

KEY ISSUES IN INFORMATION SYSTEMS MANAGEMENT: A COMPARATIVE STUDY BETWEEN ACADEMICS AND PRACTITIONERS IN THAILAND

Dr. Daranee Pimchangthong, DBA

School of Business, Rajamangala Institute of Technology

ABSTRACT

This study was designed to examine the IS key issues in Thailand by comparing IS academics and practitioners within the country, and by comparing Thailand as a whole with other developed and developing countries. The economic development based on GDP per capita was used to classify the developed and developing countries. The Q-Sort method, a ranking technique, was used to rank the IS key issues. The data were collected through an Internet survey website. The findings show that the issue of building IT infrastructure was projected to be the top issue over the next three to five years in Thailand. The importance ranking of IS key issues in Thailand was similar to the studies from developed countries but different than the studies from developing countries. There was a significant difference in the importance rankings of IS key issues between academics and practitioners in Thailand. However, they were in agreement on the first and second ranking IS key issues, which were building IT infrastructure and IS strategic planning, respectively.

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INTRODUCTION

In today's highly competitive global environment, information technology (IT) management plays an important role in business. Since diverse technologies change rapidly, the Information Systems (IS) community is facing many challenges. In order to understand the challenges facing them and prepare to manage the change, there is a need to understand the information systems management issues that concern their peers. The results of IS key issues studies can help IS executives and IS managers to prepare and plan in advance instead of acting when things happen (Brancheau et al., 1996; Clark, 1992; Watson et al., 1997). Due to technology changes over time, new issues emerge quickly and are often missing from older studies. There is a need to identify these issues from time to time in order to address them properly. As a consequence, the studies

on the key issues in IS management have been conducted every three or four years over the past fifteen years in the United States and the similar studies have been duplicated in many countries around the globe.

PROBLEM BACKGROUND

Previous studies indicated that politics, law, culture, economics, technology infrastructure, and the availability of skilled personnel have greatly influenced the difference of key issues in IS management between developed and developing countries. While developed countries have systematically and periodically done research on the key issues in IS management, there has been only limited research on this topic in developing countries. The major concern expressed by several researchers who are familiar with the conditions in

developing countries, has been that the organizations in developing countries may not be prepared for computerization and do not have carefully prepared plans for developing computerized information systems (Chandler & Holzer, 1983; Nils, Lin & Muntoro, 1998). In order to be prepared and plan for the rapid changes of technologies, studies on the key issues in IS management need to be conducted in developing countries. The result of this study will provide useful information for future planning in IS/IT management.

LITERATURE REVIEW

A key issue is an opportunity, threat, or problem associated with the effective use of IT in the organization and it is a critical success factor (Yang, 1996). The results of studies on key issues in information systems management represent the future trends and provide useful direction for the IS community in order to serve their organization efficiently and effectively. Based on the classification of key issues in information systems management by Niederman and Brancheau (1991), and key issues derived from the literature reviewed, this study developed a classification list of key issues in IS management in developed and developing countries.

Developed countries refer to the countries with advanced industrial market economics and the GDP per capita is greater than \$20,000. Based on the GDP per capita from The World Factbook (CIA, 2001), six selected developed-country studies in key issues in information systems management, which include the United States, Hong Kong, the United Kingdom, Norway, Australia, and Canada are reviewed (Brancheau et al., 1996; Burn, Saxena, Ma & Cheung, 1992; Galliers et al., 1994; Gottschalk, Watson & Christensen, 2000; Pervan, 1996; Pollard & Hayne, 1996). The studies showed that developed countries paid greater attention to technical issues than to managerial issues. Issues that were of major concern among IS executives in developed countries are: building IT infrastructure, IS architecture,

telecommunication systems and network, and data resource issues. Some of these issues were ranked equal in importance in several studies that were completed in the same year. For instance, building IT infrastructure was ranked first in the United States, Australia, and Canada in studies conducted in the same year (see Table 1).

Developing countries are typically referred to as countries with a relatively low level of Gross Domestic Product (GDP) per capita, with an economy often focused on agricultural products, raw materials, handicraft and commodities. In this study, countries that have a GDP per capita less than \$20,000 are considered in this group. Ten selected studies of key issues in information systems management of the countries in this group, which include the Gulf Cooperation Council (GCC)¹, Taiwan, Slovenia, South Korea, Costa Rica, Guatemala, Brazil, India, Indonesia, and Poland are reviewed (Bradi, 1992; Chou & Jou, 1999; Dekleva & Zupancic, 1996; Kim & Kim, 1995; Mata & Fuerat, 1997; Morgado, Reinhard & Watson, 1999; Palvia & Palvia, 1992; Samik-Ibrahim, 2001; Wrycza & Plata-Przechlewski, 1994). Table 2 presents the ranking of key issues in information systems management in developing countries, which was derived from the reviewed literature. As the aggregate data show, developing countries paid higher attention to managerial issues than to technical issues. These managerial issues are educating and training senior management, IS for competitive advantage, educating and training IS personnel, and data resources.

Due to the rapid change in information technologies and applications, qualified IS professionals have become a major issue among the IS community, especially in developing countries. The expectation gap between academic preparations and practitioner needs has been recognized as one of the problems. The IS education process has been criticized as incapable of producing qualified, employable IS professionals

(Archer, 1983; Cardinali, 1988). Trauth et al. (1993) described that universities have been faulted for teaching obsolete technologies, and that changes in IT that brought some new concepts, such as end-user developed applications, off-the-shelf software, outsourcing, or increased use of the Internet, have created many new career paths yet to be filled by qualified IS staff. The curriculum gap, which is caused by differences in perspectives between academics and practitioners, might be a reason of insufficient preparation. Niederman and Brancheau (1991) described that academics and practitioners have disagreed over the importance of specific issues. For example, practitioners were more concerned with technical issues, while academics were more interested in managerial issues (Kim & Kim, 1999).

Thailand is considered a developing country of eastern culture due to national culture, economic development, and location. Similar to IS executives in other countries of eastern culture, IS strategic planning and human resource issues were expected to be the major issues for Thai IS executives. However, the key issues in information systems management could be influenced by local conditions such as national financial crisis. For example, before the economic recession in 1997, IS management key issues in Thailand were similar to the other countries in the region; but following the recession, the importance of competitive advantage increased substantially. The financial crisis in South East Asia also caused budget cutbacks in many sectors in Thailand; however, after the recession, the Thai government still continued to invest heavily in the development of a more sophisticated IT infrastructure. The IT market is also expected to be better than the other industries following the recession due to the fact that the economic recession has prompted most organizations to acquire IT-related technologies to cut costs and increase competitiveness. The computer service subsection was forecasted to rise by fourteen

percent while the Internet market was expected to continue its rapid growth pattern (ATCI, 2001).

Research methodologies most often found in the previous studies were questionnaires using the Likert scale with Delphi method, structured interview, and follow-up interviews. The Delphi method, a group decision-making process, was particularly useful for assessing the judgment of a large, dispersed group of experts (Bass, 1983). The Delphi method rating technique typically starts with an opened-ended questionnaire that solicits opinions on the issue of the study. Succeeding rounds of study feed back the previous round's results so that participants can revise their judgments. Recent research on key issues in IS management in Brazil and Norway used the Q-sort method. The Q-sort method is a ranking technique where respondents are required to sort the statements supplied so that they fall into a predefined, usually approximately normal, distribution (Brown, 1980). Morgado et al. (1999) used the Q-sort method and the Interpretive Structural Modeling (SIM) workshop in the Brazil study. Gottschalk et al. (2000) used the Q-sort method in a Norway study. The problem with the Q-sort method has been low response rate; however, the Q-sort method is a subjective methodology with no requirement for high response rate (Brown, 1996).

PURPOSE OF STUDY

The purpose of this study is to examine key issues in IS management in Thailand over the next three to five years. The finding will look at the differences and similarities of the IS key issues ranking in Thailand by academic and practitioner perspectives. The specific purposes of this study are addressed in the following research questions:

1. What IS management issues are expected to be the most important over the next three to five years in Thailand and thus most deserving of time and resource management?

2. If there are any differences in the importance of IS key issues in Thailand between academics and practitioners, then what are those differences?
3. Does the importance of IS key issues vary between academics and practitioners depending on organizational characteristics (type, size, and development stage) and respondent demographics (position, educational background, and years of experience in IS)?
4. How do the IS key issues in Thailand compare with those previously reported in developing countries?
5. How do the IS key issues in Thailand compare with those previously reported in developed countries?

Definitions

The following definitions clarify the use of key terms and provide a fundamental agreement about their meaning in relation to their particular use in this study.

IS Academics

IS academics refer to faculties who teach IS in colleges, universities, and other schools. The administrative staffs in academia such as the President, Vice President, and Dean or IS department head, who are involved in IS resource planning and curriculum development are also considered in this group.

IS Practitioners

IS practitioners refer to IS executives and IS pro-

fessionals in a variety of businesses, such as Chief Executive Officer (CEO), Chief Information Officer (CIO), Vice President of Information Technology, IS Director, and IS Manager who are responsible for IS management and planning.

IS Key Issues

IS key issues refer to the issues that are considered critical success factors of the information systems management in the organization. This study uses 28 IS issues, which are derived from the median ranking order by importance from the ten most recent studies found in developing countries.

Organizational Characteristics

In this study, organizational characteristics refer to type, size and growth stages. Organization type includes public, private, state enterprise, and other. Organization size is determined by the number of people who work in the IS department. Organization growth stage includes initial stage, expansion stage, control stage, and maturity stage.

Respondent Demographics

The respondent demographics include position, educational background, and years of experiences in IS. Academic IS positions include the President, Vice President, Dean, IS Department Head, and IS Faculties. Practitioner IS positions include Chief Executive Officer (CEO), Chief Information Officer (CIO), IS Director, and IS Manager.

RESEARCH DESIGN

This study employed a survey that was designed to examine the ranking of IS key issues in Thailand. Twenty-eight IS key issues, which were derived from the previous studies, were used in the survey. Although many studies on IS key issues used Delphi method,

this study followed Morgado, Reinhard & Watson (1999) and Gottschalk et al. (2000), the most recent study, by using the Q-sort method. This study used an Internet survey web site as an instrument to collect data.

RESEARCH FINDING

One hundred and sixty subjects participated in this survey out of 250, representing a 64% response rate. There were 99 responses from IS practitioners and 62 responses from IS academics. Mann Whitney Test, Kendall's tau-b, and MANOVA test were used to analyze data in this study. The statistical analysis indicated the following findings:

1. The ranking of top ten IS key issues over the next three to five years in Thailand are presented in Table 3. The issue of building IT infrastructure was projected to be the most important issue, followed by the issues of IS strategic planning and IS human resources.
2. IS academics and practitioners in Thailand had a good agreement over the top issues, which were building IT infrastructure and IS strategic planning (see Table 4). However, The Wilks' lambda test, $F(14, 146) = 1.918, p = 0.029$ showed that there was a significant difference in ranking of IS key issues in Thailand between IS academics and practitioners.
3. The results of this study showed that the organization size, development stage, and the combination of organization type and development stage had a statistically significant impact on the importance rankings of IS key issues in Thailand. In terms of respondent demographics, only the combination of respondent educational background and years of experience in IS had a statistically significant impact on the importance rankings of IS key issues in Thailand.
4. Comparison ranking of IS key issues between Thailand, developed and developing countries are provided in Table 5. In comparison between Thailand and the developing countries, Kendall's tau-b ($\tau_b = 0.043$) showed that there was a significant difference between the im-

portance ranking of IS issues in Thailand and the developing countries.

5. In comparison between Thailand and the developed countries, Kendall's tau-b ($\tau_b = 0.337$) showed that Thailand was similar to the developed countries on the importance ranking of IS key issues.

CONCLUSIONS

The Q-sort methodology used in this study had the advantage of considering all the issues simultaneously, similar to a real world situation. Although it was reported in the previous study that the Q-sort method got a low response rate of 7.5% (Gottschalk et al., 2000), this study improved the response rate by using an online Internet survey.

The Internet survey was designed as a Java applet in order to take advantage of a customized user interface that provided good interactivity for the Q-sort ranking selections. The Java applet Internet survey was a successful tool for this research because the applet made the survey fast and convenient for the respondent to complete. As a result, the response rate was improved to 64% in this study.

As discussed earlier, the ranking of IS key issues in developing countries lagged behind developed countries. The difference appears to decrease between developing and developed countries on the ranking of IS issues as the IS development stages in developing countries caught up with developed countries. This study showed that the importance ranking of IS key issues in Thailand was similar to the studies from developed countries but different than the studies from developing countries. This result may be due to the fact that the comparisons were done between studies performed during different time frames.

The findings show that building IT infrastructure was projected to be the top issue over the next three to five years in Thailand. The top ten issues indicate

that Thai executives still paid higher attention to mid-range tactical issues than to long-range planning; however, they were aware of the importance of IS planning as well as human resources. The issue of human resources still ranked high similar to previous studies in Thailand and the other developing countries, which reflected the future needs for appropriate skills in IS personnel.

The findings also support the hypothesis that there is a difference in the importance rankings of IS key issues between IS academics and practitioners in Thailand. This finding is similar to studies that were conducted in the USA (Ball & Harris, 1982; Farhoomand, 1987; Trauth et al., 1993). However, IS academics and practitioners in Thailand were in agreement over the first and second ranked IS issues: building IT infrastructure and IS strategic planning.

The strengths of this research are as follows: (a) The Q-sort ranking method, with simultaneous consideration of all the issues, provided the ultimate decision similar to a real world situation, (b) Internet online survey provided the convenience to access and complete the survey, and (c) All the IS issues used in this study are derived from previous recent studies, which are based on the ISM/MISC issues. The issues were also validated from IS academics and practitioners in Thailand. Therefore, it has consistent meaning with the prior studies. However, similar to other research, this research carries some limitations: (a) As described by Mata (1993) that "...all the studies on IS management issues have relied on judgment or convenience samples...", this study also used a non-probabilistic sample, which is similar to the previous studies reviewed, and (b) There is only a small number of responses from top-level IS executives (7.4%) and most of the responses are from IS managers and IS professors (72.5%).

IMPLICATIONS OF THE RESEARCH

This study increases the knowledge of the IS issues that are expected to be important over the next three to five years in Thailand. It also provides a comparison study between academics and practitioners in Thailand. As the expectation gap between academics preparation and practitioner needs has been criticized, the results of this research are expected to help narrow the gap. The educational authorities can use information from this study as follows.

First, this study reveals the high rank of the IS human resources issue, which reflects a further need for knowledgeable IS professionals. IS academics should plan to support this need in both short-term and long-term strategy by updating and developing degree seeking IS curricula and by offering non-degree seeking training courses in areas that change rapidly. Second, technical issues, such as the issues of building IT infrastructure, quality of software development process, and electronic data interchange, are revealed to be of higher priority than managerial issues. Therefore, academics should be aware of the strong technical skills needed in the near future. Third, planning for resources allocation of hardware, software, and people is necessary. Effective budget management to support both short-term and long-term policies is also important.

Practitioners in Thailand, which includes business IS professionals, consultants, and researchers, can use the information from this study for future IS management planning, organizing conference or seminars to discuss the issues, studying future trends, and contributing knowledge to the public.

Table 1

Median Ranks of Key Issues in Information Systems Management in Developed Countries

Rank	Key issues	UK '93	HK '93	USA '96	AU '96	CA '96	NO '00	Median rank Developed countries
1	Educating/training IS personnel	-	1	-	-	-	-	1*
2	Building IT infrastructure	-	2	1	1	1	5	1*
3	Disaster recovery	-	-	-	3	-	-	3
4	IS architecture	4	-	4	11	7	4	4
5	Telecommunication system & network	-	9	5	2	3	21	5
6	Data resource	2	5	7	4	15	10	6
7	Ensuring quality with IS	-	4	-	17	2	8	6
8	Quality software development	5	10	6	21	4	7	6.5
9	IS organizational alignment	-	3	9	10	5	-	7
10	Eucating/training senior management	8	-	-	7	-	-	7.5
11	IS human resource	-	1	8	20	12	6	8
12	IS for competitive advantage	7	8	17	8	8	2	8
13	Business process redesign	3	-	2	18	9	15	9
14	Strategic planning	1	-	10	9	11	1	9
15	Distributed system	-	-	3	22	10	-	10
16	IS effective measurement	9	-	11	13	13	11	11
17	Security & control	6	-	-	12	-	14	12
18	Organizational learning	10	-	14	5	14	-	12
19	IS role & contribution	11	-	13	14	18	-	13.5
20	Intergrating technology	-	10	-	18	-	-	14
21	ESS/DSS	12	-	-	16	-	16	16
22	End-user computing	-	6	16	6	16	23	16
23	Collaborative Support Systems	-	-	11	25	22	9	16.5
24	Application portfolio	-	7	15	27	20	-	17.5
25	Multi-Vendor Open Systems	-	-	18	29	17	-	18
26	Educating/traning users	-	-	-	-	19	-	19
27	EDI	-	-	19	24	24	3	21.5
28	Outsourcing	-	-	20	30	-	-	25**

Sources:

UK	- United Kingdom	Galliers, Merali & Spearing (1994)
HK	- Hong Kong	Burn, Saxena, Ma, Cheung (1992)
PO	- Poland	Wrycza & Plata-Przeclewski (1994)
USA	- United States	Brancheu et al. (1996)
AU	- Australia	Pervan (1996)
CA	- Canada	Pollard & Hayne (1996)
NO	- Norway	Gottschalk, Watson & Christensen (2000)

Note: * Rank 1 represent high priority issue for future development efforts among developed countries.

** Rank 25 represents issue of low priority relate to developed countries.

Table 2

Median Ranks of Key Issues in Information Systems Management in Developing Countries

Rank	Key issues	IN '92	GCC '92	PO '94	KO '95	SO '96	CR '97	GU '97	BR '99	TW '99	ID '01	Median rank Developed countries
1	Educating/training senior management	4	3	-	-	4	-	-	-	2	-	3.5*
2	IS for competitive advantage	-	4	15	4	-	1	1	3	4	9	4
3	Educating/training IS personal	6	3	-	-	2	5	4	10	-	-	4.5
4	Data resource	3	14	1	9	-	6	6	12	6	2	6
5	IS architecture	-	-	3	5	7	12	8	4	20	5	6
6	Security & control	9	2	6	-	-	7	1	11	-	-	6.5
7	Strategic planning	18	1	13	6	3	2	9	2	12	8	7
8	Educating/training users	-	3	-	-	6	8	14	18	1	-	7
9	Disaster recovery	-	-	12	-	-	3	1	14	-	-	7.5
10	Organizational learning	-	3	8	13	5	9	-	7	19	16	8.5
11	ESS/DSS	-	19	2	-	9	10	21	5	-	-	9.5
12	Telecommunication system & network	20	11	4	3	8	21	18	8	11	4	9.5
13	Building IT infrastructure	-	-	14	1	-	16	10	1	8	19	10
14	Quality software development	-	9	5	12	13	3	4	21	10	17	10
15	Standard and Control Mechanisms for IS activities	8	-	-	-	10	17	11	-	-	-	10.5
16	Business process redesign	-	-	-	2	-	-	-	16	18	6	11
17	IS human resource	2	13	7	11	-	14	12	9	14	1	11
18	Integrating technology	-	12	10	18	12	19	25	6	9	-	12
19	EDI	-	-	9	10	11	-	-	13	24	13	12
20	IS role & contribution	1	6	11	14	1	18	24	23	15	10	12.5
21	End-user computing	-	8	20	8	-	10	15	24	22	12	13.5
22	IS organizational alignment	13	5	17	16	22	15	27	22	5	18	16.5
23	Application portfolio	16	10	18	20	23	23	17	19	13	14	17.5
24	Collaborative Support Systems	-	-	-	18	-	-	-	-	23	11	18
25	IS effective measurement	15	7	22	19	19	19	20	-	17	3	19
26	Distributed system	-	-	23	7	-	-	29	17	21	15	21
27	Outsourcing	-	-	-	15	-	-	32	25	27	20	26
28	Multi-Vendor open system	-	-	-	17	-	-	30	-	26	7	26

Sources:

IN	- India	Palvia & Palvia (1992)	GCC	- Gulf Cooperation Council	Bradi (1992)
KO	- South Korea	Kim, H. & Kim, J (1995)	SO	- Slovenia	Dekleva & Zupancic (1996)
CR	- Costa Rica	Mata & Fuerst (1997)	GT	- Guatemala	Mata & Fuerst (1997)
BR	- Brazil	Morgado et al., (1999)	TW	- Taiwan	Chou & Jou (1999)
ID	- Indonesia	Samik-Ibrahim (2001)			

Note: * Rank 3.5 represent high priority issue for future development efforts among developing countries.

Table 3
Top Ten Key Issues in Information Systems Management: Thailand Study

M/T	P/C	I/E	Rank	Issue Name	Mean	Standard Deviation
T	C	I	1	Building IT infrastructure	1.47	1.85
M	P	E	2	IS strategic planning	1.09	1.75
M	C	I	3	IS human resource	.93	1.94
T	C	I	4	Quality of software development process	.66	1.82
T	C	E	5	Electronic data interchange	.53	1.89
M	C	E	6	IS Organizational Alignment	.44	1.60
M	C	E	7	Data resources	.39	1.80
T	C	I	8	IS disaster recovery	.31	1.78
T	C	E	9	Telecommunication and network systems	.27	1.82
T	P	I	10	IS architecture	.26	2.00

Note M/T indicates management (M) or technology (T)
 P/C indicates planning (P) or control (C)
 I/E indicates internal (I) or external (E) to IS organization

Table 4
Top Ten Key Issues in Information Systems Management: Ranked by Academics and Practitioners in Thailand

Key issues	Academics Ranks	Mean	Practitioners Ranks	Mean
Building IT infrastructure	1	.97	1	1.78
IS strategic planning	2	.79	2	1.27
Electronic data interchange (EDI)	3	.74	6	.40
Quality of software development process	4	.73	5	.62
IS human resource	5	.71	3	1.06
IS disaster recovery	6	.66	12	.09
Telecommunication and network systems	7	.48	11	.13
Business process redesign	8	.43	14	.03
Data resource	9	.42	7	.37
Outsourcing	10	.23	17	.19

Table 5
Comparison of Top Ten IS Key Issues Ranks Between Thailand and Developed and Developing Countries

Thailand	Developed Countries	Developing Countries	Key Issue
1	1	13	Building IT infrastructure
2	13	7	IS strategic planning
3	11	16	IS human resource
4	8	13	Quality of software development process
5	27	18	Electronic data interchange
6	9	22	IS Organizational Alignment
7	6	4	Data resources
8	N/A	9	IS disaster recovery
9	5	11	Telecommunication and network systems
10	4	4	IS architecture

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