BETTER IT GOVERNANCE FOR ORGANIZATIONS
A Model for Improving Flexibility and Capabilities of Strategic Information Systems Planning (SISP) through EA and BPR under e-Business Environment

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Abstract: Within more turbulent, and increasingly globalized and digitalized environments, Strategic Information Systems Planning (SISP) has been recognized as one of the most significant factors for effective and efficient IT governance to improve organizations' effectiveness and capabilities by changing the characteristics or overall governance of organizations. Although organizations have been introduced, various well-known methodologies for creating the SISP successfully to maximize their strategic opportunities and values, the current literatures indicate that there is no perfect and fully comprehensive methodology or model to make organizations satisfactory. The purpose of this paper is to propose a model that can complement issues of the existing model and support improved flexibility and capabilities, and at the same time minimize waste and systems inconsistency by incorporating EA, BPR and concurrent approach. On-going research will be a case study to validate the proposed model in the government of Korea and to seek for other potential issues and factors compared with other sectors.

1 INTRODUCTION

In the last few years, the rapid progress in information technology capabilities, as well as both internal and external environment of organizations has continued to proceed and transform as the remarkable degree and they are greatly increasing environmental complexity and uncertainty. Organizations are trying to change industry structures, create strategic goals, performance and competitive position, and spawn new businesses as well as continuously shaping and reshaping the business environment through a powerful interdependency between business and IT that is a specific focus on IT Governance (Porter, 2001; Chi et al., 2005; Grover and Segars, 2005; Peterson, 2004).

To achieve more effective and efficient IT Governance under the e-business environment, several requirements should be positively considered to all organizations that the top management's leadership, an establishment of strategic and systematic planning, and rigid alignment and integration of organizational structures and processes that ensure that the organization's IT

sustains and extends the organization's strategy and objectives, because it is the single most important determinant of IT value realization (Peterson, 2004; Van Grembergen et al., 2004). Hence, boards and business executives of an organization have recognized that Strategic information systems planning (SISP) can be an indispensable application for organizations to succeed both a proactive search for competitive and value-adding opportunities, as well as the development of broad policies and procedures for integrating, coordinating, controlling and implementing the IT resource in today's e-business environment (Grover and Segars, 2005; Newkirk et al., 2003). They have also invested vast amounts of time and capital in SISP projects to introduced a number of well-defined, documented planning models and methodologies, such as Business Systems Planning, Information Engineering and Critical Success Factors that can be customized or develop in-house methodologies suitable for the organization. In practice, SISP has provided various advantages and benefits for organizations and with the emergence of end-user computing and client-server architectures, the contemporary agenda of SISP has expanded even

further to include the development of organizational and inter organizational architectures for the sharing data and integration of technologies (Segars et al., 1998).

However, even though organizations' endeavour and the advancement of SISP, many researchers have pointed out that organizations have experienced failures from the methodologies due to several issues such as limiting planners' knowledge, involvement and commitment of senior management, time and planning horizons, cost budget overrun and poorly defined and integrated business objectives (Chi et al., 2005; Griffiths and Hackney, 2001; Hartono et al., 2003; Hevner et al., 2000; Palanisamy, 2005; Pant and Hsu, 1999; Petel, 2004). Pant and Ravichandran (2001) emphasize that these existing methodologies tend to be too detailed, time-consuming, and expensive, so organizations often find methodologies unsuitable for dealing with the high unpredictability and diversity of the environment change (Newkirk and Lederer, 2006) as well, they are not appropriate to deal with integrated views of the entire organization in current business practice (Pant and Ravichandran, 2001; Jonkers et al., 2006). In particular, IT Governance in current dynamic and turbulent business environments cannot only be accomplished with the traditional models of aligning IT strategy with business strategy and needs to deliberate to meet organizations' impending and forthcoming IT-business challenges and requirements simultaneously (Newkirk et al., 2003; Petel, 2004), so that the developed methodologies are not sufficient to fulfil flexibility and capabilities that are the latest IT issues.

Therefore, to set up better and more effective IT Governance, the existing methodologies need to be complemented as more comprehensive planning is available to contain the following factors: considering internal-external environments of business and IT from the primary stage, aligning business strategy with IT strategy, securing business opportunity that can be proposed from IT strategy as well as integrating and standardizing of processes and systems which are already developed and implementing in the future. Enterprise Architecture (EA), Business Process Reengineering (BPR) and concurrent approach can specifically be required to supplement the issues mentioned above, to develop a practical long-term approach or model based on improving organization's flexibility and capabilities as well as to minimize duration of time. EA provides the "blueprint" for systematically defining an organisation's current or future environment and a long-term view of a company's processes, systems,

and technologies through the integration and standardization requirements of the company's operating model so that organizations can build capabilities (Jonkers et al., 2006; Ross et al., 2006). Also, implementing IT strategy based on BPR can create more flexible, team-oriented, coordinative, and communication-based work capabilities (Attaran, 2004; Hammer and Stanton, 1995; Ward and Peppard, 2002).

In this paper, we propose a model for SISP to complement existing methodologies by incorporating EA, BPR and concurrent approach. We also review the theoretical perspective of IT Governance and SISP, as well as its success and relationship between IT Governance and SISP in section 2. In the next section, we briefly analyze existing methodologies for SISP and their key problems, at the same time display what are EA and BPR, and why should they need to implement the long-term strategic planning for IT Governance. Section 4 presents the proposed model which incorporates EA, BPR and concurrent approach as well as justifies its characteristics and compares it with the existing methodologies. Finally a conclusion and further work is presented in Section 5.

2 LITERATURE REVIEW

2.1 IT Governance

Amidst the challenges and changes of the 21st century, the pervasive use of information, systems, and technology has created a critical dependency on IT, so that IT governance has become a fundamental business imperative (IT Governance Institute, 2005; Peterson, 2004). IT Governance is all mainly focused on the same issues, such as the link between business and IT, and that specifying the decision rights and accountability framework to encourage desirable behaviour in the use of IT (Van Grembergen et al., 2004; Weill and Ross, 2004). Although IT Governance is a topic that has recently been rediscovered, it is ill-defined and consequently blurred at the edges as yet. Van Grembergen et al. (2004) present that there are three IT Governance definitions that have frequently mentioned in literatures as follows:

- IT Governance is the responsibility of the board of directors and executive management. It is an integral part of Enterprise Governance and consists of the leadership and organizational structures and processes that ensure that the

organization's IT sustains and extends the organization's strategies and objectives (IT Governance Institute, 2001);

- IT Governance is the organizational capacity exercised by the board, executive management and IT management to control the formulation and implementation of IT strategy and in this way ensure the fusion of business and IT (Van Grembergen, 2002);
- IT Governance is the system by which an organization's IT portfolio is directed and controlled. IT Governance describes (a) the distribution of IT decision-making rights and responsibilities among different stakeholders in the organization, and (b) the rules and procedures for making and monitoring decisions on strategic IT concerns (Peterson, 2004).

Hence, IT Governance is a senior management responsibility and specifies the structure and processes through which the organization's IT objectives are set, and the means of attaining those objectives and monitoring performance (Peterson, 2004; Weill and Ross, 2004). Contrary to IT management is focused on the internal effective supply of IT services and products and the management of present IT operations, IT Governance in turn is much broader. It concentrates on performing and transforming IT to meet present and future demands of the business (internal focus) and the business' customers (external focus) (Van Grembergen et al., 2004). Also, Governance determines who holds the decision rights for how much the enterprise invests in IT, while management is the process of making and implementing the decisions and determines the actual amount of money invested in a given year and the areas in which the money is invested (Weill and Ross, 2004). In particular, Peterson (2004) accentuates that "This does not undermine the importance and complexity of IT management,…, but whereas elements of IT management and the supply of (commodity) IT services and products can be commissioned to an external provider, IT Governance is organization specific, and direction and control over IT can not be delegated to the marker."

The purpose of IT governance is to direct IT endeavours to ensure that performance meets the objectives such as IT activities are aligned with the business, value delivery of IT, IT resources management, business and IT-related risks are being managed appropriately and performance measurement of IT. IT governance also plays an important part in the total governance responsibility of the board of directors and executive management,

and is an integral part of enterprise governance. Leadership and their associated organizational structures are needed to ensure that the organization's IT can sustain and extend the organization's strategies and objectives (IT Governance Institute 2005), so it needs to involve building professional IT capabilities that are able to offer business strategic advantages.

Therefore, good IT governance harmonizes decisions about the management and use of IT with desired behaviours and business objectives. Without carefully designed and implemented governance structures, enterprises leave this harmony to chance (Weill and Ross, 2004). The value contribution of IT can be determined by considering facets of global IT Governance, such as (1) develop an IT strategy, and undertake critical strategic and operational reviews, (2) develop and manage the distributed IT/IS systems, (3) define methods, tools, and processes, (4) define best practices and manage application development, (5) manage outsourced providers and multi-site procurement policies, (6) develop key performance indicators, (7) critically review current organization structures and capability and implement cost savings to improve efficiency and effectiveness (Petel, 2004).

2.2 SISP and SISP Success

As indicated above, organizations are aggressively searching for new ways to leverage information, knowledge and IT in supporting strategic goals and competitiveness, the need for effective strategic information systems planning (SISP) has become more and more critical (Grover and Segars, 2005; Hartono et al., 2003; Newkirk and Lederer, 2006). SISP has been defined and studied empirically as the process of identifying a portfolio of computer-based applications to be implemented, which is both highly aligned with corporate strategy and has the ability to create an advantage over competitors (Doherty et al., 1999) and the process of identifying a portfolio of computer-based applications that will support an organization's business plans, thus enabling the organization to align its IS with its business needs and achieve its business goals (Reich and Benbasat, 2000).

SISP is, therefore, an exercise, or ongoing activity, that enables organisations to develop priorities for IS development and to help the organization reach its goal of improved competitiveness, operations, and resource management (Chi et al., 2005; Newkirk and Lederer, 2006). SISP can contribute substantially to an

organization. It can help the organization develop priorities for information systems development by ranking such systems in terms of their efficiency, effectiveness, and strategic value (Hartono et al., 2003). SISP also can help organizations to perform the planning as an organizational learning process in order to anticipate environmental uncertainty and dampen its detrimental effects. For such reason, several researchers mention that SISP can be viewed as having evolved into a knowledge management (KM) activity (Hartono et al., 2003; Newkirk and Lederer, 2006). Accordingly, SISP is an important activity for information executives and top management and becoming one of the most critical issues facing them (Chi et al., 2005; Doherty et al., 1999; Grover and Segars, 2005; Hartono et al., 2003; Hevner et al, 2000; Newkirk et al., 2003; Newkirk and Lederer, 2006; Palanisamy, 2005; Segar et al., 1998; Teubner, 2007).

In general, SISP activities require substantial resources in terms of managerial time and budgets, and specific projects are chosen for their alignment with business objectives or their capacity to create significant impact on the organisation's competitive positioning (Segar and Grover, 1998). Therefore, the process must deliver benefits to sustain and contribute positively for organizational effectiveness as well as must require considerable management coordination to inspire creativity and innovation. The primary objectives of SISP is to align the organization's business strategy with its IS/T strategy, to achieve an organization's business objectives, to identify opportunities for exploiting information and to utilize IS for creating and sustaining competitive advantage by integrating, coordinating, controlling and implementing the IT resources (Doherty et al., 1999; NewKirk et al., 2003; Ward and Peppard, 2002). The outcome of the SISP process is a strategic IS plan containing the technology architecture plan and the applications architecture plan (Satzinger et al., 2007). The technology plan includes the types of hardware, software and communications networks required to implement all of the planning systems, and the applications architecture plan may contain Strategic Information Management System (SIMS), Supply Chain Management (SCM) and Customer Support System (CSS) to carry out specific business functions.

Accordingly, measuring how well SISP was carried out and how planning has improved over time is a complex exercise and must incorporate consideration of these intangible process contributions and in this context, SISP success can

be viewed as the degree of attainment of the objectives of SISP (Segars and Grover, 1998). They have also shown SISP success to be comprised of four dimensions of objectives which they referred to as alignment, analysis, cooperation, and improvement in capabilities. Alignment refers to the results of the linkage of the IS strategy and business strategy, analysis concerns the results of the study of the internal operations of the organization, cooperation refers to the results of the general agreement about development priorities, implementation schedules and managerial responsibilities, and the fourth dimension, improvement in capabilities, represents the enhancement of the potential of the planning system. In particular, Ward and Peppard (2002) note that some of the key factors that seem to recur and underpin success for SISP, such as (1) external, not internal focus, (2) adding value, not cost reducing (3) understanding customers, (4) Business-driven innovation, rather than technology-driven. Chi et al., (2005) also describe that in the current study, SISP success was defined as a combination of the extent to which an organization achieved each of its objectives such as aligning IT with business needs, and forecasting and allocating IT resources.

Therefore, successful SISP should help achieve alignment between IS and business strategies, analyse and understand the business and its associated technologies to compete via an architecture of integrated applications and databases, foster cooperation and partnerships among functional managers and user groups. SISP also should encourage organizations to anticipate relevant events and issues within the competitive environment to reduce the possible conflicts that may put SISP implementation at risk, and adapt to unexpected organizational and environmental change.

3 METHODOLOGIES OF SISP, EA AND BPR

3.1 Review of the Existing Methodologies and its Issues

To perform SISP study, in general, organizations typically conduct a major, intensive multi-phase study with the highest level of an organization for a longer time frame. Because the project involves major changes for organizations such as (1) defining new business strategies, technologies, policies and

architectures, (2) improving adaptability to align IS and business strategies, (3) the capabilities of existing internal and external systems, (4) flexibility of organizational and environmental changes as well as cooperation among managers, other users and systems developers (Chi et al, 2005; Hartono et al, 2003; Lederer and Salmela, 1996; Pant and Hsu, 1999). Accordingly, the choice of a SISP methodology can be a critical issue on the IT governance agenda (Doherty et al, 1999, Petal, 2004). Organizations follow one of several well-defined and documented planning methodologies or hire an IS consulting company to customize their own methodology.

Ward and Peppard (2002) indicate that basic approaches of many methodologies have much in common, but they differ considerably in detail. Many components of SISP methodologies are also believed that more than one approach should be used to derive business plans and goals, current IS provision and use, and IT opportunities. In general, there are a broad variety of governance mechanisms for the two high level components to achieve the business/IT fusion that are alignment and impact (Vitale et al., 1986; Van Grembergen et al., 2004). In addition, Earl (1989) proposed three approaches for SISP formulation such as top-down, bottom-up and inside-out. Consequently, based on considering both alignment and impact, models, frameworks and approaches have been developed to incorporate these aspects such as Business Systems Planning (IBM Corporation, 1975), Information Engineering (Martin, 1989) for alignment model and Critical Success Factors (Rockart, 1979) for impact model. First, BSP combines top-down planning with bottom-up implementation, and focus on organizations' business process to derive data needs. In particular, information architecture is obtained from BSP through functional area analysis. Similarly, IE is more data-oriented and provides techniques for building enterprise, data and process models. These models are combined to form a comprehensive knowledge base that is used to create and maintain information systems. Also, CSF methodology is used for identifying key information requirements for the success of the organization and its managers. Mainly, the methodology focuses on key information needs of senior management and builds information systems around those key needs (Palanisamy, 2005; Pant and Hsu, 1999; Pant and Ravichandran, 2001).

However, as technology continues to change, grow and become more complex, the process for SISP has become complex and difficult to handle.

Several researchers point out that BSP and IE tend to be too detailed, expensive and time-consuming. These alignment methodologies also fail to explicitly address such integration issues, and unsuitable for the highly compressed development cycle times. Petal (2004) remarks that the fundamental difference between the new models and traditional view of aligning IT support or transforming business is that in the new fused e-businesses, IT is integrated into business activity. In addition, CSFs methodology focuses more internal sources and ignores value adding aspects of IS, so not comprehensive and creative (Palanisamy, 2005; Pant and Hsu, 1999; Pant and Ravichandran, 2001). Accordingly, many times organizations face IS failures because of IS rigidity and passiveness and they perceive that there is no one methodology superior to another in all situations regardless of techniques or related products (Cerpa and Verner, 1998; Hartono et al., 2003; Palanisamy, 2005). Griffiths and Hackney (2001) also claim that the methodologies which are based on a structured and inflexible method-oriented approach may not be the most appropriate for exploiting SIS.

Furthermore, several researchers have noted that organizations focus upon the role and effectiveness of specific planning methodologies and frameworks, rather than to consider the broader set of practices which influence the application of planning within a specific organization, so they often fail to take into account other important aspects of the process of SISP such as the level of participation, the ownership of the project or the focus of the planning exercise (Earl, 1993; Segars et al., 1998; Peppard and Ward, 2004). Griffiths and Hackney (2001) also assert based on some literatures that the high failure rate of SIS applications in business is deemed to be largely of a managerial rather than a technical causation. Likewise a number of research studies have examined the implementation approaches of organizations to identify the main issues. The research literatures present a number of specific implementation issues can be identified and implementation issues cannot be separated from the strategic planning process (Cerpa and Verner, 1998; Chi et al., 2005; Gottschalk, 1999; Griffiths and Hackney, 2001; Hartono et al., 2003; Karimi, 1988; Lederer and Sethi, 1991; Teo and Ang, 2001; Ward and Peppard; 2002), as follows: (1) Lack of top management commitment, (2) Lack of top management support and understanding, (3) Lack of user involvement to projects, (4) Poorly defined business objectives caused by inadequate appreciation of the business's needs, (5) Poor level

of communication between users and IS staff, (6) Serious cost budget overruns due to insufficient understanding of the project, (7) Ignoring the IS plan once it has been developed, and (8) SISP planning time horizon.

Over the past few years, the approach for enterprise governance has evolved towards a balanced or reconciliation between competitive positioning and resource or competence-based strategy. As 'strategic thinking' that is opposed to strategic analysis or planning, begins to emerge, it is getting more difficult task for organizations to deal with all status quo and issues mentioned above by just introducing the alignment and impact approaches in unpredictable business environmental changes. Therefore, organizations need to develop and implement better methodologies to complement the existing one that can suggest the long-term prosperity of the organization by a realignment of the organization's resources and capabilities to match the demands of the environment including assets, skills, knowledge processes and culture, etc. The supplementary model for effective and efficient IT Governance must also have the ability to pacify intentional changes and adapt to environmental changes in current strategic action, that is, flexibility.

3.2 Enterprise Architecture (EA)

As mentioned earlier, with the rapid proliferation of Internet and web-enabled technologies, global connectivity and the changes it supports are perhaps the most significant component of the current paradigm realignment. Through connectivity with the IT and Internet, an enterprise is able to conduct business anywhere, anytime – eclipsing the traditional constraints of time, distance, and location. Many organizations are now also focusing on their core competencies, or what they can do best, and extending their business processes by teaming with networks of similarly focused patterns and sharing services (IT Governance Institute, 2005).

Accordingly, Enterprise Architecture (EA) can be one of the hottest topics on the agenda of IT organizations. Ross and Weill (2006) define the EA as 'the organizing logic for business processes and IT infrastructure, reflecting the integration and standardization requirements of the company's operating model.' The EA provides a long-term view of a company's processes, systems, and technologies in order to build capabilities – not just fulfill immediate needs, as well as the framework for ensuring that enterprise goals, objectives, and policies are properly and accurately reflected in decision making (IT Governance Institute, 2005; Ross et al., 2006; Weill and Ross, 2004). Hence, hard decisions regarding resources, investments, information, applications and technology all require EA. In addition, it has greatly changed the focus of the chief information officers (CIOs), so senior management views EA as a critical component for making decisions that are consistent with the strategic plan for their organization, because EA can remove the boundaries between business and IT planning, and the business architecture dictates the shape of the IT environment and supports effective IT governance. As a key planning discipline, it helps guide and optimise an organisation's IT investments and translate business strategies into implementable technology solutions. The most important characteristic of EA is that it provides a holistic view on the enterprise (Jonkers et al., 2006).

To shape IT capabilities, an operating model for EA is mainly classified with two dimensions, such as business process standardization and integration. Standardization of business process and related systems means defining exactly how a process or where is it is completed, and it delivers efficiency and predictability across the organization by a reduction in variability. In addition, integration links the efforts of organizational units through shared data. This sharing of data can allow the organization to present a single face to customers. The benefits of integration include increased efficiency, coordination, transparency, and agility. An integrated set of business processes can improve customer service, provide management with better information to make decisions, and speed up the overall flow of information and transactions through a company. Currently, most EAs specify infrastructure, data, and applications as a stable platform supporting faster-changing applications to build flexibility into their architectures (Ross et al., 2006; Weill and Ross, 2004).

Therefore, a specific focus on EA can be required by CIOs to assume the governance responsibility of ensuring that EA is used to identify problems addressed by architecture and uses the architecture to do the following: (1) make decisions – to ensure that information systems are available to enhance the enterprise's ability to guide decision making and inter-process communication, at the same time ensure that information systems will be consistently or appropriately applied across the enterprise, (2) manage change – to ensure that IT is able to deal with the high rate of change in today's complex information environment and to accurately

represent the enterprise's goals, objectives, and policies, (3) improve communications – to ensure information systems have a clear picture of the inter-relationship among the systems and adequately communicate linkages between the systems and (4) ensure information systems and information resources are managed to be consistent with business planning – to maintain current with the capability of new technologies, and support the business strategies in rapidly changeable environments (IT Governance Institute, 2005).

3.3 Business Process Reengineering (BPR)

Organizations have also continued their investigation of re-engineering that often begins by looking for detailed methodologies and supporting tools to govern them through the process. The term "reengineering" first appeared in the information

Micheal Hammer and James Champy (1993) defined BPR as the analysis and redesign of workflow within and between enterprises, as well as promoted the idea that sometimes radical redesign and reorganization of an enterprise is necessary to lower costs and increase quality of service and that IT is the key enabler for that radical change. Working together, BPR and IT have the potential to create more flexible, team-oriented, coordinative, and communication-based work capability.

IT is more than a collection of tools for automating or mechanizing processes. It can fundamentally reshape the way business is done and enable the process design. In leading edge practices, IT makes BPR possible and worthwhile (Attaran, 2004). The aim of BPR approach is quick and substantial gains in organizational performance by redesigning the core business process. The motivation was usually the realization that there was a need to speed up the process, reduce needed resources, improve productivity and efficiency, and improve competitiveness. Another reason for BPR relates to the increasing emphasis placed on integrating business web sites with backend legacy and enterprise systems, as well as organizational databases. Hence, BPR requires taking a broader view of both IT and business activity, and of the relationships between them. IT capabilities should support business processes, and business processes should be in terms of the capabilities IT can provide (Broadbent et al, 1999; Hammer and Stanton, 1995).

BPR is not a strategy but a strategic action, and it is the means of changing strategies in response to a changing environment, where continuous or incremental change is insufficient. It also requires a clear understanding of customers, market, industry and competitive directions. Furthermore, like any other strategic action, it requires consistency between the company's business strategy and vision. Defining business strategy and developing a strategic vision requires understanding the company's strengths and weaknesses, and the market structure and opportunities. In particular, many organizations ignore IT capabilities until after a process is designed. An awareness of IT capabilities can and should influence process design (Attaran, 2004; Ward and Peppard, 2002).

Therefore, the relationship between IS/IT planning and BPR enables a reconciliation of the fundamental questions of impact and alignment of IS/IT strategy development with the rationale for reengineering initiatives such as how can IS/IT be exploited to provide business advantage (impact) and how can IS/IT ensure the success of the business strategy (alignment) (Attaran, 2004; Hammer and Stanton, 1995; Ward and Peppard, 2002). The redesign of business process through BPR is pertinent to consider the topic alongside the development of an IS strategy, for a number of reasons:

- In developing the IS strategy, a thorough understanding of the business strategy is essential. Most re-engineering initiatives will spring from, and be part of, the business strategy;
- Most, if not all, re-engineering initiatives have a significant IS/IT element, which will be accommodated in the IS strategy, and need to be allocated the same priority that the business places on the change program;
- There is a common need in both IS strategy development and business re-engineering to build up a model of the business as it currently exists and other potential of how it will look following transformation or evolutionary change;
- Success in re-engineering, as with the development and implementation of an IS/IT strategy, demands a strong business-IS function partnership;
- Designing or redesigning business processes to take advantage of IS/IT capabilities is essential if the traditional problems of automating poorly-designed processes or inefficient work practices through IT are to be avoided.

4 PROPOSE A MODEL TO ENHANCE FLEXIBILITY AND CAPABILITIES OF SISP

Although, models, frameworks and approaches for the process of strategic IS/IT planning formulation have been developed to incorporate both alignment and impact, and the success factors for this process have also been determined, problems of SISP mentioned so far are closely related to methodologies itself, planning process, managerial and implementation issues. In addition, technological aspect such as database, hardware, application and systems can be equally important. Accordingly, we need to look into several issues that haven't been considered in the existing methodology to develop an improved model as follows:

(1) Insufficient consideration of both alignment and impact: most methodologies only focus on alignment, so does not consider the potential impact of IS/IT on organizational tasks and processes as well as not fitting into an integrated business plan. It means that it is somewhat hard for organizations to harmonize both alignment and impact in the methodologies. As more organizations are transforming into e-businesses, it has been a challenge for them to understand how businesses create and sustain competitive value from their IT investments (Peterson, 2004). Hence, it is needed for organizations to consider the interaction of alignment and impact simultaneously for more comprehensive approach. In essence, a comprehensive methodology for SISP should be able to incorporate both the impact and the alignment views. Method/1 incorporates Value Chain Analysis, IE supports Critical Success Factors Analysis and even BSP also incorporates CSF to complement their one-way approach (Pant and Hsu, 1999).

(2) Lack of sufficient analysis of external business-IT environments: By focussing mainly on analysing the internal environment and data processing, it can be difficult for organizations to adapt to rapidly changing or emerging circumstances. To respond to environmental fluctuations, organizations need to realize the change in information requirements. Presence of flexibility in IS that handles special situations in organizational information requirements and enables organizations to tackle these fluctuations successfully by adapting to the environmental forces (Pananisamy, 2005). To develop effective and competitive strategic IS planning, therefore, both internal and external business-IT environment should be considered

together in stages from the early stage of planning until the planning process is implemented;

(3) Deficiency of effort for increasing of IS and organizational capabilities through EA and BPR: most existing methodologies that use top-down approaches have a fixed structure. Accordingly, making it difficult to change a process, to implement organization-wide policies and minimize redundancy and system inconsistencies once the project is completed. However, lack of support for EA is apparent in existing methodologies such as BSP, IE and CSFs, this may accelerate future difficulties of inconsistencies and confusion and hinder an organization's ability to meet customer needs efficiently if SISP is carried out without the prior benefit of an EA (Hartono et al., 2003). Thus, EA and BPR are essential for establishing a long-term view of a company's processes, systems, and technologies in order to build and strengthen capabilities and flexibility;

(4) Difficulty of a reduction of excessive duration for developing SISP: to implement SISP projects, in general, BSP takes 8-21 months, IE needs 10-12 months to finish and sometimes it takes over 2 years to complete, according to the scale of the project. Accordingly, an organization's concerns and priorities may have changed enough to render the activities outdated (Flynn and Arce, 1995; Lederer and Salmela, 1996). Present methodologies, however, do not consider whether the stages can be accomplished concurrently. They may also have a step for creating a workout plan and are designed in a sequential form. If a methodology is formulated as a concurrent way to utilize related or similar processes at the same time, the duration of the SISP process can be significantly reduced contrary to other methodologies (Min et al., 1999). Thus, this model introduces a concurrent approach as a way to minimize duration of time.

Therefore, we propose an overall SISP model as shown in Figure 1 which can provide a structure for sorting out the interrelationships of strategic issues and at the same time maintain the advantages of existing methodologies by addressing the problems mentioned above. The approach of the model will be both alignment and impact based, focusing on IS as a way to assist business goals as well as identify strategic opportunities enabled by IT. This model attempts to focus on amplifying strategic compatibilities, flexibility and effectiveness but reducing the development period of time through introducing EA, BPR and the concurrent approach. Accordingly, this proposed model enables organizations to comprehend four dimensions of
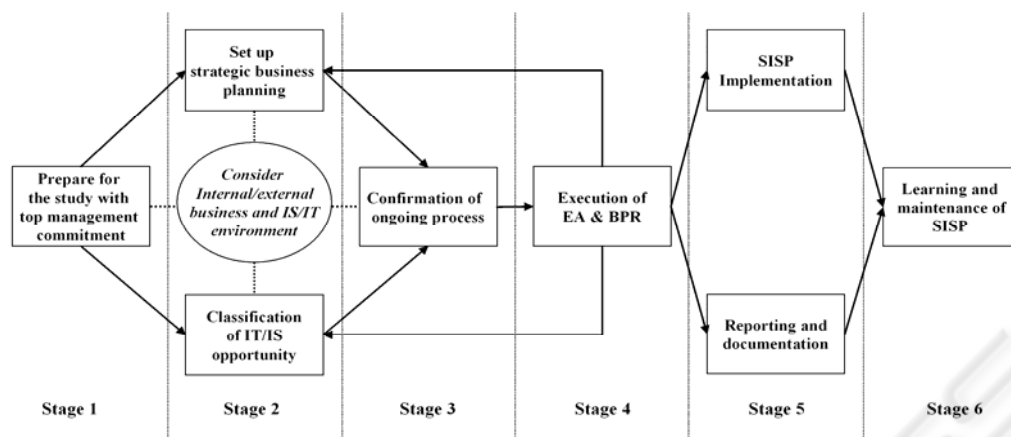
Figure 1: The proposed model for integrated SISP model.

objectives for SISP success from Segars and Grover (1998) and six process dimensions to accomplish effective strategic governance from Segars et al., (1998) such as comprehensiveness, formalization, focus, flow, participation, and consistency.

Above all, the proposed model provides the following advantages for organizations unlike other SISP methodologies:

- Consider and emphasize SISP formulation in both IS/IT and business point of view by carrying out strategic business-IT/IS planning and opportunities concurrently (consider both alignment and impact of organizational process simultaneously);

- Possible to consider internal/external business and IT/IS environment at the same time and summarise overlooked important factors from the first stage of the framework until commencing the SISP implementation. Therefore, organizations are available to secure the degree of organizational flexibility to have a variety of actual and potential procedures and to increase the control capability of the management and improve the controllability of the organization and environment;

- Possible to align, integrate and standardize the SISP model and to maintain effective organizational capabilities and flexibility by utilizing EA as well as possibly design or redesign business processes to take advantage of IT/IS capabilities and to improve performance if processes are poorly-designed or inefficient through BPR;

- Contrary to the existing methodologies, possible to implement the stable planning and minimize extra cost, reduction of implementation time and

trial and error through analysing and accomplishing several processes concurrently.

As a whole, the proposed SISP model consists of supplementary processes with a different overall structure contrary to other conventional SISP methodologies. It consists of eight main processes and one supplementary process. The proposed model and the processes can be differentiated from the existing methodologies. Basically, the model is implemented sequentially which commences from Stage 1 through to Stage 6 and several processes are completed concurrently at the same level. Although some processes are carried out at the same time, it does not mean the processes of the same stage are achieved independently. The information completed in stage 1 is supplied to the next stage at the same time to verify the forwarded information. In Stage 2, two processes work together to consider strategies, opportunities and critical factors with the received information and external business-IS/IT environment. At this time, Critical Success Factors (CSF) and Key Performance Indicator (KPI) can be introduced to identify and analyse business strategy and organisational IT/IS opportunities for measuring the current and future success of the organisation. In this way, the six stages can produce the overall base for implementing effective and comprehensive SISP. The tasks and characteristics of each stage are given below.

Firstly, the basic direction and formal definition of SISP project is established by considering the business mission and objectives as well as top management involvement and commitment with setting up project team and a basic process in stage 1. In stage 2, by complementing the shortcoming of the existing methodologies, perceiving business

environment, and identifying CSF and KPI, it is possible to align and integrate concurrently both data and systems appropriate for organizations through understanding business strategies and opportunities of IS/IT as well as potential factors. Stage 3 can help organizations set up the structure of processes more consistently and efficiently by synthesizing and formulating the requirements considered in the previous stage.

In the next stage, before the implementation of SISP, it is available to improve organization's performance and capability by integrating, standardizing and redesigning added requirements or overlooked factors through EA and BPR. To accomplish this stage, top management's commitment and responsibility is more required, because, the same as developing SISP, managers have the authority to provide organization goals, objectives and policies for exploiting EA and BPR. Organizations also need to comprehend and compare both existing processes and newly developed or added processes. In particular, it is very important for organizations to create a solid IT/IS architecture, because it enables modification and upgrade of the system easily despite the change of business appropriateness or management policies in the future. In stage 5, two processes are accomplished such as implantation, and reporting and documentation. It can provide a clear guide as to contents, form of deliverables and supporting appendices to the whole staff of an organization. It is also required to confirm organization's standards, policy and overall system equipments based on created strategic IS plan. Finally, in the last process, stage 6 focuses on learning and maintenance of the developed SISP project. More recently, organizations have recognized the importance of continuous learning for the completed project. Since SISP generate an enormous amount of information about an organization, and its internal and external environment, the information on the project must be understood and managed by all staff of the organizations. Besides, continuous management of the planning system enable them to cope with alteration of management circumstances promptly.

5 CONCLUSIONS AND FUTURE WORKS

As a development of IT, related technologies and both internal and external environments of organizations has continued to proceed and transform as the remarkable degree, SISP has been regarded as one of the most important determinants to achieve effective and efficient IT Governance and to innovate and create a long-term value. Several well known methodologies have been introduced to implement SISP or in some cases companies develop their own in-house methodologies. However, these methodologies contain problems such as lack of consideration on the impact of the external environment, deficiency of architecture to improve organizations' capabilities and flexibility and the duration of SISP planning and others. Hence, there is a need to develop more effective SISP to maximize capabilities and flexibility as well as to minimize cost, time and inconsistency through integrating, standardizing and reengineering the business process.

It is widely recognised that business strategies and IS strategies need to be aligned with the SISP process to strengthen the effectiveness and sustainability of the organization employment. In this paper, therefore, we proposed a model which can overcome the drawbacks of existing methodologies to achieve more effective and efficient SISP for better IT Governance. The model provides organizations with various opportunities to verify and clarify business-IT processes. It also allows the implementation of consistent and efficient SISP by inducing the commitment and responsibility of top management through EA and BPR based on long-term information architecture. Furthermore, performing several processes concurrently can prevent organizations from ineffective use of time and cost.

Next, we will conduct a case study to demonstrate that the proposed model can manage flexibility and capabilities to adjust in response to new circumstances and demands by focusing on the Government of Korea. In fact, with the continuous diffusion of e-business and globalization, the Government in Korea has introduced information systems planning aggressively in the past two decades as a strategic way to strengthen their governance through enhancing credibility of the governance and intimacy of customers, at the same time improving their service quality. Therefore, this case study will be used to verify the proposed model as well as identifying other potential issues and factors that compare with other sectors.

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