THE RELATIONSHIP BETWEEN STRATEGIC INFORMATION SYSTEMS PLANNING FACILITATORS AND THE SUCCESS OF SOUTH KOREAN ORGANISATIONS

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Abstract

Strategic Information Systems Planning (SISP) is an important activity for strategic use of IS/IT in today's dynamic and increasingly digitalized organisations. However, SISP is not a very straight forward task as it entails simultaneous multiple planning views as well as changing environmental and organisational issues. Although SISP has been widely studied, to date theory on SISP facilitators remain sparse. Therefore the aim of this study is to explore SISP facilitators for sustainable organisational performance and a competitive advantage. This study explores the relationship between SISP facilitators, SISP success and the outcome of SISP in organisations. This study proposes a model indicating the relationship between facilitators of SISP success and organizational outcomes. By surveying a random sample of SISP experts in large South Korean organisations, and via SEM analysis, the relationship between SISP facilitators and outcomes has been determined. The outcome suggests that facilitators positively affect SISP success through improved business-IT strategic alignment and IS planning effectiveness. SISP success includes the achievement of dynamic capabilities and IT infrastructure flexibility. This study proves that a positive relationship among facilitators is essential for SISP and successful organizational outcome. This finding adds to the theory of SISP, and provides a guide to Information Systems planners and organizational managers.

Keywords: Facilitators, Strategic Information Systems Planning, SISP success, Dynamic capabilities, IT infrastructure flexibility.

1 INTRODUCTION

The current business environment is made up of customers, business stakeholders and the public is impacted by social, economic, political, technological and environmental forces (Rainey 2010). Organisations are therefore focussed on long-term and strategic perspectives of organisational processes that are competitive, cost-effective, performance-oriented, profitable and sustainable (Grant et al. 2010). In this rapidly changing and highly dynamic business environment, Information Systems (IS) and Information Technology (IT) have become vital factors for organisational growth, survival and for achieving a competitive advantage (O'Brien & Marakas 2009). The reliance on IS/IT enables organisations to maintain a more adaptive, flexible, collaborative and information-intensive business structure (Bechor et al. 2010; Rainey 2010; Rondeau et al. 2010). Globalization is another factor leading to organisations becoming more dependent on IS/IT for information management, innovation and success (Grant et al. 2010; Lutchman 2012; Rajapaksha & Singh 2009).

Since IS/IT is an important requirement for all aspects of business operations, the need for strategic information systems planning (SISP) is very important for achieving success with IS/IT. Inappropriate SISP can lead to the repetitive development of some IS/IT systems that tend to be inflexible and incompatible, sometimes not resulting in the anticipated benefits from IS/IT investment (Lientz 2010; Yeh et al. 2011; Zwass 2009). Although organisations have recognized the importance of SISP in the past decade, they have developed IS/IT strategies that have been left to 'gather dust' or have been implemented in "a half-hearted manner" (Ward & Peppard 2002, pp. 125-126). SISP theories and methods still lack the capabilities (Choi & Bae 2007) and flexibility (Palanisamy 2005; Tallon 2009; Yeh et al. 2011) to systematically support sophisticated strategic planning in today's digital environment made up of large integrated systems (Lee & Bai 2003), mobile and e-business (Grant et al. 2010) and global business (Rajapaksha & Singh 2009). Unless effectively planned, implementing IS/IT into the organisation can be a risk of increased costs and reduced benefits. Thus, to be more flexible, innovative and systematic with the implementation and use of IS/IT, organisations need to take multiple planning perspectives by addressing their interactions and cultures, as well as political, structural and technological factors (Lientz 2010; King 2009; Wallace 2013). Organisations need to consider possible 'facilitators' as factors leading to successful SISP to realize business goals and strategies and to enhance organisational performance and secure competitive advantage (Reich & Benbasat 2000; Zwass 2009).

Prior literature (Chi et al. 2005; Newkirk et al. 2008; Rondeau et al. 2010; Stemberger et al. 2011), discusses one or a few critical facilitators individually, and there is limited research that address some facilitators for a more extensive understanding of SISP. Prior studies also lack investigation about the relationship between various facilitators and the outcome of SISP success, such as improved dynamic capabilities and IT infrastructure flexibility. Moreover, domestically and internationally, South Korea has long been considered as one of the primary countries, leading current information and knowledge-based society with a strong leadership in information and communication technologies (ICT) and e-business (Hong and Hwang 2011; National Information Society Agency (NIA) 2013). Despite the high diffusion of IS/IT, about 50% of South Korean large organisations have formally undertaken SISP and rest of them have implemented their IS/IT system without a strategic and systematic planning (NIA 2013). Some South Korean researchers (Choi and Bae 2007; Kim et al. 2003) argued that the current SISP process in South Korean organisations is still lacking in their capability and flexibility to systematically support and sustain sophisticated strategic planning processes. However, to date SISP studies in the South Korean context, a leader in Information Technology use and adoption, is sparse.

Investigating the importance of a number of facilitators, analysing the relationship among facilitators, SISP success and the organisational outcomes of SISP are, thus, the key motivation of this study. The main objective of this study is to empirically answer the research question: What are the relationship among facilitators necessary to undertake SISP, SISP success and the outcome of SISP success in organisations? This study contributes to both theory and practice on the extensive and critical role that facilitators play in achieving successful SISP process, the relationship among the facilitators, and the successful outcome of SISP process in organisations.

This study first reviews the theoretical perspectives of SISP. It then investigates various facilitators essential for undertaking SISP, discusses what SISP success is, and what the outcome of SISP success is. Next, this study proposes a research model to show the relationship among the facilitators, SISP success and the outcome of SISP success with the research hypothesis derived from literature on SISP. The research design with methodologies, data collection and data analysis methods is included followed by the analysis of the survey data and the in the implications of the findings in the discussion section. A conclusion and further research issues follow the discussion.

2 LITERATURE REVIEW: STRATEGIC INFORMATION SYSTEMS PLANNING IN THE ORGANISATIONAL ENVIRONMENT

Business trends in the organisations of the 21st century have emerged around customer relationships, global communications, knowledge management, outsourcing and social networking based on the IS/IT systems' innovation (Grant et al. 2010). The key goal of all organisations is to attain sustainable performance and competitive advantage. Some dominant drivers for organisational changes comprise globalization (Rajapaksha & Singh, 2009), virtualization (Rainey 2010) innovation (Lutchman 2012) and collaboration (Rainey 2010). These drivers make organisations more flexible, opportunistic and dynamic (Lutchman 2012; Rainey 2010). The term 'dynamic' has been defined as the capacity to renew resource positions to attain harmonization with the changing environmental conditions (Pettus 2001). It is important for organisations to create effective strategies for delivering sustainable performance and for achieving competitive advantage. Thus, organisational frameworks need to be well harmonized with business and IT planning as well as organisational structure by undertaking of SISP in order to successfully operate in this current environment (Kemp et al. 2013; Lutchman 2012).

SISP has been defined as "the process of identifying a portfolio of computer-based applications that will assist an organisation in executing its business plans and consequently realizing its business goals", and "searching for applications with a high impact and with the ability to create an advantage over competitors" (Lederer & Sethi 1988, p. 446). The definitions of SISP have evolved incorporating the developments in IS/IT systems and the rapid changes taking place in the business environment (Grover & Segars 2005), more recently, SISP was defined as the process of strategic thinking that identifies the most desirable IS on which the firm can implement and enforce its long-term IT activities and policies (Bechor et al. 2010).

The key purpose of SISP includes strategic business-IT alignment and competitive advantage (Teo 2009). However, the objectives of SISP are currently expanding beyond the strategic alignment of IS/IT with business needs. Its purposes encompass improving systems' architecture, infrastructure capability and reliability from IS/IT investments as well as managing information resources effectively and securing user satisfaction (Cassidy 2006; Lientz 2010; Philip 2009). The need for SISP process in organisations is to support the current business environment which is turbulent due to making the future unpredictable (McNurlin et al. 2009). Organisations need to adjust and combine business and IS/IT strategies to meet the current and future business challenges (Lientz 2010; Wallace 2013).

Although there have been various approaches for SISP, there is no one universal way of carrying out SISP and there is no consensus on the dimensions of SISP planning process (McNurlin et al. 2009; Palanisamy 2005) Since organisations have different cultures, business directions, goals and strategies, undertaking SISP process in the organisation is not an easy task (Cassidy 2006). SISP comprises of a broad set of characteristics and elements, such as strategic business planning, information systems assessment, information systems vision, information systems guidelines, and strategic initiatives (Piccoli 2008) and assessment of external environments, assessment of internal environments, assessment of IS/IT environments, generation and assessments of options for IS/IT change, specification (choice) of IS strategic elements, and development and implementations of plans (King 2009).

Organisations need to have a very long-term strategic perspective for their organisational processes and structures based on enhanced communication and coordination, and improved decision-making because strategy should not be isolated but be consistent with the dynamic organisational environments (Grant et al. 2010; Rainey 2010). Thus, to undertake SISP successfully, organisations need to consider and take multiple planning views at addressing interactions of different cultures as well as political, structural and technological features and issues for improved organisational performance and competitive advantage from the capabilities achieved from SISP (Bechor et al. 2010; King 2009; Peppard & Ward 2004).

2.1 SISP Facilitators

There are essential facilitators of SISP that need to be considered to underpin its effective undertaking because SISP success is dependent on a function of many variables (Gottschalk 1999; Rainey 2010). It is important for organisations to understand these facilitators in order to recognise SISP challenges and related issues (Wallace 2013). Five important facilitators that positively impact on SISP success are discussed below.

2.1.1 Top management participation and support (TMPS)

It has long been noted that top management participation and support is an important facilitator of SISP success in organisations (Philip 2007; Stemberger et al. 2011). Grant et al. (2010); Kemp et al. (2013) and Wallace (2013) explained top management needs to be a good communicator and consultant who is well versed with the organisation's objectives and principles promoting a positive mind-set for SISP and interactions between members in the organisation. Salmela et al. (2000) also advocated that without top management support SISP process can encounter problems especially at the analysis, design and development stage of the selected IS/IT system which sometimes remains a business-IT gap in organisations.

2.1.2 Active communication and knowledge-sharing between business and IT sectors (ACKS)

SISP requires discussion, clarification, negotiation and mutual understanding between all stakeholders from the business and IT sectors for knowledge creation (McNurlin et al. 2009; Piccoli 2008). Wagner and Newell (2006) are of the opinion that strategic management depends on extensive communication and knowledge-sharing, between the various users, building awareness and understanding as well as encouraging desired behaviours. Good communication is a critical issue for business and IT planning for strategic management. However, Kovacic (2004) is of the opinion that employees working in business and IT sector normally find it difficult to communicate and share their knowledge due to the cultural gap and the predisposition of individualism in organisations. Therefore, there tends to be a gap between business requirements and the ability of IT personnel to understand the requirements for business strategy. Active communication and knowledge-sharing between business and IT sectors can be a critical facilitator for undertaking successful SISP process and realizing IS/IT implementation to deal with today's dynamic environment effectively (Lutchman 2012; Wallace 2013; Yeh et al. 2011).

2.1.3 Consideration of internal and external environments (CIEE)

The business strategies of organisations for obtaining competitive advantage are not based on mass production and cost reduction, but have evolved to include an organisations' ability to seek opportunities and adapt to changes in market conditions (Grant et al. 2010; Rainey 2010). Organisations need to understand complex relationships between various internal and external environments to undertake SISP successfully. The internal and external business-IT environments significantly influence both the direction and pace of SISP for strategic use of IS/IT (Chi et al. 2005; Newkirk et al. 2008). The reason is that business activities of organisations could be assessed and prioritized by the internal and external environmental changes and opportunities (Bechor et al. 2010; Chi et al. 2005; Ward & Peppard 2002). However, many organisations still have difficulty in considering and maintaining various internal and external factors at the same time (Newell & David 2006). Therefore, organisations need to recognise the significance of internal and external environments in undertaking SISP.

2.1.4 Appropriate resource allocation for undertaking SISP exercise (ARA)

Resource allocation for SISP and IT-related project include network support, hardware support, system operations, application software operation support, security services, administrative support, help desk, end-user support as well as training and upgrading of staff capabilities (Lientz 2010). Decision-making during SISP also encompasses business-IT investments, objectives and strategies by aligning business and IT plans (Wallace 2013). Resource allocation for SISP and IS/IT is expected to maintain and support the organisation's objectives and activities for IT. It is critical to allocate arrange appropriate resources to effectively address key change issues and operationalize the changes. If organisations lack the necessary resources it can delay or slow down the progress of strategic tasks (Kim & Mauborgne 2003; Lientz 2010). Thus, SISP undertaking with appropriate resource allocation, including HR and financial investment for the process could result in sustained competitive advantage and organizational performance in dynamic environments.

2.1.5 Performing organisational learning (POL)

Strategies for obtaining competitive advantage have normally evolved to include an organisation's ability to seek opportunities and adapt to changes in market conditions by innovation and to embed learning in the organisation (Grant et al., 2010; Rainey, 2010). The SISP and IS/IT implementation is typically accompanied by large investment in formal organisational learning/training. Organisational learning enables an organisation to perform new tasks, complete existing tasks faster and enhance the quality of tasks by providing essential knowledge for efficient execution of tasks within the newly deployed IS/IT. This helps users in the organisation to understand changes in the external environment and the expected solutions to potential issues (Otim et al. 2009). Sharma and Yetton (2007) suggested organisations will thus be able to judge the merits and risks of proposed projects and create concrete procedures for measuring the effectiveness of the plan. Organisational learning can also contribute to organisational performance by improving the IS/IT capabilities and competences, which are outcomes of organisational learning (Grant et al. 2010; Lin & Hsu 2010; Peppard & Ward 2004). Therefore, organisational learning is essential to successful SISP in the current dynamic contexts, because SISP is viewed as a learning process rather a problem solving process (Grover & Segars 2005; Wang & Tai 2003).

2.2 SISP success

It is critical for organisations to focus more on considering and maximizing the effects of the various facilitators during the SISP process to ensure a greater level of success. If organisations consider and identify the facilitators properly, they will be more likely to achieve organisational goals and strategies based on the progress of business-IT strategic alignment and IS planning effectiveness (Wang & Tai 2003). Then, organisations will be able to sustain organisational performance and competitive advantage by the creative and strategic implementation and use of IS/IT (Grover & Segars 2005; King 2009). That is, SISP success is closely related to achieving IS planning effectiveness and the success consists of the consideration of various facilitators positively affect SISP undertaking.

The basic goal of SISP is typically business-IT strategic alignment, to sustain long-term performance and competitive advantage as well as to realize business success (Hirschheim & Sabherwal 2001; Lientz 2010). In particular, in today's fast changing environmental conditions, the planning characteristics need to be well aligned and addressed together to realise planning success. SISP success depends on an organisation's goals to align its business-IT strategies (Papke-Shields et al. 2002) as well as its ability to learn and adapt to changing circumstances (Otim et al. 2009). Organisations are more likely to achieve their objectives, and improved organisational performance and competitive advantage with SISP success based on the improvement of IS planning effectiveness (Grover & Segars 2005; Otim et al. 2009; Wang & Tai 2003). IS planning effectiveness (ISPE) is the assessment of 'how well the IS planning system has met its goals' (King 1988, p. 107). Some SISP studies argued that IS planning effectiveness is an important requirement for achieving SISP success (Kunnathur & Shi 2001; Lee & Pai 2003). Thus, in order to realize SISP success, organisations need to address a wide set of factors positively influencing SISP for planning effectiveness and to align the chosen factors with IS/IT according to business-IT objectives and strategies.

2.3 The outcome of SISP success: Improving dynamic capabilities (Dycap) and IT infrastructure flexibility (ITIF)

To achieve a competitive advantage in this fast changing world, the success of organisations highly depends on the creation of effective objectives and strategies (Grant et al., 2010). SISP success enables organisations to enhance business value and its competitive position by the measurable improvement of key business-IT processes. It also enables them to sustain organisational performance and agility (or flexibility) through the progress of IS/IT system, technology and resources (Lientz, 2010; Wallace, 2013). In other words, the outcome of SISP success in organisations is related to delivering more rapid benefits of IS/IT to business by making IS/IT objectives and action items for their businesses more realistic, turning their business drivers into golden opportunities (Lutchman, 2012). The outcome of its success can be measured by two dimensions, dynamic capabilities and IT infrastructure flexibility.

Dynamic capabilities refer to 'the ability of the firm to integrate, build and reconfigure its internal and external competencies to address rapidly changing environments' (Teece et al. 1997, p. 516). These competencies involve organisational skills, resources, and functional capabilities in order to match the requirements of a changing environment and they can identify the bases on which the future of the IS function must be built. Dynamic capabilities make organisations possible to rearrange and reconfigure existing knowledge to be more responsive (Eisenhardt & Martin 2000). By dynamic capabilities, each portfolio of competencies can be well balanced to provide sustainable benefits (Daniel & Wilson 2003). Wang and Shi (2007) also proposed three main sources of dynamic capabilities for e-business, such as market sensing, organisational learning and coordination.

The primary goal of organisations is generally to merge speed with flexibility by reacting swiftly to changing business drivers and reacting effectively to broaden strategic experiments that have proven successful in the organisation (Lutchman 2012; McNurlin et al. 2009). IT infrastructure flexibility is defined as the ability of IT infrastructure, such as hardware compatibility, software modularity, network connectivity and IT skills adaptability to easily and quickly scale and evolve in accordance with the needs of the market (Byrd & Turner 2000). According to Tallon (2009), inflexible IT infrastructure exhibits a chaotic SISP process while those with flexible IT infrastructure have more structured SISP. It is due to a capability that will allow redirecting or repositioning of resources to whatever activities in the value chain are in most need of support. Having a clear understanding of dynamic capabilities and IT infrastructure flexibility is vital for organisations to improve organisational performance and competitive advantage by a successful SISP. Therefore, these dimensions need to be considered and realized as the outcome of SISP success.

3 RESEARCH MODEL WITH HYPOTHESIS

Based on the above arguments, this study proposes a research model to show the relationship among facilitators, SISP success, dynamic capabilities and IT infrastructure flexibility as the outcome of SISP success presented in Figure 1. The following six hypotheses are proposed to test the relationship between these SISP issue.

Fulfilment of the examined facilitators is likely to enable organisations to undertake SISP successfully, because SISP success depends on a function of many variables (Gottschalk 1999; Rainey 2010). The more organisations try to consider potential facilitators, the more they are likely to realise SISP success by achieving business-IT strategic alignment and IS planning effectiveness. Thus, the two hypotheses are proposed:

H1: The higher consideration of the facilitators *positively affects improving business-IT strategic alignment.*

H2: The higher consideration of the facilitators *positively affects improving IS planning effectiveness.*

The main objective of SISP process typically covers business-IT strategic alignment and SISP success is measured by a greater business-IT strategic alignment (Teo 2009). Besides, if organisations achieve business-IT strategic alignment properly, they could be more likely to improve the level of IS planning effectiveness (Wang & Tai 2003). Therefore, business-IT strategic alignment can be a necessary factor that leads to undertaking successful SISP and improve IS planning effectiveness as a critical factor for SISP success. Thus, the following hypothesis is proposed:

H3: Business-IT strategic alignment positively affects improving IS planning effectiveness

Organisations are more likely to experience SISP success when they maximize achieving business-IT strategic alignment and IS planning effectiveness through the consideration of possible facilitators. If they undertake SISP successfully, they could have higher opportunities to accomplish sustainable organisational performance and competitive advantage. This means that the outcome of its success is closely related to the progress of organisational performance and competitive advantage by realizing dynamic capabilities (Grant et al. 2010) and IT infrastructure flexibility (Tallon 2009). Following this argument, the following two hypotheses are proposed:

H4: Business-IT strategic alignment positively affects improving dynamic capabilities and IT infrastructure flexibility.

H5: IS planning effectiveness positively affects improving dynamic capabilities and IT infrastructure flexibility.

The facilitators are more likely to help organisations to undertake SISP effectively and successfully. It means the facilitators encourage them to realize dynamic capabilities and IT infrastructure flexibility by improving business-IT strategic alignment and IS planning effectiveness. The following hypothesis is proposed by the argument:

H6: Facilitators *vital to undertake SISP process positively affects improving dynamic capabilities and IT infrastructure flexibility.*

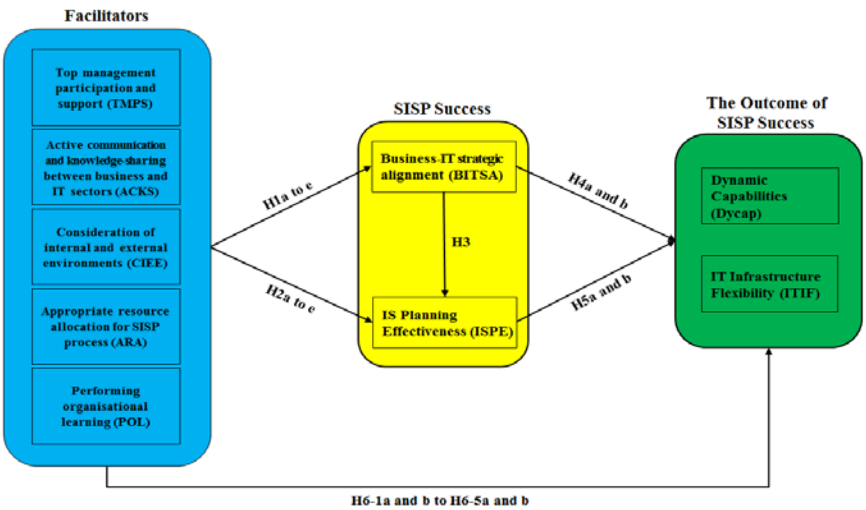

Figure 1. The proposed research model

4 RESEARCH METHODOLOGY AND DESIGN

This study is a positivist quantitative study with data collection achieved via a survey and statistical analysis of data to answer the research question, to test the hypotheses and to validate the conceptual framework. There are two reasons for adopting the quantitative approach. First, a quantitative approach can test the relationship between variables with the use of numeric data (Creswell 2009). Second, this approach allows collecting data from a larger sample to be able to generalize the results of testing the proposed theories to a larger population (Creswell 2009). Data analysis is SEM, which is regarded as a family of statistical techniques allowing researchers to test multivariate models by the analysis of covariance structures (Anderson and Gerbing 1988). SEM is appropriate for data analysis in this study for some reasons. First, SEM allows users to hypothesize a model with a series of causal relationships among multiple variables as well as to validate such relationships simultaneously. Second, it is capable of estimating the relationship between the latent variables that are available in the theoretical model (Hair et al. 2010). Based on the SEM analysis, the relationships among facilitators, SISP success and the outcome of SISP success is analysed.

The survey instrument was designed to collect data from business managers and IT managers who have experience with SISP, in 1,000 large South Korean organisations. The sample comprised of 'top 1000 company ranking' in South Korea based on total sales and total assets from the database of KORCHAMBIZ, which is managed by the Korea Chamber of Commerce and Industry (KCCI). KCCI is South Korea's largest private economic organisation that provides the lists more credible and representative organisations. All the items for the constructs were generated from prior literatures. The survey tool was made up of questions with a five-point Likert-type scale to establish the importance of the issue. The questionnaire was also translated from English into Korean to ensure South Korean respondents understood the questions easily to be able to respond, supporting the response rate required for research (Douglas and Craig 2007).

Prior to the main survey, a pilot study was conducted with 13 managers from 8 South Korean organisations. This helped confirm the internal consistency of the measuring instrument ensuing Cronbach's Alpha test. The alpha value between 0.8 and 0.9 is commonly considered as a high level of reliability (Hair et al. 2010). The alpha for all constructs was more than 0.8, which confirmed that the internal reliability of the questionnaire was acceptable and reliable for undertaking the main survey and further statistical analysis. Based on the feedback received from the pilot study, the questionnaire for the main survey was slightly revised (i.e., minor changes to wording of several questions) before the main survey was distributed.

The translated questionnaire was then printed and forwarded to business managers and IT managers in 700 large organisations of South Korea by email and post. A total of 258 responses (from 118 business managers and 132 IT managers, with 8 missing so deleted) were received in a response rate of 35.7%. The highest percentage of the respondents' industry was manufacturing (55.4%), followed by banking, finance and insurance (8.8%), construction (7.2%), cargo, logistics, and transport (5.6), electricity, electronics, IT and telecommunications (8.4%), services (7.6%) and wholesale and retail trade (8%). Then, data were stored and screened by using PASW statistics (formerly SPSS statistics version. 21) for addressing the missing values, outliers, kurtosis and Skewness.

5 DATA ANALYSIS AND DISCUSSION OF FINDINGS

The SEM analysis (using AMOS 21.0) is normally conducted in two steps, namely, developing and validating a measurement model as well as testing and validating a structural model (Hair et al. 2010). SEM utilizes confirmatory factor analysis (CFA) for assessing the measurement model. Assessing the measurement model by using CFA examines how well the measurement variable used to measure the theoretical constructs represent the theoretical construct (Hair et al. 2010). As a result, factor analysis for the research construct was achieved and all research constructs were satisfied with the applicability criteria in order to progress the CFA (Barlett's (significance) was 0; KMO was more than 0.90; and Eigenvalues was greater than 1).

In order to increase the fitness of the full measurement model, one factor congeneric models were re-examined and re-specified. Re-specifying the congeneric measurement model to improve their fitness is done by considering the standard factor loading (SFL) of each item of the measurement variables and standard residuals (Hair et al. 2010). The overall fitness of the measurement model is then assessed by using goodness-of-fit (GOF) indices. In this study, the Normed Chi-Square (χ^2/df), the Goodness of Fit Index (GFI), the Comparative fit index (CFI), the Tucker-Lewis Index (TLI), the Root mean square error of approximation (RMSEA) and the Standardized RMR (SRMR) were computed and used for assessing the fitness of the model, following the recommendation of Hair et al. (2010). Following this criterion, a few measurement items were deleted from the congeneric measurement models. The constructs of the full measurement model were modified to reflect the modifications that were done in those congeneric measurement models.

Table 1 shows most one factor congeneric model of constructs, the resulted values are within the acceptable ranges for GOF indices, except for the χ^2/df and RMSEA in CIEE and ARA (shown in bold and italic). The χ^2 is the most basic GOF index, but the Chi-Square statistic is sensitive to sample size, which means that the Chi-Square statistic nearly always rejects the model when large samples are used (Hair et al. 2010). Moreover, the value of RMSEA was increased and GOF value wasn't assessed when the researcher attempted to eliminate one of the items in the two constructs (both CIEE and ARA have 4 items). Despite the issue, the rest of the GOF results were more than the acceptable range. Therefore, the two constructs have been kept in the model to analyse without any modification.

Construct (deleted item(s))	**χ^2/df**	**GFI**	**CFI**	**TLI**	**RMSEA**	**SRMR**
TMPS (item no 2 deleted)	1.231	0.991	0.998	0.996	0.030	0.017
ACKS (item no 6 deleted)	2.396	0.972	0.983	0.971	0.075	0.028
CIEE (no deleted)	***5.710***	0.976	0.986	0.958	***0.138***	0.021
ARA (no deleted)	***3.800***	0.986	0.991	0.973	***0.106***	0.016
POL (item no 4 deleted)	1.235	0.995	0.999	0.996	0.031	0.015
BITSA (item no 1 deleted)	0.144	0.999	1.000	1.020	0.000	0.006
ISPE (item no 1 and 2 deleted)	0.230	0.999	1.000	1.013	0.000	0.006
Dycap (item no 1 deleted)	2.302	0.974	0.980	0.967	0.072	0.030
ITIF (item no 2 deleted)	1.533	0.988	0.994	0.988	0.046	0.023
Recommended value	**<3.00**	**>0.9**	**>0.9**	**>0.9**	**<0.08**	**<0.08**

Table 1. Goodness-of-fit results for the final measurement models

Following this, the discriminant validity and the convergent validity of the constructs were calculated in order to assess the validity of the constructs in this study. The discriminant validity is commonly undertaken to determine the distinction of the constructs from each other (Hair et al. 2010). The discriminant validity between two constructs is determined by comparing squared correlation between the constructs with the average variance extracted (AVE). The AVE of the constructs should be higher than the squared correlation for adequate discriminant validity. A summary of the discriminant validity of the constructs in the final measurement is described in Table 2.

The convergent validity is then used to determine the degree to which the indicators of a construct converge. Three estimates namely the standardized factor loading (SFL), AVE (introduced in Table 2 as bold), and the construct reliability (CR) are used in this research to assess the convergent validity of the constructs (Hair et al. 2010). The CR of 0.7 or higher of a construct is the acceptable value. A SFL of 0.6 or higher of an item indicates that the item converges on the construct. The SFL value of all items was over 0.6 (the lowest SFL value was 0.62 in BITSA item no 2), so that they are considered as having the convergent validity (Hair et al. 2010). According to a rule of thumb, AVE of a construct should be at 0.5 or higher to have a higher convergence (Hair et al. 2010). The convergent validity measures for the final constructs measured using CRs and AVEs as shown in Table 3. The Cronbach's

Alpha for the constructs was also over 0.7 (the lowest Alpha value was 0.783 in BITSA), so the reliability of the instrument is adequate.

	TMPS	ACKS	CIEE	ARA	POL	BITSA	ISPE	Dycap	ITIF
TMPS	**0.688***								
ACKS	0.320	**0.704***							
CIEE	0.285	0.350	**0.779***						
ARA	0.358	0.436	0.436	**0.793***					
POL	0.342	0.454	0.507	0.602	**0.662***				
BITSA	0.181	0.241	0.231	0.206	0.190	**0.661***			
ISPE	0.211	0.379	0.158	0.352	0.314	0.659	**0.703***		
Dycap	0.197	0.278	0.306	0.208	0.254	0.452	0.613	**0.677***	
ITIF	0.252	0.249	0.212	0.228	0.244	0.442	0.428	0.601	**0.664***

Table 2. Discriminant validity of the constructs in the final measurement model (: AVE value)*

Constructs	**CR**	**AVE**	**No of items**	**Left items**	**Cronbach's Alpha**
TMPS	0.916	0.688	6	5	0.884
ACKS	0.934	0.704	7	6	0.887
CIEE	0.934	0.779	4	4	0.910
ARA	0.939	0.793	4	4	0.901
POL	0.886	0.662	5	4	0.828
BITSA	0.886	0.661	5	4	0.783
ISPE	0.922	0.703	6	4	0.835
Dycap	0.926	0.677	7	6	0.863
ITIF	0.908	0.664	6	5	0.844

Table 3. Convergent validity of the constructs of the final measurement model

By assessing the measurement model and obtaining an appropriate fitness of the measurement model, the structural model was developed and assessed in order to test the proposed research hypothesis. The structural model is utilized to reveal whether the dependence relationships specified in the conceptual model between constructs are valid (Hair et al. 2010). As described in Table 4, the evaluation of the structural model reveals that H1a to c; H2b and H2d; H3; H4b; H5a; H6-1a and b; H6-3a; H6-5a and b (shown in Bold) were supported. Besides, H1d, H4a and 6-4a (shown in italic with bold) were a little out of the recommended acceptable range, but they were supported in p<0.1 level. All other hypothesis was not supported.

Hypothesis	**Estimate**	**P-value**	**Support**	**Hypothesis**	**Estimate**	**P-value**	**Support**
H1a	.119	.043*	**Y**	H6-1a	.100	.033*	**Y**
H1b	.261	***	**Y**	H6-1b	.144	.002**	**Y**
H1c	.169	***	**Y**	H6-2a	.046	.475	N
H1d	.087	.099#	***Y in p<0.1***	H6-2b	.021	.730	N
H1e	-.009	.878	N	H6-3a	-.114	.004**	**Y**
H2a	-.033	.446	N	H6-3b	-.020	.581	N
H2b	.190	.001**	**Y**	H6-4a	-.085	.068#	***Y in p<0.1***
H2c	.033	.369	N	H6-4b	-.022	.606	N
H2d	.135	***	**Y**	H6-5a	.169	***	**Y**
H2e	.028	.532	N	H6-5b	.106	.022*	**Y**
H3	.611	***	**Y**				
H4a	.221	.087#	***Y in p<0.1***	*** indicates p<0.001			
H4b	.337	.008**	**Y**	** indicates p<0.01			
H5a	.599	***	**Y**	* indicates p<0.05			
H5b	.227	.111	N				

Table 4. The result of hypothesis testing in the structural model

According to the outcome of the structural model, H1a (TMPS), H1b (ACKS), H1c (CIEE) and H1d (ARA) are facilitators that positively affect BITSA with path coefficients of 0.119 ($p<0.05$), 0.261 ($p<0.001$), 0.169 ($p<0.001$) and 0.087 ($p<0.1$) respectively. Two facilitators – H2b (ACKS) ($p<0.01$) and H2d (ARA) ($p<0.001$) – turned out to be the most important facilitators for improving ISPE. The relationship of BITSA → ISPE was strongly indicated by the coefficient value of 0.611 ($p<0.001$). BITSA as a dimension of SISP success had a positive influence on Dycap and ITIF with path coefficients of 0.221 ($p<0.1$) and 0.337 ($p<0.01$). However, in the case of ISPE, it had a positive impact on facilitating only Dycap with path coefficients of 0.599 ($p<0.001$). There were four facilitators TMPS, CIEE, ARA and POL with path coefficients of 0.100 ($p<0.05$), -0.114 ($p<0.01$), -0.085 ($p<0.1$) and 0.169 ($p<0.001$) respectively that positively impacted on Dycap. Moreover, two elements, TMPS and POL, turned out to be the facilitators with a positive impact on ITIF. Figure 2 illustrates the relationship among facilitators, SISP success and the outcome of its success.

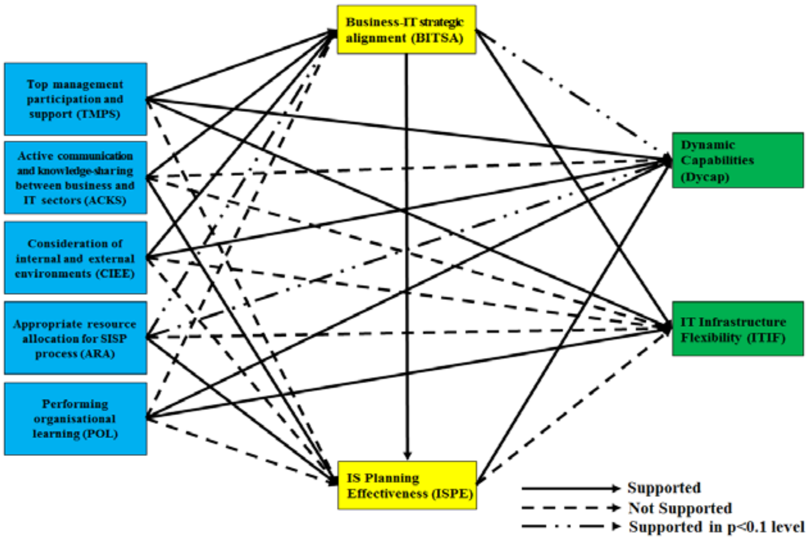

Figure 2. The Result of the Hypothesized Structural Model

This study thus found that TMPS (H1a: p-value of .043*), ACKS (H1b: p-value of ***), CIEE (H1c: p-value of ***) and ARA (H1d: p-value of .099#) are essential facilitators improve the level of business-IT strategic alignment. This indicates that BITSA can highly depend on how internal members in the organisation actively join in the process with a high interest and a good understanding of its goals and strategies as well as its current external environments and proper resource allocation. According to the study of Newkirk and Lederer (2006), business-IT strategic alignment could be enhanced by business management's understanding of the significance of IS/IT and IS/IT management's understanding of business objectives. Wallace (2013) indicated that SISP undertakers need to assess the current internal and external environments by drawing on what they plan is reliable and up-to-date information about trends and patterns so as to provide a road map that charts the course. In particular, the road map needs to be aligned with the strategy the organisation establishes. Some studies also observed that decision-making during SISP undertaking encompasses allocation of business-IT resources, such as HR, time, financial budget and so on, and the allocated resources need to be properly aligned with business plans and IT ones (Kearns and Lederer, 2000; Newkirk et al., 2003). Moreover, the analysis points out that in order to increase overall level of IS planning effectiveness, communication and knowledge-sharing between business and IT sectors (H2b: p-value of .001**) with suitable resource allocation (H2d: p-value of ***) is needed. Premkumar and King (1994) discussed that there are several items utilized to measure and improve IS planning effectiveness, such as improved communications with top management; better appreciation of role of IS/IT and improved communications with users; and better planning and control of human, software, and hardware resources. Thus, improving overall ISPE in an organisation is related to how necessary resources to undertake SISP are well allocated (Lientz 2010) with proper communication and knowledge-sharing between business sector and IT sector (Piccoli 2008). BITSA positively affected the level of ISPE. If organisations realize BITSA by considering various facilitators, then they can have a higher possibility of improving ISPE (H3: p-value of ***). It means that the better BITSA is achieved, the higher planning effectiveness the organisation could be realised and overall success in SISP could be higher. Hence, organisations need to first consider the four facilitators before they intend to undertake successful SISP.

In the case of the outcome realized by the SISP success, BITSA proved to be a dimension that could have a positive effect upon improving both Dycap (H4a: p-value of .087$^{\#}$) and ITIF (H4b: p-value of .008**). According to the study of Otim et al. (2009), business-IT strategic alignment enables an organisation to exploit IT capabilities to transform business process and ultimately influence business performance. Tallon (2009) also indicated that there is a profound effect on the link between business-IT strategic alignment and IT infrastructure flexibility. However, ISPE positively affected only Dycap (H5b: p-value of ***). It shows that although the two dimensions are important to enhance its outcome, BITSA might contribute more to improving Dycap and ITIF compared to ISPE. Hence, in order to improve the level of the outcome of SISP success, organisations need to more consider achieving BITSA, because BITSA is the factor that directly leads to improving ISPE.

This study found that there were four facilitators TMPS, CIEE, ARA and POL that positively affected enhancing Dycap (H6-1a, H6-3a, H6-4a and H6-5a: p-value of .033*, .004**, .068$^{\#}$ and *** respectively). There were also two facilitators such as TMPS and POL that had a positive impact on facilitating ITIF. This study particularly observed that POL could be a vital facilitator positively influences improving Dycap (H6-5a: p-value of ***) and ITIF (H6-5b: p-value of .022*), although it did not have an impact on SISP success. It indicates that organisations need to consider POL during SISP undertaking so as to promote overall level of its outcome. Some authors argue that organisational learning could contribute to facilitating organisational performance (Lin & Hsu 2010) and gaining competitive advantage (Grant et al. 2010) by promoting the effects of IS/IT capabilities and competences. Moreover, Tallon (2009) claimed that high IT infrastructure flexibility and its ability could be traced to a well undertaken SISP with considerable effort of learning and understanding information needs through close interaction with users. Table 5 summarizes the relationship among the three constructs indicated in Figure 2.

Facilitators		**SISP success**
• Top management participation and support (TMPS) • Active communication and knowledge-sharing between business and IT sector (ACKS) • Consideration of internal and external environment (CIEE) • Appropriate resource allocation (ARA)	→	• Business-IT strategic alignment (BITSA)
• Active communication and knowledge-sharing between business and IT sector (ACKS) • Appropriate resource allocation (ARA)	→	• IS planning effectiveness (ISPE)
SISP success		**The outcome of SISP success**
• Business-IT strategic alignment (BITSA)	→	• Dynamic capabilities (Dycap) • IT infrastructure flexibility (ITIF)
• IS planning effectiveness (ISPE)	→	• IT infrastructure flexibility (ITIF)
Facilitators		**The outcome of SISP success**
• Top management participation and support (TMPS) • Consideration of internal and external environment (CIEE) • Appropriate resource allocation (ARA) • Performing organisational learning (POL)	→	• Dynamic capabilities (Dycap)
• Top management participation and support (TMPS) • Performing organisational learning (POL)	→	• IT infrastructure flexibility (ITIF)

Table 5. The summary of the relationship among the three constructs

6 CONCLUSION

This study investigated the significance of facilitators vital for SISP and observed the relationship among these facilitators, SISP success and the outcome of SISP success. Based on the result, it suggests there are various facilitators that enable organisations to achieving SISP success and most of the facilitators have a positive effect on improving business-IT strategic alignment and IS planning effectiveness. The two dimensions of SISP success positively affect improving sustainable competitive advantage and organisational performance, but business-IT strategic alignment might be more critical to facilitate the level of its outcome. Other facilitators, except for active communication and knowledge-sharing between business and IT sectors, were essential to facilitate dynamic capabilities and IT infrastructure flexibility. Organisational learning needs to be considered if improves and sustains the outcome of SISP success.

There are three key implications of this study. This study shows that considering various facilitators are critical to achieve better quality of SISP process. Business-IT strategic alignment is the vital factor to improve SISP success as a facilitator and to promote the level of IS planning effectiveness because realizing business-IT strategic alignment could be related to considering as many factors as possible inside and outside the organisation. Second, there have been few studies that show how SISP success can impact on improving dynamic capabilities and IT infrastructure flexibility. The study shows that there is a direct relationship between SISP success and the outcome of its success. In other words, sustainable organisational performance and competitive advantage in the organisation can be obtained by a high quality of business-IT strategic alignment and IS planning effectiveness. Finally, this study shows the relationship among facilitators, SISP success and the outcome of its success. It suggests that there is a relationship among the facilitators, SISP success and the outcome of its success.

This study contributes to the existing literature from both a theoretical perspective and a practical one. Most prior literature sources have discussed a relationship between critical factor(s) and SISP success. However, it observed the relationship between SISP success and the outcome of its success as well as the relationship between facilitators and the outcome of SISP success. Thus, this study can theoretically suggest the importance of considering facilitators, SISP success and its outcome, and their relationship to undertake SISP process more effectively. From a practical perspective, the findings of this study could imply that there are various factors that lead to improved SISP success as well as the importance of achieving business-IT strategic alignment and IS planning effectiveness to improve its outcome. This means that organisations need to recognize that to improve the quality of business-IT strategic alignment and IS planning effectiveness, organisations need to consider as many facilitators as possible, to achieve a higher quality of its outcome from SISP.

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