

策略性資訊系統規劃論文之分析研究

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摘要

本研究針對策略性資訊系統規劃 (Strategic Information Systems Planning) 進行研究論文整理分析。利用「SISP」關鍵字在 ABI/INFORM 資料庫進行檢索，同時進一步檢閱三份著名期刊，最後更查詢臺灣地區近年有關此主題的博/碩士論文之參考文獻，總共整理出十五篇論文，其發表時間自 1988 至 1999 年。本研究包括：對策略性資訊系統規劃的多種定義；研究程序；對年份、期刊、研究變數、操作化、目的與結果、研究方法及樣本等各種分析整理；同時試圖了解其屬實徵或非實徵性研究；最後提出研究結論與限制。

Strategic Information Systems Planning: A Review of Research

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Abstract

This article basically surveys the published literature on Strategic Information Systems Planning (SISP) research. Using keyword "SISP" to check ABI/INFORM and followed by reviewing 3 dominant journals in detail along with examining references of recently published PHD/MA dissertations in Taiwan, 15 papers were included in this summary report ranging from 1988 to 1999. This report contains definitions of SISP, the research procedure and the analysis of years, journals, variables, operationalization, purpose/results, methodology plus sample as well. The analysis of empirical and non-empirical researches is also presented. Finally, a conclusion with limitation is included.

I. Introduction

When reading articles presented by Lederer and Sethi, they stated that Strategic Information Systems Planning (SISP) had been discussed since late 1970s and now new objectives were emerged. Because of their statements, we are interested to know the whole research skeleton of SISP since its first introduction and the development until now. That's why we chose this topic for this summary report. Later when reading papers, they all stated that SISP is one of the most popular issues for the past decades and even now. In 1987, Wetherbe stated that SISP was the most critical issue facing information systems (IS) executives. Then in 1990, Monyihan stated that for many IS executives, SISP continued to be a critical issue in his finding. It is apparent that over the past 30 years, SISP has been one of the top-concerned topics to IS experts no matter to what extent it has evolved. Since information technology will still play important role in organizations, it is apparent that the continuous and prosperous researches on the SISP related issues should be forecasted.

The content of this report can be divided into four parts. I). Introduction which includes the reason why the topic was chosen and the structure of this report; II). Definitions of different emphasis of SISP ; III). Review methodologies: In this part, it includes procedures of the review, the analysis of topics, variables, operationalization, purpose/result, journals, years, authors, research methods and samples. Because of complicated items, four tables are presented and some findings are discussed; IV). Conclusion which includes suggestions of future research on SISP related topics and the limitations of this report might have.

II. Definitions of Strategic Information Systems Planning (SISP)

When discussing a topic, the first step should know exactly what it is. Hence, to have a clear definition is critical. By examining definitions from

papers, some have different emphasis on SISP. Following are the definitions from these papers.

Since Lederer and Sethi stated the original definitions and the evolutions of SISP most clearly, we followed their definition and excerpted mainly from theirs in this summary report.

--By Lederer and Sethi, 1991, in the journal of Decision Sciences and also other journals and the book.

--contains the evolutions of SISP and more integrated and detailed definition

“In the late 1970s, Information systems executives initially used SISP to improve communication with users, to increase top management support, to better forecast resource requirements, to allocate resources, to find opportunities for improving the Information Systems Department, and to identify new and higher payback computer applications. More recently, these executives have begun using SISP to develop an organization-wide data architecture. Likewise, SISP is now used to identify strategic applications of information technology.

Thus, SISP may be defined as the process of identifying a portfolio of computer-based applications to assist an organization in executing its business plans and realizing its business goals. SISP also entails the specification of databases and systems to support those applications. SISP may mean the selection of rather prosaic applications, almost as if form a list, that would best fit the current and projected needs of the organization. SISP can also include the search for applications with a high impact and the ability to create an advantage over competitors.”

--Adopted by Baker B, 1995, in the journal of Strategic Information Systems

--Multidimensional nature of SISP with respect to tangible and intangible types of factors:

- “Context refers to internal and external environment factors that may have an affect on the planning process and the resultant plan’s success.

The tangible factors may include organizational size, structure, style of management and IS function characteristics whereas the intangible factors comprise those that refer to the political undercurrents that prevail in an organization.

- Process relates to 'the sequences of steps, relationship transformations, and interpersonal and intellectual transactions needed to reach an end state of outcome' (Quinn, 1980)...
- Method refers to the tools and techniques used during the planning process to develop the plan.....
- Inputs refer to the resources allocated to the planning activity.....
- Outputs refer to the planning deliverables.....
- Implementation refers to how the planning deliverables are to be executed.....
- Outcome refers to the impact that the planning deliverables have on the organization..."

Thus, the multidimensions of SISP can include context, process, method, inputs, outputs, implementation and outcome according to this definition.

When focusing on "coordination":

--By Lederer and Mendelow, 1989, Journal of Management Information Systems

Past researchers viewed "strategic information systems planning as the transformation of the organizational strategy set into an information systems strategy set. The organizational strategy set is the organization's mission, objectives, and strategy. The information systems strategy set is system objectives, constraints, and design strategies. Therefore, coordination is achieved when the information systems strategy set is derived from the organization's strategy set."

More recent related definitions of SISP may include the assessment of successful SISP with the domain of alignment, analysis, cooperation and improvement (Segars, 1998). Also, many studies in this area have the

purpose of examining the planning system dimensions. Hence, Segars, Grover and Teng in 1998 presented the process dimensions of SISP as: comprehensiveness, formalization, focus, flow, participation and consistency.

After reviewing the definitions and focuses of SISP, it now should have more clear understanding about this topic, further discussions on reviewing procedures and methodologies can then be discussed.

III. Review methodologies

A. Analysis of Journals and Published Years

By checking ABI/INFORMS using keyword "SISP" and the published year since 1970s to find related papers, it was surprising that there are not many articles matched. After eliminating some that are not research-based or they are technical-oriented, only 10 papers are included. In these papers, 3 papers don't have full text files. Therefore, going through National Central University's library and other 3 libraries to find desired paper copies were conducted.

Besides, in order to find if there's any eliminations by ABI, examination was held to check most authorized journals. Owing to time limitation, only three leading journals were checked in detail: Management Information Systems Quarterly (MISQ), Journal of Management Information Systems (JMIS), and Journal of Strategy Information Systems (JSIS). During this detailed research, another 3 papers were included. However, totally 13 papers were still not a satisfied research sample. The final step to find related papers was by way of examining references of recently publish PHD/MA dissertations in Taiwan which explored the topic of SISP as well. This time, another 2 papers were then included at this time's research. One paper needed to utilize virtual library to receive the file of full-text and we submitted the request to the desired library.

Hence, there are 15 papers included in this summary report dated from

1988 to 1999. It is a regret that we didn't find any SISP papers dated after year 2000 while in our research at this time. Because of time limitation, we do believe that some other papers may later be found in other journals which are not included in this summary.

Therefore, totally six journals are covered in this summary report. The full names of the journals are listed under table 1 for better understanding of names of the journals. Years of numbers of published papers in accordance with journals are listed in Table 1.

Table 1. Years and Journals SISP Papers Published

	1988	1989	1991	1992	1993	1994	1995	1996	1998	1999	Total
MISQ	2				1				1		4
JMIS		1						1			2
DS			1	1					1		3
LRP			1	1							2
JSIS							1	1		1	3
JIS						1					1
Total											15

MISQ: Management Information Systems Quarterly

JMIS: Journal of Management Information Systems

DS: Decision Sciences

LRP: Long Range Planning

JSIS: Journal of Strategic Information Systems

JIS: Journal of Information Science

B. Topics, Variables, Operationalization and Purpose/Result of SISP Survey

(I). Review Procedures

When trying to analyze articles, we first carefully went through each

article to summarize the theoretical relationships at the same time classified each article in order of years, journals, authors, research methods and samples according to the article's content. It was very time-consuming because it needed to reexamine each article several times. Sometimes difficulties encountered because of hard to explain the variables and operationalization merely by the author's simplified descriptions. However, we had tried our best to do it. The result is the integrated analysis of Table 2 and Table 3. Two tables are presented because of different purposes of analyzing SISP research. Table 2 presents the summarization of topics, variables and operationalization plus purpose/result as well.

(IF). Findings:

When trying to analyze literature presented in SISP research, it is apparent to find that all these articles were at the organizational scope but not individual scope. Furthermore, for the earlier studies, most of researches were interested to the phenomenon of the usage of SISP. Hence, topics were related to problems of SISP failure, departmental coordination, organizational factors, costs, hardware equipments, databases, planning methodologies, system implementation and issues of implementation experiences. Later until 1995, topics of integrated approaches, SISP success with investigation of construct and measurement, a possible theory and other conceptual frameworks then were presented. It can be found that the topics were then different from those before 1995. Had the main focus of the issues of SISP research changed because of the need of the establishment of theory and various constructs? Again, this paper just summarizes 15 articles, the conclusions may not be able to make at this moment. However, it is apparent that it has some needs for the establishment or more theoretical foundations in the field of SISP but not just to discuss the phenomena of practical SISP usages.

Table 2 Topics, Variables and Operationalization of SISP Research

Topics	Variables	Operationalization	Purpose/Result
Value of SISP: understanding consistency, validity and IS markets	Critical success factors; Critical assumptions sets	Assess strategic IS planning process	Define the components of a strategic IS plan
Implementation of SISP methodologies	*BSP tool; *IE tool; *SSP tool; In-House tool	Verify extent of problems of SISP methodologies	Categorize factors related to SISP problems
Coordination of ISP with BP	4 reasons and 4 actions mentioned by subjects	Analyze reasons/actions for resolving the difficulty of coordinating ISP with BP	IS management alone may present four general actions which IS executives can do to eliminate difficulties of coordination
Critical dimensions of SISP	Original 49 items of SISP problems	Discriminant analysis of the organization, implementation, database, hardware and cost factors	Factors of Organization, Implementation and Database best distinguished satisfied/unsatisfied ISP
Assessing SISP	Industry; Role of IS in the organization; Quality of SISP	Examining by strategic grid	Analyze the role of IS, information inputs, quality of planning process
Root causes of SISP implementation problems	Original 49 items of SISP problems	Analyzing factors of organization; Implementation; database; hardware; cost	Examination of SISP process and an attempt to interdependencies among different facets of SISP

- * BSP: Business Systems Planning
- * IE: Information Engineering
- * SSP: Strategic Systems Planning

Table 2 Topics, Variables and Operationalization of SISP Research (Continue)

Topics	Variables	Operationalization	Purpose/Result
Meeting the challenges of information systems planning	18 most severe SISP problems Leadership; Implementation; Resources	Analyzing 3 scopes of SISP problems with the extents of either impact or align approaches	To analyze issues to be categorized
Experiences in SISP	Components of SISP: Method, Process and Implementation	Presenting 5 SISP approaches: business-led; method-driven; administrative; technical and organizational discovery	The intents, outcomes, and experiences of SISP efforts among different tasks' mangers
Planning for information systems integration: some key challenges	Key SISP approaches: Database dilemma; Power/politics; Influence strategies; Structural change; Planning approach	Analyzing underlying challenges	Realize the approaches for the organization of structural and political dimensions during periods of technological change.
The role of feedback in assessing ISP effectiveness	Elements of ISP systems	Documents summarization and analysis	Assessing effectiveness by the element of feedback
Key prescriptions for SISP	Prescriptions about SISP input, process and output.	Conducting a 4- section survey to know the extents planners concerned.	Understand what planners concerned and not concerned
Toward a theory of SISP	7 constructs	Hypothesizing 6 propositions to make it a theory	Establish a theory of strategic information planning

Table 2 Topics, Variables and Operationalization of SISP Research (Continued)

Topics	Variables	Operationalization	Purpose/Result
SISP success: an investigation of the construct and its measurement	30 items in 4 constructs: Alignment; Analysis; Planning cooperation; improvement	Evaluating a covariation model of SISP success	Development of an validated measurement of SISP success
Plan system dimensions, internal coalignment, and implementation for planning effectiveness	Dimensions of SISP process: Comprehensive-ness; Formalization; Focus; Flow; Participation; Consistency	Verify the dimensions of planning system design and internal coalignment	Present a framework
An integrated approach toward SISP	6 Levels of integrated SISP methodology	Defining elements in levels and approaches of integration between levels	Present an integrated framework

C. Years, Authors, Research Methods and Samples Analysis of SISP Research

(I). Research Procedure

As stated above, the analysis of each article on journals, years, authors, research and samples were conducted at the same time when trying to summarize variables and operationalization . Hence Table 3 is presented below. It is ordered ascendingly by published year.

(II). Findings

By examining these articles chronologically, it is an interesting

finding that Lederer and Sethi devoted to SISP research significantly. There are 7 papers included in this report which were published by them or with their co-workers. Originally, we would like to analyze the research methods used in SISP researches to see if there are any trends since its first introduction. However, there are 4 papers presented by Lederer and Sethi which used the same research methods and samples. Hence, the analysis might be biased due to limited number of papers at this moment.

However, it may be categorized still. For empirical research, methods of field study, case study and survey are included. As for non-empirical study, framework, conceptual model and theory are the types in this review. It is an interesting finding that most of researches were empirical that survey and case study were main methodologies before 1995; however, non-empirical studies such as theory and integrated framework were presented after 1995.

Following in Table 4 is the tabular analysis of empirical and non-empirical studies for the articles in this review report. It can be found that for non-empirical studies, just 2 papers included and the year is in 1996 and 1999.

Furthermore, integrated articles analyzed by means of grids such as strategic process was also included in the later trend after 1995. It seems that the research methods were varied for the latest research and not just empirical studies since 1995.

Table 3. Summary of Methods and Samples of SISP Research

Journals	Years	Authors	Research Methods	Sample
MISQ	1988	Henderson, Sifonis	Case Study: Focus group interview	The executive management team/many upper level managers in a large retail organization
MISQ	1988	Lederer, Sethi	Survey: Pilot tested questionnaire	80 out of 251 firms who are members of Strategic Data Planning Institute; respondents are mainly managers with IS experiences over 10 years

Table 3. Summary of Methods and Samples of SISP Research (Continue)

Journals	Years	Authors	Research Methods	Sample
JMIS	1989	Lederer, Mendelow	Interview; first interview were recorded on tape	IS senior managers in medium to large organizations in a wide variety of industries
DS	1991	Lederer, Sethi	Survey: Pilot tested questionnaire	80 out of 251 firms who are members of Strategic Data Planning Institute; respondents are mainly managers with IS experiences over 10 years
LRP	1991	Premkumar, King	Questionnaire	Returned 245 out of 720 VPs of MIS or CIOs from companies in the Corporate-1000 list

Table 3. Summary of Methods and Samples of SISP Research (Continue)

Journals	Years	Authors	Research Methods	Sample
JMIS	1992	Lederer, Sethi	Survey: Pilot tested questionnaire	80 out of 251 firms who are members of Strategic Data Planning Institute; respondents are mainly managers with IS experiences over 10 years
LRP	1992	Lederer, Sethi	Survey: Pilot tested questionnaire	80 out of 251 firms who are members of Strategic Data Planning Institute; respondents are mainly managers with IS experiences over 10 years
MISQ	1993	Earl	First stage -- Survey: Case studies Second stage -- Field studies: In-depth interview by questionnaire	First stage -- retrospective six company cases based on accounts of IS directors and/or IS strategic planner Second stage -- 21 U.K. leading companies in various fields with experiences of SISP over 20 years. 63 managers included CIO, CEO, general managers and user managers

Table 3. Summary of Methods and Samples of SISP Research (Continued)

Journals	Years	Authors	Research Methods	Sample
JIS	1994	McGrath, Dempney, More	Case	Study led by a senior executive and 10 middle to senior-level managers plus an external consulting firm formed the team in a large Australia public utility
JSIS	1995	Baker	Conceptual research	N/A
JMIS	1996	Lederer, Sethi	Questionnaire; Pilot tested	199 out of 840 companies from Information Week rated 500 largest one and some were from Corporate 1000, Experienced, high-leveled sample
JSIS	1996	Lederer, Salmela	Conceptual research	N/A
MISQ	1998	Segars	Q-sorting and item refinement; Key informant; Survey	550 was chosen randomly from the East Edition of the Directory of Top Computer Executives; Senior IS managers with the title of CIO, VP and director or MIS

Table 3. Summary of Methods and Samples of SISP Research (Continued)

Journals	Years	Authors	Research Methods	Sample
DS	1998	Segars, Grover, Teng	Mailed survey with monetary incentive	550 was chosen randomly from the East Edition of the Directory of Top Computer Executives; senior IS managers with the title of CIO, VP and director or MIS
JSIS	1999	Min, Suh, Kim	Framework of information systems specification	A Korean bank as a case

Table 4. Numbers of Empirical and Non-empirical research

Year	1988	1989	1991	1992	1993	1994	1995	1996	1998	1999
Empirical	2	1	2	2	1	1	0	1	2	**1
Non-empirical							1	1		1
Total										15

** A case was presented as an example

IV. Conclusions

By analyzing SISP research articles, most of the publications emphasized the SISP problems, tools, process dimensions, user satisfaction/concern, organizational experience, factors of SISP success, impact & alignment on the scope of implementation and resources. However, we didn't see any researches discuss the organizational culture or moral issues in the SISP research. And, for this summary report, only one article surveyed the business and general managers but not just IS managers. It is a good standpoint for future

researches to try to realize SISP problems and/or success from such a broader view but not limited on IS managers' viewpoints and experiences.

As for the research methodologies, it is a good phenomenon that some frameworks, measurements and theories about SISP were trying to be developed. Although it is not an easy task to fulfill, these approaches may need encouragement for future study to let researches of SISP be more matured and varied. After all, it is better to make empirical and non-empirical studies balanced for researches but not just mainly on survey or case studies.

At last, we would like to emphasize that we didn't find any papers of SISP dated from year 2000 while conducting this summary report. Future research may try to find if there are any papers discussing SISP topics after year 2000. Also, the findings and conclusions of this short summary report may have some biases because of limited papers discussed. Thus, the conclusions above can just be viewed as suggestions for future researchers on the related topics of SISP.

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