



UNIVERSITI PUTRA MALAYSIA

**DECISION SUPPORT SYSTEM IN MANAGERIAL DECISION
MAKING: A COMPARATIVE STUDY BETWEEN PUBLIC AND
PRIVATE SECTORS IN MALAYSIA**

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MAKING: A COMPARATIVE STUDY BETWEEN PUBLIC AND
PRIVATE SECTORS IN MALAYSIA**

BY

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**Thesis Submitted in Fulfilment of
the Requirements for the Degree of
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APRIL 1997



Specially dedicated to ...

**My husband
(Mr. Ismail Ali)**

&

**My daughter
(Miss Iwani Ardini)**



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**BY
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APRIL 1997

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Nowadays, computers are useful tools for managers whether top manager, middle manager or lower manager in any organisation, and information is a vital asset in every modern organisation. So, computers and information are widely used in any purpose of applications. Decision support system (DSS) is one of the computer-based information systems that provides a flexible tool for analysis and also help managers in semi-structured decision making tasks. This study was done to evaluate the usage of DSS and to make comparison between the public and the private sectors in managerial decision making.

Comparisons were made based on the seven hypotheses of the study in which management in the private sector has more concern in using DSS than management in the public sector. Regarding the above hypotheses, the study



emphasised on the understanding of the usage and current status of DSS in Malaysia, managerial perception, attitudes towards DSS software products, problems and implementation strategies of DSS in the management. Respondents of the study were the middle level managers. Questionnaires were distributed to the selected organisations in Klang Valley.

Based on this study, it could be concluded that there were no significant differences between the public and private sectors in terms of experience, effect of DSS use, attitudes towards DSS software products, satisfaction with DSS, problems with DSS use, and implementation strategies. However, there was a significant difference between the public and private sectors in terms of the frequency of using DSS. The public sector tended to irregularly use DSS in their decision making whereas private sector used DSS systematically.

Many of the respondents have yet to use DSS because of the lack of knowledge about DSS and not enough support from the top management. Top management must make the new technology available for their employees to use with the necessary hardware, software and DSS prototypes. The adoption of DSS would encourage users to experiment with new ways of working to improve decision making and increase productivity. Overall satisfaction can be fostered by applying DSS to less structured tasks which are formed by users with favourable attitude towards DSS.

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**SISTEM SOKONGAN KEPUTUSAN (SSK) DALAM PENGURUSAN
PEMBUATAN KEPUTUSAN: SATU KAJIAN PERBANDINGAN DI
ANTARA SEKTOR AWAM DAN SWASTA DI MALAYSIA**

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Pada hari ini, komputer merupakan satu alat yang penting kepada pihak pengurusan sama ada pengurus atasan, pertengahan atau bawahan dan maklumat merupakan antara aset yang terpenting untuk setiap organisasi yang moden. Oleh itu, komputer dan maklumat digunakan secara meluas di dalam apa jua bidang. Sistem Sokongan Keputusan (SSK) adalah salah satu sistem maklumat berasaskan komputer yang menyediakan peralatan dengan menolong pengguna dalam SSK separa-berstruktur. Oleh itu kajian ini dijalankan bagi menilai penggunaan SSK serta perbandingan dibuat di antara sektor awam dan sektor swasta dalam pelaksanaan pengurusan pembuatan keputusan.

Perbandingan adalah berasaskan kepada tujuh hipotesis dengan andaian penggunaan SSK dalam sektor swasta lebih diberi penekanan berbanding dengan



sektor awam. Sehubungan dengan hipotesis tersebut, kajian ditumpukan untuk memahami penggunaan dan status semasa SSK di Malaysia, persepsi pihak pengurusan terhadap SSK, sikap terhadap perisian SSK, masalah dan strategi pelaksanaan dalam menangani SSK. Responden kajian ini merupakan pengurus pertengahan. Borang soal selidik diedarkan kepada organisasi terpilih di sekitar Lembah Kelang.

Berasaskan dari hasil kajian, dapat disimpulkan bahawa tiada perbezaan yang bererti di antara sektor awam dan sektor swasta dalam aspek pengalaman, kesan penggunaan SSK, kepuasan selepas menggunakan SSK, masalah semasa menggunakan SSK, sikap terhadap penggunaan SSK, dan strategi pelaksanaan. Walau bagaimanapun terdapat perbezaan yang bererti di antara sektor awam dan sektor swasta dalam kekerapan penggunaan SSK. Sektor awam hanya kadang-kala menggunakan SSK manakala penggunaan SSK dalam sektor swasta adalah secara bersistematik.

Ramai dari kalangan responden masih belum menggunakan SSK disebabkan oleh kekurangan maklumat dan pengetahuan tentang SSK serta tidak mendapat sokongan yang sewajarnya dari pihak pengurusan atasan organisasi. Pihak pengurusan atasan mesti memastikan keperluan teknologi terkini dapat digunakan oleh pengguna seperti perkakasan, perisian dan prototaip SSK. Penggunaan SSK akan menggalakkan pengguna untuk mencuba gaya kerja yang baru, memperbaiki pembuatan keputusan dan meningkatkan pengeluaran. Kepuasan

keseluruhan terhadap SSK boleh diperolehi oleh pengguna yang mempunyai pandangan dan sikap yang positif terhadap SSK.

CHAPTER I

OVERVIEW OF THE STUDY

Introduction

Management decisions are very important in determining organisational effectiveness and stability. In order to make effective decision, managers need to have sufficient information. Where do senior executives really get the information they require for decision-making purposes? Organisations are spending more money on computer-based technologies designed to enhance the quality of information provided to executives for decision making. We can see a myriad of computer-based systems promoted specifically to meet executives information needs (Alter, 1980a; Keen, 1978; Marzour, 1980; McCosh and Mortan, 1978; Meadow and Ness, 1974; Mintzberg, 1983; and Neumann and Hadass, 1980). Decision support system (DSS), intelligent terminals, word processing, networking, electronic mail, data-base management systems, dedicated microcomputers and teleconferencing are just a few of the techniques currently suggested to assist executives in the fulfilment of their job requirements.



The development of DSS is a complex process that has been investigated by many researchers (Alter, 1980a; Ariav and Ginzberg, 1985; Bonezek et al., 1981; Brookes, 1984; Carlson, 1979; Gorry and Morton, 1971; Keen, 1976; and Kroeber and Watson, 1986). Most of these DSS researches can be classified into one of three distinct areas. The first group of studies (Aldag and Power, 1986; Cats-Baril and Huber, 1987; Horwitt, 1984; King and Rodriguez, 1978; Little, 1970; and Mackay et al., 1992) has primarily focused on whether DSS has actually improved decision quality and/or decision performance. Sharda et al. (1988) found that most of the studies in this area support the premise that DSS improve decision quality and/or decision effectiveness.

The second area of DSS research (Cats-Baril and Huber, 1987; Santos and Bariff, 1988; Jarvenpa, 1989; Olson and Nilsen, 1988; and Remus and Kotterman, 1987) has been directed towards identifying specific design, specific characteristic and the impact on DSS. Topics that had been investigated include the influence of different user interfaces, such as, presentation formats, the use of colour, and the impact of different graphic capabilities. Analysis has generally provided mixed results as to the impact these factors make on DSS and decision making effectiveness.

The third group of studies (Benbasat and Taylor, 1978; Hardiman et al., 1989; Kydd, 1989; Ramaprasad, 1987; Robey, 1988; and Zmud, 1979) has addressed the role of decision makers and differences between individuals in

influencing the effectiveness of DSS. Specific characteristics investigated include cognitive biases, novice/expert effects and cognitive process. The studies generally suggested that, these factors are important to generate DSS. Each of these areas has contributed to the general understanding of DSS and the factors that influence how decisions are made.

During the past three decades, innumerable systems have been computerised to improve efficiency in accounting and operational activities. More recently, DSS has flourishing in many organisations. With the advent of the personal computer, computer-based assistance for all functions of the business become widespread in a number of corporations. The movement of information systems hardware and software capabilities from merely facilitating the automation of clerical tasks to providing direct on-line support for decision making and other managerial processes have opened up new ways for top executives to view their information needs. Currently, information technology gives managers opportunity to improve and increase their effectiveness and productivity in managing the organisations (Rockart, 1991).

In an increasingly turbulent business environment, DSS receives growing attention. More than 50 percent of the top management have heard of DSS (Hough and Duffy, 1987). Middle level managers appear to be receptive to DSS since they frequently use it (Higbi and Farah, 1991). Yet with sophisticated and technologically advanced computer-based applications in business, senior

executives still rely more on informal, non-computerised information for their decision making purposes. Evidence suggests that managers identify decision situations and build mental models not with the aggregated, historical abstraction that a formal management information system (MIS) provides but with specific titbits of informal or soft data (Mintzberg, 1983). Much of the intelligent information that senior executives need for relatively unstructured decision making may be excluded in a formal MIS.

DSS has been used in diverse contexts, such as, the understanding of business strategies and their implications (Belardo et al., 1994), and executive information systems (Leidner and Elam, 1994). It has become increasingly popular to many firms (Alavi and Joachimsthaler, 1992) and is gaining popularity in developing countries, for example, Taiwan (Hsieh et al., 1992). Decision making can be a complicated process, but few organisations employ a robust, consistent decision-making method. Managers need to alter their decision-making processes by combining business-driven criteria with financial criteria. Corporations can bolster their decision making by avoiding a number of critical errors and omissions. A standard method of quantifying and comparing factors can result in effective decision making (Comaford and Cristine, 1995), providing workers with better tools to improve their productivity. DSS is such a tool.

Definitions of DSS

Since Gorry and Morton (1971) coined the term “Decision Support System” (DSS) in their seminar article, there has been confusion and controversy over the interpretation of this notion. The semantic issues surrounding DSS often cloud the discussion but the origin of the term is clear. *Decision* emphasises the primary focus on decision making in problematic situations rather than subordinate activities of simple information retrieval, processing or reporting. *Support* clarifies the computer’s role in aiding rather than replacing the decision maker, thus including those decision situations with sufficient ‘structure’ to permit computer support, but in which managerial judgement is still an essential element. *System* highlights the integrated nature of the overall approach, suggesting the wider context of user, machine and decision environment.

There are several definitions and interpretations of the term DSS. The most widely used definition is that DSS is an interactive computer-based system that helps decision makers utilise data and models to solve unstructured problems (Porter and Miller, 1985). Raman and Phoon (1990) define that DSS is any computer based systems that are used to support managers in their decision making in planning, co-ordination, control, organising, forecasting, budgeting, administration and general management.

DSS is to support strategic decision. DSS is a computer-based information system that provides a flexible tool for analysis and helps managers with non-routine decision making task (Williams et al., 1995). When DSS first appeared, it was ascribed on the basis of its capacity to assist managers in complex tasks requiring human judgement (Keen, 1981). However, the characteristics of these systems have continuously evolved; new computing tools such as microcomputers and fourth generation languages have also become more available. Snitkin and King (1986) have argued for a revision of the DSS concept, employing an in-use approach rather than one based on the degree of problem structure.

DSS is a concept that has been developed to assist the managerial work and decision making. Keen and Mortan (1978) suggest that, the purpose of DSS is to assist managers in their decision processes in semi-structured task, to support rather than to replace managerial judgements and to improve the effectiveness of decision making rather than its efficiency. DSS can increase managerial effectiveness by improving personnel efficiency, facilitating interpersonal communication, and increasing organisational control.

Keen (1980) define DSS as a computer-based system that helps decision-makers confront ill-structured problems through direct interactions with data and analysis models. A crucial aspect, especially in the strategic planning environment, is that a DSS is aimed at supporting managers in their decisions, not replacing them. A DSS is an effective combination of many components, for

example hardware, software, data and knowledge base. DSS is created to aid decision makers. DSS is used in solving ill-structured problems faced by managers in various organisation and their use is typically accompanied by an emphasis on support of decision making (Ariav and Ginzberg, 1985; and Keen, 1980).

Computerisation in Malaysia

Computers were introduced in Malaysia in 1965 when the National Electricity Board (NEB) bought an IBM mainframe to automate its accounting and administrative systems. Later, other large government ministries, departments, and agencies, such as, the statistics department, telecommunication department, employee provident fund, and Malayan railways also bought large computer systems. The majority of these systems were installed to automate accounting and administrative systems.

The trend of purchasing large systems for automating an organisation's accounting and administrative systems persisted during the last half of the 1960s and the first half of the 1970s. The computers used during this period were large, expensive and required dedicated experts to operate. Expert data processing managers, system analysts and programmers were very few. There was a tremendous need to automate the accounting and administrative systems as manual