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A MODEL OF STRATEGIC INFORMATION SYSTEM PLANNING (SISP) APPROACH DETERMINATION

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UPM

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The importance of corporate planning in guiding a strategic information system process has been commonly advocated in both prescriptive and empirical research. Strategic Information System Planning (SISP) are increasingly modeled after corporate plans, as more and more companies seek to leverage Information Technology (IT) to compete more effectively in the globalized world. Despite the heightened interest and activity associated with the topic, there is a range of opinion regarding what should constitute in an SISP approach. Therefore this study attempts to propose a model to determine the SISP approach determination and it's relation to the internal factors of an organization, using Information Systems as a strategic planning to gain the competitive advantage. The model of the SISP approach determination in this study is tested in three different types of Malaysian organizations; education, service and telecommunication namely Universiti Putra Malaysia, Tenaga National Berhard and Telekom Malaysia

respectively. These companies were selected because of their important role in the Malaysian economy. The data were collected from the IT manager/head of division related to IT used from each organization through interviews and questionnaires. The result of the study shows that the SISP practices in the organization selected differ and the comprehensiveness of the SISP practices depends on company's experience in managing IT as its resources. Another significant finding indicates that the most common approach that is currently applied in these selected companies is organizational approach. In general, this study shows that the model of the SISP approach determination can be used in this case study.

Abstrak tesis yang dikemukan kepada Senat Universiti Putra Malaysia sebagai memenuhi keperluan untuk ijazah Master Sains.

SATU MODEL SISTEM INFORMASI YANG STRATEGIK UNTUK MENENTUKAN KAEDAH PERANCANGAN

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Kepentingan perancangan korporat dalam membentuk satu sistem informasi yang strategik sering diperbincangkan dalam kajian preskriptif dan emperikal. Malah, pendekatan sistem informasi yang strategik (SISP) sering dibentuk sebagai hasil daripada perancangan korporat, selari dengan peredaran globalisasi yang menekankan penggunaan teknologi maklumat. Namun demikian, terdapat berbagai pandangan tentang apa yang seharusnya ada dalam sesuatu rancangan sistem informasi yang strategik. Justru itu, kajian ini mencadangkan satu model pendekatan SISP untuk menentukan kaedah perancangan dengan mengambil kira faktor-faktor dalaman sesebuah organisasi. Model ini dilaksanakan di 3 buah institusi berbentuk pendidikan, perkidmatan dan komunikasi di Malaysia iaitu Universiti Putra Malaysia, Tenaga National Berhard dan Telekom Malaysia Berhard. Organisasi-organisasi ini dipilih berdasarkan peranan mereka dalam ekonomi Malaysia. Data diperolehi daripada pengurus IT/ketua unit IT

di setiap organisasi. Instrumen kajian adalah temuduga dan soal selidik. Hasil kajian menunjukkan bahawa amalan SISP di setiap organisasi tersebut berbeza mengikut pengalaman organisasi berkenan dalam pengendalian IT serta sumber-sumber lain. Namun, kajian mendapati kaedah organisasi sebagai pendekatan yang kerap digunakan. Secara amnya, kajian mendapati model pendekatan yang digunakan dalam kajian ini boleh digunakan.

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LIST OF ABBREVIATIONS

BSP	Business System Planning
CASE	Computer Aided Software Engineering
CASS	Automated Customer Service System
CEO	Chief Executive Officer
CIBS	Customer Information Billing System
CSF	Critical Success Factors
DP	Data Processing
FCS&IT	Faculty of Computer Science & Information Technology
HRIS	Human Resource Information System
IBM	International Business Machine
ICSO	Independent Create system Operator
IPP	Independence Power Preparation
IS	Information System
ISO	International Organization for Standardization
ISP	Internet Service provider
IT	Information Technology
ITD	Information Technology Division
MIS	Management Information System
MMIS	Material Management Information System
MSC	Multimedia Super Corridor
OS	Operating System
PC	Personal Computer
PNC	Planning and Consultancy
SCADA	Supervisory Control and Data Acquisition
SIS	Strategic Information System
SISP	Strategic Information System Planning
SIVA	Strategic Information Value Analyses
SKT	Satuan Kerja Tahunan
SMP	Student Information System
SP	Strategic Planning
SP&CD	Strategic Planning & Corporate Development
TM	Telekom Malaysia
TNB	Tenaga National Berhard
UPM	University Putra Malaysia
VCA	Value Chain Analyses
WAP	Wireless Application Protocol

CHAPTER I

INTRODUCTION

Background

In the early 1980 Strategic Information Systems Planning (SISP) emerged (Radford, 1978) (Ward et al., 1990). SISP improved the competitiveness by changing the nature or conduct of business (Ward et al., 1990) and became an increasingly important topic among the Information Systems issues (Ward et al., 1990). Many companies are now seeking new ways to exert IT leverage to streamline internal operation, lower cost and differentiate products/services to compete more effectively in the global environment (Porter, 1987). This increases the vital role of SISP because firms can be at a serious strategic disadvantage if they are unable to control their operations firmly and manage them in two coordinated manners; at home or globally (Pavri and Ang, 1995).

SISP is a long term planning, focusing on the future actions to achieve the competitive advantage. SISP has become a critical issue and has an important impact on the organizational survival. As a part of corporate planning process, SISP must therefore develop within the context

of the wider corporate and business strategic planning process (Ward et al., 1990). It has become a key activity in pursuit of delivering increased value to the business; both in term of exploiting opportunities and in countering threats (Ward et al., 1990). As a consequence perhaps, SISP has been argued to be the single most important information management issue for the 1990s (Earl, 1983) (Dickson, Leitheiser, Wetherbe and Nechis, 1984) (Brancheau and Wetherbe, 1987) (Galliers, 1987).

A number of different types of approaches have been advocated and the process is defined as being crucially concerned with the linkage of the corporate planning process and Information Systems Management issues. The processes of planning and the implementation of plans are equally important (Earl, 1993). SISP has become a critical issue because it is often unsuccessful in implementation. Indeed, implementation has been proposed as a measure of success in SISP (Lederer and Sethi, 1988). In implementation, the appropriate SISP approaches have to adapt to suit the environment.

Despite the importance of SISP, the percentage of companies practicing SISP is still relatively low (Teo et al., 1997). Very few studies have examined SISP practices in Asian countries. This reason encourages the writer to make a SISP study on the organizations in Malaysia.

Despite the heightened interest and activity associated with the topic in the recent years, there is a range of opinion regarding what constitute an appropriate approach (Galliers, 1987). Therefore, based on the previous studies by Earl (1993) on the SISP approaches in the UK organizations, this research is an attempt to propose a model of the SISP approach determination which examines the internal factors that influence an organization.

This study referred to Earl's idea on the approaches that have been studied in the UK. The objective is to propose a model of SISP approach determination by focusing on the internal factors of the observed organizations in Malaysia. Three different types of organization; education, services and telecommunication are being used in this study to determine the appropriateness of the model to the Malaysian organizations.

The Role of SISP

An Information System (IS) function has been transformed from a traditional role of a cost centered to a profit centered providing revenues to the company and in some cases becoming the primary factor for the business success of the company (Premkumar and King, 1991). In the early stage of the IS development in 1960s, the IS has delivered the efficiency in data processing in order to replace the clerical systems. Furthermore, in 1970s information has been used for achieving the effectiveness in management decision and SISP was used to improve communication with

users, to increase top management support, to have a better forecast resources requirement, to allocate resources, to find opportunities for improving the IS development and to identify new and higher payback computer applications (McLean and Soden, 1977). In 1980 the Strategic Information Systems emerged and improved the competitiveness by changing the nature or conduct of business (Ward et al, 1990), giving the competitive edge (Vacca, 1984) and developing an organization-wide information architecture (Moskowitz, 1986). SISP has become increasingly important as information systems have begun to play a more critical role in implementing business strategies (Lederer and Sethi, 1992). SISP is believed not only to be considered in improving efficiency but also the identification of application that could improve company effectiveness and competitiveness (Sinclair, 1986). Now it is widely accepted that information systems can be regarded as a strategic resource in an organization (Parsons, 1983) (Benjamin Rockart, Scott Morton and Wyman, 1984) (Mc Farlan, 1984) (Porter and Miller, 1985) (Earl, 1987) (Benjamin and Scott Morton, 1988) (Johnston and Carrico, 1988). We can generalize the role of SISP as follows:

- to gain competitive advantage
- to improve productivity and performance
- to enable new ways of managing and organizing
- to develop new business
- to improve their operation
- to reduce cost
- to supply services on time

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- to assist operational and management supports

From the study on Teo and Pavri in Singapore companies (Teo et al., 1977), they found three benefits derived from strategic IS planning process. There are mainly internal to the firm: improved productivity, improved internal coordination, and efficient and effective management of IS resources.

SISP Practices

The study on SISP practices in the USA on IS executives has started since 1974. In consequence of this study, in 1977 Mc Lean and Soden (1977) conducted a study on various facets of SISP practices on 20 top USA companies. The companies were larger than the average Fortune 500 companies in the USA. The survey carried out by Earl (1990) investigated 27 different U.K companies. All were large companies that were among the leaders in the banking, insurance, transport, retailing, electronics, IT, automobile, aerospace, oil, chemical, services and food and drink industry. Earl reports a figure of 84 percent of companies claim to be formulating IS plans in a long-term capacity. While Galliers (1991) informs that more than 75 percent of British companies undertake some sort of SISP activity. Later, in 1992 Conrath (Conrath et al., 1992) conducted an SISP practice survey on 138 Canadian companies. Premkumar and King (1991) surveyed on 245 USA firms on IS planning practices would consist of the 1000 largest manufacturing and service companies in the USA. While Lederer and Sethi (1992) found 32 percent of the companies in USA undertook SISP practices.

In 1992 Pavri and Ang (1995) study on 70 companies in Singapore, showed that 48 percent carried out SISP practices. Teo (Teo et al., 1997) extended the study by Pavri and Angs' to 92 Singapore companies and found that 63 percent of the companies practiced SISP. They were very large companies by Singapore's standard. In 1998 Doherty (Doherty et al., 1999) conducted an empirical study on Earl's approaches in UK's major organizations. From 2000 questionnaires distributed, the result of the study indicated that 267 responses (91percent) out of 292 responses were undertaking some of IS planning.

Statement of the Research Problem

SISP has become an important issue in the organization and the success in implementing SISP will lead the organization in gaining the corporate objectives and compete well in globalized world. The internal environment as a major factor of the organization needs to be managed firmly in order to face the increasing competition and the developing business opportunities. Therefore Information System Planning needs to have a strategy because now is the time for the organization to improve their competitiveness to achieve the competitive advantages. To gain the competitive position, the organization needs to have the integrated actions that we call Strategic Information System Planning (SISP).

Studies conducted in some countries show that most of the SISP studies have been done in European countries and very little study is

undertaken in Asian countries. Especially in what constitute the SISP approach, therefore this a need to study the SISP approaches determination in this nation; particularly since Malaysia is going to realize its vision towards an Information based nation.

In the Seventh Malaysia Plan (7MP) which was launched by Datuk Seri Mahatir Mohammad on May 6th 1996, several new strategies have been determined. One of the new strategies is to promote Information Technology (IT) (The STAR, May 7th 1996). IT has been recognized as an enabling tool to support the nation's economy. During the Sixth Malaysia Plan (6MP), investments were directed towards laying the basic IT infrastructure. Now, 7 MP will focus on the intensification and upgrading of telecommunication and skills. RM 2.3 billion will be allocated to ministers and agencies to invest in IT related programs and projects. (The STAR, May 7th 1996). The developing technologies have brought Malaysia to be an important nation in business and technology. Malaysia should prepare a good SISP in order to compete and to gain the competitive advantages in the globalized world. The success of implementing SISP depends on good team work and support from higher management and IS management.

Since very few studies on SISP approach in Malaysia have been conducted, there is a need to carry out a study on the SISP approaches determination in Malaysia's organizations. As the focus of the study is to determine a model of SISP approaches determination and to verify the

model of SISP determination in three different types of Malaysia organizations: education, service and telecommunication.

Objectives of the Study

In general, this study is aimed at the use of SISP in Malaysia's organizations particularly in the education, service and telecommunication sectors. Model of an appropriate SISP approach determination is proposed based on the approach used in a study conducted by Earl (1993). More specific objectives of this study:

1. to propose a model of the appropriate SISP approach determination for an organization
2. to test the model and to prove the usefulness of the proposed model

Description of the Study

The organizations observed in this study are Universiti Putra Malaysia, Tenaga National Berhard and Telekom Malaysia Berhad. Each representing the education, service and communication sectors respectively. These organizations are chosen based on their vital contribution to the nation's economic growth and also representing different sectors. UPM is known as a university with the largest number of students in Malaysia. Besides that UPM is one of the largest centers for research and development among the 32 research institutions in the country. This explain why UPM has been

awarded 20 percent of the nation's allocation for IRPA grant (Tribun Putra, 4 August, 1998). Besides that UPM which is strategically located in the Multimedia Super Corridor (MSC) aims at producing human resources that are IT skilled. Meanwhile, Tenaga National Berhard (TNB) is a company that has served the whole nation in providing electricity to the whole Peninsular of Malaysia since 1941(TNB interview 1, 1999). TNB plays an important role in the implementation Information Technology (IT) to the whole nation. While the communication sector, Telekom Malaysia Berhard plays a role in making technological-based communication possible. Taking these in mind, this study therefore focussed on these organizations.

The data that have been used in this study were collected from interviews with IT managers/heads of IT division from each organization. Venkatraman (1989) suggested that the individuals are reliable sources in providing information on group or organizational attitudes and behaviour within the system. The interviews were structured, based on guideline questions (Premkumar & King, 1991) (Pavri & Ang (1995).

In discussing SISP issues, organization must manage firmly their operation in order to gain the competitive. These can be done by controlling the internal factors focussed in this study. The factors are the type of organization, business activities, products and services of the organization.

The result of this study will be useful to assist organization planners in determining their SISP approaches based on the internal information