A Competency Model for Strategic Information Systems Planning (SISP) Success

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Abstract—Successful planning of IS is perhaps going to be more problematic in today’s world of rapid change and uncertainty. SISP is a cornerstone of the information system discipline and very little attention has been paid to its success based on the resource-based view point of the firm (RBV). The researchers believe that the aim to build a model for SISP success based on RBV theory is important because this new perspective will be helpful for gaining a superior assessment and better underpinning of the SISP. The purpose of this study is to conceptualize the relationship between IS competencies and SISP success and contingency factors moderating that relationship. Finally, a competency model for SISP success is proposed.

Keywords—Strategic information system planning, IS competency, moderating variables.

I. INTRODUCTION

Nowadays, organizations are facing with more economic uncertainty, more complex technologies and more innovations. Additionally, technological and development requirements have forced organizations to use more effective and efficient Information Systems. 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 and lead to the strategic importance of IS planning.

Successful planning of IS is perhaps going to be more problematic in today’s world of rapid change and uncertainty. 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. 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 Bechor et al [5], SISP “is the process of strategic thinking that identifies the most desirable IS 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 enforcement [6], SISP critical success factors [5], [7], and various other aspects.

Until now, empirical research examining the SISP success has been established on key success factors (KSFs). Some of these KSFs are organizational commitment, senior management support and team involvement [5]. Those studies, despite their valuable contribution to the body of knowledge on SISP field, suffer from lack of sound theoretical framework. A review of the existing literature revealed that there was no prior research in SISP field.
dealing with the resource based view of the firm (RBV). Hence, RBV attracted our attention.

According to RBV, it is possible to exploit technical and business dimensions of information systems (i.e. IS competencies) as another view to SISP process. In this paper through a competence perspective we argue about the factors that influence SISP success. Many studies have been done on SISP or competencies, but there is room to examine the relationship between IS competencies and SISP success and moderating factors affecting this relationship.

II. SISP

SISP is required to provide a strategic plan for future IS/IT requirements according to the business objectives. In the 1970s information systems were implemented for manual processes automation resulting in more effective daily routines and ultimately in cost savings [8], [9]. In the mid-1980s the use of IS for competitive advantage became a significant determinant for competitive position of the firm. Consequently, this role as an important organizational activity becomes strategic. Therefore, strategic information system planning attracted many scholars attention.

The distinction attribute of strategic information system that makes it different from Data Processing (DP) and Management Information System (MIS) is in its strategic focus. Strategic systems are necessary to acquire competitive advantage. According to Ernst and Chen [10], a strategic system 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. Information system has all above characteristics, thus it could be strategic. In order to do IS strategically, managers in SISP process have to answer three questions: (1) what is the current status?, (2) what 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].

Several research streams can be identified that have tried to improve SISP practice. One stream is focusing on “SISP success” by discussing issues of planning (i.e. finding critical success factors of planning process). This stream has resulted in new methodologies and tools for this process. There is another research stream that is working on “contextual factors” affecting SISP process. Researchers in this flow believe that the appropriateness of those context-free studies is questionable and accordingly, contingency theory is the pivotal theory in this group. Another research flow is about applying those theories and models that have been tested in private sector in “other organization types” such as public sector, non for profit organizations and universities. A considerable attention has been paid to “SISP approach” and “top management support” as well.

SISP is now a crucial issue of the firm’s strategic planning process; but it has some characteristics that make it intriguing: (1) 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 effects. All above specifications with considering costs of IS failure support this argument that SISP success is a valuable area for more research and investigation.

III. 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 compete [13], [14]. 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. There are several research streams that have explored SISP success. 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. Then, 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 influenced by resource based view of firm [15]. 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 core competencies respectively as the hierarchy of resources [18], [19]. Combining resources for building particular firm abilities will develop competencies [20].

The competition pressure has forced organizations to develop their competence and trying to find new ways for performance improvement. This paper proposes the relationship of those competencies and success of SISP process. As will be seen in the following sections, the concept of IS competency is introduced in IS management field.

IV. IS COMPETENCY

Some researchers have proposed that IS management area has arrived to a “4th era” of IS management [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 planning methodology, but rather on IS competency development. In the model of Peppard and Ward [21], IS competencies are the components of IS capability and this capability affects business and IS strategy, operations, and firm performance.
It is well established that by ongoing readjustment or radical change, firms try to build a set of competencies that will guarantee future success. The real challenge is how to recognize those competencies and their components. In other terms, the changing nature of business, and 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]. In IS management area, the notion of “IS competencies” is defined as the organizational ability to gain benefits from IS investments through a set of required abilities and skills, knowledge and capacities in both individual and organizational level [3]. 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 a process not a quick change. Simply stated, by merging notions of the RBV in IS area, researchers [15], [19], [21], [22], [23], [24], [25], [26] could exploit various IS competencies that produce value for the organization.

IS competencies are not merely embodied in the IS function, but they diffuse across business [3]. IS competencies 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 combining IS competencies with IS routines. This is very important to view those IS competencies from an overall business point of view rather than from a limited IS functional vision.

In this paper, IS competencies will be viewed from the perspective of an organizational ability to gain benefits from IS investments. 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]. Calderia and Dhillon [15] introduce 6 fundamental and 17 facilitating competencies as follow:

**Fundamental IS competencies:**
1. Ability to conduct IT strategic thinking and planning;
2. Ability to align IT with business processes and objectives;
3. Ability to deploy cost effective applications and systems;
4. Ability to conceptualize the maintenance of data integrity and confidentiality;
5. Ability to facilitate behavior enrichment for technology adoption;
6. Ability to ensure compliance with standard IT methods and procedures; (p: 6) and

**Facilitating IS competencies:**
1. Ability to select and manage IT staff;
2. Ability to provide ongoing IT training;
3. Ability to get top management support in IT projects;
4. Ability to design business processes for effective use of IT expertise;
5. Ability to maintain systems consistency;
6. Ability to involve users in IT projects;
7. Ability to institute SLAs (Service Level Agreements) with IT suppliers;
8. Ability to identify and set IT standards and procedures;
9. Ability to develop software in-house;
10. Ability to select and contract IT vendors and IS consultants;
11. Ability to decide on software sourcing strategies;
12. Ability to maintain or decrease system response time;
13. Ability to ensure user application knowledge;
14. Ability to identify business IS requirements;
15. Ability to increase the credibility of the IT department;
16. Ability to increase service accountability;
17. Ability to develop an IS architecture (p: 10, 11).

By defining IS competencies, the question is that “what is the nature of the relationship between IS competencies and SISP success.

V. COMBINING IS COMPETENCIES AND SISP SUCCESS

As Lee and Bai [29] suggest, a large number of studies in SISP field suffer from a lack of investigating the relationship between organizational aspects and SISP success. To fill this gap we introduced IS competencies as a type of organizational aspect. Providing such aspect may lead to better underpinning of SISP success. Further, 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 the latter discipline in strategic management studies.

Finally, literature review shows significantly little effort about integrating RBV and SISP in general and about recommending a framework for understanding the relationship between “IS competencies” and “SISP success” in particular. To be clearer, the question is that what kind of skills and abilities, knowledge, and qualification or capacity is required in organization level to have a successful strategic information system planning? And what conditions affect this relationship?

VI. THE NATURE OF THE RELATIONSHIP BETWEEN IS COMPETENCIES 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 resource to ensure that IS planning and implementation would be successful. In other words, individual and organizational levels in which strategic information system planning is taking place in them need to be researched appropriately to identify issues and failure reasons.

If organizations could understand the competencies required for IS success, by developing and leveraging them, they can use their IS investment more competitive and more effective.
VII. MODERATOR VARIABLES

There might be a possible planning paradox [5] in studying the relationship between IS competencies and SISP success. The SISP process and implementation can not merely anticipate from IS competencies. Based on a contingency model, there are moderating factors that might affect this relationship. Wade and Hulland [30] introduce external environment (that mostly refers to environmental uncertainty) and internal influences (organizational culture, and organizational structure) and top management support as main contextual factors in IS studies. Therefore, in this paper, organizational and environmental influences are selected as moderator variables.

VIII. RESEARCH MODEL

Based on prior discussion, the research model is as follow (Fig.1). This study established on some of theoretical perspectives to introduce the relationship between IS competencies and SISP success (H1). The model also considers the role of moderating variables; environmental and organizational influences (H2, H3).

![Diagram of Research Model](image)

**Figure 1. The relationship between IS competencies and SISP success**

IX. CONCLUSION

The purpose of this paper was to investigate what competencies are necessary and what factors are moderating or mediating the possible relationship between IS competencies and SISP success. Consequently, through a competence perspective, SISP success was investigated. For this aim, we studied the relationship between IS competencies and SISP success as the basic relationship and Because of possible inconsistency between those two variables (IS competencies 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 characteristics of IS users and the firm in which they work (IS competencies) and SISP success and requires empirical research to examine abovementioned relationships.

REFERENCES

