A Maturity Model of Strategic Information Systems Planning (SISP): An Empirical Evaluation Using the Analytic Network Process

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ABSTRACT

In this paper Strategic Information Systems Planning (SISP) maturity models are empirically validated in Australian environment. A research instrument used to determine the degree of SISP maturity in Australian organisations is described. While empirical testing of a five-stage SISP model has only confirmed the existence of three levels of SISP maturity, statistical methods confirmed the adequacy of the establishment of the SISP assessment model as a third-order system. The study also opens the way for SISP thinking beyond the conventional approaches by introducing the Analytic Network Process and the Analytic Hierarchy Process methods to reduce complexity of SISP measurement in a natural and structural way. By using these methods, it was possible to obtain a single overall measure of SISP maturity, thus overcoming a problem of result synthesis measured by different scales.

Keywords: *Analytic Hierarchy Process, Analytical Network Process Theory, IT/IS, SISP Assessment, SISP Maturity Stages, Strategic Information Systems Planning (SISP)*

INTRODUCTION

There is no disagreement that the purpose of SISP is to gain financial benefit by improving productivity and decision-making. While this is true and beneficial, this is a tactical and short-term response on the crucial question of what the real purpose of SISP is (Boar, 1993). SISP is to enable management to act and react to the dynamics of the environment and to enable management to build, sustain, and compound competitive advantage. SISP is then needed to produce a strategic plan of recommendations that addresses the future needs for IT/IS in accordance with the business objectives in formal or less formal way (Galliers, 1987; Mintzberg, 1994; Hackos, 1997; McBride, 1998).

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SISP implementation has been proposed as a measure of success in SISP (Hartono et al., 2003). However, this does not diminish the importance of planning processes; the processes of planning and the implementation of plans are equally important (Earl, 1993). The plan itself is the root, if it is ill-defined, the results of its implementation cannot be successful. Also, there is no guarantee that a good plan will be adequately translated into action plans (Hartono et al., 2003; Teo & Ang, 2001), so the existence of formal SISP doesn't guaranty success.

Literature reveals that organisations found assessment of their own SISP strengths and weaknesses (success and failures) a very challenging task (Hackos, 1997; Boar, 1993). Apart from the idea that it is very hard to be objective about ourselves, it is very difficult to recognise that something we have done for so long in our own way can be done better if done in a different way. Even if we are aware that someone is doing a similar job better than what we are doing it, we still cannot easily obtain information about how others (in many instances competitors) are achieving their success (Hackos, 1997). And perhaps we would like to know what the best practices in our industry are, but we have no resources, time or devotion to find it out.

Consequently, organisations are seeking information about best SISP measurement practices and they are conscientious of multiple perspectives and very often confused with offered different concepts varying in scope from very specific to too broad and not usable. Measurement of SISP success is a very challenging task as measurement is the biggest single failure reported (Willcocks, 2000). The results of studies that attempted SISP measurement in financial terms is considered flawed because of their inability to isolate the effect of SISP as one of many contributors to financial performance of an organisation (King, 1988). IT/IS should be able to learn which initiatives provide the best business values. That is only possible if tangible and intangible variables like costs and benefits of performing and implementing SISP are measured. This is proven to be difficult as a single scale is not sufficient for measurement of 'soft' and 'hard' SISP variables (Segars & Grover, 1998; Faulkner, 2002).

This paper addresses SISP measurement problems; in particular a lack of adequate measurement scales and a lack of attempt to synthetize the various measures into a single measure of SISP success or level of maturity. The study presents way how the relations between SISP factors can be discovered; it assesses the influence of the factors on the SISP maturity and assigns numerical values to these factors based on the relative importance of each factor to the particular SISP maturity stage. Synthesis of all factors and their relations constitute a SISP maturity assessment model.

Assessment of SISP as a complex phenomenon requires a structured approach in analysing its subdimensions. The complexity of SISP is dealt by selecting the Analytic thinking method which allowed the analysis of SISP in a holistic perspective.

The Analytic Network Process (ANP) and the Analytic Hierarchy process (AHP) are advanced multi-criteria decision making theories based on relative measurements (Saaty, 2001a). We used them as techniques to define interdependencies among SISP variables and prioritise the importance of the SISP maturity criteria. ANP is used to develop a way of comparing an organisation's SISP against the benchmarked 5 stages of the SISP maturity model. This is a unique application of ANP and in doing so we break new ground for research of application AHP/ANP theory in the domain of SISP assessment.

For the assessment and measurement of SISP maturity, two models are developed, a Relative Ranking and Absolute Rating model. The former is used to rank each SISP maturity stage and the latter to establish the benchmark against which to measure the maturity level of a particular organisation.

This paper extends the previous work (1) which defines the SISP maturity model and assessment criteria and subcriteria. To provide the background information needed to ground this study we summarise the previous work (1) as: we consider SISP as a system, which can