The Applications of Decision Support System (DSS) among the Top Corporations in Metro Manila and its Perceived Advantages and Disadvantages

Review of Integrative Business & Economics Research

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ABSTRACT

"To design, implement, and use a DSS, several groups, or roles, must be involved. These roles include : use, managerial designer, technical designer, and model builder…"
– Hossein Bidgoli (Bidgoli, 2012)

The application of the Information System (IS) in different corporations is to provide complete, timely and accurate business transaction processes. There are many types of Information System, one of them is Decision Support System (DSS). DSS supports managers on decision making, and to provide information and decision support techniques needed to solve specific types of business problems. Majority of companies in Metro Manila are now using DSS, and it supports them in all stages of decision making.

The research design used was descriptive. The data gathered from the respondent companies thru survey was used for analysis. The application of the Decision Support System (DSS) in different organization is to support their business transaction, it support managers to analyze important data in able to come up with a good decision making. Based on the finding results, only 29 companies or 33.72 % (out of 86 companies) claimed that they are using Decision Support System (DSS). They used DSS to provide them important information and decision support techniques which needed to solve specific types of problems. Many companies were using DSS to distribute reports to their different departments (11.63%), to forecast trends (11.63%), sales and budgets (8.14%), to make the data concise and accurate (6.98%), to support decision making (6.98%), to facilitate on management reporting (5.81%), to calculate the risk and return (3.49%), and to compile information (3.49%). The proponent also found out that there's more perceived advantages compared to disadvantages of using DSS by the top corporations in Metro Manila.

Keywords : Decision Support System, Information System, DSS, IS

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I. INTRODUCTION

1.1 Background of the Study

An information system is an organized combination of people, hardware, software, communication networks, and data resources that collects, transforms, and disseminates information in an organization. People have relied on information systems to communicate with each other using a variety of physical devices, information processing instructions and procedures, communications channels, and stored data since the dawn of civilization. Today's end users rely on many types of information system (IS). They might include simple manual (paper-and-pencil) hardware devices and information (word-of-mouth) communication channels. Information Systems perform three vital roles in any type of organization : support of business operations, support of managerial decision making and support of strategic competitive advantage. (O'Brien, 1999)

A higher-level class of computerized information systems are Decision Support System (DSS). DSS are similar to the traditional management information system because they both depend on a database as a source of data. A decision support system departs from the traditional management information system because it emphasizes the support of decision making in all its phases, although the actual decision is still the exclusive province of the decision maker. Decision Support Systems are most closely tailored to the person or group using them than is a traditional management information system. Sometimes they are discussed as systems that focus on business intelligence. (Kendall & Kendall, 2005)

Nowadays, project managers in the top corporations normally used Group Decision Support System to eliminate some groups problems like no agenda during meetings, no alternative actions, members come to the meeting unprepared, necessary information is not available in time, discussion dominated by few people, members coming in late, or absent from the meeting. And according to Hossein Bidgoli (2012), "Group Decision Support System (GDSS) assist decision makers working in groups. These systems use computer and communication technologies to formulate, process, and implement a decision-making task and can be considered a kind of intervention technology that helps overcome the limitations of group interactions."

1.2 Rationale of the Study

The proponent's interest on the topic of Information System specifically Decision Support System (DSS) began when the proponent started teaching Computer Application for Business Management Students, Management Information System for Business Students, System Analysis and Design, and IS Planning for undergraduate of the Decision Sciences and Innovation Department – De La Salle University Manila. In addition, the undergraduate degree of proponent was Computer Science specialized in Software Technology. The proponent has the interest to know how DSS was being used

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in different companies in Metro Manila, Philippines, and what are their perceived advantages and disadvantages of using DSS. It is worth knowing because uses of DSS helped company to achieve their goal and objectives, and it also improve their business processes, this will enable them to speed up their business transaction, to save more time and effort, increase sales, lower down the costs and expenses.

1.3 Statement of the Problem

What are the applications of using Decision Support System (DSS) by the selected top corporations in Metro Manila, Philippines ? And what are the perceived advantages and disadvantages of using DSS ?

1.4 Objectives of the Study

The general objective of the study is to enumerate the applications of Decision Support System (DSS), and to describe the perceived advantages and disadvantages of using DSS among the top corporations in Metro Manila, Philippines based on the definition of IS by Reynolds and Stair which DSS is an organized collection of people, procedures, software, databases, and device used to support problem specific decision making.

1.5 Significance of the Study

The result of the study will benefits the following :

- Academic Community

This research paper will benefit faculty teaching computer subjects, and the students taking up MIS courses and subjects. The faculty can share the information of this research papers to their students, and they would also have idea on what specific topics need to be discuss in class lecture. On the other hand, students would be able to apply it in the real business application when they graduate.

- Different corporations in Metro Manila, Philippines

To give them feedback on how other companies use the Decision Support System for their daily business transactions. They can also benchmark the best practices from companies that are using DSS. The companies can also have idea on how to further improve in the utilization of their DSS which can help them streamlined their processes and enhanced their decision making processes.

1.6 Scope and Limitation

The uses of Decision Support System (DSS) focused on this study will be limited to 100 top corporations in Metro Manila, Philippines. The data gathering was assisted by

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proponent' students in Management Information System (BUSIMIS) class during 1st term AY 2009-2010, and it was limited to 100 top corporations based on their gross revenue in Metro Manila, Philippines which was stated in Business World Magazines (Volume 22) published early 2009. Business World Top 1000 Corporations in the Philippines is published annually by Business World Publishing Corporation, with editorial offices at 95 Balete Drive Extension, New Manila, Quezon City, Metro Manila, Philippines.

At first, the limitation of the study was limited to top 100 corporations based on their gross revenue which was stated in Business World magazines, but unfortunately, not all the 100 corporations responded. Some of them are not willing to be surveyed nor interviewed. Out of 100, only 86 corporations responded. In addition, only these 86 companies were accessible and located in Metro Manila. And these are composed of 38 service companies, 12 manufacturing companies and 36 merchandising companies. The respondent also had a hard time to assess the data gathered from the companies. The data gathered was presented in narrative explanation format, this give the proponent a hard time in coding the data.

Another limitation of the study was that there are some uses, perceived advantages and disadvantages of using Decision Support System and other important details and information were not mentioned or discussed clearly by the interviewee respondent of the corporation. And many companies also claimed that these information are kept confidential by their companies.

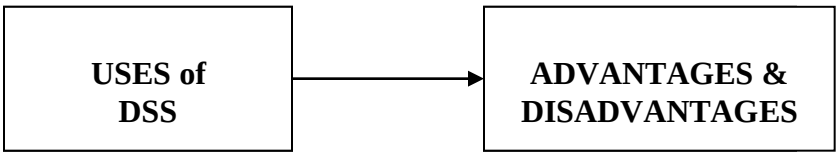
II. FRAMEWORK

2.1 Conceptual Framework

The conceptual framework of the study is based on (or adopted from) R. Kelly Rainer Jr. and Efraim Turban (2009) which states the following :

An Information System (IS) is an organized collection of people, procedures, software, databases, and device used to record completed business transactions (please see figure 1):

Figure 1 : Schematic Diagram of the Conceptual Framework



Rainer and Turban (2009) states that : "The function of the Decision Support System (DSS) is to provide access to data and analysis tools. It combine models and data

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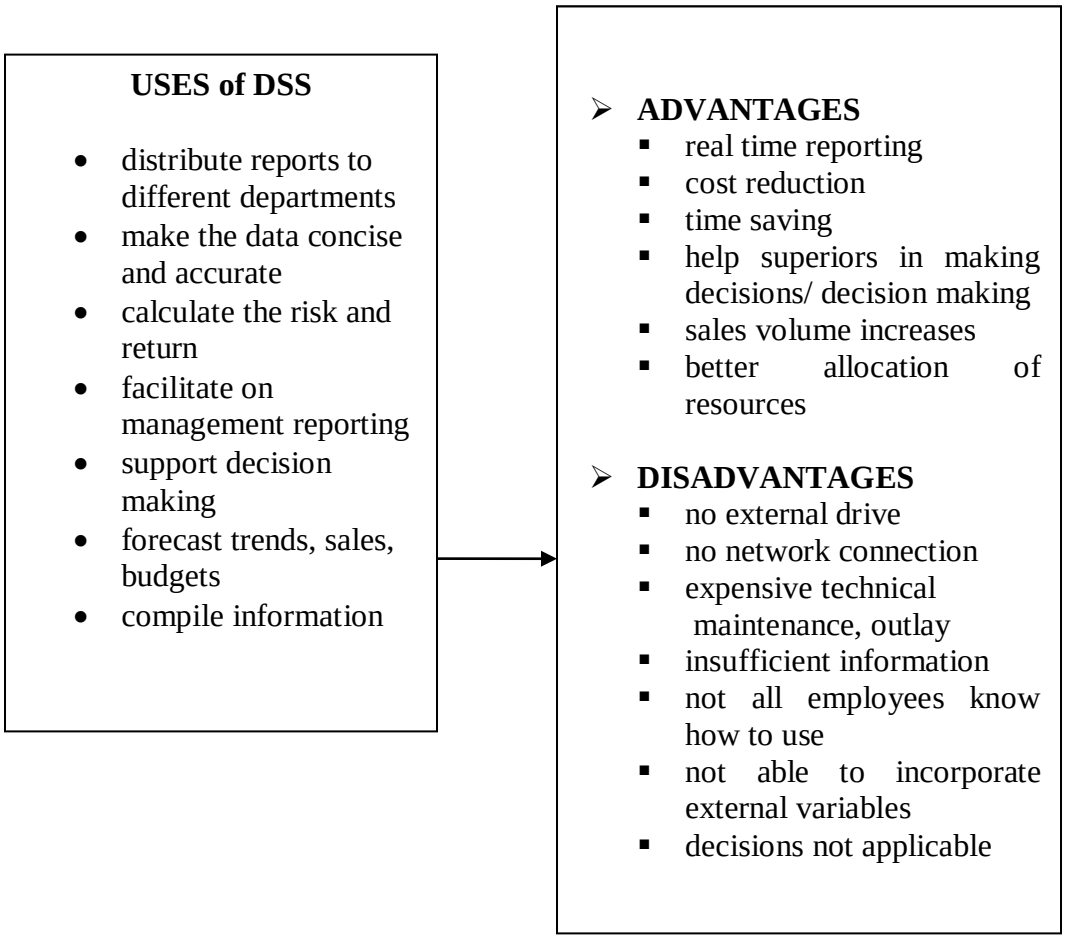
in an attempt to solve semi-structured and some unstructured problems with extensive user involvement. Models are simplified representations, or abstractions, of reality. The DSS is designed to enable interactive access to data, to enable manipulation of these data, and to provide business managers and analysts the ability to conduct appropriate analyses. Decision Support Systems can manipulate data, enhance learning, and contribute to all levels of decision making. DSSs also employ mathematical models. Finally, they have the related capabilities of sensitivity analysis, what-if analysis, and goal seeking analysis."

2.2 Operational Framework

Adopted from the Conceptual Framework of Reynolds and Stairs (2009), the uses of DSS, and the perceived advantages by selected top corporations in Metro Manila of using it will serve as the variables of this study in terms of :

Figure 2 : Variables of the study



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2.3 Operational Definition of Terms

- *Information System – A set of interrelated components that collect, manipulate, store, and disseminate data and information and provide a feedback mechanism to meet an objective. (Rainer and Turban, 2009)*

- *DSS – Decision Support System – Business Intelligence systems that evolved from decision support systems; they combine models and data in an attempt to solve semi-structured and some unstructured problems with extensive user involvement. (Rainer and Turban, 2009)*

III. RESEARCH METHODOLOGY

The research methodology and research design of this research study was adapted from the proponent's former research paper "Uses of Information System Among the Top Corporations in Metro Manila" (Ong, 2009). A different set of variables (with regards to DSS) was chosen in this study.

3.1 Research Design

The research design used was descriptive. The data gathered (survey and interview results) from the respondent companies will used to discussed and described the uses of Office Automation System by 86 corporations in Metro Manila namely in the following sectors : Service, Manufacturing and Merchandising.

Among the 100 list of top corporations, only 86 companies responded. 38 companies (or 44.19 %) were Service companies which includes oil refineries, electric distribution, wireless service, banking, power service, port management, media, financial institution, utility, real estate, telecommunications, transportation, infrastructure, water, call center, and insurance companies. 12 companies (or 13.95 %) responded were Manufacturing companies which includes food, automotive, agriculture, beverage and beers, pharmaceutical, pediatric nutrition, cement, packaging companies. And 36 companies (or 41.86 %) were Merchandising companies which includes shopping and retail, supermarket, warehousing, beauty products, LPG and Petroleum companies.

3.2 Sampling Plan

The secondary data collected during 1st term Academic Year 2008-2009 from the corporation interviewed by BUSIMIS (Management Information System Class) students as the basis of data for this research study.

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3.3 Method of Data Analysis

Primary data was tabulated in a data set, and the data was analyzed using the frequency and percentage distribution. Since the data gathered presented in narrative paragraph form, content analysis will be used by the proponent in coding the data. And the data was presented also in frequency distribution table format and context narrative discussion.

IV. RESEARCH FINDINGS

Based from the Conceptual Framework adapted by the proponents :

The purpose of using the conceptual framework cited in the previous section is to enumerate the applications of DSS, as well as the perceived advantages and disadvantages of using DSS by different top companies in Metro Manila. This would also narrate some the information given or stated by the respondents during the data collection.

Table 1 : Frequency and percentage distribution results with regards to the uses of DSS

	Frequency (n = 86)	%
• distribute reports to different departments	10	11.63 %
• make the data concise and accurate	6	6.98 %
• calculate the risk and return	3	3.49 %
• facilitate on management reporting	5	5.81 %
• support decision making	6	6.98 %
• forecast trends, sales, budgets	7	8.14 %
• compile information	3	3.49 %

Based on the result findings, only 29 companies or 33.72 % (out of 86 companies) claimed that they are using Decision Support System (DSS). They used DSS to provide them important information and decision support techniques which needed to solve specific types of problems. Many companies were using DSS to distribute reports to their different departments (10 out of 86 respondents or 11.63%), to forecast trends, sales and budgets (7 out of 86 companies or 8.14%), to make the data concise and accurate (6 out of 86 respondents or 6.98%), to support decision making (6 out of 86 respondents or 6.98%), to facilitate on management reporting (5 out of 86 respondents or 5.81%), to calculate the risk and return (3 out of 86 respondents or 3.49%), and to compile information (3 out of 86 respondents or 3.49%).

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Based of the survey results, some company respondents mentioned that they use DSS to forecast the availability of corporate funds for investment. They also use the DSS and generated data to make decisions about allocating funds to projects. Airlines companies mentioned that they used DSS for flight scheduling, price selection, and route selection. Petroleum companies mentioned that they used DSS for corporate planning and forecasting. Oil and gas corporations used DSS to evaluate of potential drilling sites. Many companies also used DSS for product optimization, advertising and promotion selections, investment selection, and others.

Table 2 : Frequency and percentage distribution results with regards to perceived advantages of using DSS

	Frequency (n = 29)	%
▪ real time reporting	3	10.34 %
▪ cost reduction	2	6.90 %
▪ time saving	5	17.24 %
▪ help superiors in making decisions/ decision making	5	17.24 %
▪ sales volume increases	8	27.59 %
▪ better allocation of resources	3	10.34 %

In table 2, among the 29 companies who were using DSS, it shows that 8 out of 29 companies (or 27.59%) stated that using DSS make their sales volume increases. Next highest, 5 out of 29 companies (or 17.24%) mentioned that having DSS, they can work multitasking, thus it saves a lot of time, and DSS also helped their superiors in making some important decision. Rank number three, 3 out of 29 respondents (or 10.34%) mentioned that by using DSS, they have better allocation of their resources, and it also gave them real time reporting as well. Lastly, 2 out of 29 respondents (or 6.90%) mentioned that DSS helped them reduce their cost and expenses.

Table 3 : Frequency and percentage distribution results with regards to perceived disadvantages of using DSS

	Frequency (n = 29)	%
▪ no external drive	2	6.90 %
▪ no network connection	6	20.69 %
▪ expensive technical maintenance outlay	6	20.69 %
▪ insufficient information	1	3.45 %
▪ not all employees knows how to use DSS	4	13.79 %
▪ not able to incorporate external variables	3	10.34 %
▪ decisions not applicable	1	3.45 %

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In table 3, it displays that 6 out of 29 companies (or 20.69 %) mentioned that there was sometimes no network connection and expensive technical maintenance when they were using OAS. While 4 out of 29 respondents (or 13.79 %) mentioned that not all the people in the companies know how to use OAS, some of them are not computer literate nor IS literate, they still need to undergo some training. Some of them are not familiar in using the new system. not everyone in their company can use the DSS simultaneously, times were wasted. 3 out of 29 companies (or 10.34%) mentioned that they were not be able to incorporate external variables even they were using DSS. 2 companies (or 6.90 %) mentioned that they don't have external drive. Lastly, only 1 respondent (3.45 %) mentioned that decision generated by DSS were not applicable and DSS provides them insufficient information.

V. CONCLUSION / OBSERVATION

The objectives of writing this research paper is to enumerate some application of DSS that was adapted by the top corporations in Metro Manila, and mentioned their perceived advantages and disadvantages based on the surveyed from 86 companies, and to disseminate them both in academic and business community.

The proponent also found out that there's more perceived advantages compared to disadvantages of using DSS by the top corporations in Metro Manila. Based on proponent's observation, DSS helps the companies to improve decision making and answer "what-if" questions, especially when considering new situations. They used this to try out different scenarios. It supports the managers to analyze important data and arriving at a final decision. DSS were developed to solve complex problems and for strategic corporate planning. A well-designed DSS can be used to different levels of the organizations. DSS placed emphasis on helping the manager making decision by being at the hub of the decision making process rather than on actually making decisions for the manager.

The proponent would like to quote the statement of Turban and Volonino (2010) that : "A DSS provides support for decision makers at all management levels, whether individuals or groups, mainly in semi-structured and unstructured situations, by bringing together human judgment and objective information. DSS supports all phases of the decision making process - intelligence, design, choice, and implementation - as well as a variety of decision-making processes and styles. A DSS is adaptable by the user over time to deal with changing conditions and easy to construct and use in many cases. It also promotes learning, which leads to new demands and refinement of the current application, which leads to additional learning, and so forth. A DSS usually utilizes quantitative models. DSS can also be disseminated for use via the Web. DSS allows the easy execution of sensitivity analysis." (Turban and Volonino, 2010)

Nowadays, companies are very competitive and dynamic. Thru this, all the companies need to apply Decision Support System (DSS) in able to get ready the

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employees and managers in the companies to face new challenges in the workplace and to act in response to the system dynamics inside the companies. And most of all, to attain the company's vision and mission, as well as their corporate goals and objectives.

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