Factors moderating the relationship between IS capabilities and strategic information system planning (SISP) success

Naser Khani (corresponding author) / Mojgan Bahrami
University Technology Malaysia
Faculty of Management and Human resource
Development
Johor, Skudai
Khani451@yahoo.com

Khalil Md Nor
University Technology Malaysia
Faculty of Management and Human resource
Development
Johor, Skudai
m-khalil@utm.my

Abstract—SISP is a cornerstone of the information system discipline and its success is perhaps going to be more important in today’s world of e-commerce prevalence. Yet, despite those facts and its increasing importance, very little attention has been given to its success based on the resource-based view of the firm (RBV). The researchers’ aim is to build a model for SISP success based on RBV perspective and hope that it will be helpful for gaining a superior assessment and better understanding of the SISP. The purpose of this study is to conceptualize the factors moderating the relationship between IS capabilities and SISP success. At the end, the conceptual model is proposed.

Keywords—strategic information system planning (SISP), IS capability, environmental and organizational factors.

Introduction

Nowadays, technological and development requirements have forced organizations to use more effective and efficient Information Systems accordingly. Annually, billions of dollars has been spent on Information Systems (IS) formulation, implementation and maintenance. Studies have shown that a large amount of organizational expenditures is related to IS [1], [2]. If all these expenditures were resulting in gaining benefits, spending that amount of money was justified; but it does not happen and almost half of the IS projects are unsuccessful [1], [3]. Those failures could be explained by turbulences in both business and IS environments as lead us to grasp the strategic importance of IS planning.

Additionally, Successful planning of IS is perhaps going to be more problematic in today’s world of rapid change and uncertainty. According to this fact that Organizations are facing with more economic uncertainty, more complex technologies and more innovations, IS importance has experienced more increases. Consequently, Lack of successful IS management could result in (a) missing business opportunities, (b) duplication of efforts, (c) inaccurate and inadequate information, (d) incorrect prioritizing, (e) low business performance and low IS productivity, (f) incoherent technology strategy, (g) retrospective resource allocation, and (h) conflict between IS users that leads to inappropriate solution [3].

IS success has been such an attractive research subject for many scholars and researchers; as IS and technology grow and environment becomes more competitive and strategies of the business change, SISP can help firms to encounter this complexity, analyze environment, track development, monitor how competitors use IT, plan more effective infrastructure and finally impact business objectives. In addition, it has been interpreted as an important management issue; Some believe that strategic information system planning (as of now: SISP) is the best framework for assuring that IS efforts are concordant with other organization’s activities and arising needs [4]. According to the Bechor et al [5], SISP “is the process of strategic thinking that identifies the most desirable on which the firm can implement and enforce its long-term IS activities and policies” (p: 1). Prior research on SISP success involves topics such as the effect of senior management approval (Kearns, 2006), SISP critical success factors [7], [5], and various other aspects.

Traditionally, researchers have examined the SISP success based on key success factors (KSFs); for instance, Organizational commitment, senior management support and team involvement are some of these factors [5] each has been done in separate research. These efforts lead us to the question of relationship between other aspects or dimensions of the planning process and success of SISP. What about other perspective of strategic management; is it possible to apply resource-based view of the firm in this area?

As a new strategic perspective in IS management field, RBV propose that it is possible to exploit human, technical, and business dimensions of information systems (IS capabilities). Through a capability perspective, this study will look for SISP success. Many studies have been done on SISP or capabilities, but the relationship between IS capabilities and SISP success and moderating factors
affecting this relationship have not been investigated before.

A. SISP (strategic information systems planning)

In the 1970s information systems were implemented for manual processes automation resulting in more effectiveness of daily routines and ultimately in cost savings or benefit rising [8]. For years, only the power of “change” was forcing organization to adapt with technology and business requirement regardless of industry sector or economic situations.

In the mid-1980s, the dominant power in the strategic information system was “competitive advantage”. In essence, the use of IS for competitive advantage became a significant determinant for competitive position of the firm. Yet, nearly 30 years later, IS usage has an important role in firm’s competitive advantage or disadvantage. Consequently, this role as an important organizational activity becomes strategic. Therefore, strategic information system planning attracted many scholars attention.

The emerging concept of SISP involves various comments for distinguishing IS requirements [9]. The distinction attribute of strategic information system at makes it different from IS and MIS is in its strategic focus. Strategic systems are necessary to acquire competitive advantage. Information system could be strategic because, according to [10], it can change: (a) the overall performance, (b) the way of doing business, (c) the way of interaction with customers or suppliers, and (d) the instruments for goal achieving. In order to doing IS strategically, managers in SISP process have to answer three questions: (1) what is current status?, (2) who are the objectives?, and (3) How to implement planning? Therefore SISP is the process of preparing a plan for IS implementation in line with organization goals [11].

SISP is now an accepted segment of the firm’s strategi planning process; but it has some characteristics that make it intriguing: (1) it should not be developed quickly or in a long time period; it is an ongoing process, rather than an event [3]; (2) SISP process has many stakeholders working together not individually [11], and (3) the biggest detriment of an improper SISP process is in its possible missed opportunities rather than in direct financial e fects. All above specifications with considering costs of IS failure can convince us that SISP success is a valuable area for more research and investigation. There are several research streams that have explored SISP success.

B. SISP success

SISP requires significant amount of financial and human resources and considerable budget and managerial efforts [12] and is a crucial issue for IS and business managers and, furthermore, oftentimes is unsuccessful and hard to complete [13]. These issues have made it a legitimate goal for research. But such research could not be simply established on financial measures like return on investment (ROI) and so on; because like any other strategic planning it contains several intangible outcomes.

First efforts resulted in single items known as key success factors (KSFs). After introducing single dimension scales in early stages of IS success measurement (see [7]) multi item scales were explored as well.

Raghunathan and Raghunathan [14] proposed a two dimensional model involving capabilities improvement and gaining objectives of SISP process. Another well-known research is the work of Segars and Grover [12]. They introduced alignment, analysis, capabilities improvement, and cooperation as four dimension of SISP success and suggest that SISP effectiveness can be predicted through those four factors.

Recently, IS research area has been affected by resource based view of firm [15]. In summary, as a new strategic perspective, resource-based view (RBV) claims that the organizational resources are the main source of competitive advantage and a subset of them will provide excellent performance [16]. These resources must be valuable, rare, inimitable, and hard to replace [17]. RBV introduces resources, capabilities, competencies and competencies respectively as the hierarchy of resources [18]. From those concepts, the competency is an elusive notion and has as much definitions as there are researchers in this field.

There are two viewpoints of competency implemented in managerial research. One refers to the organizational level investigates core competencies and the other one is used in both individual and organizational level addresses ownership of desired skills and abilities, knowledge, and capacity [19]. The focus of this study is on second one. Combining resources for building particular firm abilities will develop competencies [20]. The competition pressure has forced organizations to develop their capability and trying to find new ways for performance improvement. This research is in search of the relationship of those capabilities and success of SISP process. As will be seen in the following sections, by introducing capability approach to IS management field, the concept of IS capability has been emerged.

C. IS capability

IS management area has arrived at its “4th era” (i.e. IS capability) [21]. Previous eras are DP (data processing), MIS (management information systems), and SIS (strategic information systems) respectively. The focus of this 4th era is not on strategic use of IS, or IS plan methodology, but rather on IS competency development. In the model of Peppard and Ward, IS competencies are the components of IS capability and this capability affects business and IS strategy, operations, and firm performance. Simply stated, strategic application of IS competencies results in organization’s IS capability [21].
It is well established that by ongoing readjustment or radical change, firms try to build their IS capability that will guarantee future success.

IS capability might be strong or weak in one organization and the real challenge is how to recognize and develop its components (i.e., competencies). In the other terms, the changing nature of business incorporating with the pressure for acquiring competitive advantage from IS investments have made this new challenge for SISP: the challenge of measuring firm’s competencies to gain benefit of IS investments [9]. Thus, in evidence, strategy formulation is going to be converted into the process of making and leveraging capabilities [3] and therefore IS strategy formulation will focus on IS capability as well.

By merging notions of the RBV in IS area, researchers [15], [19], [21], [22], [23], [24], [25], [26] could exploit various IS competencies produce value for the organization. Firms expand competencies through experience step by step and as a result they will be able to compete properly. It should be mentioned that competency building and development is an ongoing process not a quick change. IS capability must be seen from business perspective not solely from IS function perspective. Marchand et al. [27], believe that for improving businesses use of IS, more efforts must be done in enhancing IS capabilities. In this way, business, human, and technology resources must be combined together properly through organizational roles, processes, and structures to make some competencies, then strategic application of those competencies will shape the organizational IS capability [21]. As may be evident, this is very important to view those IS competencies from an overall business point of view rather than from a limited IS functional vision. IS competencies are not solely embodied in the IS function, but they diffuse across the organization [3].

Here, IS capability will be investigated from the perspective of an organizational ability to gain benefits from IS investments and according to the previous research, IS competencies are a cluster of related IS strategy, IS contribution, IT capability and exploitation, IS supply, and many other competencies ranging from fundamental to facilitating competencies [15] and from strategic to exploitation and supply [23]. IS competencies can be exploited compared to the literature and field work and can be improved through consultation and development.

D. IS capabilities and SISP success integration

A broad reviewing of the literature provides several researches on the topic of information systems and capabilities as well. However, there are very few studies related to IS capabilities and/or SISP success.

There are also studies speaking of IS failure and provide some excuse for the failure. Yet, despite this fact that SISP is a cornerstone of the information system discipline, very little attention has been given to its success based on the resource-based view of the firm (RBV) that is a recent discipline in strategic management field. Generally, literature mirrors significantly little effort to recommend a framework for understanding the relationship between “IS capabilities” and “SISP success” in particular. To be clearer, the question is that what kind of skills and abilities, knowledge, and qualification or capacity is needed for organizations to have a successful planning of strategic information systems? And what conditions affect this relationship?

Till now, no prior empirical study has investigated the abovementioned relationship. Furthermore, there are no studies concentrated on developing countries in this field. To fill this gap in the IS discipline, this paper aims to establish a conceptual model by providing a contingency model to investigate this relationship within. The researchers believe that the aim to build a model for SISP success based on RBV perspective is important because this new perspective will be helpful for gaining a superior assessment and better understanding of the SISP.

E. Factors moderating the relationship between IS capabilities and SISP success

According to this fact that information systems are becoming more important in organizations, managers realize that they have to equip their organizations with other tools more than solely human and physical resources to ensure that IS planning and implementation would be successful. In other words, organizational capacities, in which strategic information system planning is taking place in them, need to be researched appropriately to identify issues and failure reasons.

If organizations understand the capabilities required for IS success, by developing and leveraging them, can use their IS investment more competitive and more effective. Hence, the purpose of this study is to investigate the relationship between IS capabilities and SISP success.

The success of SISP cannot solely predicted from IS capabilities and there might be other factors that affect that relationship. SISP context comprises of variables that exhibit environmental and organizational attributes and outside conditions that may influence the process and consequently the success of SISP (e.g., organization’s IT importance, organizational structure, and environmental uncertainty). Lederer and Salmela [13] have divided environment construct into two part of internal and external. Organization size, structure, and culture, managerial style, IS role and maturity and IS planning goals were among attributes of the internal environment. On the other side, the external environment included economic stability of the industry and country, business
sector information intensity and changing in market forces and trends. Wade and Hulland [28] introduce external environment (that mostly refers to environmental uncertainty) and internal influences (organizational culture, and organizational structure) and top manager support as main contextual factors in IS studies.

Based on a contingency model, the abovementioned factors shaped the moderating factors of this study that are titled “organizational and environmental influences”.

F. Research model

From above discussion, the research model is as follow that will be tested in an empirical research.

![Diagram of IS capabilities, SISP success, and moderating factors]

G. conclusion

Conceptualizing the relationship between IS capabilities and SISP success and factors moderating this relationship was the aim of this study. In this research through RBV perspective, this relationship was investigated. Because of possible inconsistency between those two variables (IS capabilities and SISP success), factors moderating this relationship were introduced based on a contingency model to address planning paradox. While IS failure has many consequences for organizations, the results of this research can support organizations understanding the competencies they need to acquire in order to have a successful SISP. This research specifically investigated the detailed relation amongst IS competencies and SISP success and requires empirical research to examine abovementioned relationship.

REFERENCES