation. This privatisation is an organisational situation which negatively impact employees as they do not

know whether to go or to stay. This needs attention, and any change at this stage will have an impact. In contrast, IT in Y recognises that the user is important to IT strategic adoption success. This attention to users is justified by: a) IT has to listen to its consumers in terms of what they expect of its service, and b) IT has to listen to its consumers in order to understand them and to understand the qualities they expect from the service. By doing so, IT does avoid IT-business strategy misalignment. Not only this, but Y also must understand very well, in designing the strategy, what are its operating environments. Therefore, the priorities of Y are different from one of its members to another, and so different business environments require attention because understanding various operating environments is crucial to developing business strategies as well as IT strategy. For this reason, the IT department has strategies for training employees in understanding different business environments. From this, a distinction can be made between X airlines, which is considering the internal impacts of IT on different dimensions, such as people and processes, and the Y bank, which considers the internal impact as well as the external impact, which is illustrated in different business environments.

5.3.6.2 Strategic IS adoption and IS roles

Because the roles explain the IT contribution, the component part of the IT impact is its roles. The stage of coordination of other business units in X airlines by IT not yet arrived. The IT master plan has three stages of projects, moves, and sub-projects. It goes from stage to stage until it reaches the desired situation. IT aimed to be strategic, ready for implementation and sale of these services to other airlines, and to support in managing other business activities in future plans. Consequently, IT has administrative, partly operational, and not competitive roles. However, Y believes that its IT deals with administration and requesting and proposing services. So, it is administrative, partly operational, and not competitive. No administration within Y looks to outsourcing as a solution. IT desires Y to be competitive in the internal work environment. All of these roles are effective in the bank. In this respect, both cases are nearly similar in that their IT has administrative and operational roles but does not have a competitive role.

5.3.7 IS Strategic adoption benefits, requirements, and drivers in the research case studies

In this section the consideration of different factors such as benefits, requirements and drivers in both case studies presented as following sub-headings.

5.3.7.1 The benefits of IS strategic adoption

Although most of the interviewees of X airlines agreed about the benefits of IS strategic adoption in strategic analysis, and that competitiveness focuses with full participation and partial participation in

the aligning strategic focus as presented in Table 5.6, they disagreed about some benefits such as global efficiency, development of a new market, and supporting different levels of organisation. On the other hand, most of the interviewees in Y bank agreed about IS strategic adoption benefits in the strategic analysis, competitiveness, and aligning focuses. However, similarities in both cases were that interviewees disagreed about some of the benefits, such as the increase in organisational efficiency, the reduction of costs, obtaining competitive advantage, improving resource control, and integrating or becoming independent of IS function.

5.3.7.2 The requirements of IS strategic adoption

As shown in Table 5.5, most of the interviewees of X airlines agreed about the requirements of IS strategic adoption with full participation. They also disagreed about some requirements, such as value measurement maturity, architecture maturity, and good working relations. On the other side, most of the interviewees in Y bank agreed about IS strategic adoption requirements as presented in Table 5.13. They were also in agreement about architecture maturity with partial participation. However, in both cases, interviewees disagreed about some requirements such as good working relations, trust, documentation and data, and information. Additionally, interviewees in both cases stated business strategy as a requirement for IS strategic adoption.

5.3.7.3 The drivers of IS strategic adoption

As presented in Table 5.7, most of the interviewees of X airlines disagreed about the drivers of IS strategic adoption. They only agreed on the importance of IS with full participation. The same was true of Y, as presented in Table 5.15; most of the interviewees disagreed about the drivers of IS strategic adoption. They agreed about time, cost, executives' skills, quality, and corporate customers with full participation. However, interviewees in both cases agreed that stated skills and technology trends are drivers for IS strategic adoption.

5.3.8 Modifications of the Proposed Model and the Research Case Studies

From Table 6.1, it appears that there are some similarities between the cases (X airlines and Y bank) regarding the additional factors that are presented in the revised model. Participants stated that support, cost, and performance measurement are important factors that influence the IS strategic adoption. Even though the two cases were similar in these factors, they differed in applying them. Operational cost, human resource cost, financial measures, and human resources development

measures, for example, were stated only by Y bank participants. However, both cases were similar with regard to the support by consultancies and suppliers.

5.4 Conclusions

This chapter presents and analyses the strategic information systems planning adoption practice in two case studies of global organisations. As these two cases have provided this research with necessary and required data, there would have been only a marginal benefit from a third case study. Nevertheless, Section 4.3.3 explains the justification for choosing two case organisations.

From the evidence presented in this chapter, the conclusions can be demonstrated. Chapter 4 highlighted the research issues of this thesis that combined with conclusions derived from this chapter to shape the third level of case study protocol as presented in Table 4.9. In doing so, the conclusions from the empirical data in this chapter are presented in the following paragraphs.

The factors proposed in the conceptual model in Figure 3.2 have been empirically confirmed as affecting the adoption of SISP through the case studies (X airlines and Y bank). Moreover, additional factors that influence the adoption of SISP have been stated such as cost and performance. Nevertheless, revisions to the proposed framework for the evaluation of strategic information systems planning techniques have been stated. Chapter 6 of this thesis considers all the factors that have been put forward and analysed in this chapter in order to revise the proposed conceptual model and framework. The main conclusions obtained from the adoption and evaluation of SISP in X airlines and Y bank are presented below:

- Continuous changes in the business environment need organisations that are characterised by high flexibility at both strategic and operational levels in order to face these changes appropriately. From the empirical evidence of X airlines and Y bank, neither could properly consider IS flexibility to fit their business needs as their existing IS planning processes are limited. This is because their planning processes are not completely connected to the business planning. This type of planning weakness increases IS costs as well, as it does not support the decision-makers as it should.

- The cost of IS is considered an important factor that influences the adoption of SISP in both X airlines and Y bank. Empirically, both organisations consider IS adoption in different scenarios throughout the cost. These costs include systems development cost and infrastructure upgrade

cost. There is empirical evidence from both cases to present cost as a factor that influences the adoption of SISP.

- From both cases reported in this chapter, support was considered as a factor that influences the adoption and evaluation of SISP. This support can be presented in the form of consultancies or suppliers. Engaging support as a factor for SISP adoption can be justified for many reasons, such as:

  - The involvement of a global dimension for SISP in a specific industry requires knowledge that can be trusted when making such an expensive investment. This knowledge could be acquired through consultancies and suppliers who have experience in such projects.
    .

- Performance measurement as a factor that influences the adoption of SISP was indicated by both X airlines and Y bank. This may be explained by understanding the level of planning and transferring from one level to another. IS/IT performance is clearly connected to IS/IT satisfaction. In other words, the performance measurement is important in developing a governance mechanism for IS planning. From the case studies, there are a number of performance measurements such as client satisfaction measurements, financial measurements, and integrated process measurements.

- The planning team is another factor that influences the adoption and evaluation of SISP. Empirical data from both organisations confirmed that the planning team is extremely important and can be developed via a comprehensive process as mentioned in Section 5.1.4.

- Field work evidence from both X airlines and Y bank showed that the existence of a framework for evaluation of strategic planning techniques as a support tool for decision-makers would be valuable. This framework could have a crucial and critical role in the adoption and evaluation of SISP through the assessment of its techniques. It is empirically confirmed that a framework for evaluation of strategic planning techniques supports decision-makers in the selection of appropriate planning techniques for the adoption and evaluation of SISP.

Chapter 6: Revised Conceptual Model for Evaluation and Adoption of Strategic Information Systems

6.0 Introduction

As discussed in Chapter 2, the need exists for deeper understanding of the adoption of the SISP process. Theoretical, general and process models were presented for SISP; however, most of these models lacked details such as planning techniques, methods, and tools. Furthermore, the need for consideration of IS benefits, requirements, and drivers is obvious. These factors (benefits, requirements, and drivers) are important for identifying suitable planning techniques for a team engaged in the planning process. In fact, the empirical data in Chapter 5 identified the points mentioned in Chapter 2 through arguments presented in the literature. For these reasons, this thesis has examined strategic issues of IS and suggested the classification of factors that affect the adoption of the SISP process. Consequently, this thesis contributes a comprehensive understanding of the process linked to the adoption and evaluation of strategic information systems planning.

In the assessment process of the conceptual model (Chapter 3), Chapter 5 was written on the basis of empirical evidence related to the adoption of the SISP process through case studies. The present chapter reviews the conceptual model of the adoption and evaluation of SISP (Chapter 3) by considering the empirical evidence presented in Chapter 5. Thus, Section 6.2 describes a redesigned conceptual model for adoption of SISP. It also considers a proposed framework for evaluation of SISP techniques. Factors and sub-factors derived from the empirical data have been added to the conceptual model as modifications, as shown in Figure 6.1. These factors are support, cost, and performance measurement, while additional sub-factors are technology trends, skills and people, and culture (for example, national culture) as driver criteria. Business strategy, data and information, documentation, and disaster recovery are additional criteria in the requirements factor. As a result, this chapter presents a novel model for the adoption of SISP after revision. This model can be a tool for an IS strategic planning team for the adoption and evaluation of SISP.

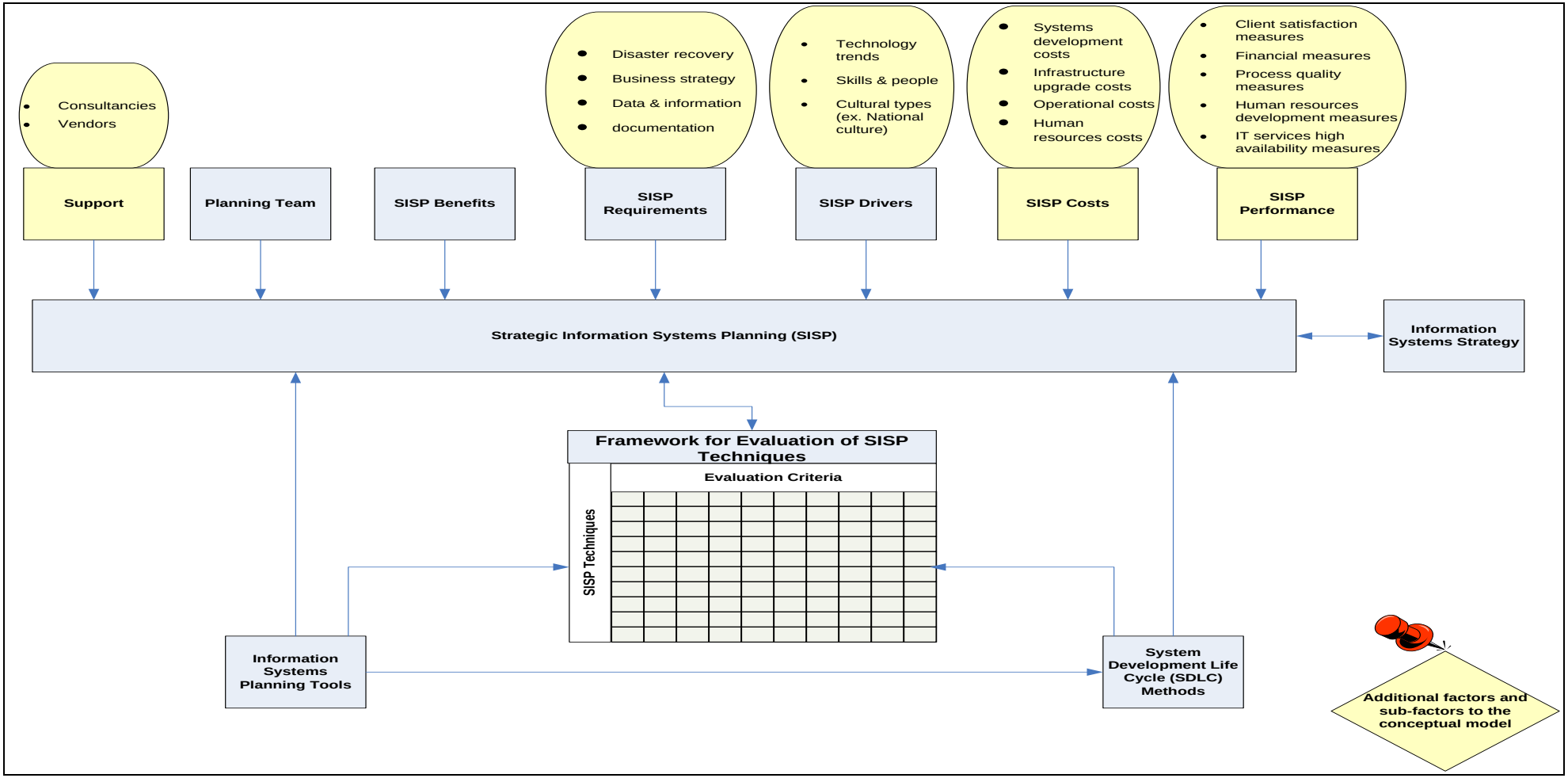

Figure 6.1: The revised conceptual model for the adoption and evaluation of SISP

6.1 Lessons Learned from the Case Studies

This section emphasises the main findings of Chapter 5. This allows other researchers to compare their experience with the case studies reported in Chapter 5, as this thesis aims to understand the wider view of strategic information systems planning adoption instead of creating guidelines for the adoption and evaluation of SISP. With attention to the literature presented in Chapters 2 and 3, some factors were demonstrated in the empirical work. These factors, illustrated in both case studies, contribute towards the adoption of strategic information systems planning. So, *the following points consider the key findings from the empirical work of this thesis:*

- There are many motivations such as strategic, organisational, managerial and technical for adoption of strategic information systems planning as both cases, X airlines and Y bank, illustrated. These are important factors that influence the adoption of strategic information systems planning. These factors are presented as both requirements and drivers of SISP in the proposed conceptual model (Chapter 3). In addition, additional sub-factors have been identified through empirical work to both requirements and drivers.

- From the empirical results, the cost of SISP adoption influenced the decision of X airlines and Y bank to adopt the SISP, because of the risk and lack of experience and learning of SISP projects. Such issues influence the cost and affect the adoption of SISP in firms. Cost is a sub-factor that is considered in the proposed conceptual model in the driver factor (Chapter 3). From Chapter 5, the cases studied provided sufficient data to reorganise the cost as a factor and not sub-factor. This supports the cost analysis to increase the understanding of IS contribution through decision making. Therefore, the cost factor is added in the revised conceptual model as a factor.

- Empirical work showed that support for IS strategic planning was an additional factor for SISP in both cases presented in Chapter 5. X airlines has used support to improve SISP adoption.

- Even though both cases are applying SISP for the first time, they emphasise performance assessment for IS planning. The motives for highlighting this were: (1) the lack of IS strategic planning sophistication and experience and, (2) the importance of evaluation of SISP in both cases through understanding the benefits, requirements and drivers of SISP adoption. The first point indicates that IS strategic planning assessment is a factor that influences the adoption of

SISP in both cases. The second point demonstrates that both X airlines and Y bank desired to understand and assess the level of IS strategic planning that is reached through the existing IS strategic planning process. So, performance assessment is a factor that influences the adoption of SISP and is included in the revised conceptual model.

- X airlines and Y bank made the decision to evaluate SISP processes and techniques prior to the implementation of the SISP plan. Both cases have developed evaluation frameworks for the assessment of SISP processes and techniques. So, both cases have spent time and money to generate their framework, understanding and assessment of SISP processes and techniques. Nevertheless, both organisations express the importance of such a framework as a tool for decision-making in the adoption of SISP.

- From Chapter 5, empirical data shows additional factors to the model of the SISP process evaluation presented in Chapter 3. Both cases indicated additional factors to the proposed model (Chapter 3) that considered: (a) cost; (b) support and; (c) performance assessment. So, all these criteria are related to the SISP process, which are also included in the proposed revised conceptual model. Furthermore, both cases considered that the cost of IS planning is an important factor for IS planning evaluation.

- The empirical data from Chapter 5 reported additional criteria to the framework of the SISP techniques evaluation presented in Chapter 3. Both cases added additional criteria for the proposed framework (Chapter 3) that considered: (a) disaster recovery; (b) business strategy; (c) data & information and; (d) documentation as additional criteria for the requirements factor. Furthermore, (a) cultural (eg. national); (b) technology trends; and (c) skills and people are additional criteria to the drivers factor. So, all these criteria are related to the factors that influence the adoption of SISP, which are also included in the proposed revised conceptual model.

Table 6.1 presents the modifications to the proposed model. These modifications are derived from the empirical data (Chapter 5) and have been added to the revised model.

Additional factors & sub-factors	Y bank	X airlines
Support		
1. Consultants	✓	✓
2. Suppliers	✓	✓
Cost		
1. Systems development cost	✓	✓
2. Operational cost	✓	×
3. Infrastructure upgrade	✓	✓
4. Human resources cost	✓	×
Performance measurement		
1. Client satisfaction measures	✓	✓
2. Financial measures	✓	×
3. Process quality measures	✓	✓
4. Human resources development measures	✓	×
5. Outsourcing measures	✓	✓
6. IT services high availability measures.	✓	×
Requirement		
1. Disaster recovery	✓	✓
2. Business strategy	✓	✓
3. Data & information	✓	×
4. Documentation	✓	×
Drivers		
1. Technology trends	✓	✓
2. Skills & people	✓	×
3. Cultural (e.g. National)	✓	✓

Table 6.1: A summary of the modifications

6.2 Redesigned Conceptual Model for the Adoption and Evaluation of SISP

The empirical data presented in Chapter 5 plays an important role in the development of the redesigned model for adoption and evaluation of SISP, as shown in Figure 6.1. Thus, modifications to the conceptual model (Chapter 3), after it has been investigated through case studies (Chapter 5), are presented in this chapter.

In Figure 6.1 it appears that the revised model for adoption and evaluation of SISP consists of benefits, requirements, drivers, costs, performance measurements, IS strategy, planning team support, and a framework for evaluation of SISP techniques, tools, and methods. All these factors are analysed in this chapter, with modifications highlighted in Figure 6.1.

6.2.1 Benefits

Recognising the benefits of SISP for an organisation is critical in evaluation of the process. Thus an organisation considers the benefits of the process during the early stage of process design in order to determine its contribution to the organisation. In both cases X and Y, it appears that the benefits of IT were verified; however, the way they verified these benefits were different in terms of specification of the benefits: SISP benefits in X are not specific or focused, whereas in Y they are clear, specific, and focused. X considered the benefits of particular systems such as ERP instead of the strategic benefits of IT. This means it did not consider the general strategic benefits of IT; however, these benefits are important because of their influence on requirements and drivers of strategic planning for the organisation as well as on the IT strategic plan (Ward and Peppard, 2002; Earl, 1996, Mohdzain *et al*., 2007, Applegate *et al*., 2008). Thus, this factor has more weight when benefits such as business benefits, IS benefits, and global benefits are considered (Turban *et al*., 2005; Dhillon, 2005). Nonetheless, clear benefits, illustrated by organisations, lead to greater understanding of the requirements and drivers that support obtaining these benefits.

6.2.2 Requirements

The examples of two global organisations (X and Y) given in Chapter 5 show that SISP adoption involved crucial consideration of strategic requirements of the organisation and of IT. The significant IT strategic contribution led both organisations to justify and evaluate the implications of the SISP process. Doing so demonstrated that requirements are a major factor influencing the adoption of IT strategic planning. This result agrees with theoretical work such as that by Luftman (2000), Robson (1997), and Benson *et al*., (2004) which encourages firms to justify their requirements prior to adoption of SISP. Requirements as an aspect in the adoption of SISP are also noted in the research of Ward and Peppard (2002).

As mentioned in Chapter 3, requirements are classified into: (a) business, (b) IS, and (c) global requirements. Lederer and Salmela (1996) defined business requirements as those factors connecting the IT plan with a business plan; thus business requirements refer to those requirements related to IT-business integration, IT applications, support for communications, and improved governance. IS requirements focus on many issues, including scope and architecture improvement and understanding of both the internal and external environments of

an organisation. Global requirements focus on requirements such as improving partnerships and supporting planning process flexibility. As a variety of benefits are offered, so also do a variety of requirements exist, including business requirements, IS requirements, and global requirements. Integration requirements are examples of IS requirements, whereas IS integration is an important stage in the planning process. In addition, the requirements are classified to ease consideration of benefits; however, these requirements go with drivers that support the evaluation of planning techniques.

6.2.3 Drivers

Many researchers such as Earl (1996), Applegate *et al*., (1999), and Turban *et al*., (2005) support the notion that the adoption of SISP has an impact on organisations. This impact can be positive or negative in many respects, including the process of SISP. Firms need to navigate the drivers of SISP before making a decision to adopt it. As mentioned, drivers are classified as (a) business, (b) IS, and (c) global drivers. Ezingeard *et al*., (2007) reported that business drivers are those factors that influence the adoption and evaluation of strategic information systems. Thus, business drivers refer to those drivers related to business process (cost, time, effectiveness), executive skills and commitment, the nature of the organisation, and the organisational situation. IS drivers are many, including users' politics, budget and cost, and IT architecture. Global drivers focus on global business and geographical spread, joint resources, and global products/services (Laudon *et al*., 2004; Newkrik *et al*., 2003; Shore, 2006). As a variety of benefits and requirements exist, so also do a variety of drivers: business drivers, IS drivers, and global drivers. Integration drivers are examples of IS drivers, whereas IS integration is an important stage in the planning process. However, these drivers go with both benefits and requirements in supporting the evaluation of planning techniques. Nevertheless, all these different drivers can be shared within this type of categorisation. Global products/services are an example of a shared driver because they consider business, IS, and global dimensions. What is important here is to consider the driver itself for the organisation in a complex situation where business identifies drivers. The classification of these drivers thus supports organisations in considering the important drivers that impact them.

Strategic adoption for IS obviously presents challenges for organisations that must consider these challenges prior to adoption of SISP. As mentioned in Chapter 5, empirical evidence supports the consideration of IS strategic drivers by the planning team before the adoption of SISP. Both case studies (X and Y) have shown that SISP is related to a diversity of drivers even if they are not called

drivers. Y, for example, considers them external environmental impacts as mentioned by (Mendoza *et al*., 2006; Turban *et al*., 2005).

This factor of IS strategic drivers as well as strategic requirements affects the ways in which strategy is analysed and implemented, because the drivers and requirements influence decision-making about the application of specific techniques. The author emphasises business, IS, and global drivers in this research to present a novel model. Some models focus on specific drivers such as business, IS, or global drivers. The comprehensive framework proposed by Ives *et al*., (1993), which applies global business drivers, is an example.

6.2.4 IS Strategy

The importance of IS strategy lies in control, implementation, and learning from feedback for the planning team. This factor is also influenced by the method (SDLC methodologies) because the IS strategy comprises projects with different applications as considered by (Turban *et al*., 2005). IS strategy is the result of the SISP process (Robson, 1997). This factor comprises the roles that IS plays in business. Feedback from stakeholders who implement this strategy is thus important in term of changes in the business environment for both internal and external interests. The feedback supports the flexible planning and implementation of IT strategy that can react to change. The case studies presented in Chapter 5 show that IS strategy influences the adoption and evaluation of SISP. This result is in agreement with theoretical models such as that offered by Earl (1996), who considers IS strategy a critical factor that influences the adoption of SISP.

6.2.5 Performance

The importance of performance was presented in terms of the case studies in Chapter 5. It was concluded that IT performance influences the adoption and evaluation of SISP. IT performance is connected to the level of transformation from one level of planning to another. Both cases have specified phases for increasing the level of contribution of IT. In particular, IT performance refers to the level of understanding of the planning process for IT, such as mature planning, understanding of the IT environment, such as e-business, and understanding of organisational systems such as core business systems (Luftman, 2000). IT performance considers the measurement criteria of each IT objective (Robson, 1997).

An IT unit requires a high level of IT performance to avoid overlapping IT functions. This helps reduce IT cost, maximise utilisation of IT resources, build integrated information systems, and achieve satisfactory IT services (Weill & Ross, 2004; Ward and Peppard, 2002); therefore, IT performance is connected to IT service satisfaction, which influences the adoption and evaluation of SISP. Nevertheless, IT performance has encouraged both case study organisations to develop an IT governance mechanism. Table 6.2 presents the performance criteria for both case studies.

Y bank	X airlines
• Client satisfaction measures • Financial measures • Process quality measures • Human resources development measures • IT services high availability measures	• Client satisfaction measures • Integrated process measures • Outsourcing measures

Table 6.2: Performance criteria for both case studies, X airlines and Y bank

In Table 6.2 it should be noted that the performance criteria are different depending on the goals, objectives, methods, techniques, and tools of the information systems plan.

6.2.6 Cost

From the data collected from both case studies, it appears that cost is an important factor affecting the adoption and evaluation of SISP. Both cases consider the cost of IT investment in the evaluation process for the adoption of SISP in order to justify its implementation as mentioned by (Irani, 2002); nevertheless, planning scenarios are based on cost, for two reasons: (1) to allocate an IT budget with top management support, and (2) to evaluate the improved planning process for IT (Hartono *et al*., 2003; Robson, 1997; Ward and Peppard, 2002; Weill *et al*., 2004); however, cost is considered a sub-factor in SISP drivers, but it seems important enough to be considered a factor because its role affects the quality and moderation of IT. Nevertheless, different types of costs exist in terms of different investments, uses, and evaluations of IS between industries or organisations. Table 6.3 presents the types of costs for SISP in both case studies.

Y bank	X airlines
• Systems development cost • Infrastructure upgrade • Operational cost • Human resources cost	• Systems development • Hardware and software management

Table 6.3: The types of costs of SISP for both Y bank and X airline

6.2.7 Support

Support can play an important role in the adoption of strategic information systems by organisations. In both cases (X and Y) this factor occurred in the investigation process. Both cases mentioned that consultants' and suppliers' support had affected the decision to use SISP (Evans *et al*., 1999; Benson *et al*., 2004; Ward and Peppard, 2002). This concerns the connection between the framework for evaluating planning techniques and the adoption of SISP. As presented in the case of X airlines, the consultant focuses on how to develop a process for selecting suppliers who also offer support for the IT master plan. Nevertheless, both consultants and suppliers played important roles in developing the IT master plan for X airlines in terms of analysing and developing the IT strategy (Laudon *et al*., 2004; Turban *et al*., 1997; Ward and Peppard, 2002). Their roles are also supported by case studies of consultants' clients. Thus, X asked a consultant to evaluate its IT situation and develop a strategy for determining suitable suppliers, so the consultant's support was a crucial factor in the adoption of SISP for X. On the other hand, Y worked with consultants and suppliers in the early stage of its IT strategic planning and was not successful, with incomplete projects bought at great expense. Consultants and suppliers thus supported specific projects in the IT strategic plan but did not play a role in developing the strategic plan of Y; however, other factors must be considered such as people skills and knowledge that influence the need for support (Luftman, 2000; Galliers *et al*., 2003; Weill *et al*., 2004; Ariyachandra *et al*., 2008).

6.2.8 Evaluation Framework for Techniques

As reported in Chapters 2, 3, and 5, investigation of the SISP process is derived from applying strategic planning techniques to IT planning. Therefore, a framework for the evaluation of strategic planning techniques has been developed (Section 3.5). This framework (Tables 3.6 and 3.7), proposed in Section 3.5, is part of the research conceptual model (Figure 3.2). This proposed framework was examined through interviews in the case studies. From this examination of the proposed framework, some points were recognised by the interviewees:

- The process of developing the proposed framework can be described as a learning process in terms of developing criteria, and analysing and building relationships between criteria. Furthermore, this process can build knowledge for organisational planning and change as different situations require different techniques.

- The developed framework is recognised as a tool for decision-making in the SISP process, a fact supported by both case studies. X airlines emphasised the need for this framework to deal with consultants and suppliers, whereas Y bank considered the framework assisted in the improvement of its analysis and application of the techniques.

Some modifications to the framework were identified during the data collection process. These modifications are minor and can support the decision-maker in evaluation of SISP techniques and adoption of SISP. These modifications, presented in Section 6.2, show the empirical data gained from both cases. These modifications consider SISP requirements and SISP drivers. To both factors of requirements and drivers, additional criteria have been added. As presented in Chapter 5, the criteria for business strategy as a requirement for SISP are considered in both cases, whereas data and information as well as documentation are considered additional criteria by Y for SISP requirements. On the other hand, both case studies considered technology trends and cultural issues (e.g., national culture) as additional criteria for SISP drivers (Newkirk *et al*., 2003; Pant *et al*., 1999; Ward and Peppard, 2002; Laudon *et al*., 2004), while Y also considered skills and people (Luftman, 2000; Galliers *et al*., 2003; Weill *et al*., 2004; Ariyachandra *et al*., 2008).

The modified framework for evaluation of SISP techniques is presented in Table 6.4 (requirements). All additional criteria are highlighted in Table 6.4.

Technique	Requirement															
	Disaster recovery	Business strategy	Data & information	Documentation	Communication maturity	Competency measurement maturity	Governance maturity	Partnership maturity	Scope and architecture maturity	Skills maturity	Senior management support and commitment	Strong leadership	Understanding technical environment	Understanding environment	Planning process flexibility	Adaptable planning model and process
SWOT																
Opportunity categorising																
Strategic importance matrix																
Benefit level matrix																
5 forced model																
Generic business strategies																
Information intensity matrix																
Impact categorising																
Industry analysis																
Strategic thrusts																
Strategy set transformation																
Business modelling																
Critical success factors																
Critical set analysis																
Lateral thinking																
Business systems planning																
Scenario planning																
Case-based reasoning																
Cost-benefit analysis																
Balanced scorecard analysis																
Process analysis																
Stage of growth																

Table 6.4: The additional requirements as criteria for evaluation of SISP techniques

The modified framework for evaluation of SISP techniques is presented in Table 6.5 (drivers). All additional criteria are highlighted in Table 6.5.

Technique	Driver																		
	Culture (e.g. National)	Technology trends	Skills & people	Users politics	Time	Budget and cost	IT architecture	Business process	Executive skills and commitments	Global business and geographical spread	Nature of the organisation	Importance of IS	Organisation situation	Joint resources	Risk reduction	Global products/services	Quality	Suppliers	Corporate customers
SWOT																			
Opportunity categorising																			
Strategic importance matrix																			
Benefit level matrix																			
5 forced model																			
Generic business strategies																			
Information intensity matrix																			
Impact categorising																			
Industry analysis																			
Strategic thrusts																			
Strategy set transformation																			
Business modelling																			
Critical success factors																			
Critical set analysis																			
Lateral thinking																			
Business systems planning																			
Scenario planning																			
Case-based reasoning																			
Cost-benefit analysis																			
Balanced scorecard analysis																			
Process analysis																			
Stage of growth																			

Table 6.5: The additional drivers as criteria for evaluation of SISP techniques

The inclusive arrangement of evaluation criteria represents the originality of the proposed framework, as presented in Figure 6.1. It adds value to understanding of the application of different IS strategic planning techniques. It supports decision-makers in improving application of the SISP process by identifying misunderstanding of its techniques. Since the business environment is unpredictable, the strategic planning process should be flexible to react to changes. This flexibility can be improved through an understanding of applications of various planning techniques within the planning process. Thus, the proposed framework can be a reference point for decision-makers throughout the planning process. Nevertheless, this framework supports the planning team in identifying suitable tools to serve the applied technique. In addition, this framework supports the combination of more than one technique in order to face a variety of requirements and drivers. It further supports evaluation of the method (SDLC methodologies) to be applied when project priorities are completed, because projects need more detail and need to deal with different levels of requirements and drivers at operational levels.

6.2.9 Strategic Planning Tools

This significant factor supports deep analysis of data. These data are important as input into SISP techniques, so strategic planning tools support the planning team in terms of deep analysis of issues such as workflow that influence strategic techniques. The details of planning are very important for building strategy. When organisations wish to create IS strategic integration, they need frameworks for planning of this type. These frameworks contain the tools and techniques of planning in flexible and adaptable processes to reach goals. Therefore, this factor comprises the roles of IS analysis in the business as they come from different stakeholders. These stakeholders implement the strategy. Both case studies investigated in Chapter 5 shows that strategic planning tools influenced the adoption of SISP, as confirmed by Robson (1997) and Avison *et al*., (2003).

6.2.10 Systems Development Life Cycle (SDLC) Methods

SDLC is crucial in this process. This means that every organisation considers a specific set of processes supported by techniques and tools. These processes aim to develop information systems (such as application and system); whatever the goal of the method, there are sequences in the processes. This important factor thus supports the planning team in controlling the process of planning. The methods chosen by an organisation are influenced by IT projects and the IS approach (such as impact, alignment, increments) of the organisation in developing IT. It also impacts IT strategy. Therefore, this factor plays an important role for strategic planning techniques, tools, and stakeholders. Both case studies investigated in Chapter 5 were influenced by a strategic planning method to adopt SISP, as also mentioned by Avison *et al*., (2003).

6.2.11 Planning Team

The planning team is a vital factor that affects the adoption and evaluation of the SISP process. In Chapter 2 it was mentioned that the development management team should understand the entire process, including suppliers, business partners, and evaluation of system performance. The role of the planning team is not simple and easy, because no comprehensive and general approach exists for strategic planning of IS, when there should be a connection between the elements of an organisation that allocates its important IS elements at the strategic level (Benson, 2000; Gottschalk, 1999; Prahalad *et al*., 2002; Laudon *et al*., 2004; Robson, 1997; Pant & Hsu, 1999). So, an organisation can create a model that supports its IS planning by building good team planning. Because the strategy team decides the type and level of strategy and how it can be used, shifting from one level of planning

to another will improve IS strategic planning by using resources more efficiently. The empirical data presented in Chapter 5 shows that both case studies (X airlines and Y bank) are involved in developing planning teams. In Section 5.1.4, X developed dedicated planning teams responsible for different planning dimensions within its master plan for IT (Luftman, 2000; Ariyachandra *et al*., 2008).

6.3 Conclusion

After arguing, justifying, and arranging SISP issues, the researcher presented a model for adoption and evaluation of SISP and classified the factors relating to SISP. These categories of factors support building the conceptual model of SISP in terms of adoption and evaluation. Nevertheless, they also support development of the framework for evaluation of SISP techniques. This chapter has thus identified modifications to the proposed model from empirical evidence presented in Chapter 5. Therefore, a redesigned model process was the aim of this chapter; however, these modifications consist of factors and sub-factors derived from the empirical data. These factors and sub-factors increase understanding and analysis of the redesigned conceptual model of SISP. An IS planning team can increase its contribution to the decision-making process for adoption and evaluation of SISP.

From the above, the conceptual model presented in Figure 6.1 is novel in terms of the following:

- According to the literature argument presented in the second chapter, theoretical models for adoption and evaluation of the SISP process are lacking. The conceptual model presented in this thesis was developed to fill this gap by increasing understanding of the adoption and evaluation of SISP.

- According to adoption and evaluation considerations, a comprehensive arrangement of factors and sub-factors affecting SISP were classified (Chapters 2 and 3). Nevertheless, additional factors and sub-factors were identified during the case studies (Chapter 5); consequently, the proposed model for adoption and evaluation of SISP was developed taking all these factors and sub-factors into consideration.

- According to the continuing demands of the planning process, the IT planning team needs a tool to support it through the planning stages. The novel model of SISP adoption and evaluation can be used as a tool in two ways: (1) as a tool to determine which factors and sub-factors should be identified for the planning process, and (2) as a framework for evaluation of strategic planning techniques by decision-makers. Moreover, it can support both practitioners and researchers in analysing and applying the adoption and evaluation of SISP.

Chapter 7: Conclusions, Contributions, Limitations and Future Work

7.0 Introduction

This chapter aims: (a) to build a conclusion for the research of this thesis and, (b) to suggest future work for this area of this research. Therefore, this chapter starts with a summary of the lessons learnt through the research process. These lessons consider the research methodology and recommendations. Then, a summary of the thesis and its conclusions are illustrated. The conclusions consider the literature and empirical research of this thesis. Later, the research process is critically evaluated and presented. So, the novel contribution of this thesis is stated and summarised. Finally, recommendations for further research in the area of strategic information systems planning are suggested.

7.1 Research Overview and Findings

As presented in Chapter 1, this thesis started with an overview of the research problem. It has been recognised and confirmed in both literature and empirically that IS strategic planning is a major problem for firms. IS strategic integration and IS strategic evaluation were not considered in terms of strategic planning value but have developed as a result of business demand and technological innovation as a support activity. Nonetheless, the absence of a strategic management contribution in IS strategic planning is still not sufficient especially in the unpredictable environment of business. Consequently, firms have developed technological architecture that consists of complex technological infrastructure. The outcomes of this have caused many problems such disintegrated systems, unjustified IS investment and incomplete IS projects.

Many earlier approaches to IS strategic planning have been confirmed as unsatisfactory, because they could not provide acceptable IS investment justifications in respect of cost and time. Moreover, the increase of IS as a strategic activity to obtain competitive advantage in many industries has become

crucial and valuable. This needs to employ different strategic planning techniques that support competitive advantage. These techniques are different and need experience to be employed. Therefore, decision-makers require an understanding of these techniques and the way they should be applied. The implication of this is that firms need to have a framework that will support them to simply adapt these techniques to changing business needs. With this in mind, IS strategic planning factors can play an important role in allocating suitable planning techniques. So, the first chapter aimed to address the need for this research. A need was expressed to evaluate the adoption of strategic planning processes and techniques in global organisations. Therefore, development of a framework of references for IS strategic planning techniques translates into a model that can support the decision-making process in the adoption of IS strategic planning. After that, a general overview of this thesis was considered in Chapter 1.

With the aim of this thesis in mind, background theory (Chapter 2) was established through a literature review about the motivation for adoption of strategic information systems planning. This motivation was reflected in both Chapters 5 and 6 after they had been confirmed in the empirical work. Then Chapter 2 went into more depth in the investigation of SISP adoption through the literature to allocate factors and models for its adoption. The result of this investigation revealed that there is an absence of theoretical models that consider SISP adoption in since of the connection between IS strategic planning and strategic management techniques. Therefore, a summary was given of the factors that influence the adoption of SISP. A discussion about the results of the literature review on SISP was presented. A critical evaluation was given of IS strategic planning techniques in order to resolve the confusion regarding the adoption of SISP processes and techniques. In doing this, a novel classification for categorising different IS strategic planning techniques was developed. This classification of techniques supports both researchers and practitioners by giving an overview of a wide range of IS strategic planning techniques which may improve the efficiency of decisions. This allows the improvement of IS sophistication through performance measurement criteria. Further, developing the process of evaluation is a contribution since it supports the learning process of organisations. This learning process allows decision-makers and researchers to understand the factors that influence SISP (see Chapter 3). In addition, a literature review of SISP benefits, requirements and drivers was presented. There were many reasons for this: (1) to improve understanding of SISP through these criteria, and (2) all these benefits, requirements and drivers are stated as important factors that could influence the adoption of SISP and this was confirmed in the empirical work (see Chapter 5). Benefits, requirements and drivers were classified. In doing so, another contribution to SISP literature emerged since it improves knowledge of these classifications as presented in Chapter 2. These classifications can improve the analysis and evaluation of SISP. From the literature review on SISP, a rationale for this thesis was developed. Its

aim is to contribute through solving the obstacle of planning techniques applied in the adoption of SISP.

From Chapter 2 the investigation of SISP issues led to the generation of a proposed conceptual model in Chapter 3. This comprises: (a) a framework for evaluating strategic information systems planning techniques and, (b) a conceptual model for adoption and evaluation of SISP. Strategic information systems planning processes and approaches were analysed to provide in-depth understanding of this process. Crucial criteria that influence the adoption and evaluation of SISP were considered. These criteria considered: (a) benefits of SISP; (b) requirements of SISP and, (c) drivers of SISP. A discussion and empirical confirmation that these criteria can be applied for evaluation of strategic information systems planning was set out. These criteria are the basis for the novel comprehensive framework for evaluation of SISP techniques. As a result, a summary of IS strategic planning techniques has been developed to support other researchers, practitioners and readers in understanding the evaluation of the IS strategic planning process. This framework for evaluation of IS strategic planning techniques is an important factor that influences the adoption and evaluation of SISP. Then, from an investigation of other factors that influence the adoption and evaluation of SISP, the novel conceptual model was developed and proposed (see Figure 3.2). This addresses the goal of this research as stated in Chapter 1. This conceptual model was examined empirically in Chapter 5, and then modified in Chapter 6. To examine the issues of this research as identified in both Chapters 2 and 3, the research methodology chapter was developed and empirically adopted in Chapter 4 (data theory). The rationale considered philosophies, approaches, strategies and data collection methods as well as appropriateness to the aims of this research. This research methodology was applied to two global organisations to investigate the issues of this thesis. As considered in Chapters 2 and 3, these issues related to the factors that influence the adoption of strategic information systems planning. After that, both case studies were analysed and presented in Chapter 5 as the data theory part. The empirical analysis produced empirical evidence from both case studies. This illustrated both human and organisational perceptions during the adoption process of strategic information systems planning. Many of the research issues identified in Chapters 2 and 3 were confirmed through the evidence obtained from X airlines and Y bank. In addition, some additional modifications to the proposed conceptual model and the evaluation framework are driven by the empirical data (X airlines and Y bank). All these modifications and findings are presented in Chapter 6 (novel contribution), and the revised conceptual model is presented in Figure 6.1. This revised conceptual model consists of eleven factors that influence the adoption and the evaluation of SISP in global organisations. These factors are:

- Planning team
- SISP benefits
- SISP requirements
- SISP drivers
- IS costs
- IS performance assessment
- Support
- SISP techniques
- SISP methods
- SISP tools
- IS strategy

The revised conceptual model and the proposed framework for SISP techniques evaluation can be used as a reference point for organisations considering the adoption of SISP. It is considered that the goals identified in Section 1.3 have been met. *The key findings resulting from this research are:*

- A review of the normative literature suggests that there is an absence of theoretical models that describe the adoption and evaluation of strategic information systems planning. This is attributed to the fact that SISP is a complex research area with various issues that need more in-depth investigation.

- The literature review on the IS strategic planning area suggests that planning process misunderstandings in global organisations lead to conflicts in SISP adoption. This is caused by the ever-changing environment within global organisations and, while many strategic planning techniques exist, there is no single technique that can be used as a short cut in the planning process and high-level skills are required to evaluate, select and use these various techniques. Consequently there is a requirement for an evaluation framework that will support the planning team in selecting appropriate IS strategic planning techniques throughout the IS planning process.

- The aim of this research was to address these gaps in the literature by proposing an empirically-based novel conceptual model for the adoption and evaluation of SISP. The proposed conceptual model is based on 11 important factors for SISP adoption which are: (a) planning team; (b) benefits; (c) requirements; (d) drivers; (e) costs; (f) IS performance

measurement; (g) framework for the evaluation of SISP techniques; (h) SISP methods; (i) SISP tools; (j) support and (k) IS strategy.

- The proposed conceptual model can be employed as a tool for decision-makers to support firms and allow other researchers to understand and analyse SISP adoption. The concepts in the proposed model can be applied to the adoption of IS-Business strategic integration since such integration should focus on strategic planning techniques and processes. From the empirical evidence of X airlines and Y bank, the evaluation framework described in the conceptual model can be employed for selection, evaluation and adoption of suitable planning techniques.

- A classification of SISP benefits is presented in Table 2.8, according to various models such as strategic alignment models (SAM) by Henderson and Venkatraman, the organisational fit framework (OFF) by Earl, and SISP model by Pant *et al*., This classification divides benefits that are derived from global SISP into: (a) strategic analysis; (b) competitiveness and; (c) alignment. The researcher states and empirically verifies that the same models can be used for the classification of SISP requirements and drivers. In addition, the empirical evidence directed the researcher to classify both requirements and drivers into (a) global; (b) integration and, (c) competitiveness.

- With regard to the extensive literature review (Chapters 2 and 3), the researcher goes on to clarify the conflicts regarding the SISP adoption. This shows that SISP can be applied for the adoption of IS planning process and integration supported by strategic planning techniques. These techniques have been classified in this research according to the strategic focus into: (a) analysis; (b) competitiveness and; (c) alignment.

7.2 Research Limitations

As the aim of this thesis was to develop a model for the adoption and evaluation of strategic information systems planning that can be applied as a reference point for decision-makers, there was a need for rigorous research methodology. This methodology can be employed as a framework for expanding and developing other models for IS strategic adoption. The qualitative data methods were applied and justified to collect the necessary data as presented in Chapter 4. The motivation for

employing qualitative methods was that they are associated with organisational and human matters. Thus, rich data was collected as this research required. However, there are weaknesses in qualitative research methods as follows:

- As this research took a long time to collect and analyse the data, it confirms the time-consuming nature of this method. Nevertheless, the data was analysed according to the multiple case studies approach to overcome problems related to invalid conclusions.

- The level bias during the interpretation of events from the subject point of view by the researcher was in conflict with the qualitative approach given its subjective nature. So, the researcher followed the multi-method for data collection as data triangulation to collect the necessary data while avoiding bias where possible.

- As a qualitative approach can be criticised by not considering theoretical part next to the research part and their relation, the researcher went on to develop a proposed conceptual model for adoption of SISP with its factors as well as a proposed framework for evaluation of IS strategic planning techniques as a structured relationship between the theoretical and empirical parts. With this in mind, the researcher decided upon the richness and variety of the data collected through qualitative methods which by its nature is unstructured in the theoretical part. Thus, grounded theory appears as a suitable research methodology to investigate the adoption of SISP.

- The sample size is an important issue in generalising from research issues. As this research considers rich and deep data, the sample of organisations was restricted to two. In addition, increasing the number of cases would not have influenced its external validation. In fact, as mentioned in Chapter 4, the replication procedure does not involve easily in interpretivism research philosophy in since of unstructured research and then not controlling research investigation process. So, this research resolved this issue by applying a structured research methodology through a theoretical conceptual model and framework and different data collection methods were employed. As Chapter 4 discussed, the research methodology was developed to be safe in allocating and investigating different independent variables guided by the literature review. From this evaluation of the research process as not considered very important concern where grounded theory strategy have been suitable in since of freedom and scope to discovery, theory building and testing.

7.3 Statement of Contribution and Research Novelty

The different components of this research were the basis for each individual element of the contributions produced in this thesis. Thus, Chapters 1, 2 and 3 considered related information and proposed a conceptual model for the research methodology presented in Chapter 4, while the development and demonstration of the case studies was presented in Chapters 4 and 5 and, finally, the practical analysis of the cases and the redevelopment of conceptual model were presented in both Chapters 5 and 6. The result of this thesis has produced a novel contribution to the subject of strategic information systems planning and has expanded knowledge of the subject. However, the *key contributions and novelty of this research are explained more fully in the following sections.*

7.3.1 A Novel Model for Adoption and Evaluation of SISP

The comprehensive novel model for the adoption and evaluation of SISP (see Figure 6.1) is the main contribution of this thesis. This model is presented to address a lack of theoretical models explaining the adoption and evaluation of SISP as reported in Chapters 2 and 3. This model was developed as a conceptual model in Chapter 3 and empirically investigated in Chapter 5. The results of this investigation were the basis for evidence and model modifications in Chapter 6. There are two levels of novel contribution in this model. Firstly, the proposed model takes account of previous studies in SISP and its factors and this supports the conceptual level of this contribution. The researcher involved these studies and extended them to merge the factors recognised in the normative literature. In addition, factors from empirical work have also been combined in the proposed model, thus developing a consistent model for adoption and evaluation of SISP. Secondly, the concept and process of the proposed model can be applied as a map for the evaluation process of IS as a learning process. Nevertheless, this model contains a proposed framework for evaluation of IS strategic planning techniques as a factor that influences the adoption of SISP. This framework is novel since it is part of the proposed model as well as a classification of IS planning techniques. This framework supports decision-makers' understanding and evaluation of planning techniques during the adoption of SISP.

7.3.2 A Novel Framework for Evaluating SISP Techniques

As mentioned in the previous section, the framework for evaluation and assessment of IS strategic planning techniques is a novel contribution in the proposed conceptual model. The important challenges in SISP adoption were identified and reported in Section (2.2). While Sections (5.1.2), (5.1.3), (5.2.2) and (5.2.3) empirically confirmed these challenges. Nonetheless, in Chapter 5 the

need to understand different IS planning techniques is established before selecting one during the planning process. Given these challenges, the framework for evaluation of SISP techniques was developed in Chapter 3 and empirically confirmed in Chapter 5. However, the result of the empirical work demanded some revisions to the framework since additional criteria were added as presented in Table 6.4 and Table 6.5. As the framework for evaluation of SISP techniques was based on the criteria that emerged from the literature review and empirical work, it was revised according to the criteria derived from the case studies. These criteria were divided into three groups as presented in Chapters 2 and 3. These groups are: (a) SISP benefits; (b) SISP requirements and; (c) SISP drivers. Therefore, this framework can be applied as a tool for decision-makers to address combining different techniques of SISP during the planning process. As this framework identifies the differences between various techniques of IS planning, it assists in the selection of the most appropriate techniques during IS planning. The framework also supports organisations in building their knowledge of IS planning techniques. Therefore, this evaluation framework contributes to understanding the usefulness of each technique and combinations of different techniques as appropriate.

7.3.3 Classifications of SISP Benefits, Requirements and Drivers

In Chapters 2 and 3 different classifications of benefits, requirements and drivers of SISP were presented as further contributions to this research. As mentioned earlier in this chapter these classifications were derived from a wide- ranging literature review in the area of SISP. These classifications address two issues: (a) different cases in SISP may benefit from these classifications in adoption and understanding of SISP matters and; (b) they expand the knowledge of SISP by the addition of these classifications of benefits, requirements and drivers in the absence of such taxonomies in the SISP literature. Thus, both researchers and decision-makers can benefit from such classifications in understanding the impact of SISP and then adding to the value and evaluation of such planning.

7.4 Recommendations for Further Work

As presented in previous sections in this chapter, a model for adoption and evaluation of SISP has been developed as well as a framework for evaluation of SISP techniques. Both the proposed model and framework were supported empirically by two global organisations in different industries. Further refinement of this model and framework is needed. Therefore, further work suggested from this thesis can be addressed as follows:

- Increase the generalisation of the proposed model as well as the framework. This can be achieved through a large-scale study that considers quantitative as well as qualitative approaches. Obviously, a quantitative approach would not have been appropriate before the development of the proposed model and framework as presented here. But examination of a wide range of different organisations through a quantitative approach could enrich, verify and add to the wide range of criteria and factors of SISP. More cases studies would also be valuable since an in-depth understanding of both organisational and human issues in the area of SISP is very important.

- As presented in Chapter 4, this research considered global organisations as segmentation. So, future research could consider different sectors such as small and medium-sized enterprises (SMEs) and public organisations. Thus, gaining an understanding of the impact of SISP within these sectors.

- As addressed in this thesis, there are different factors and criteria that influence the understanding, adoption and evaluation of IS strategic planning. So, future study could consider each of these factors and criteria to gain a greater understanding of their influence on the adoption and evaluation of SISP. In addition, a study to prioritise the most important factors and criteria could also be considered in future work.

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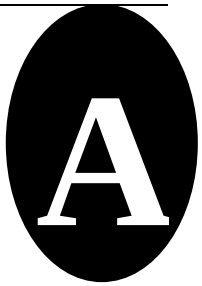
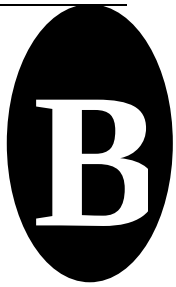


Appendix A: Abbreviations

A	
ASG	Automation Support Group
B	
BP	Business Plan
B2B	Business-to-Business
B2C	Business-to-Consumer
BS	Business Strategy
BSP	Business Systems Planning
BPR	Business Process Re-engineering
C	
CIO	Chief Information Officer
CEO	Chief Executive Officer
c-Commerce	Collaborative-Commerce
CSF	Critical Success Factors
CBP	Critical Business Processes
D	
DSDM	Dynamic Systems Development Method
DFD	Data Flow Diagramming
E	
e-Commerce	Electronic-Commerce
e-Business	Electronic-Business
e-Government	Electronic-Government
ERP	Enterprise Resource Planning
EAI	Enterprise Application Integration
EFT	Electronic Funds Transfer
EDI	Electronic Document Interchange
e-Opportunity	Electronic-Opportunity
e-Marketing	Electronic-Marketing
e-Vision	Electronic-Vision
ETHICS	Effective Technical and Human Implementation of Computer-Based Systems
F, G	
-	-
H	
HW	Hardware
I	
IS	Information Systems
IT	Information Technology
ISP	Information Systems Plan
ISS	Information Systems Strategy
IOS	Inter-organisational Information Systems
IE	Information Engineering
IDEF	Integrated DEFinition

J	
JSD	Jackson Systems Development
JMRAD	James Martin's Rapid Application Development
JAD	Joint Application Development
K, L	
-	-
M	
MIS	Management Information Systems
N	
NCC	National Computing Centre
O	
OFF	Organisational Fit Framework
P	
PI	Process Innovation
PRINCE	Project in Controlled Environments
PC	Personal Computer
Q	
-	-
R	
R&D	Research and Development
RAD	Role Activity Diagramming
S	
SISP	Strategic Information Systems Planning
SIS	Strategic Information Systems
SAM	Strategic Alignment Model
SDLC	Information System Development Life Cycle
SM	Strategic Management
SMD	Strategic Management Development
STRADIS	Structured Analysis, Design, and Implementation of Information Systems
SSADM	Structured Systems Analysis and Design Method
SSM	Soft Systems Methodology
SWOT	strength, weakness, opportunities, threat Analysis
ST	State-transition Diagramming
SW	Software
T	
TQM	Total Quality Management
U	
UK	United Kingdom
USA	United State of America
UML	Unified Modelling Language
V	
W	
WISDM	Web Information Systems Development Methodology
X	
XML	eXtensible Mark-up Language
Y	
YSM	Yourdon Systems Method
Z	
-	-



Appendix B: Interview Agenda

The interview agenda aims to examine and evaluate the strategic information systems planning (SISP) process in global organisations.

This agenda consists of two parts divided as:

A. General information of organization
B. Strategic planning information

The Interview Code:
Date of the interview:
Time:

Participants' Personal and Information Sheet

Participant's name……

Participant's occupation……...

Length of experience in organization (years)…….. ……

E-mail……...

Organization name……...

Address……

……...

Telephone……, extension……...

CONSENT FORM

THANK YOU FOR READING THIS INFORMATION SHEET

Title: Examination and evaluation of the strategic information systems planning process.

Name of researcher: Abdullah Basahel

- **Please initial box**

1. I confirm that I understood what the study is going to be about and I have had the opportunity to ask questions ☐
2. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason, and without my legal rights being affected. ☐
3. I understand that this is a PhD project. ☐
4. I agree to the interview being audiotaped. ☐
5. I agree to take in the above study. ☐

Name of participant……

Signature……**Date**……..

Name of researcher……..

Signature……**Date**…….

1 copy for participant and 1 for researcher

A. General information of organization

A.1 How many employees are working in your organization? ☐

A.2 Does your organization work globally? Yes No

If yes, how many countries do involve in your business? ☐

A.3 What are the core businesses of your organization?

……

……

……

……

……

……

……

A.4 How many business units does your organization have? ☐

Can you specify them……

……

……

……

……

……

……

……

……

B. Strategic planning information

B.1 What are the motivations for adoption SISP process?

B.2 What difficulties did your organization have before the adoption of SISP process (e.g. business units' goals alignment)?

B.3 What types of strategies did supported by IS?

Strategy type	IS support and use
Cost leadership	
Differentiation	
Growth	
Alliances	
Innovation	
Improve internal efficiency	
Customer-orientation approaches	
Other ------	
Other ------	

B.4 What type of roles does IS activity involved within your organization?

Role	Description
Administrative	
Operational	
Competitive	
Other ------	
Other ------	

B.5 Does IS activity allow organization to manage other business activities? How?

B.6 Does your organization has planning team? Who are the members?

B.7 Does your organization has central integrated infrastructure or every business units has its own IS infrastructure?

B.8 What are the drivers that impact the IS strategic planning process?

Please tick the suitable place (1: very important, 2: important, 3: not important)

Driver	Level of importance		
	1	2	3
• 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			
• Other ----			
• Other ----			
• Other ----			
• Other ----			

B.9 What are the requirements that influence the IS strategic planning process?

Please tick the suitable place (1: very important, 2: important, 3: not important)

Requirement	Levels of importance		
	1	2	3
• Communication maturity			
• Competency/value measurement maturity			
• Governance maturity			
• Partnership maturity			
• Partnership maturity			
• Scope and architecture maturity			
• Skills maturity			
• Senior management support and commitment			
• Good working relations			
• Strong leadership			
• Appropriate priorities			
• Trust			
• Understanding the business			
• Understanding technical environment			
• Understanding both internal and external environment of organization			
• Planning process flexibility			
• Adaptable planning model and process			
• Other -----			
• Other -----			
• Other -----			
• Other -----			

B.10 Which are the benefits that have obtained by adoption of IS strategic planning process?

Please tick the suitable place (1: very important, 2: important, 3: not important)

Benefit	Levels of importance		
	1	2	3
• Develop/ produce new product/service			
• Develop/produce new market			
• Support decision making process			
• Obtaining competitive advantage			
• Increase organization efficiency			
• Increase organization effectiveness			
• Increase organization competitiveness			
• Integration IS strategic plan with business strategic plan			
• Enabling users			
• Improving the relationship with customers			
• Improving the relationship with suppliers			
• Frequently composed of smaller systems			
• Integrated or independent of IS function			
• Interfacing and supporting of different organizational levels			
• Support coordination of work			
• Supporting innovation			
• Creating standards			
• Reducing cost			
• Increasing productivity of employees			
• Supporting collaboration and sharing information			
• Customer services and satisfaction			
• Improving growth and success			
• Leader in new technology			
• Market leadership			
• Enhancing competitive advantage			
• Improve market share			
• Creating new strategic opportunities			
• Increasing quality			
• Supporting global organization			
• Offers new strategic options			
• Supporting react to changes			
• Supporting organizational teamwork			
• Improving open culture of organization			
• Improve resource control			
• Improve resource creativity			
• Improve resource flexibility			
• Improve resource learning			
• Improve knowledge			
• Global efficiency			
• Local responsiveness (markets, government)			
• Global alliance			
• Support learning transfer			
• Other -----			
• Other -----			
• Other -----			
• Other -----			

B.11 What types of challenges does your organization has during the adoption of IS strategic planning process?

B.12 What types of impacts (on organization, employees, customers, and partners) have been countered by adoption of IS strategic planning process?

B.13 What type of process does your organization follow in the IS strategic planning? Is there an evaluation criterion? Please explain.

B.14 Would you like to specify this process?

Process	Explanation

B.15 What is the importance of every technique against strategic focus? **Please tick the suitable place (1: very important, 2: important, 3: not important)**

Technique	Strategy focus								
	Strategic analysis			Competitiveness			Aligning		
	1	2	3	1	2	3	1	2	3
SWOT									
Opportunity categorising									
Strategic importance matrix									
Benefit level matrix									
5 forced model									
Generic business strategies									
Information intensity matrix									
Impact categorising									
Industry analysis									
Strategic thrusts									
Strategy set transformation									
Business modelling									
Critical success factors									
Critical set analysis									
Lateral thinking									
Business systems planning									
Scenario planning									
Case-based reasoning									
Cost-benefit analysis									
Balanced scorecard analysis									
Process analysis									
stage of growth									
Other-------									
Other-------									

B.16 What is the importance of every requirement against strategic focus?

Please tick the suitable place (1: very important, 2: important, 3: not important)

Requirement	Strategy focus								
	Strategic analysis			Competitiveness			Aligning		
	1	2	3	1	2	3	1	2	3
Communication maturity									
Competency/value measurement maturity									
Governance maturity									
Partnership maturity									
Scope and architecture maturity									
Skills maturity									
Senior management support and commitment									
Good working relations									
Strong leadership									
Understanding technical environment									
Understanding both internal and external environment of organization									
Planning process flexibility									
Adaptable planning model and process									
Other --------									
Other --------									

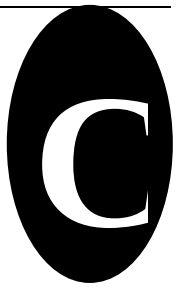
B.17 What is the importance of every driver against strategic focus?

Please tick the suitable place (1: very important, 2: important, 3: not important)

Driver	Strategy focus								
	Strategic analysis			Competitiveness			Aligning		
	1	2	3	1	2	3	1	2	3
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									
Other -----									

B.18 Could you illustrate an overall picture of IS strategic planning model?

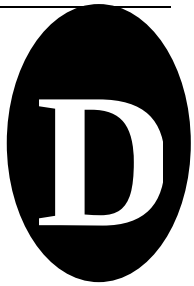
B.19 What types of measurements does your organization use for IS strategic planning performance? How?



Appendix C: Systems Development Life Cycle Methods (SDLC)

Method	Process	Advantage	Disadvantage	Reference
STRADIS	Initial study, detailed study, alternative solutions and physical design	It offers structured steps for details and tools	It is more suitable for legacy systems to be developed	Avison *et al*. (2003)
YSM	Feasibility study, constructing essential model and constructing implementation model	Middle out approach, considers both organisational and system activities	There is no strategic planning study	Avison *et al*. (2003)
JSD	Modelling phase, network phase and implementation phase	It emphasises scheduling process and real-world modelling, it also considers the time issue	It emphasises developing software systems without considering the organisational needs	Avison *et al*. (2003)
SSADM	Feasibility study, requirements analysis, requirements specification, logical system specification and physical design	Highly structured, standards and documentation. It also provides development teams with detailed rules and guidelines to work	It needs high-level skills to be implemented	Avison *et al*. (2003)
MERISE	Decision cycle, life cycle and abstraction cycle	It treats data and process as equally important	It needs high-level skills to be implemented because there are many versions to choose from	Avison *et al*. (2003)
IE	There are four levels: information strategy planning, business area analysis, system planning and design and construction and cutover	It is a comprehensive methodology and can be applied in various industries and environments	It needs high-level skills to be implemented because there are many versions to choose from	Avison *et al*. (2003)
Welti ERP Development	Planning, realisation, preparation and production	It supports ERP projects as most expensive IT project	It is related to ERP projects	Avison *et al*. (2003)
JMRAD	Requirements planning, user design, construction and cutover	Evolutionary approach to meet environmental change	It may lead to complex situations and delay in implementation	Avison *et al*. (2003)

DSDM	Feasibility study, business study, functional model iteration, system design and build iteration, and implementation	Applied by more than 200 members from different industries	There are nine principles that should be considered. If one of them is ignored the project may fail	Avison *et al*. (2003)
WISDM	Organisational analysis, information analysis, technical design, human computer interaction and work design	Modification of multi-view for web development	Considered as website orientation	Avison *et al*. (2003)
ETHICS	Why change, system boundaries, description of existing system, definition of key objectives and tasks, diagnosis of efficiency needs, diagnosis of job satisfaction needs, future analysis, specifying and weighting efficiency and job satisfaction needs and objectives, the organisational design of the new system, technical options, the preparation of a detailed work design, implementation and evaluation	It considers organisational behaviour	It needs high-level skills especially on the participation side	Avison *et al*. (2003)
SSM	The problem situation, problem situation expressed, root definitions of relevant systems, conceptual models, comparison of stages 4 with 2, feasible and desirable changes, and action to improve the problem situation	Support solving poorly - structured problem situation	It is related to poorly- structured problem situations where senior management is represented and involved	Avison *et al*. (2003)
PI	Developing business vision and process objectives, identifying the processes to be redesigned, understand and measure the existing process, identify the IT levers and design and build a prototype of the new process	It makes practices of BPR as approach	It focuses on the process of change	Avison *et al*. (2003)
PRINCE	Project management stages: defined project goal, project board, project stages	It considers the project management approach	The participation is difficult in the sense that the project situation is changing, so there is a need for other stakeholders to participate who may not have information about the project	Avison *et al*. (2003)



Appendix D: Information Systems Strategic Adoption Tools

Tool	Dimension	Advantage	Disadvantage	Reference
Entity Modelling	Data analysis	Showing organisation's entities and their relationships, data flexibility model to meet changes, communication tool	Practical problems such as entity distinction, high cost, time consuming, level of detail	Avison *et al*. (2003); Giaglis (2001)
Normalisation	Data analysis	Supports data understanding, can be used in many methodologies, can be as a foundation for future work as mechanical process	The difficulty is expressed in the semantics of the data	Avison *et al*. (2003)
DFD	Process analysis	It is a basis for structured systems methodologies, documentation, communication tool, initial tool shows the level of analysis needed, supporting the logical level of systems, supports speed of systems maintenance to meet changes,	Information about the process such as time of transfer data from one task to another and decision aspects are limited in DFD, are needed for process specifications to show process elements and start and end the process	Avison *et al*. (2003); Giaglis (2001)
Decision tree	Process analysis	It supports process logic documentation, validating information, encouraging communication between users and analysts	No suitable complex logic process	Avison *et al*. (2003)
Decision table	Process analysis	Supports considering all conditions by its verification mechanism, functional decomposition, its procedures are validated, helps in building programs that conduct actions - by rules	It doesn't support sequence of actions to follow because there are no indications of the sequence.	Avison *et al*. (2003)
Structure English	Process analysis	Supports systems' logic, specifying process, easy to understand, functional decomposition	No standard, it takes time for training	Avison *et al*. (2003)
Structure Diagram	Process analysis	Top-level diagram of processes, it can be used in many methodologies	It relates more to computer program design	Avison *et al*. (2003)
Structure Walkthroughs	Process analysis	Supports systems' review, team-based tool, supports system diagnosis, encourages communication between the team members, supports them to understand the system as a whole and supports an ego-less environment as a team	Using it may increase administrative overheads and time consuming	Avison *et al*. (2003)

Matrices	Process analysis	It expresses relationships between two things such as functions and events, functions and entities, entities and events, key attribute and entity, entities and attributes so it supports documents flow over the system	There is a need to understand which things should be related to others	Avison *et al*. (2003)
Action Diagrams	Process analysis	It represents details of process logic, it could be connected with database, easy to use by both users and analysts, communication tool, represents both high and low levels of process	Lacking in diagrammatic features	Avison *et al*. (2003)
Entity Life Cycle	Process analysis	It can address changes over time, it supports validating process' sequence, supports the logicality of entity existing within the process, documentation and communication tool	It is complex and difficult to be standardised	Avison *et al*. (2003)
Stakeholder Analysis	Relative people analysis	Supports identifying people who are involved, influence or who are impacted by the system	Difficulties of considering all people relative to the system, legal and moral rights of stakeholders, involves managers to identify stakeholders, as stakeholders theory, sometimes weak, balancing between different stakeholders is a difficult task	Avison *et al*. (2003)
JAD	Relative people analysis	Supports making decisions and identifying requirements of the developing systems, supports team working and empowerment	There is a need to attend to the culture change of an organisation	Avison *et al.* (2003)
Flowcharting	Geographical modelling	It shows complete structure of system, represents key processes and decision areas, easy to use	It uses simple graphic means of communication	Giaglis (2001)
IDEF	Modelling process and data	It is representing and modelling process and data as integrating its simplicity	It is mostly used for functional modelling perspective, time is not represented	Giaglis (2001)
Petri Nets	Systems modelling	It supports structure analysis of the system and its dynamic behaviour	Not suitable for high-level modelling and complex business processes	Giaglis (2001)
Simulation	System modelling	It has many forms to apply in order to cope with real life systems, less risky than real life failure	The experiments may be difficult to apply because of cost, time or human restriction reasons	Giaglis (2001)

Knowledge-base	Process and system modelling	It supports linking organisational rules, business processes and business objectives, supports coping with strategic change, it is based on artificial intelligence (AI) tools such as knowledge-based systems(KBS) and qualitative simulation	It uses language which may be difficult to apply in enterprise when the qualitative simulation is limited in focusing on phenomena than the details and sometimes it may make a simple process more complex than it be should	Giaglis (2001)
Role Activity Diagramming (RAD)	Process modelling	It supports adopting the roles of activities in the process modelling, focusing on human element as a source of process change	It is difficult to connect an explicit picture of RAD notation with organisational perspectives such as information, this leads to difficulties in balancing its roles in the context of business engineering	Giaglis (2001)
State-transition Diagramming (ST)	Data modelling	It focuses on real time systems of analysis and design	It is more related to system design than business process, because of its lack of work flow, control and decision making	Giaglis (2001)
Unified Modelling Language (UML)	System modelling	It contains case, class, behaviour and implementation diagrams, it is a universal language that can be used in many methodologies, supports organisations focusing on higher leverage and productive activities	It relies heavily on object-orientation	Giaglis (2001)