



**UNIVERSITI PUTRA MALAYSIA**

**ASSESSMENT SOFTWARE  
FOR STRATEGIC INFORMATION SYSTEM PLANNING**

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**ASSESSMENT SOFTWARE  
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**ASSESSMENT SOFTWARE  
FOR STRATEGIC INFORMATION SYSTEM PLANNING**

**By**

**NUR ATIQAHA SIA ABDULLAH @ SIA SZE YIENG**

**Thesis Submitted to the School of Graduate Studies, Universiti Putra Malaysia,  
in Fulfillment of the Requirement for the Degree of Master of Science**

**March 2003**



## DEDICATION

*I want to dedicate this thesis to my dearest family in Sarawak, especially my mum, Ms Chiong Siew Ding and my papa, Mr. Joseph Sia Ming Moi for their care and love throughout my studies.*



Abstract of thesis presented to the Senate of Universiti Putra Malaysia in fulfillment  
of the requirement for the degree of Master of Science

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**NUR ATIQA H SIA ABDULLAH @ SIA SZE YIENG**

**March 2003**

**Chairman: Associate Professor Hj Mohd Hasan Selamat**

**Faculty: Computer Science and Information Technology**

Strategic planning plays an important role in helping the organization to achieve success. Efficiency and effectiveness of strategic planning can be improved by using information technology that speed up the process. Although quite a number of softwares exist in strategic planning, none of them is comprehensive enough especially in the area of assessment in strategic planning. Assessment is an initial part to recognize the current position of an organization and situational analysis is used to generate conclusions. These conclusions are needed in planning the business objectives. Therefore, this research developed a simulation model and assessment software system that represents the actual working procedures and assessment process of strategic planning. Two analytical methods, Strength, Weakness, Opportunity and Threat (SWOT) Matrix and Strategic Position and Action Evaluation (SPACE) Matrix, are used in the model and system. Both matrixes enable users to make selection of attributes and place weight/rating based on their organization current situations. Calculations and matching suggest the most appropriate strategy that an organization should implement to gain success in strategic planning. This research tests the model and system, collects the relevant



data, analyze it and produce results that conclude what managers do in making analysis and conclusions in assessment. Usability testing is carried out to test the usability of the system from the aspect of usefulness, effectiveness, learnability and likability.



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

**PERISIAN PENCAPAIAN  
UNTUK PERANCANGAN STRATEGIK SISTEM MAKLUMAT**

Oleh

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Perancangan strategik memainkan peranan yang penting dalam membantu organisasi untuk memperoleh kejayaan. Efisien dan keberkesanan dalam perancangan strategik boleh diperbaiki dengan menggunakan teknologi maklumat yang boleh mempercepatkan proses tersebut. Walaupun terdapat sebilangan perisian yang digunakan di dalam perancangan strategik, namun tiada yang komprehensif terutamanya dari segi proses penilaian dalam perancangan strategik. Penilaian adalah bahagian permulaan untuk mengenalpasti posisi semasa sesuatu organisasi dan teknik analisis situasi digunakan untuk menghasilkan keputusan. Keputusan ini diperlukan dalam perancangan objektif perniagaan. Justeru, penyelidikan ini dilakukan bagi membangunkan satu model simulasi dan sistem perisian penilaian yang mewakili prosedur kerja sebenar dan proses penilaian dalam perancangan strategik. Dua keadah analisis, iaitu Kekuatan, Kelemahan, Peluang dan Ancaman (SWOT) Matriks dan Posisi Strategik dan Penilaian Tindakan (SPACE) Matriks, digunakan dalam model dan system ini. Kedua-dua matriks ini membolehkan pengguna membuat pilihan ciri-ciri dan meletakkan pemberat/nilai berdasarkan situasi semasa organisasi tersebut. Pengiraan dan penggabungan ciri-ciri yang

dipilih mencadangkan satu strategi yang paling mungkin untuk organisasi tersebut agar dapat mencapai kejayaan dalam perancangan strategik. Kajian ini menguji model dan sistem, mengumpul data yang relevan, menganalisis dan seterusnya menghasilkan kesimpulan tentang apa yang pengurus perlu lakukan dalam membuat analisis dan keputusan dalam penilaian. Ujian penggunaan dilakukan untuk menguji kegunaan sistem dari aspek gunapakai, keberkesanan, pembelajaran, dan penerimaan.



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I certify that an Examination Committee met on 26<sup>th</sup> March 2003 to conduct the final examination of Nur Atiqah Sia binti Abdullah@Sia Sze Yieng on her Master of Science thesis entitled “Assessment Software for Strategic Information System Planning” in accordance with Universiti Pertanian Malaysia (Higher Degree) Act 1980 and Universiti Pertanian Malaysia (Higher Degree) Regulations 1981. The Committee recommends that the candidate be awarded the relevant degree. Members of the Examination Committee are as follows:

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## DECLARATION

I hereby declare that the thesis is based on my original work except for quotations and citations, which have been duly acknowledged. I also declare that it has not been previously or concurrently submitted for any other degree at Universiti Putra Malaysia or other institutions.



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Date: 9 JUN 2003

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## LIST OF ABBREVIATIONS

<b>Abbreviation</b>	<b>Term</b>
ANOVA	One Way Analysis of Variance
AssesSoft	Assessment Software System
CA	Competitive Advantage
CBIS	Computer-base Information System
CEO	Chief Executive Officer
CSFs	Critical Success Factors
DFDs	Data Flow Diagrams
DP	Data Processing
DSS	Decision Support System
ERD	Entity Relationship Diagram
ES	Environment Stability
FS	Financial Strength
GUI	Graphic User Interface
HR	Human Resource
IS	Industry Strength
IT	Information Technology
MIS	Management Information System
OA	Office Automation
R&D	Research & Development
SIS	Strategic Information System
SISP	Strategic Information System Planning
SO	Strength-Opportunity



<b>SPACE</b>	<b>Strategic Position and Action Evaluation</b>
<b>SPSS/PC X</b>	<b>Statistical Package for Social Science</b>
<b>ST</b>	<b>Strength-Threat</b>
<b>SWOT</b>	<b>Strength, Weakness, Opportunity and Threat</b>
<b>vs.</b>	<b>Versus</b>
<b>WO</b>	<b>Weakness-Opportunity</b>
<b>WT</b>	<b>Weakness-Threat</b>



## CHAPTER 1

### INTRODUCTION

Strategic information system planning (SISP) is an exercise or ongoing activity that enables organizations to develop priorities for information system development. Applications are chosen for their alignment with business objectives or their capacity to create significant impact on the organization's competitive positioning. Improving SISP practices has rapidly become one of the most critical issues facing information system executives today (Lederer and Sethi, 1988; Nierderman et al., 1991; Clark, 1992; Lederer and Sethi, 1992; Galliers, 1993; Galliers, Merali and Spearing, 1994; Segars and Grover, 1998; Doherty, Marples and Suhaimi, 1999).

Information system plays an important role in most of the organizations. It contributes especially in the area of keeping data, analysis information and provides accurate result in shorter time. Therefore, many organizations began to use information system in ways, which changed the way their business was conducted and changed the balance of power in their industry with respect to competitors, customers or suppliers (Ward, Griffiths and Whitmore, 1990). The use of information system was directly influencing their competitive position and had become a strategic weapon. It became the second issue that had been identified by business information technology (IT) executives (Stellin, 2001). Improvement in efficiency through data processing and increasing management effectiveness through Management Information System (MIS) have translated into improved business performance – competitiveness – but the relationship between information



system success and strategic development was normally indirectly (Boar, 1993; Boar, 1994; Diwan, 1999).

In other word, the information systems play an important role in order to do management planning more effectively. Whilst most organizations want to develop a more effective approach to do strategic planning in the future, they have probably achieved their current situation through various short-term tactics. Many organizations would no doubt like to rethink strategy without having to cope with the results of a less than strategic approach to information system in the past (Ward, Griffiths and Whitmore, 1990; Callon, 1996; Reich and Benbasat, 1996; Blodgett, 1998). Therefore, there is a need to create an information system that provides strategic planning especially in the area of assessment for internal and external environment factors.

### **1.1 Problem Statement**

SISP offers the most complete and practical strategic planning and makes implementation system available. Most of the strategic planning theories are noted in books and practiced by the top management through everyday experience. The strategic planning has three main areas, which are assessment, strategic coding and execution (Ward, Griffiths and Whitmore, 1990; Boar, 1993; Boar, 1994). Sometimes, when an organization has problems in certain business area such as market share, customer's satisfaction, financial and so on, it will take time for the

top management to discuss about the advantages and disadvantages. Of course, the data from those business areas should be collected at the first place.

Experience and practices make the Chief Executive Officer (CEO) and the managers find the conclusions in strategic planning easily (Steiner, 1997). There are fourteen processes that a CEO should take in strategic planning (Bower, 1986). Therefore, there are too many responsibilities and data in hands. Information systems have to be utilized to acquire competitive advantages for the business (Diwan, 1999).

In this case, a computer-based system and information processing is performed with computer program that carries out the calculation and manipulation to make the transformations. Access is made to different files of data and the data reduced to manageable and relevant form – the information. Without it, managers might have a difficult time applying all of the data to the problem at hand. It would be too cumbersome and time-consuming to shift through each record to assimilate the needed information. So, strategic planning information system can significantly assist managers in data reduction and planning (Doherty, Marples and Suhaimi, 1999).

There is quite a number of software in strategic planning, such as CheckMATE (David, 1998), EssentialSoftware (EssentialSoftware, 1999), and Double It! (Gurusoftware, 2000), but none of them specify in assessment of strategic planning. Besides, the existing software is not comprehensive enough in making analytical analysis and conclusions. It more concentrate on profit and loss factors analysis. Therefore, this research is going to build up a simulation model, which can be used



by the top management in doing their strategic planning by using information system especially in the area of assessment. This model assesses the current critical success factors based on the business environment. Besides, this research evaluates the system usability by determining the relationship between the respondents' background and usability of system, and relationship between the attributes of usability.

## **1.2 Objectives**

The objectives of this research are to:

- i. develop a simulation model, which represents the actual working procedures of managers in making assessment in strategic planning by using information system for their organization,
- ii. develop an assessment software system, which assists managers in assessing the current position of their organization and give alternative solutions, and to
- iii. evaluate the usability of the system in the organization by determining whether the system fulfill the needs of users. It includes testing the relationship between the respondents' background with the usability of system, and relationship between the attributes of usability.