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Novel Taxonomy For Evaluation Of Strategic Information System Planning (SISP) Techniques

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NOVEL TAXONOMY FOR EVALUATION OF STRATEGIC INFORMATION SYSTEM PLANNING (SISP) TECHNIQUES

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Abstract

This paper critically reviews the literature relating to the SISP in global organizations. It considers IS strategic benefits, requirements, and drivers as evaluation criteria for SISP process. Classification of the IS strategic benefits will be developed from academic literature and published case studies as well as IS strategic requirements and drivers. With this in mind, the planning team must identify how it can group the requirements and drivers of an organization. One way of doing so may be achieved by understanding the benefits that can be obtained by IS for the organization, thereby leading to a categorization of requirements against benefits being created to understand which requirements are needed for obtaining specific benefits. The result of this paper is taxonomies of SISP benefits, requirements, drivers, and techniques for global organization. This classification can benefit the evaluation of IS strategic planning processes to support decision-makers through the planning process.

Keywords: SISP, IS strategic benefits, IS strategic requirements, IS strategic drivers, IS strategic techniques.

1.0 Overview For SISP

There are many reasons to involve a firm with IS strategic planning. The first is to support the firm by focusing on information technology (IT) applications that will improve the firm by facilitating the developing and implementing connection between business and IT strategies. The second is to increase profitability by maximizing the organization's IT investment and obtaining an alliance with its business strategies. The strategic planning focuses on IT as a new "cost centre" and on how it affects business strategy. Additionally, it shows the fit between strategy and infrastructure as well as the business–IT functional integration (Papp, 1999; Ariyachandra & Frolick, 2008). IT/IS activities have had various impacts among industries and firms and

within individual firms over time (Applegate, McFarlan, & McKenney, 1999). Nevertheless, a huge number of global or multinational firms contribute to export and import, and some of these companies compete with each other from different countries where employment and other costs or natural resources are different (Turban, Mclean, & Wetherbe, 1997). All of these causes have led organizations to improve their businesses. Along with such improvement, IS has become an important solution. Planning IS strategic integrations is an important issue to consider in an organization's comprehensive strategic planning process.

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 organization" (Turban et al., 2005, p. 338). So, two core elements of IS strategy were suggested. The first is the clear statement of the IS objectives. The second is that both of the organizational capabilities and problems resulting from current practices should be listed and evaluated. However, the implementation plan shows the path to follow and knowledge of the start point as milestones. This plan has two parts as strategic planning. The short-term part explains the "how" of the plan. This part relates mostly to the review and must show the technology change. The second part is the long-term plan, which refers to directing the "what" plan expressed here. The most common aspects that affect the objectives of IS plans are major corporate changes, external competitive opportunities and threats, and evolutionary changes in IS maturity. So, the information is a critical resource when it allows an organization to manage other activities (Robson, 1997).

From this perspective, IS benefits for an organization should be clarified. By doing so, understanding where the IS can contribute within the organization can be justified and evaluated. So, this paper aims to develop taxonomies of SISP benefits, requirements, drivers, and techniques for global organizations.

2.0 Benefits, Requirements And Drivers Of SISP

Management of information resources in an efficient and effective way may express the underpinning of integration of IS/IT activities in the organization (Earl, 1996; Cunha & Figueiredo, 2000). It has been said that IT/IS strategy must align with the

overall business strategy in any 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 (Turban et al., 2005).

Another point of IS strategic planning is innovation. It is suggested that innovation is extracting value from IS/IT in business practices (Carr, 2003; Power, 2006). The adoption of new technologies could be the explanation of adoption innovation (Power, 2006). There are many benefits for strategic integration, such as creating standards; reducing cost and increasing the productivity of employees; supporting both collaboration and the sharing of information, customer services and satisfaction (Shore, 2006). There are many benefits to using global IS (Turban et al., 2005):

- 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

There are tangible benefits (such as inventory reduction, personal reduction, and productivity improvement) and 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 advantages are examples of the strategic benefits of IS (Irani, 2002). Figure 1 presents a classification of the benefits of IS strategic planning.

Strategy focus	Strategic Benefit	Reference(s)
Strategic Analysis	• Support decision-making process	Laudon & Laudon (2004); Robson (1997)
	• Increase organization efficiency	Earl (1996); Cunha & Figueiredo (2000); Weill & Ross (2004); Benson et al. (2004); Ward & Peppard (2002)
	• Improve open culture of organization	Ward & Peppard (2002); Irani et al. (2005)
	• Enable users	Laudon & Laudon (2004); Robson (1997)
	• Increase employee productivity	Shore (2006); Turban et al. (2005)
	• Support coordination of work	Mendoza et al. (2006); Earl (1996); Weill & Ross (2004)
	• Reduce cost	Shore (2006); Benson et al. (2004); Ward & Peppard (2002)
	• Interface and support different organizational levels	Laudon & Laudon (2004); Turban et al. (2005)
	• Improve growth and success	Irani (2002); Benson et al. (2004); Ward & Peppard (2002)
	• Create new strategic opportunities	Robson (1997); Earl (1996); Benson et al. (2004); Ward & 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 & Laudon (2004); Irani et al. (2005)
	• Support organizational teamwork	Benson et al. (2004); Laudon & Laudon (2004); Irani et al. (2005)
	• Increase organization effectiveness	Earl (1996); Cunha & Figueiredo (2000)
	• Support collaboration and sharing information	Shore (2006); Weill & Ross (2004); Ward & Peppard (2002)
Co	• Develop/produce new market	Laudon & Laudon (2004); Robson (1997)

	• Develop/produce new product/service	Robson (1997); Weill & Ross (2004); Benson et al. (2004)
	• Obtain competitive advantage	Ward & Peppard (2002); Robson (1997)
	• Increase organization competitiveness	Turban et al. (2005); Ward & Peppard (2002); Laudon & Laudon (2004)
	• Display market leadership	Weill & Ross (2004); Irani (2002)
	• Support innovation	Carr (2003); Power (2006); Weill & Ross (2004); Benson et al. (2004); Ward & Peppard (2002)
	• Increase customer services and satisfaction	Weill & Ross (2004); Ward & Peppard (2002)
	• Become a leader in new technology	Irani (2002)
	• Improve relationship with customers	Turban et al. (2005); Weill & Ross (2004); Ward & Peppard (2002); Laudon et al. (2004)
	• Enhance competitive advantage	Ward & Peppard (2002); Laudon & Laudon (2004); Irani (2002)
	• Improve market share	Irani (2002); Laudon & Laudon (2004)
	• Become responsible locally (markets, government)	Weill & Ross (2004); Earl (1996)
Aligning	• Integrate IS strategic plan with business strategic plan	Robson (1997); Galliers & Leidner (2003); Benson et al (2004); Ward & Peppard (2002)
	• Improve relationship with suppliers	Ward & Peppard (2002); Laudon & Laudon (2004)
	• Improve resource control	Robson (1997)
	• Integrate or become independent of IS function	Turban et al. (2005)
	• Improve global efficiency	Earl (1996)
	• Support global organization	Shore (2006); Galliers & Leidner (2003)
	• Attain global alliance	Earl (1996)
	• Improve resource creativity	Robson (1997)
	• Improve resource flexibility	Weill & Ross (2004); Robson (1997)
	• Improve resource learning	Robson (1997)
	• Create standards	Shore (2006); Turban et al. (2005); Benson et al.

		(2004)
	• Improve knowledge	Galliers & Leidner (2003); Robson (1997)
	• Compose by integrating smaller systems	Turban et al. (2005)
	• Support learning transfer	Earl (1996)

Figure 1. Classification of SISP benefits.

Figure 1 suggests that the set of delivery requirements might cause different approaches and methods to internationalization that can be applied by services providers (Jack et al., 2006). So, understanding the IS benefits for the firm may support it to clarify its IS requirements as well as drivers and then the suitable approach and method. Figure 2 presents the IS strategic requirements whereas figure 3 presents the strategic drivers of IS. Thus, the planning team can distinguish between different strategic techniques for IS implementation.

Strategic Requirement	Reference(s)
• Communication maturity	Luftman (2000); Galliers & Leidner (2003); Ariyachandra et al. (2008)
• Competency/value measurement maturity	Benson et al. (2004); Ward & Peppard (2002); Luftman (2000)
• Governance maturity	Weill & Ross (2004); Laudon & Laudon (2004); Luftman (2000); Magdaleno et al. (2008)
• Partnership maturity	Benson et al. (2004); Ward & Peppard (2002); Laudon & Laudon (2004); Luftman (2000)
• Scope and architecture maturity	Luftman (2000); Ciborra & associates (2000); Weill & Ross (2004)
• Skills maturity	Luftman (2000); Galliers & Leidner (2003); Weill & Ross (2004); Laudon & Laudon (2004); Ariyachandra et al. (2008)
• Senior management support and commitment	Luftman (2000); Benson et al. (2004)
• Good working relations	Laudon & Laudon (2004); Luftman (2000); Magdaleno et al. (2008)
• Strong leadership	Laudon & Laudon (2004); Luftman (2000)
• Understanding technical environment	Ward & Peppard (2002); Laudon & Laudon (2004); Luftman (2000)
• Understanding both internal and external environment of organization	Newkirk et al. (2003); Pant & Hsu (1999); Ward & Peppard (2002); Laudon & Laudon (2004)
• Planning process flexibility	Robson (1997); Galliers et al. (2003); Laudon & Laudon (2004)
• Adaptable planning model and process	Benson et al. (2004); Laudon & Laudon (2004); Robson (1997); Ariyachandra et al. (2008)

Figure 2. IS strategic requirements.

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

Figure 3. IS strategic drivers.

These requirements and drivers classify according to business, IS, and global business. A strategic level, as a focus of this paper, leads the author to consider these visions in the classification of the strategic techniques. All the requirements and drivers should align with organizational capabilities as well as organizational visions and goals.

After reviewing the normative literature of IS strategic planning, some published case studies have been analysed to identify and validate the benefits, requirements, and drivers of IS strategic planning and the relationship among these elements. Figure 4 and figure 5 show the benefits and requirements through case studies, whereas figure 6 illustrates the drivers through the 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 organization efficiency		√	√	√	√	√
Increase organization effectiveness		√	√	√	√	√
Increase organization 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 organizational 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 organization	√		√	√		√
Offer new strategic options						√
Support reactions to changes			√			
Support organizational 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						√

Figure 4. Benefits of SISP and their validation in 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 & Leidner (2003)	√			√	√		√			√	√	
Adidas	Retail Technology Quarterly (2005)	√		√	√	√	√	√				√	√
General Motors (GM)	Hoffman (2007)	√		√	√	√	√	√	√		√	√	√
Piper Jaffray Companies	Darling (1996)	√		√	√	√		√		√	√	√	
International Chemical	Sledgia-nowski & Luftman (2005)	√	√	√	√	√	√	√			√	√	√

Figure 5. Requirements of SISP and validation in case studies

Case study	Reference	Drivers																
		Users' politics	Time	Budget and cost	IT architecture	Business process	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
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 & Luftman (2005)	√		√	√	√	√	√	√	√		√	√	√	√	√	√

Figure 6. Drivers of SISP and validation in case studies.

As mentioned in the strategic requirements, there are different categories, including integration requirements, global requirements, and competitiveness requirements. With these differences of requirements in mind the planning team must identify how it can group the requirements of an organization. One way of doing this may be achieved by understanding the benefits that can be obtained from IS for the organization. Figure 1 presents a classification of the benefits of IS for strategic levels. This categorization has been obtained from a wide range of literature regarding strategic IS systems. Through these classifications, taxonomy of requirements against benefits has been created to understand which requirements are needed for obtaining specific benefits. Figure 7 presents this categorization with attention to symbols that are used in the classification. These are (■: 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. Partly supported means that the specific benefit is partly supported by this specific requirement. These requirements must connect to each other to be achieved. The planning team should recognize the requirements and their relation to each other to identify suitable planning techniques.

Requirement \ Benefits	Develop/ produce new product/service	Develop/produce new market	Support decision making process	Obtain competitive advantage	Increase of organization efficiency	Increase of organization effectiveness	Increase of organization 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 organizational 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 organization	Offer new strategic options	Support reaction to changes	Support organizational teamwork	Improve open culture of organization	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 organization	■	■	■	■	■	■	■	■	■	■	■	■	■	◩	◩	■	◩	◩	◩	■	■	■	■	■	■	■	■	◩	■	■	■	◩	■	◩	◩	◩	◩	◩	■	■	■	■	□
Planning process flexibility	◩	◩	■	◩	■	■	◩	■	◩	◩	◩	■	■	■	◩	◩	◩	◩	□	◩	◩	◩	□	◩	◩	◩	◩	◩	■	■	□	◩	◩	■	■	■	■	◩	◩	◩	◩	◩	■
Adaptable planning model and process	◩	◩	■	◩	■	■	◩	■	■	■	■	◩	◩	◩	■	■	■	◩	■	■	■	■	■	◩	◩	◩	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■

Figure 7. Classification of IS strategic requirements against IS strategic benefits.

3.0 Framework For Evaluation Of SISP Techniques

From the previous sections of this paper, it is clear that there is a need for a framework of evaluation for the IS planning techniques (see figure 8) to support the planning team as a tool in the decision-making process. So, this section presents the evaluation framework of information system planning techniques. This evaluation framework has been developed to fill this gap. The requirements and drivers of strategic levels are used as criteria that must be considered in the strategic planning of IS. As indicated in Figure 2 and figure 3, the requirements and drivers will be applied in this framework. In this framework there are symbols, which are (√) and (x). (√) means that the technique can support the analysis of the requirement and driver; whereas (x) means that the technique cannot support the analysis of the requirement and driver (see figure 9).

Technique	Strategic analysis (strategic planning)	Competitiveness focused (objective focused)	Aligning focused (relationship to business strategy)	Reference(s)
SWOT	√	X	X	Avison et al. (2003); Robson (1997)
Opportunity categorizing	√	√	X	Robson (1997)
Strategic importance matrix	√	X	√	Robson (1997)
Benefit level matrix	√	X	X	Robson (1997)
5 Forced model	√	√	X	Robson (1997)
Generic business strategies	√	√	√	Robson (1997)
Information intensity matrix	√	X	X	Robson (1997)
Impact categorizing	X	√	X	Robson (1997)
Industry analysis	X	√	X	Robson (1997)
Strategic thrusts	X	√	√	Robson (1997)
Strategy set transformation	X	√	√	Robson (1997)
Business modelling	x	X	√	Robson (1997)
Critical success factors	X	X	√	Avison et al. (2003); Robson (1997); Wheelen et al. (2002)
Critical set analysis	X	X	√	Robson (1997)
Business systems planning	X	X	√	Robson (1997)
Lateral thinking	√	X	√	Avison et al. (2003)
Scenario planning	√	X	X	Avison et al. (2003); Wheelen et al. (2002)
Case-based reasoning	√	√	√	Avison et al. (2003)
Cost–benefit analysis	√	X	X	Turban et al. (2005)

Technique	Strategic analysis (strategic planning)	Competitiveness focused (objective focused)	Aligning focused (relationship to business strategy)	Reference(s)
SWOT	√	X	X	Avison et al. (2003); Robson (1997)
Opportunity categorizing	√	√	X	Robson (1997)
Strategic importance matrix	√	X	√	Robson (1997)
Benefit level matrix	√	X	X	Robson (1997)
5 Forced model	√	√	X	Robson (1997)
Generic business strategies	√	√	√	Robson (1997)
Information intensity matrix	√	X	X	Robson (1997)
Impact categorizing	X	√	X	Robson (1997)
Industry analysis	X	√	X	Robson (1997)
Strategic thrusts	X	√	√	Robson (1997)
Strategy set transformation	X	√	√	Robson (1997)
Business modelling	x	X	√	Robson (1997)
Critical success factors	X	X	√	Avison et al. (2003); Robson (1997); Wheelen et al. (2002)
Critical set analysis	X	X	√	Robson (1997)
Business systems planning	X	X	√	Robson (1997)
Lateral thinking	√	X	√	Avison et al. (2003)
Scenario planning	√	X	X	Avison et al. (2003); Wheelen et al. (2002)
Balanced scorecard analysis	√	X	X	Ward et al. (2002)
Process analysis	√	√	√	Ward et al. (2002)
Stage of growth	√	X	√	Turban et al. (1997)

Figure 8. Different techniques for SISP

Technique	Requirement												Driver															
	Communication maturity	Competency measurement maturity	Governance maturity	Partnership maturity	Scope and architecture maturity	Skills maturity	Senior management support and	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	Nature of the organization	Importance of IS	Organization situation	Joint resources	Risk reduction	Global product/service	Quality	Suppliers	Corporate customers
SWOT	x	√	x	x	√	√	√	x	√	√	x	x	√	x	x	√	√	√	√	√	√	√	x	√	√	√	x	x
Opportunity categorising	x	√	x	x	√	x	√	x	√	√	x	x	x	x	x	√	√	√	√	√	√	√	x	x	√	x	x	x
Strategic importance matrix	x	√	x	x	x	x	√	x	x	x	x	x	x	x	x	√	x	√	√	√	√	√	x	x	√	x	x	x
Benefit level matrix	√	√	√	√	x	x	√	x	x	x	√	x	x	√	√	√	√	√	√	√	√	√	x	x	√	√	x	x
5 Forced model	√	√	√	√	√	x	√	x	x	√	x	√	x	x	√	√	√	√	√	√	x	√	√	x	√	√	√	√
Generic business strategies	x	√	√	x	√	x	√	x	x	√	x	x	x	x	√	√	x	√	√	√	√	x	x	x	√	x	x	x
Information intensity matrix	x	x	x	x	x	x	x	x	x	x	√	x	x	x	x	x	√	√	X	√	√	x	x	x	x	x	x	x
Impact categorising	x	√	√	√	√	x	√	x	√	√	x	x	x	x	√	√	√	√	√	√	√	√	√	x	√	√	√	√
Industry analysis	x	√	x	x	x	x	x	x	√	√	√	x	x	x	x	√	x	√	√	√	√	√	x	x	√	x	x	x
Strategic thrusts	x	√	x	√	√	√	√	x	√	√	√	√	x	x	x	√	√	√	√	√	x	√	√	x	√	x	√	√
Strategy set transformation	√	x	√	√	√	√	√	x	√	√	√	√	√	x	x	√	√	√	√	√	x	√	√	x	x	x	x	x
Business modelling	√	√	√	√	√	√	√	√	√	√	√	√	√	√	x	√	√	√	√	√	x	√	√	√	√	√	√	√
Critical success factors	√	x	x	x	√	√	√	x	√	√	√	√	√	x	x	√	√	√	√	√	√	√	√	√	√	√	√	√
Critical set	√	x	x	x	√	√	√	x	√	√	√	x	x	x	x	x	√	√	X	x	√	x	x	x	x	x	x	x

analysis																										
Lateral thinking	√	x	x	√	√	√	√	x	√	√	x	x	√	x	x	√	x	√	√	x	x	√	x	x	x	x	x	x
Business system planning	√	x	√	√	√	√	√	√	√	√	√	√	√	x	x	√	√	√	√	√	x	√	√	x	√	√	√	√
Scenario planning	√	x	√	√	√	√	√	x	√	√	√	√	x	x	x	√	√	√	√	√	x	√	x	x	√	x	√	√
Case-based reasoning	√	x	x	x	X	√	√	x	√	√	x	x	x	x	x	√	√	√	√	√	x	√	x	x	x	x	x	x
Cost–benefit analysis	√	√	x	√	√	√	√	√	x	x	√	x	√	√	√	√	√	√	√	√	x	√	√	√	√	√	√	√
Balanced scorecard analysis	√	√	x	√	X	√	√	√	x	x	x	x	√	x	x	√	√	√	√	√	x	√	√	x	√	x	√	√
Process analysis	√	x	√	√	√	√	√	√	√	√	√	√	√	x	x	√	√	√	√	√	X	√	√	√	√	√	√	√
Stage of growth	√	√	√	√	√	√	√	√	√	√	√	√	√	x	x	√	√	√	√	√	X	√	√	x	√	√	√	√

Figure 9. Evaluation framework for evaluating IS planning techniques

4.0 The Evaluation of IS Strategic Planning Techniques

To evaluate the techniques, they should be divided according to their use and applicability. This may support increasing the effectiveness and efficiency of decision making in the planning process. In figure 8, the techniques have been classified with regard to the strategic analysis, competitiveness, and alignment as dimensions of strategic planning. Figure 10 presents the strategy focus with its suitable techniques. This is supported to evaluate the techniques against IS requirements and drivers.

		Techniques
Strategy Focus	Strategic analysis	SWOT, opportunity categorising, strategic importance matrix, benefit level matrix, 5 forced model, generic business strategies, critical success factors, information intensity matrix, business system planning, Letratul 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.
	Aligning	Strategic importance matrix, generic business strategies, strategic thrusts, strategy set transformation, business modelling, critical success factors, critical set analysis, business systems planning, Letratul thinking, case-based reasoning, process analysis, stage of growth.

Figure 10. Strategy focus and their techniques

5.0 The Evaluation of Techniques Against IS Requirements

In this section, the requirements have been evaluated against the strategy focus. So, there are techniques in the strategic analysis as well as competitiveness and alignment focuses that can support the communication maturity. This means that the planning team connects the planning process with strategy focus, and its requirement then conducts the suitable technique. Figure 11 presents the IS requirements and strategy focus.

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	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

	planning, cost–benefit analysis, process analysis, stage of growth, lateral thinking		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, case-based reasoning, 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 organization	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

Figure 11. IS requirements with strategy focuses and their techniques.

6.0 The Evaluation of Techniques Against IS Drivers

In this section, the techniques of IS planning are evaluated against the IS drivers. The strategic focuses must be connected to drivers to support the evaluation of techniques. Not all the IS planning techniques can be used for all the strategy focus. For instance, the SWOT analysis technique can be used for the users' politic driver in the strategic analysis focus, whereas it cannot be used in the competitiveness focus. Figure 12 presents these strategic drivers with the strategy focuses.

Driver	Technique		
	Strategic Analysis	Competitiveness	Alignment
User's politics	SWOT, critical success factors, business system planning, cost–benefit analysis, balanced scorecard analysis, process analysis, stage of growth, lateral thinking	Strategy set transformation, process analysis	Strategy set transformation, business modelling, critical success factors, business systems planning, process analysis, stage of growth, lateral thinking
Time	Benefit level matrix, case-based reasoning	Case-based reasoning	Business modelling, case-based reasoning
Budget and cost	Benefit level matrix, 5 forced model, generic business strategies, cost–benefit analysis, lateral thinking	5 Forced model, generic business strategies, impact categorising	Generic business strategies, lateral thinking
IT Architecture	SWOT, opportunity categorising, strategic importance	Opportunity categorising, 5 forced model, generic business	Strategic importance matrix, generic business strategies,

	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	strategies, impact categorising, industry analysis, strategic thrusts, strategy set transformation, case-based reasoning, process analysis	strategic thrusts, strategy set transformation, business modelling, critical success factors, business system planning, case-based reasoning, process analysis, stage of growth
Business process (cost, time, effectiveness)	SWOT, opportunity categorising, benefit level matrix, 5 forced model, information intensity matrix, critical success factors, business system planning, lateral thinking, scenario planning, case-based reasoning, cost–benefit analysis, balanced scorecard analysis, process analysis, stage of growth	Opportunity categorising, 5 forced model, impact categorising, strategic thrusts, strategy set transformation, case-based reasoning, process analysis	Strategic thrusts, strategy set transformation, business modelling, critical success factors, critical set analysis, business system planning, lateral thinking, case-based reasoning, process analysis, stage of growth
Executive skills and commitments	SWOT, opportunity categorising, strategic importance matrix, benefit level matrix, 5 forced model, generic business strategies, information intensity matrix, critical success factors, business system planning, lateral thinking, scenario planning, case-based reasoning, cost–benefit analysis, balanced scorecard 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,	Opportunity categorising, 5 forced	Strategic importance matrix, generic

	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	model, generic business strategies, impact categorising, industry analysis, strategic thrusts, strategy set transformation, case-based reasoning, process analysis	business strategies, strategic thrusts, strategy set transformation, business modelling, critical success factors, business system planning, case-based reasoning, process analysis, stage of growth
Nature of the organization	SWOT, opportunity categorising, strategic importance matrix, benefit level matrix, 5 forced model, generic business strategies, information intensity matrix, critical success factors, business system planning, scenario planning, case-based reasoning, cost–benefit analysis, balanced scorecard analysis, process analysis, stage of growth	Opportunity categorising, 5 forced model, generic business strategies, impact categorising, industry analysis, strategic thrusts, strategy set transformation, case-based reasoning, process analysis	Strategic importance matrix, generic business strategies, strategic thrusts, strategy set transformation, business modelling, critical success factors, business system planning, case-based reasoning, process analysis, stage of growth
Importance of IS	SWOT, opportunity categorising, strategic importance matrix, benefit level matrix, generic business strategies, information intensity matrix, critical success factors, lateral thinking	Opportunity categorising, generic business strategies, impact categorising, industry analysis	Strategic importance matrix, generic business strategies, critical set analysis, critical success factors, lateral thinking
Organization situation	SWOT, opportunity categorising, strategic importance matrix, benefit level matrix, 5 forced model, critical success factors, business system planning, scenario	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

	planning, case-based reasoning, cost–benefit analysis, balanced scorecard analysis, process analysis, stage of growth		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	5 Forced model, impact categorising, strategic thrusts, process analysis	Strategic thrusts, business modelling, critical success factors, business system planning, process analysis, stage of growth

	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

Figure 12. IS drivers with strategy focuses and their techniques.

7.0 Conclusion

This paper has attempted to provide a critical review of the literature relating to the IS strategic planning. The paper starts with a discussion of the strategic planning of IS in the global dimension. This general discussion illustrates the benefits, techniques, and drivers as important holders of such a planning process. From the literature, the taxonomy of IS strategic benefits developed. IS strategic requirements and drivers are also presented. To validate these holders published case studies have been analysed.

After the IS strategic planning holders have been identified, they have been connected to the strategic planning techniques of IS (paper contribution). The main result of the paper is classification for both the IS strategic requirements and drivers alongside strategic focuses and their techniques. This created an insufficient process for IS/IT strategic benefits, requirements, and drivers' justification to support the decision makers. These holders also have been identified as criteria of evaluation for the IS strategic planning techniques to support the decision makers through the planning process. In other words, implementing such taxonomy may support the success of practical implementation because it considers many points from different stakeholders' thinking. Such stakeholders may be rich in knowledge and have broad points of view regarding improvement of IS benefits, requirements, and drivers. Implementation should be structured and built in a systematic way with an understanding of the circumstances and the environment.

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