Strategic Information Systems Planning in Practice

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ABSTRACT

The purpose of this study was to find behaviors and techniques used by information resource (IR) managers in strategic information systems planning (SISP) that had differentiated between successful and unsuccessful SISP results for their departments or divisions. This was undertaken to provide information resource managers with an insight to the SISP experiences of other information resource managers.

INTRODUCTION

For at least five years, strategic information systems planning (SISP) has been one of the more important issues on the minds of information resource (IR) managers [2,6,7,8]. Seen as a process of implementing business plans, SISP includes selecting the best portfolio of applications as well as designing appropriate support systems for databases [7]. SISP has also been recognized a competitive advantage, [6,7] giving the IR manager a tremendous accountability of the company's assets, resources and ultimate performance.

Although formal methodologies have been designed with outlines of policies to be followed, steps to be taken, and resource requirements to be considered, there is a lack of published information on the IR manager's actual experiences with SISP [4,7,8,9,10]. Insights offered from the common experiences of IR managers who use SISP could give other managers a greater chance at success by making it more "user friendly."

A user-friendly SISP approach would assure success by answering important questions such as: (a) Which actions had been most important for successful SIS planning? (b) What methodologies had been more frequently associated with successful SIS planning? (c) Were any specific resource requirements consistently included in successful SIS planning? and, (d) What had been the greatest challenge experienced by SISP information resource managers? These particular insights would give more confidence to the IR managers, correct problems more easily, and achieve a greater SISP success.

The purpose of this article is to identify practices, achievements, and problems that IR managers have had while using SISP — irregardless of the company's industry, its budget or its geographical location. Information systems executives from across the United States provided data for this investigation. Their department or division budgets ranged from less than $250,000 to more than $10 million [4]. More than 12 different industry classifications were represented in this study, including: banking, education, financial-other-than-banks, government, health care services, manufacturing, oil or gas refining or distribution, public utilities, publishing, retail, transportation, and wholesale.

Method of Study

In order to make SISP more experienced based, 600 top IR managers were mailed surveys regarding SISP in their department or division. Of this group, 129 managers gave responses that could be used. The managers' answers were divided into two groups: 32 percent, who felt SISP had been very successful for their department or division, and 68 percent who reported that SISP had not been very successful. The two sets of responses were then compared to determine differences between the two groups.

The input from the 129 IR managers provided answers to four questions: (a) What actions had been the most important for successful SISP? (b) What SISP methodologies had been more frequently associated with successful SISP? (c) Were any specific resource requirements consistently included in successful SISP? and, (d) What had been the greatest challenge experienced by the IR managers using SISP? The analysis results which follow answer these questions.

THEORETICAL ISSUES IN SISP

Critical Actions in Planning

Coordinating information resource goals and actions with corporate goals and actions has been shown to be important to information resource departments or divisions [4,6,7]. Procedural guidelines that had been suggested for

SISP reflect a similarity to corporate strategic planning procedural guidelines [1,4,6,7,14].

Generally, SISP procedural guidelines have stated that the planning process should have been undertaken on a regular basis between one and three years [4,6,7]. Management's commitment to — and support of — SISP would have been demonstrated by the measured investment of time and resources into SISP.

An analysis of IR managers' responses to questions regarding success with SISP process initiation and modification showed that strategic plans had been created annually by most departments or divisions — 64.3 percent (see Table 1). When successful and unsuccessful groups were compared there was some difference, although not large. Annual plan creation occurred in 73.1 percent of the successful groups and 60.2 percent of those unsuccessful.

Strategic Information Systems Planning Methodologies

Within the past 15 years, several strategic information systems planning methodologies have appeared [4,6,7,8,11]. The fundamental purposes of these methodologies has been to enable information resource managers to allocate limited resources wisely, to coordinate company and IS goals, to provide necessary data for decision making, and to create a competitive advantage if possible [4,6,7,8,11]. Some methodologies have focused more on the aims of the entire company; others, more on the functional departments within the company.

The five methodologies examined in this research were: (a) the portfolio of prioritized projects; (b) Business Systems Planning, IBM; (c) Critical Success Factors, Rockart; (d) Stage Theory, Nolan; and, (e) Strategic Value Analysis, ADL [3,4,5,12,13]. One major difference among these methodologies has been the prioritized information resource projects by different criteria. With IBM's Business System Planning methodology, projects were arranged so that priority was given to projects that contributed the most to the information needed by various departments within the company [5,6].

Greatest priority was given projects contributing the most to the company's success with Rockart's Critical Success Factors (CSF) method [13]. Information resource departments or divisions using Nolan's Stage Theory [4,12] gave the highest priority to projects supported by current hardware and software capabilities. The Arthur D. Little (ADL) Strategic Value Analysis ranked projects according to the most profitable, or, with the most reduced costs [4].

Most participating information resource managers reported which methodology they had used (see Table 2). Regardless of the SISP experience being reported, or whether successful, the methodology most frequently used among the IR managers' departments or divisions was a portfolio of

Table 1. Group Comparisons of Information Resource Departments by Frequency of Strategic Plan CreationInformation Systems Planning Methodologie

Created Strategic Information Systems Plans:	Information Resource Depts.	
	Successful SP* (n=41)	Unsuccessful SP* (n=88)
Annually	73.17%	60.22%
Biannually	4.88%	6.82%
Triannually	9.76%	9.09%
Once in 4 Years	0	1.14%
Once in 6 Years	0	1.14%
Once in 7 Years	0	1.14%
Had Just Begun Planning	12.19%	0
No Response	0	20.45%

*SP is an abbreviation for Strategic Information Systms Planning.

prioritized projects. Almost half (46.3 percent) of the successful group, and just over one third (36.6 percent) of the unsuccessful group used this methodology (see Table 2).

The proportion of the successful group that had used the CSF methodology (36.6 percent) was higher than the proportion of the unsuccessful group that had used the CSF technique (22.7 percent). This result could have been related to the importance of coordination between company and information systems goals. Although differences between the successful and unsuccessful groups was not large, the association between the SISP successful group and the CSF methodology group was probably not random chance.

Resource Requirements

Successful SISP has usually included resource requirements such as capital expenditures, personnel training, personnel development, current and future technological capabilities, software projects, and hardware modifications or additions [4,6,7]. These resources were present in the information systems division or departments, or the information systems manager was able to acquire or access them to support SISP formulation and implementation.

Table 2. Group Comparisons of Information Resource Departments: By Use or Nonuse of Strategic Information Systems Planning Methodologies

| | Information Resource Departments | | | |
| | Successful SP* (n=41) | | Unsuccessful SP* (n=88) | |
Methodology	Do Use	Do Not Use	Do Use	Do Not Use
Portfolio of Prioritized Projects	46.34%	53.66%	36.36%	63.64%
IBM--Business System Planning	34.15%	65.85%	21.59%	78.41%
Rockart--Critical Success Factors	36.58%	63.42%	22.73%	77.27%
Nolan--Stage Theory	9.76%	80.24%	4.54%	95.46%
ADL--Strategic Value Analysis	21.95%	78.05%	13.64%	86.36%
Combination of Methodologies	7.32%	92.68%	4.54%	95.46%

*SP is an abbreviation for Strategic Information Systems Planning.

There were differences between the successful and unsuccessful groups on three basic resource requirements that had been included in the SISP process. In ascending order of importance, those three resource requirements were capital expenditures, software projects, and personnel changes (see Table 3).

Thirty-three of 41 in the successful group (80.5 percent) included capital expenditures, while 57 of 88 (64.8 percent) of the unsuccessful group included capital expenditures. Software projects were integrated into SISP by 36 of 41 (87.8 percent) of the successful group, and 64 of 88 (72.7 percent) of the unsuccessful group. Differences shown between successful and unsuccessful planner groups were greatest in personnel changes. Twenty-four of 41 (58.5 per-

Table 3. Group Comparisons of Information Resource Departments Including or Excluding Some Resource

| | Information Resource Departments | | | |
| | Successful SP* (n=41) | | Unsuccessful SP* (n=88) | |
Methodology	Include	Exclude	Include	Exclude
Operating Budgets	56.09%	43.91%	51.14%	48.86%
Capital Expenditures	80.49%	11.51%	64.77%	35.23%
Software Projects	87.80%	12.20%	72.73%	27.27%
Hardware Modifications	80.49%	11.51%	71.59%	28.41%
Personnel Changes	56.09%	43.91%	42.04%	57.96%

*SP is an abbreviation for Strategic Information Systems Planning.

cent) in the successful SISP group considered necessary personnel changes, while only 17 of 88 (19.3 percent) in the unsuccessful SISP group considered necessary personnel change.

Differences between the two groups on the integration of capital expenditures and software projects were probably not completely explained by chance (see Table 3). However, the association between the successful group and the group that integrated personnel changes into SISP was strong. This was probably a meaningful or significant difference.

FINDINGS

The Greatest Challenge

In most information resource systems departments or divisions there have been points of persistent difficulty in the implementation, the process, and/or the output of SISP. Implementation problems usually revolve around resource requirements; process difficulties usually from different methodology limitations on analysis; and output shortcomings from a failure to develop all the encompassing, integrated strategic plans [6,7].

Personnel problems have been prominent in at least one recent study [7]. In a listing of 49 top problems of SISP methodologies, four of the ten (40 percent) most extreme implementation, process, and output problems were related to personnel issues.

Of the 129 participating IR managers, only 19 (14.7 percent) reported they felt that their department's SISP had been successful with regard to personnel or career development (see Table 3). The "successful" group represented 16 of the personnel/career development successes, while the "unsuccessful" group represented three personnel successes. Converted to percentages, these groups constituted 39 percent and 3.4 percent respectively. This was the sharpest difference observed between the successful and the unsuccessful groups.

Conclusion

The Object of this research was to increase the likelihood of the IR manager's success with SISP by making it a more experience-based process. The findings have provided some insight by reporting and analyzing the SISP experiences of many information resource managers.

The IR managers' responses were divided into two groups, successful and unsuccessful; then compared for meaningful differences.

Differences between the successful and the unsuccessful groups may have been important considering: (a) the SISP methodology that was chosen; (b) the resource requirements that were integrated into the strategic plans; and (c) how often personnel and career development had been considered successful.

Of the five SISP methodologies examined, the Critical Success Factors (Rockart) methodology illustrated differences that could not be explained entirely as chance between the successful and the unsuccessful groups. The methodology prioritized the amount that its information resource department's projects contributed to the company's success. These findings reinforce the point that coordination of information resource department goals with company goals is vital for success.

Capital expenditures, software project;s, and personnel changes showed differences between the two groups when they had been integrated into SISP. The association between successful SISP and departments that included the three resource requirements was greater than chance. Association between integrating personnel changes and SISP success was strong.

Personnel and career development was the aspect of SISP that showed the least success for IR departments or divisions. Only 19 of the respondents felt that personnel or career development had been successful. Personnel considerations clearly would have seemed the part of SISP to require the most effort among these IR managers.

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TECHNICAL APPENDIX

This study was undertaken for the purpose of providing information resource managers an insight into the behaviors and techniques used by other IR managers with respect to strategic information systems planning (SISP). This paper relates experiences encountered by the "successful" and the "unsuccessful" groups.

The null hypothesis confirmed no differences between the successful and unsuccessful departments (in terms of SISP) on parameters which managers could control. These parameters were actions or decisions such as: (a) the frequency of strategic plan creation; (b) the SISP methodology chosen; and (c) resource requirements included in SISP formulation.

A random sample of 600 was drawn from a population of approximately 3,000 top information systems executives by a professional service. This sample was validated for adequate dispersion on geographical, industry type, and budget size bases. Of the 149 respondents, 129 were usable. Since the respondents were assured anonymity, the geographical dispersion of the respondents could not be demonstrated. However, the budget sizes and industry types were data that had been gathered. The usable responses seemed to represent an adequately dispersed sample (see Tables 4 and 5).

The data were gathered in the Summer of 1987 by a single mailing of questionnaires. The questions were closed-ended; all questions except one were multiple choice. In the non-multiple choice question, respondents were presented a Likert-type, summated, graphic, rating scale. With this scale they gave a self-report on their success with SISP in regard to: (a) coordination between corporate and information systems goals; (b) hardware planning; (c) software planning and development; and (d) personnel or career development for the information systems staff.

In the first step, the responses were tabulated with simple frequency analysis. Next, the respondents were divided into two groups, successful and unsuccessful, according to their reported success with strategic planning in the four different aspects of their operation. The scale ranged from a complete failure or nuisance (0) to a complete, extremely valuable success (5). Any managers that evaluated themselves as a "four" or a "five" on any of the four criteria were designated successful; those not meeting this requirement were desig-

Table 4. Major Business of Respondent Information Resource Departments' Companies

Major Business	Respondents	
	Number	Percent
Banking, Savings & Loan, or Thrift Institution	13	10.08
Financial Other Than Above	8	6.20
Oil or Gas Refinery or Distributor	2	1.55
Public Utility	7	5.43
Retail	8	6.20
Wholesale	3	2.32
Manufacturer	34	26.36
Health Care Services	8	6.20
Publishing	2	1.55
Transportation	2	1.55
Government	16	12.40
Education	16	12.40
Other	9	6.98
No Response	1	0.77

nated unsuccessful.

Chi-square analyses were first performed to determine if the budget size of major business of the firms was associated with any specific actions, the use of any techniques, or overall SISP success among the information resource departments.

The results of the first chi-square analyses found that neither budget size nor major business was associated with actions, decisions, or the ultimate success of SISP.

Table 5. Budget Size of Respondent Information Resource Departments

Budget Size (Dollars)	Respondents	
	Number	Percent
Less than $250,000	5	3.87
$250,000 to $500,000	8	6.98
$500,000 to $1,000,000	12	9.30
$1,000,000 to $2,000,000	28	21.70
$2,000,000 to $10,000,000	46	35.66
Over $10,000,000	29	22.48

Table 6. Chi-Square Analyses Between Variables in Information Resource Department Data

Relationship between Success and:	Chi-Square Value	Signifi-cance Level
Annual Plan Creation	2.048	p<.20
Use of CSF (Rockart Planning Methodology	2.772	p<.10
Including Capital Expenditures	2.806	p<.10
Including Software Projects	3.653	p<.10
Including Personnel Changes	19.845	p<.001

The second chi-square analyses revealed significant associations between the success of the departments' SISP results and three actions or techniques. Information resource departments for which SISP had been successful were more likely to: (a) have been using the Critical Success Factors methodology; (b) have included capital expenditures, software projects, and especially personnel changes in SISP formulation; and (c) to have felt as if personnel and career development had been successful (see Table 6). These results were significant at the 0.10 level or greater. Although one hypothesis had been a possible association between annual SISP creation or modification, the results of the study did not support this (see Table 6).

This research has four primary limitations: acquiescence, self-selection/nonresponse, self-report/appraisal, and association's inequivalence with causality. Survey research has two inherent flaws, an acquiescence among respondents and the self-selection of the respondents, i.e., the nonrespondents. The validity of answers may be flawed because respondents may have acquiesced to what they felt would be "acceptable" answers. Validity may also be imperiled by the group's composition that did respond; they may not be representative of the population.

In rating scale questions, self-report or self-appraisal could have represented another threat to validity. Even though anonymity was guaranteed, some respondents might not have divulged exact data. Further, respondents could have misinterpreted the researcher's intent of the question.

Chi-square analysis is a measure of association; causality cannot be assumed or implied. While results may show a significant coincidence of two phenomena, it would be inappropriate to assume replication of conditions would have replicated results.

The conclusions drawn demonstrate that these results could provide IR managers with outcomes and experiences as reported by their peers. These outcomes and experiences may be weighed by IR managers in their decision making. There was a significant association between successful SISP and the Critical Success Factors methodology, inclusion of capital expenditures, software projects, and personnel changes. The association between including personnel changes in SISP and overall SISP success was particularly strong. Personnel and career development appeared to have been the least successful aspect of SISP that the information systems managers had reported.

ABOUT THE AUTHORS

Lynn Neeley, assistant professor of management at Northern Illinois University, received her Ph.D. from the University of Tennessee in strategic management. Currently, she teaches graduate courses in strategic management and business ethics. She also has an international consulting practice focused on applications of, and training in, strategic management. She is an officer in a national business organization and has received national professional awards.

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