

# Organizational factors influencing the quality of the IS/IT strategic planning process

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## Keywords

Information systems,  
Strategic objectives,  
Electronic commerce,  
Organizational culture

## Abstract

Large investments in information technology (IT) and information systems (IS) have increased the need for effective IS/IT strategic planning (ISSP). As e-business strategies have received growing attention from industrial managers, IS/IT strategic planning is now considered critical in developing a successful e-strategy. However, despite the extensive literature on ISSP, the determinants of the quality of the ISSP process have seldom been examined. This study investigates the effects of organizational factors on the quality of the ISSP process. Data were collected using a questionnaire sent to the IS directors of 827 large companies in Taiwan and 239 usable responses were received. Survey results indicate that organizational context-related factors influence the quality of the ISSP process. This study also discusses implications for IS practice and directions for future research.

The authors would like to thank the National Science Council of the Republic of China for financially supporting this research under Contract No. NSC89-2416-H011-030.



Industrial Management &  
Data Systems  
103/8 [2003] 622-632

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[ISSN 0263-5577]  
[DOI 10.1108/02635570310497666]

## Introduction

IS/IT strategic planning (ISSP) has been identified as essential in integrating IT into an organization to increase a firm's strategic competitive advantage (Huysman *et al.*, 1994; Lederer and Sethi, 1996; Mentzas, 1997; Levy *et al.*, 1999). According to surveys on information systems management issues, ISSP remains one of the top ten issues facing corporate general managers and IS executives (Brancheau *et al.*, 1996; Watson *et al.*, 1997; Gottschalk, 2001). Specifically, with the recent growth in interest in e-business and e-commerce, ISSP is widely viewed as an effective means of implementing a successful e-strategy. The ISSP process involves a long-range planning horizon for funds, human services, technical expertise, hardware and software capabilities needed to take advantage of any opportunities that may arise (Baker, 1995). Lederer and Sethi (1996) indicated that improper ISSP may fail to realize the anticipated benefits of IS/IT investments and leads to incomplete system projects, resulting in incompatible, redundant and inflexible information systems, while a superior ISSP process produces a better plan.

Much empirical research has been conducted in the area of ISSP in recent years. However, there are a number of gaps in previous studies. First, an overwhelming majority of existing ISSP studies were undertaken in Western countries, and only a few have examined ISSP practices in Asian countries. Second, existing empirical research on ISSP focuses on factors that involve resources (finance, human resources, skills, and others) and information (business strategy, visions and objectives, and others) perspectives. However, these studies ignore the effects of cooperative competence,

organizational IS/IT context and organizational structure on the ISSP process. Mentzas (1997) pointed out that the ISSP process becomes more complex and more difficult to handle as technology continues to change. Teo and Ang (2000) contended that the ISSP process is intricate and often plagued with numerous problems. Other researchers point out that the ISSP process is extremely context dependent and IS strategy should be considered from an organizational perspective (Reponen, 1993; Hackney and Little, 1999). In view of the recent attention given to improve the effectiveness of ISSP, it would be useful to examine the relationships between organizational context and the ISSP process.

This study investigates the organizational factors that influence the quality of the ISSP process. The hypothesized relationships were empirically tested using a field survey of Taiwan's large firms. The results of this study will be of interest to business managers who are initiating or conducting IS/IT strategic planning exercises, and to researchers in the field of information systems management.

## Theoretical background

Recently, e-strategies have been widely considered as an innovative means for contemporary organizations to enhance their competitive advantage (Butler, 2000; Clegg *et al.*, 2001). According to Forrester Research, the value of global e-commerce will reach \$6.8 trillion by 2004. More firms are anticipated to make large investments in developing e-commerce and e-business applications. However, recent experience suggests that despite the many spectacular e-business successes, there have also been numerous failures (Phan, 2001). Numerous

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companies fail not for technical reasons related to IS/IT implementation, but rather because they neglect the effects of organizational context on e-business and e-commerce strategic planning. Phan (2001) also argued that such failures result principally from overlooking the comprehensive integration of Internet technology into the overall strategy and business model of a company, and a failure to prepare for the transformation. Based on the above, it is clear that introducing an e-strategy not only involves a change in technology, but also an impact on various organizational perspectives, such as culture, skills, styles, structure, and beliefs, as well as various social and political perspectives. ISSP is becoming increasingly important for implementing a successful e-strategy, and more work is required to understand how various organizational considerations may influence the ISSP process.

A growing amount of empirical work that has been conducted examining the relationship between ISSP and organizational context, such as studies evaluating the effectiveness of ISSP (Premkumar and King, 1994a; Tang and Tang, 1996), identifying ISSP prescriptions (Lederer and Sethi, 1996) and profiles (Segars and Grover, 1999), identifying the implementation predictors of IS plans (Gottschalk, 1999), examining relationships between planning sophistication and IS success (Sabherwal, 1999), assessing the effect of IS maturity (Cerpa and Verner, 1998), and assessing the usefulness of strategic IS plans (Teo and Ang, 2000). However, there has been little empirical research that investigates the effects of organizational factors on the quality of the ISSP process. Ward *et al.* (1996) stated that organizational dynamics form an important input into the planning process, and further conceptualized an ISSP model to show how internal/external business environment and internal/external IS/IT environment influence the ISSP process. Lederer and Salmela (1996) proposed an ISSP theory that depicts how planning resources, internal environment and external environment influence the ISSP process. In the next section, the literature on IS/IT planning, organization/group, and behavior were reviewed to identify factors that potentially influence the ISSP process.

### Hypotheses development

Three dimensions of organizational variables – cooperation, organizational IS/IT environment

and organizational structure – are developed from Ward *et al.* (1996) and Lederer and Salmela (1996). Each of the organizational variables and research hypotheses are described and rationalized below.

### Relationship between cooperative factors and the ISSP process

As information systems become more complex, ISSP must involve multiple stakeholders, cut across departments, and feature increased co-operation among different managers and managerial groups. Therefore, numerous cooperative factors may influence the quality of the ISSP process (Ruohonen, 1991; Ang *et al.*, 1999).

#### CEO/CIO relationship

Tai and Phelps (2000) indicated that unsuccessful information technology projects result from conflicts between CEOs and CIOs. These conflicts may result from differences in visions of IT and in views of organizational IS issues (Fenny *et al.*, 1992; Remius, 1997). Cerpa and Verner (1998) also pointed out that insufficient communication between IS managers and CEOs indicates that the organization does not value IS or IS planning sufficiently. To improve their relationship with IS managers, CEOs must understand what IS and IT can do for the company and be willing to take advantage of IS/IT opportunities when they arise. Furthermore, CIOs must understand the goals of their business, and be able to recognize appropriate IS opportunities and threats (Jones *et al.*, 1995). The relationship between the CEO and CIO can be crucial to the alignment and success of the strategic use of IS (Jones *et al.*, 1995). If the relationship between CEOs and CIOs is poor, it may affect the quality of the ISSP process. Accordingly, the following hypothesis is proposed:

*H1.* The better the relationship between CEO and CIO, the better the quality of the ISSP process.

#### Task coordination

Coordination, the specification and execution of roles with minimal redundancy and verification, is a major component of the cooperative competency that is well established in organizational theory (Sivadas and Dwyer, 2000). Planning is a group activity that requires extensive coordination and communication (Rathwell and Burns, 1985). Robbins (1992) suggested that the interactive process affects teamwork performance, and also clearly indicated that coordination is key to the success of teamwork. In the ISSP process, stakeholder groups are mutually interdependent and each has specific tasks and responsibilities.

To achieve planning goals and ensure the IS plan is implemented as expected, organizations require effective coordination. Accordingly, the following hypothesis is proposed:

*H2.* The better the task coordination among stakeholder groups, the better the quality of the ISSP process.

#### *Stakeholder interaction*

Strategic planning aims to reduce uncertainty, coordinate the efforts of organizational members, and establish dialogue and lines of communication among various organizational subgroups (Segars and Grover, 1999). ISSP needs increased interaction among different managers and managerial groups, and the interpretation of various views from organizational interest groups (Ruohonen, 1991). Frequent interaction among stakeholders enables them to share a common frame of reference with regard to various organizational issues. This common frame of reference is necessary for the internal consistency and external validity of output plans from IS planning (Henderson and Sifonis, 1988). Since knowledge and expertise differs among stakeholder groups, better interaction not only facilitates the integration of different stakeholder views, but also facilitates cooperation among stakeholders (Ruohonen, 1991). Accordingly, the following hypothesis is proposed:

*H3.* The better the effectiveness of stakeholder interaction, the better the quality of the ISSP process.

#### *Stakeholder involvement*

Ruohonen (1991) suggested that the key stakeholder groups in the ISSP process are top management groups, user management groups and IT/IS management groups. The lack of top management involvement and commitment to ISSP activities has been considered one of the major problems in formulating an acceptable IS strategy (Galliers, 1991). The participation of user management and IS managers and professionals can significantly facilitate the planning (King, 2000). The participation of the IS manager in strategic business planning and active interaction between IS and business planners are possible strategies to improve communication between the BP and ISSP systems (Premkumar and King, 1994a). As discussed above, the stakeholder involvement is important for effective ISSP. Accordingly, the following hypothesis is proposed:

*H4.* The greater the extent of stakeholder involvement, the better the quality of the ISSP process.

### **Relationship between organizational IS/IT context and the ISSP process**

#### *IS maturity*

The results of a case study conducted by Cerpa and Verner (1998) showed that one of the most crucial issues for ISSP is how the maturity of the IS function influenced the planning process. As the IS function grows to maturity and as some IS planning methodologies were adopted by the IS strategic planner, the ISSP process is also maturing (Cerpa and Verner, 1998). In organizations with greater IS maturity, top management may be more likely to consider strategic IS decisions important, and thus more accessible to IS executives (Sabherwal and King, 1995). ISSP studies should consider organizational experience in ISSP and organizational maturity in the utilization of information technology (Lederer and Sethi, 1996). Accordingly, the following hypothesis is proposed:

*H5.* The higher the maturity of IS function, the better the quality of the ISSP process.

#### *Computer-aided planning systems*

Lee and Gough (1993) argued that it is essential that a computer-aided planning system be incorporated into the IS planning framework for it to be used effectively and economically by managers. The computer-aided planning systems bring about improvement to the ISSP effectiveness since appropriate guidelines and knowledge provided by the system lead managers to implement the ISSP process more thoroughly. Most research work in the ISSP area has been normative, focusing upon the issue of "what should be done" rather than "how to do it" (Ziviran, 1990; Mentzas, 1997). Computer-aided planning systems such as decision support systems and groupware could be used to assist the ISSP process (Ziviran, 1990). Accordingly, the following hypothesis is proposed:

*H6.* The quality of the ISSP process is significantly higher in firms with computer-aided planning systems than in firms that do not have such systems.

### **Relationship between organizational structure and the ISSP process**

*Centralization of organizational structure*  
ISSP is not merely a creative process but also an interactive learning process involving multiple participants and stakeholders (Reponen, 1993). Different stakeholders will have different reasons for wanting an ISSP study, and may well be seeking different outcomes from the process (Galliers, 1991). Organizational centralization refers to the

extent to which the right to make decisions is concentrated in the hands of a few individuals (King and Sabherwal, 1992). Strategic IS plans will face problems achieving internal consistency and effective implementation if the organizational decision-making process is overly centralized (Henderson and Sifonis, 1988). Accordingly, the following hypothesis is proposed:

*H7.* The higher the organizational centralization, the worse the quality of the ISSP process.

## Research methodology

### Data collection

The sample adopted was the Corporate 1000 (the 1000 largest manufacturing and service companies in Taiwan), published by *Commonwealth Magazine* in 2000. To ensure the questionnaire was received by IS directors and to encourage a better response rate, two research assistants spent three weeks telephoning these 1,000 companies. Such firms were then asked to provide the name of the IS director to whom a questionnaire should be mailed. Using this procedure, a list of 827 firms from various industries was compiled. Questionnaires were mailed to the 827 IS directors. A cover letter explaining the objective of the study and a stamped return envelope were enclosed. Follow-up letters were sent about three weeks after the initial mailings. The decision to use the IS executives as informants herein is supported by previous research conducted by Segars and Grover (1998) and Gottschalk (1999).

### Measurement of variables

The research variables were defined as briefly as possible with multiple indicator items. From the literature on organizational, behavioral and IS theory, we adopted the variables that have been used and validated by other researchers. All variables were measured with multiple items on a five point Likert-type scale, ranging from (5) strongly agree to (1) strongly disagree, except in the case of the dichotomous variable (computer-aided planning system). Table I lists the measurement items of all research variables.

### Pre-testing

The questionnaire was refined through two rounds of rigorous pre-testing. The pre-testing process focused on instrument clarity, question wording and validity. During the first round of pre-testing, five MIS doctoral students and three MIS professors were interviewed. The comments of these

eight individuals resulted in revisions to the construct measures. During the second round of pre-testing, a revised questionnaire was pre-tested by 14 senior IS executives from five different industries. The IS executives were given the questionnaire and asked to examine it for meaningfulness, relevance, and clarity.

## Data analysis and results

### Sample characteristics

Of the 827 questionnaires distributed, 239 completed usable questionnaires were returned, for a response rate of 29 percent. The respondents are all IS executives, and had worked in the IS field for an average of 14.7 years. Table II lists respondent company characteristics, including industry type, sales revenue, number of employees and number of IS employees. The respondents were distributed across industry groups.

### Reliability and validity of research variables

Internal consistency (Cronbach's alpha) was calculated in order to assess the reliability of all constructs. As shown in Table III, the results in our study indicate that all the constructs are greater than 0.7. The constructs are therefore considered to exhibit adequate reliability (Nunnally, 1978).

The content validity of the questionnaire was established through a series of personal interviews with multiple IS executives. Construct validity was determined using factor analysis of the items comprising each construct. Principal component factor analysis with VARIMAX (orthogonal) rotation was used to determine if all items measuring a construct cluster together, and selection of factors with eigenvalues greater than one. Items with loadings of less than 0.5 on any factor were dropped from subsequent analyses. The results of the factor analyses for independent variables, as shown in Table IV, confirm that each construct is distinct from other constructs.

### Hypothesis testing

Hypothesis testing was carried out using a multiple regression analysis. Before performing multiple regression analysis, the dichotomous variable (computer-aided planning systems) was recoded into dummy variable. Statistical assumptions (normality, homogeneity of variance and linearity) related to multiple regression analysis were also checked and no significant violation of assumptions was found. Table V shows the results of the multiple regression analysis

**Table I**

Measurement items for organizational variables

**Organizational variables**

**CEO/CIO relationship – Adapted from Davison (1997)**

- CERE1** CEO frequently communicates with the CIO for the IS plans  
**CERE2** CIO spends time educating CEO about IS opportunities and threats  
**CERE3** CEO relies on CIO for information about MIS needs  
**CERE4** Interviews-in-depth existed between CEO and CIO

**Task coordination – Adapted from Lee & Kim (1999) and Sivadas & Dwyer (2000)**

- TAC01** Most exceptional problems are solved through mutual discussion  
**TAC02** Coordination mechanisms are used to solve conflicts among stakeholder groups  
**TAC03** The problems of incompatibility of activities and resource sharing are solved by negotiation  
**TAC04** Goals are achieved by effective interaction and communication

**Stakeholder interaction – Adapted from Davison (1997)**

- STIN1** Planning participants were not motivated to state their opinions during planning  
**STIN2** Interacting with other stakeholder groups is extremely difficult  
**STIN3** Planning participants had problems in stating their opinions and suggestions  
**STIN4** Understanding the wording of statements that come from other stakeholder groups

**Stakeholder involvement – Adapted from Segars & Grover (1999)**

- STIT1** The planning process contains a variety of functional managers  
**STIT2** The planning process contains various levels of management

**IS maturity – Adapted from King and Sabherwal (1992)**

- ISMA1** Information technology supports various functions in the company  
**ISMA2** IT is perceived in the company as important and able to make a significant impact  
**ISMA3** Top management's knowledge about information technology  
**ISMA4** Information technology is available throughout the company premises  
**ISMA5** IS planning takes the company's business plans into consideration

**Centralization of organizational structure – Adapted from King & Sabherwal's (1992)**

- ORCE1** Decision making concerning entry into major new markets  
**ORCE2** Decision making about pricing of major product lines  
**ORCE3** Decision making concerning capital budgeting  
**ORCE4** Decision making concerning new product introduction  
**ORCE5** Decision making concerning hiring/firing of personnel

**Dependent variable**

**Quality of the ISSP process – Adapted from Segars & Grover (1998) and Premkumar & King (1994a,b)**

- QISP1** Understanding the information needs of organizational subunits  
**QISP2** Identifying opportunities for internal improvement in business processes through IT  
**QISP3** Development of a "blueprint" which structures organizational processes  
**QISP4** Generating new ideas to reengineer business processes through IT  
**QISP5** Development of a company-wide information architecture  
**QISP6** Analysis of hardware and software requirements  
**QISP7** Analysis of human resource requirements for the IS function  
**QISP8** Assessment of hardware and software market and formulating systems acquisition plans  
**QISP9** Review, feedback and refinement of plans

between the eight organizational variables and the quality of the ISSP process. The overall regression model is significant ( $F = 30.888, p < 0.001$ ). The value of  $R^2$  (0.502) suggests that 50.2 percent of the variance is explained by seven variables. No apparent colinearity problem among independent variable exists, as the variance inflation factors (VIF) for all independent variables are smaller than 3 (Neter *et al.*, 1997).

Based on the results shown in Table V, the CEO/CIO relationship is significantly related to the quality of the ISSP process, so hypothesis 1 is supported ( $t = 3.867, p < 0.01$ ).

Task coordination was significantly related to the quality of the ISSP process ( $t = 3.028, p < 0.05$ ), which supports  $H2$ . Effectiveness of stakeholder interaction was not significantly related to the quality of the ISSP process ( $t = 1.536, p > 0.05$ ); thus,  $H3$  was not supported. The result was contrary to expectation. Stakeholder involvement had no positive effect on the quality of the ISSP process ( $t = -0.776, p > 0.05$ ), indicating a lack of support for hypothesis 4. IS maturity was positively related to the quality of the ISSP process, so  $H5$  is supported ( $t = 3.008, p < 0.01$ ). Organizational centralization had no effect on

**Table II**  
Characteristics of respondents (n = 239)

Demographic characteristics	Frequency	Percentage
<b>Industry type</b>		
Manufacturing	89	37.2
Banking/finance/insurance	54	22.6
Oil/petroleum related	8	3.3
Real estate/construction	12	5.0
Transportation	6	2.5
Retail/wholesale	9	3.8
Computers/communication	18	7.5
Health/Foods	11	4.6
Utility	9	3.8
Others	23	9.6
<b>Sales revenue</b>		
\$50 million – \$100 million	85	35.6
\$100 million – \$500 million	111	46.4
\$500 million – \$1 billion	21	8.8
\$1 billion – \$2 billion	14	5.9
\$2 billion – \$3 billion	3	1.3
\$3 billion – \$5 billion	2	0.8
\$5 billion or more	3	1.3
<b>Number of employees</b>		
Less than 100	11	4.6
100-499	81	33.9
500-999	57	23.8
1,000-2,999	59	24.7
3,000-4,999	7	2.9
5,000-9,999	14	5.9
10,000 or more	6	2.5
Not reported	4	1.7
<b>Number of IS employees</b>		
Less than 10	88	36.8
10-29	52	21.8
30-49	17	7.1
50-99	30	12.6
100 or more	52	21.7

**Table III**  
Reliability coefficient of research variables

Variable	Number of items	$\alpha$
<b>Dependent variable</b>		
Quality of the ISSP process	9	0.90
<b>Cooperative factors</b>		
CEO/CIO relationship	4	0.78
Task coordination	4	0.84
Stakeholder interaction	4	0.71
Stakeholder involvement	2	0.73
<b>Organizational IS/IT context</b>		
Maturity of IS function	5	0.80
Computer-aided planning system	1	N/A (categorical variable)
<b>Organizational structure</b>		
Centralization of organizational structure	5	0.86

**Table IV**  
Cross-loading matrix for organizational variables

Constructs	Factor					
	1	2	3	4	5	6
<b>ORCE1</b>	0.861	0.071	-0.046	-0.019	0.002	0.001
<b>ORCE2</b>	0.830	0.042	0.195	-0.053	-0.008	-0.008
<b>ORCE3</b>	0.824	0.038	0.023	0.011	0.043	0.055
<b>ORCE4</b>	0.801	-0.048	-0.036	0.012	-0.016	0.025
<b>ORCE5</b>	0.696	-0.129	-0.055	-0.011	-0.081	-0.030
<b>TAC01</b>	-0.003	0.813	0.163	0.127	0.188	0.171
<b>TAC02</b>	0.075	0.799	0.153	0.157	0.039	0.019
<b>TAC03</b>	-0.051	0.758	0.171	0.186	0.163	0.128
<b>TAC04</b>	-0.060	0.651	0.091	0.208	0.196	0.258
<b>ISMA1</b>	0.072	0.090	0.831	0.093	0.088	-0.038
<b>ISMA2</b>	0.038	0.234	0.738	-0.113	0.021	0.231
<b>ISMA3</b>	-0.032	0.186	0.704	0.252	0.104	0.052
<b>ISMA4</b>	-0.022	0.156	0.635	0.339	0.120	0.211
<b>ISMA5</b>	-0.020	0.009	0.529	0.370	0.124	0.194
<b>CERE1</b>	0.024	0.174	0.170	0.841	0.101	0.048
<b>CERE2</b>	-0.037	0.102	0.178	0.736	-0.007	-0.040
<b>CERE3</b>	-0.026	0.176	0.042	0.731	0.031	0.281
<b>CERE4</b>	-0.070	0.317	0.161	0.503	0.030	0.251
<b>STIN1</b>	-0.021	-0.015	0.089	0.068	0.822	-0.200
<b>STIN2</b>	-0.020	0.187	0.028	0.023	0.772	0.156
<b>STIN3</b>	0.015	0.275	0.192	0.147	0.560	0.266
<b>STIN4</b>	-0.046	0.257	0.145	-0.054	0.537	0.340
<b>STIT1</b>	0.049	0.193	0.210	0.131	0.159	0.784
<b>STIT2</b>	0.027	0.230	0.163	0.271	0.064	0.734
<b>Eigenvalue</b>	6.375	3.287	1.854	1.589	1.275	1.041
<b>Variance explained</b>	26.561	13.695	7.725	6.620	5.311	4.338

**Notes:** The italicised items indicate the items that are designed to load on the construct in the respective columns. F1: organizational centralization; F2: CEO/CIO relationship; F3: Task coordination; F4: IS maturity; F5: stakeholder interaction; F6: stakeholder involvement

**Table V**  
Results of multiple regression analysis

Variables	Hypothesis (direction)	b	$\beta$ Coefficient	t-value	VIF
<b>Cooperative factors</b>					
<b>CEO/CIO relationship</b>	H1 (+)	0.391	0.218	3.867**	1.516
<b>Task coordination</b>	H2 (+)	0.348	0.180	3.028*	1.686
<b>Stakeholder interaction</b>	H3 (+)	0.140	0.081	1.536	1.319
<b>Stakeholder involvement</b>	H4 (+)	-0.161	-0.046	-0.776	1.658
<b>Internal IS/IT context</b>					
<b>IS maturity</b>	H5 (+)	0.789	0.458	3.008**	1.561
<b>Computer-aided planning systems</b>	H6 (+)	0.256	0.029	0.594	1.158
<b>Organizational structure</b>					
<b>Centralization of organizational structure</b>	H7 (-)	0.036	0.026	0.562	1.016

**Notes:** Adjust  $R^2 = 0.502$ ; F-value = 30.888\*\*\*; Degree of freedom = (8, 229)  
N = 239; \*  $p < 0.05$ , \*\*  $p < 0.01$

the quality of the ISSP process ( $t = 0.594$ ,  $p > 0.05$ ), indicating a lack of support for *H6*. The use of computer-aided planning systems was not positively related to the quality of the ISSP process ( $t = 0.562$ ,  $p > 0.05$ ), contradicting *H7*. These results are discussed in the next section.

## Discussion

Empirical results partially support hypothesized relationships between organizational variables and the quality of the ISSP process. The results are discussed below.

### **Effect of cooperative factors on the ISSP process**

Empirical results strongly support the hypothesis that the CEO/CIO relationship significantly affects the quality of the ISSP process. Similar results have been found in previous studies on the alignment and success of the strategic use of IS (Jones *et al.*, 1995; Kearns and Lederer, 2000). Aligning IS plans with business plans requires IS and business executives to assume joint responsibility for achieving benefits through IS investment. Such a collaborative and symmetric approach to planning can produce significant IS-based competitive advantages (Kearns and Lederer, 2000). Gottschalk (1999) pointed out that a common understanding of business-critical success factors and the role and importance of IT in the organization is an essential element to a good CEO/CIO relationship. Based on Jones *et al.* (1995), this study suggests that the CEO/CIO relationship can be enhanced by increasing the time the CIO in communicating with the CEO, educating the CEO about IS opportunities and threats, and having the CIO learn about the business.

Furthermore, task coordination was originally hypothesized to be correlated with the quality of the ISSP process. The results provide substantial evidence of this hypothesis, implying that as ISSP become more important to organizations, effective coordination among stakeholders is required. As Turban *et al.* (2000) pointed out, the deployment of e-commerce systems requires the involvement of almost every functional part of the organizations. Heijden (2001) also indicated that e-commerce is a multidisciplinary undertaking, and because of this, cooperation with the rest of the business is therefore crucial. ISSP is an iterative, ongoing and complex process that cannot be handled by just one person in an organization (Auer and Reponen, 1997). An effective coordination mechanism can help a planning team to achieve their IS decision-making goals (Ang *et al.*, 1999).

Effectiveness of stakeholder interaction was originally hypothesized to be related to the quality of the ISSP process. The results from the present study, however, refute the original hypothesis, perhaps because egocentrism is frequently found in interdepartmental relationships in Taiwan's companies (Tang and Tang, 1996). Consequently, obtaining a cross-departmental consensus on IS priorities may be difficult. Another hypothesis claimed that greater stakeholder involvement would increase the quality of the ISSP process. However, the results also contradict this

hypothesis. One possible explanation for this phenomenon is that in many of Taiwan's companies, IS/IT strategic planning may be centralized in the hands of top managers and IS executives. Therefore, most of the middle managers, line managers, end users and functional managers may not actively participate in IS/IT strategic planning activities.

### **Effect of organizational IS/IT context on the ISSP process**

Results of this study demonstrate that IS maturity facilitates better ISSP. Similar results were found in studies of the organizational factors that influence the applications of strategic information systems (King and Sabherwal, 1992). As the IS function gains experience with developing important information systems, and as the CEO and users recognize the strategic potential of IT, a shift may be expected to occur from an internal orientation toward applications that enhance business competitiveness (King and Sabherwal, 1992). Numerous large firms in Taiwan have well established IT infrastructures. Many companies have established their own Web sites for implementing e-business and e-commerce strategies, because of the increased importance of the Internet and Web technology. According to surveys on maturity of e-business, conducted by the Economist Intelligence Unit (EIU), Taiwan rose from 27th place in 1999 to 16th in 2000. Furthermore, the IDC reported that the Information Society Index (ISI) of Taiwan rose from 3,177 in 1999 to 4,296 in 2000, and listed Taiwan among the top 13 information society countries. IT/IS and e-business strategy are clearly growing in importance for Taiwan's companies, and it is anticipated that more business organizations will invest more in IT, e-business and e-commerce in the future. Thus, business managers must pay attention to the effect of IS maturity on IS/IT and e-business strategic planning.

Furthermore, the use of computer-aided planning systems was not significantly related to the quality of the ISSP process. Most firms in Taiwan possibly may not have developed computer-aided systems to assist planning activities, while carrying out ISSP. However, this study suggests that some IT applications may help organizations to cooperate in planning. Such applications include groupware, intranet and Web-based applications. With the recent growth in interest in knowledge management, the use of groupware applications may help planners to share and transfer their knowledge.



### **Effect of organizational structure on the ISSP process**

As originally assumed herein, a higher centralization of organizational structure implies a lower quality of ISSP process. However, the results refute the hypothesis. Centralization refers to the extent to which the responsibility of decision-making is centralized at the top-most levels of management. Professional IS personnel have increasingly played a key role in organizational innovation as IT has become increasingly important in Taiwan. Therefore, professional managers or IS personnel may participate in major decisions pertaining to introductions of new products, entry into new markets, and the research and development of new products.

### **Managerial implications**

This study has several practical implications. First, as information technology develops, today's organizations frequently redesign their processes to provide new competitive advantages. E-business strategies such as enterprise resource planning (ERP), customer relationship management (CRM), supply chain management (SCM) and knowledge management systems (KMS) are considered to be the most attractive solutions in managing organizational resources (Phan, 2001). However, e-business activities often deeply impact corporate infrastructure and the supply chain. Therefore, enterprises that enter e-business need the support and visions of top management. A better relationship between CEO and CIO can improve the CEO's knowledge of IT/IS and increase the CEO's belief in the importance of IT/IS. By being knowledgeable about IT/IS, a CEO can better evaluate payoffs from IT investments and have more realistic expectations of such investments (Teo and Ang, 1999). The CIO can understand the emerging technology while the CEO has insight into the external environment; the business value of an e-strategy is generated by a complementary relationship between CEO and CIO. Thus, this study recommends that business managers should focus on improving the relationship between CEO and CIO, and establish better coordination among stakeholder groups when developing electronic strategies.

Second, as planning tasks in the network era becomes more complex, effective coordination mechanisms are required to manage the knowledge of stakeholders. During the ISSP process, four types of knowledge must be integrated, including business knowledge, organization-specific

knowledge, IS/IT knowledge and management competencies. Such knowledge may be "tacit" or "explicit" (Nonaka, 1994). Tacit knowledge resides in the minds of different stakeholders and has not been documented in a structured form, but such knowledge is important to the planning process. For example, the CIO possesses IT knowledge and experience; the CFO has organization-specific knowledge concerning finance and accounting, and the CEO has business executive knowledge and experience. Tacit knowledge exists in the minds of various interest groups, all of which have their own expertise, positions, perceptions, and capabilities. Consequently, these differences may cause difficulties in cooperation, and may influence the effectiveness of ISSP. Sharing knowledge is necessary for ISSP to achieve planning objectives. One important question concerns how knowledge can be shared in the ISSP process. Earl (1993) mentions teamwork as an effective method for creating IS plans. Based on Mentzas (1997), this study suggests that four different strategic IS/IT teams should be specified when implementing an IS strategy: functional, technical, guidance and coordination teams.

Finally, as information technology rapidly advances, novel methods of business process redesign (BPR) including emerging e-business, create turmoil in the industry (Phan, 2001). The development of e-business strategies creates not only technological change but also dramatic change in the various social and political perspectives of organizations. Consequently, organizations must evaluate the current state of IS/IT development while planning e-business and e-commerce strategies.

### **Conclusions and future research**

This study confirms the significant relationship between ISSP and organizational context. The results are consistent with those reported in the literature. For example, Premkumar and King (1994b) found organizational characteristics (for example, firm size and planning resources) were significantly related to the quality of the ISSP process in large firms in the USA. Ang *et al.* (1999) examined the factors that influence the benefits of ISSP, and found that organizational and implemental factors were associated with planning benefits.

In contrast to previous empirical studies that focused on the effects of resources and information input, this study assessed the effects of cooperative competence,

organizational IS/IT context and organizational structure on the ISSP process. The results reveal that some factors within the cooperative competence and organizational IS/IT context are significantly related to the quality of the ISSP process. This finding shows that as ISSP becomes more complex, especially when organizations introduce e-commerce and e-business strategies, organizations must integrate multiple views of various stakeholder groups. Therefore, an effective coordination mechanism and maintaining a close relationship between CEO and CIO are crucial to improving the quality of the ISSP process. Moreover, organizations may need to assess their core IT capabilities when conducting strategic planning in e-commerce and e-business. In conclusion, this research contributes valuably to the research on IS research and provides a valuable reference for business managers and strategic planners who are initiating or conducting strategic planning exercises in IS/IT, e-business and e-commerce in the network era.

However, this study has several limitations. First, numerous organizational factors may influence the quality of the ISSP process, but this study did not examine all organizational factors that relate to the ISSP process but focused on cooperation, internal IS/IT environment and organizational structure. Future research could address more general factors that relate to organization, such as commitment, trust and political behavior. Second, researchers have shown IT management style may differ between Eastern and Western countries, due to cultural and political context (Kunnathur and Shi, 2001). The subjects of this study are IS executives in Taiwan. Cultural differences may exist between Taiwan and other countries. Future research should be similarly carried out in other countries.

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#### Further reading

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