

# The Applications of GDSS & CSCWS Among the Top Corporations in Metro Manila and its Perceived Advantages and Disadvantages

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## ABSTRACT

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 Group Decision Support System (GDSS). GDSS also known as Computer Supported Collaborative Work System (CSCWS). Majority of companies in Metro Manila are now using GDSS or CSCWS, it supports them in all stages of decision making when they worked as a group. The research design used was descriptive. The data gathered from the respondent companies thru survey was used for analysis. GDSS is an interactive computer-based system that facilitates solution of unstructured problems by a set of decision makers working together as a group. Based on the finding results, only 29 companies or 33.72 % (out of 86 companies) claimed that they are using GDSS. It supports them to analyze important data in able to come up with a good decision making. They also use GDSS to support meetings and activities (9.30%), give information to managers (6.98%), email server (6.98%), communication between employees (6.98%) and others. The proponent also found out that there's more perceived advantages compared to disadvantages of using GDSS by the top corporations in Metro Manila.

Keywords: Group Decision Support System, Computer Supported Collaborative Work System, Information System

## I. INTRODUCTION

### 1.1 *Background of the Study*

In today's dynamic business environment, many consider information as a power. However, the power of information can be maximized if used efficiently and effectively. Information itself can be considered as valuable, and commerce often involves the exchange of information rather than tangible goods. Organizations use information to assist them in their daily business operations such as keeping records, inventories and sales. The process of collecting and analyzing such components are often referred to as information systems. An information system (IS) is a set of interrelated components that collect, manipulate, store, and disseminate data and information and provide a feedback mechanism to meet an objective. (Reynolds & Stair, 2012)

Hosseini Bidgoli (2012), states that information is the second most important resource next to the human element. He discusses that information systems can aid an organization in various ways depending on the use. When information is timely, relevant, and accurate, businesses can use this as a critical tool in enhancing a

company's operations and competitive standing. Moreover, the proper use of information can aid an organization manage its resources and capabilities. Information systems can help organization strategize and gain a competitive advantage.

A Decision Support System (DSS) is an organized collection of people, procedures, software, databases, and devices used to help make decisions that solve problems. The focus of a DSS is on decision-making effectiveness when faced with unstructured or semi-structured business problems. Decision support systems offer the potential to generate higher profits, lower costs, and better products and services. Moreover, DSS can be used at all levels of management. DSS's can assist with all or most problem-solving phases, decision frequencies, and varying degrees of problem structure. DSS approaches can also help at all levels of the decision making process. (Reynolds & Stair, 2012)

Nowadays, project managers in the top corporations normally use Group Decision Support System (GDSS) or Computer Supported Collaborative Work System (CSCWS) to eliminate some groups problems such as no agenda during meetings, no alternative actions, no alternative actions, members come to the meeting unprepared, necessary information is not available on 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."

In addition, GDSS is also a response to the underlying problems in group decision making like explosion of decision maker meetings, the growing length of these meetings, and the increased number of attendees. Kendal & Kendall (2005) also states that, "Group Decision Support Systems are intended to bring a group together to solve a problem with the help of various supports such as polling, questionnaires, brainstorming, and scenario creation. Moreover, it can be designed to minimize negative group traits and behaviors such as lack of participation, domination by vocal group members, and "group think" decision making. Through the use of GDSS and its features, organizations may operate seamlessly with more efficiency and effectiveness. "

The users of the GDSS will be presented with software tools that will help them in the decision making process. These tools will help the users in gathering information. "Electronic questionnaires" will aid the organizers in pre-meeting planning by addressing the problem of no agenda and specific actions. Electronic brainstorming tools will be presented to allow the individuals to continuously contribute and collaborate ideas. Idea Organizer's will integrate and synthesize the ideas of the users. Questionnaires will be used to gather information before and during the meeting. Tools for voting in order to help the users in determining what course of action they should apply. Stakeholder identification and analysis tools are structured in such a way to calculate the impact of a proposal upon the organization. Policy information tools will help the users in crafting the policy statements. Lastly, Group

Dictionaries are placed to help define words and terms related to the topic. Each of these tools is able to address a certain problem. The system is meant to help make the meeting easier as well as more effective in making decisions. The users will be able to have a bigger impact in the meaning as the tools will present them with the necessary information needed to make a good decision.

## ***1.2 Rationale of the Study***

The proponent's interest on the topic of Information System specifically Group Decision Support System (GDSS) & Computer Supported Collaborative Work System (CSCWS) 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 GDSS or CSCWS was being used in different companies in Metro Manila, Philippines, and what are their perceived advantages and disadvantages of using GDSS / CSCWS. It is worth knowing because uses of GDSS / CSCWS helped the company achieve their goal and objectives, and it also improve their business processes, this will enable them to speed up their business transaction, 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 Group Decision Support System (GDSS) by the selected top corporations in Metro Manila, Philippines ? And what are the perceived advantages and disadvantages of using GDSS ?

## ***1.4 Objectives of the Study***

The general objective of the study is to enumerate the applications of Group Decision Support System (GDSS), and to describe the perceived advantages and disadvantages of using GDSS among the top corporations in Metro Manila, Philippines based on the definition of IS by Reynolds and Stair which GDSS 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 Group Decision Support System (GDSS) for their daily business transactions. They can also benchmark the best practices from companies that are using GDSS. The companies can also have idea on how to further improve in the utilization of their GDSS which can help them streamlined their processes and enhanced their decision making processes when working in group.

### ***1.6 Scope and Limitation***

The uses of Group Decision Support System (GDSS) focused on this study will be limited to 100 top corporations in Metro Manila, Philippines. The data gathering was assisted by proponent' students in Management Information System (BUSIMIS) class during 1<sup>st</sup> 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 Group 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 have also claimed that this information is kept confidential by their companies.

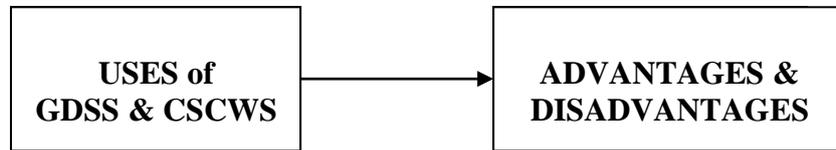
## **II. FRAMEWORK**

### **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 Group Decision Support System (GDSS) is to provide access to data and analysis tools. It combines models and data in an attempt to solve semi-structured and some unstructured problems with extensive user involvement. Models are simplified representations, or abstractions, of reality. The GDSS 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. Group Decision Support Systems can manipulate data, enhance learning, and contribute to all levels of decision making. GDSSs also employ’s mathematical models. Finally, they have the related capabilities of sensitivity analysis, what-if analysis, and goal seeking analysis.”

In today’s business environment, collaboration is an essential tool in operations and decision making. Bidgoli (2012) states that, “In this collaborative environment, there has been an increase in group support systems, which are intended to assist decision makers working in groups. This mode of intervention creates a more systematic and efficient way of communicating and removes some inefficiency in group meetings and brainstorming sessions.

A GDSS, with the help of a human facilitator, enhances decision making by providing a clear focus for group discussion, minimizing politicking, and focusing attention on critical issues. GDSS’s are useful for committees, review panels, board meetings, task forces, and decision making sessions that require input from several decision makers. They can be used to find a new plant location, introduce a new product or advertising campaign, and participate in an international bid, brainstorm alternatives, and other tasks. In addition to all the capabilities of a DSS, a GDSS should include communication features so that decision makers in many different locations can still work together to participate in the decision-making process. (Bidgoli, 2012)

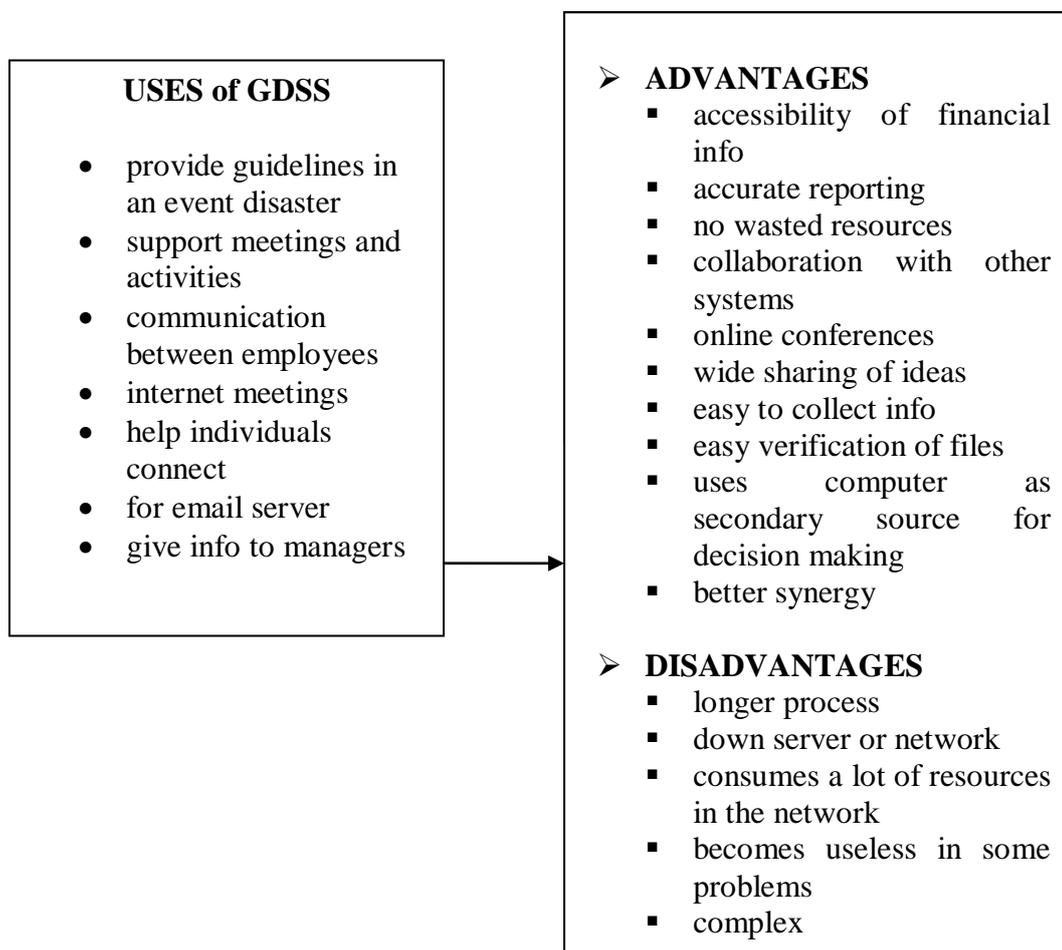
Furthermore, Bidgoli states some advantages and disadvantages of using GDSS : Due to the nature of GDSS – allowing people to work far apart - some of the advantages include cost reduction and more time to discuss and solve problems. Decision makers do not need to travel long distances which save money as well as create an atmosphere where they have more time to discuss. Moreover, shyness does not become an issue since GDSS sessions are face-to-face. Lastly, there is an increase in collaboration improves the effectiveness of decision makers. However, some of the disadvantages include the lack of understanding between decision makers. There is a

lack of the human touch such as handshakes, eye contact and other nonverbal cues which may cause confusion or hinder the effectiveness of the meetings. Due to the ease-of-use, there may be unnecessary meetings set. Just like most systems, there is also the possibility of having security problems such as hacking or acquiring confidential data. Lastly, the costs of GDSS are high due to the numerous features it offers. (Bidgoli, 2012)

## 2.2 Operational Framework

Adopted from the Conceptual Framework of Reynolds and Stairs (2009), the uses of CSCWS, 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



## 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)*
- *GDSS – Group Decision Support Systems - A system that assists decision makers that work 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. (Bidgoli, 2012)*
- *CSCWS - Computer Supported Collaborative Work Systems – A more general term for GDSS, it deals with assisting the decision makers via networked computers in making timely decisions (Kendall & Kendall, 2005)*

### 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 GDSS) 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 be used to discuss and describe 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 primary data collected during 1<sup>st</sup> term Academic Year 2009-2010 from the corporation interviewed by BUSIMIS (Management Information System Class) students as the basis of data for this research study.

#### 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 GDSS, as well as the perceived advantages and disadvantages of using GDSS 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 GDSS

	Frequency (n = 86)	%
• support meetings and activities	8	9.30%
• give info to managers	6	6.98%
• for email server	6	6.98%
• communication between employees	6	6.98%
• help individuals connect	5	5.81%
• internet meetings	2	2.32%
• provide guidelines in an event of disaster	2	2.32%

Based on the result findings, only 29 companies or 33.72 % (out of 86 companies) claimed that they are using Group Decision Support System (GDSS). They use GDSS to provide them important information and decision support techniques which needed to solve specific types of problems. Many companies were using GDSS to support their meetings and activities (8 out of 86 respondents or 9.30%), to give information to managers (6 out of 86 companies or 6.98%), for their email server (6 out of 86 respondents or 6.98%), to enhance communication between employees (6 out of 86 respondents or 6.98%), to help individuals connect effectively and efficiently (5 out of 86 respondents or 5.81%), to conduct internet meetings (2 out of 86 respondents or 2.32%), and to provide guidelines in an event of a disaster (2 out of 86 respondents or 2.32%).

Based on the information gathered, companies in Metro Manila are more likely to use the GDSS as means of supporting their meetings and activities. This allows the company to make it easier for the decision makers to make better decisions as they are more prepared during meetings. The system is also used to give information to managers. This makes it easier for information to be messaged to the right people faster. The GDSS also allows them to monitor their email server and help communication between employees easier. These are the top reasons why companies

use the GDSS. By making things more efficient, they are able to make better decisions as information is presented to them faster. Majority companies uses GDSS to make group meetings more productive by facilitating communication as well as decision making. Many company respondents mentioned that GDSS support their activities where people come together, whether at the same place at the same time or in different places at different times.

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

	Frequency (n = 86)	%
▪ accurate reporting	7	8.14%
▪ better synergy	6	6.98%
▪ easy to collect info	4	4.65%
▪ easy verification of files	4	4.65%
▪ uses computer as secondary source for decision making	4	4.65%
▪ accessibility of financial info	3	3.49%
▪ no wasted resources	3	3.49%
▪ collaboration w/ other systems	2	2.32%
▪ wide sharing of ideas	2	2.32%
▪ online conferences	1	1.16%

In table 2, among the 86 companies who were using GDSS, it shows that 7 out of 86 companies (or 8.14%) stated that using GDSS makes their reports more accurate. Next highest, 6 out of 86 companies (or 6.98%) mentioned that having GDSS creates better synergy in the workplace. Rank number three, 4 out of 86 respondents (or 4.65%) mentioned that by using GDSS they are able to collect information, verify files easily, and allows them to use computers as secondary source for decision making. As for the fourth rank, accessibility to financial info and no wasted resources were some the reasons why companies use GDSS. They both garnered the votes of 3 out of 86 companies (or 3.49%). Next, 2 out of 86 companies (2.32% each) mentioned that using GDSS allows them to collaborate with other systems and wide sharing of ideas. Lastly, 1 out of 86 respondents (or 1.16%) mentioned that GDSS helped them conduct online conferences.

The statistics in table 2 show that the companies that are using the GDSS are able to their work more efficiently than the others. The companies show that with the system being applied, managers and other decision makers are able to make better decisions as more information is presented to them. The system allows them to be better connected as an improved synergy allows them to be more effective. By having a central system to help in the decision making, managers will be able to have the information needed in order to make the best decision. The system allows them to become more connected to each other as they are able to make better group decisions.

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

	Frequency (n = 86)	%
▪ complex	7	8.14%
▪ down server or network	5	5.81%
▪ become useless in some problems	5	5.81%
▪ longer process	4	4.65%
▪ consumes a lot of resources in the network	1	1.16%

In table 3, it displays that 7 out of 86 companies (or 8.14 %) mentioned that GDSS can be quite complex and difficult to apply and understand. Not all the people in the companies know how to use GDSS, some of them are not computer literate nor IS literate, they still need to undergo some training .Another disadvantage mentioned by 5 out of 86 companies, or 5.81%, was there was sometimes no server or network connection when they were using GDSS which requires expensive technical maintenance. Moreover, 5 out of 86 respondents (or 5.81% %) mentioned that GDSS becomes useless in some problems. 4 out of 86 companies (or 4.65%) mentioned that using GDSS is a longer process and may consume more time. Lastly, only 1 respondent (1.16 %) also mentioned that GDSS consumes a lot of resources in the network.

There are certain disadvantages that companies face when the GDSS is applied to them. As mentioned in table 3, the top disadvantages that companies face are its too complex, the server is down, and the system is useless in certain problems. Not all systems are created perfectly. The GDSS disadvantages are more of people who don't know how to use it and technical difficulties. The system may be unable to solve certain problems and it forces the company to find a different way in solving it.

## V. CONCLUSION / OBSERVATION

The objectives of writing this research paper is to enumerate some application of GDSS 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.

GDSS supports both managers and top executives on decision making, and to provide information needed to solve specific types of business problems. The companies in Metro Manila use GDSS to response to the growing concern over the quality and effectiveness of their meetings. The proponent also found out that there's more perceived advantages compared to disadvantages of using GDSS by the top corporations in Metro Manila. Based on proponent's observation, GDSS allows the users to communicate their ideas in a more efficient way. There are problems when group discussions happen such as no agenda, no specific action items, no alternative actions, members come in unprepared, Necessary information is not available on time, the discussions are dominated by only a few people, and people coming in late or

absent. By applying GDSS, the users will be able to address the problems. By using GDSS, information will be presented to the users in real time. This leads to the user's communication being easier amongst the decision makers. The system is able to provide the group an area for discussion and brainstorming. They will also be able to connect all the users and the decision makers to make decisions at a more efficient rate.

GDSS 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. GDSS were developed to solve complex problems and for strategic corporate planning. A well-designed GDSS can be used to different levels of the organizations. GDSS 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 GDSS 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. GDSS 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 GDSS 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. GDSS can also be disseminated for use via the Web. GDSS 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 Group Decision Support System (GDSS) or Computer Supported Collaborative Work System (CSCWS) in able to get ready the 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.

## REFERENCES

- [1] Bidgoli, Hossein (2012) "Management Information System" Cengage Learning
- [2] Kendall, Kenneth and Kendall Julie (2005) "Systems Analysis and Design" Pearson Prentice Hall
- [3] Ong, Harvey (2009) "Uses of Information System Among the Top Corporations in Metro Manila" S & T 2009, De La Salle University, in cooperation with Osaka University
- [4] Rainer and Turban (2009) "Introduction to Information Systems : Enabling and Transforming Business" John Wiley & Sons, Inc.
- [5] Reynolds and Stair (2009) "Introduction to Information Systems" Cengage Learning
- [6] Reynolds and Stair (2012) "Information Systems Essentials" Cengage Learning

- [7] Turban Efraim and Volonino Linda (2010) "Information Technology for Management: Transforming Organizations in the Digital Economy" 7th Edition, John Wiley & Sons, Inc.