

# Management Information Systems of a Government Guarantee Financing Institution in the Philippines

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## Abstract

In today's competitive environment, computerization or automation of the business process is of considerable importance because many people believe that with the help of this technology most organizations can make their operational, tactical, and strategic processes more productive, effective and efficient. Management information system (MIS) is the means of support of any business organization today and the functionality of information systems is a necessity. This study was conducted in order to identify, describe and evaluate what types of problems are most likely incurred in the implementation of management information systems at Quedan and Rural Credit Guarantee Corporation, a government guarantee financing institution in the Philippines. The problems in the areas of management support, MIS planning and training, user's involvement and communication between MIS personnel and the rest of the company, inadequacy of computer resources, and limitations of the MIS division hinder the success of implementation of any information systems. These constraints must be taken into consideration to avoid the "chicken and egg problem" situations and to facilitate effective and efficient implementation of a computerization plan.

**Keywords:** management information systems; guarantee financing; loans monitoring; IS implementation.

## 1. Introduction

Today is the era of information technology and information dissemination is the key word in this fast-paced age. Many paradigms for making information accessible have been proposed and the computing industry has seen many improvements in making knowledge available even to non-computer-literate.

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The computer has brought such number of changes in the structure and processes of business organization. This computer revolution is clearly affecting corporate management. The explosion in micro-processing, distributed systems and corporate-wide databases will eventually leave only few corporate managers unaffected. Frequently in large organizations, the top managers' milieu has provided a shelter against the bombardment of new computing hardware devices and software packages. These systems will synergize the computer revolution; culturally changing the managers who run their businesses. Technically oriented managers will grow into controllers and users of automated support systems and computer decision support orientation will become a common prerequisite for management. In today's booming economy, information is a critical resource. The proliferation of a wide range of computer and communication technologies has been continuously improving to provide quality information for management.

The role of the MIS in an organization can be compared to the role of heart in the body. The information is the blood and MIS is the heart. In the body, the heart plays the role of supplying pure blood to all the elements of the body including the brain. The heart work faster and supplies more blood when needed. It regulates and controls the incoming impure blood, processed it and sends it to the destination in the quantity needed. According to the author [9], MIS plays exactly the same role in the organization. The system ensures that an appropriate data is collected from the various sources, processed and produce valuable information. The system is expected to supply the information needs of an individual employee, the management and the corporation as a whole.

### ***1.1 Background of the Study***

In today's competitive environment, computerization or automation of the business process is of considerable importance because people believe that with the help of this technology most organizations can make their operational, tactical, and strategic processes more productive, effective and efficient.

Quedan and Rural Credit Guarantee Corporation (QUEDANCOR) was created by Republic Act No. 7393 on April 13, 1992. The Act reorganized the Quedan Guarantee Fund Board (QGFB), that was then implementing inventory financing programs for the food marketing sector, into QUEDANCOR, a semi-government corporation in-charge of facilitating the flow of investments and credit resources into the countryside.

R.A. 7393 mandated QUEDANCOR to establish a credit support mechanism for farmers, fishermen, rural workers, cooperatives, retailers, wholesalers and primary processors of agricultural and aquatic commodities; and to implement a guarantee system to promote inventory financing of agri-aqua commodities, establishment of production and post-production facilities, acquisition of farm and fishery machineries, equipment and implements, and investment in production inputs and labor.

Quedancor's authorized capital stock is two billion (Php2,000,000,000) pesos of which 60% is for government subscription and 40% for farmers, fisherfolk and private investors. It is an agency attached to the Department of Agriculture for policy and program coordination.

There are four government institutions operate the government's agricultural credit guarantee programs in

accordance with their mandate or as implementing agencies of Comprehensive Agricultural Loan fund (CALF). These are Quedan and Rural Credit Guarantee Corporation (QUEDANCOR), Guarantee Fund for Small and Medium Enterprises (GFSME), Philippine Crop Insurance Corporation (PCIC) and Technology and Livelihood Resource Center (TLRC). QUEDANCOR and GFSME are legally mandated credit guarantee institutions. PCIC is an insurance agency while TLRC primarily a lending institution. All four agencies implemented the CALF agricultural credit guarantee programs from 1987 to 1996. Of the eight guarantee programs for agriculture and fisheries implemented by these four institutions during this period, only four guarantee programs of QUEDANCOR and one of GFSME are presently operating.

In consonance to Section 1 of Executive Order No. 125 which declared the policy of government in furtherance of national development, to create the appropriate policy and institutional environment to rationalize and accelerate the use, application and exploitation of Information Technology (IT) as a productivity tool and as a development strategy for modernization and economic development and in accordance to Republic Act No. 7393 which broadened QUEDANCOR's functions, it has become imperative to expand and improve the agency's information system in terms of computer operation, systems development and data control in order to efficiently and effectively monitor various phases of program implementation.

Several problems are most likely to be incurred while implementing a technology in an organization, such as the implementation of information systems to be used in the different departments of QUEDANCOR. The purpose of this paper is to identify, describe and evaluate what types of problems are most likely incurred in the implementation of information systems. According to the author [1] in order for the computerization project to succeed from an operational perspective all stakeholders including the end-users, managers who influence direction and budget, and software developers must be in full collaboration to ensure successful delivery of the new information system.

### ***1.2 Statement of the Problem***

In order to achieve the purpose of this paper, the following questions were identified:

1. What are the profiles of the different departments of Quedan and Rural Credit Guarantee Corporation (QUEDANCOR) in terms of computer resources in relation to:
  - 1.1 Hardware resources allocation;
  - 1.2 Information Systems; and
  - 1.3 End-user's computer literacy?
2. What is the profile of the Management Information System Division in terms of:
  - 2.1 Organizational structure; and
  - 2.2 MIS personnel?
3. How do the respondents assess the effectiveness of the company's management information systems implementation in terms of:
  - 3.1 Management support;
  - 3.2 User involvement and commitment;

- 3.3 Communication and coordination of MIS personnel to the rest of the company;
- 3.4 MIS planning and;
- 3.5 Training?
- 4. How is information produced by different information systems evaluated by the end-user respondents in terms of:
  - 4.1 accuracy;
  - 4.2 completeness;
  - 4.3 timeliness and;
  - 4.4 relevance?
- 5. What problems were encountered in the implementation of the different information systems?
- 6. What recommendations are offered by the respondents to improve the implementation of the different information systems?

### ***1.3 Significance of the Study***

The results of this study on computerization will be able to get evidence and give information about practices and present activities on guarantee and loans monitoring. This will be a reliable tool for other lending institutions especially government credit organizations to make improvements on the implementation of the different financing programs. This will also introduce new scheme in the proper loan management through the use of modern technology.

With this study, policy-makers will be equipped with the necessary guidelines to further expand and upgrade the system through the formulation of new plans and policies.

Technologically, other information technology (IT) enthusiasts may use the results of this study. This will increase their knowledge specifically on the mechanics of information systems development.

This was conceived to provide professionals in disciplines that are related to information technology with the needed information that will assist them in their outlook, further investigation and eventually developing updated and refined standards for an effective computerized application system.

The study shall become significant for private and other public corporations that have not yet adapted any information system with computers as the main technology of the system. This shall act as an attempt to initiate the important role of this issue in the field of management.

This study can also be used as basis of future researchers on the relevance of computerization on the implementation and monitoring of loans and maybe used to some fields other than guarantee financing.

Lastly, to the educators and students of computer related programs, most importantly those taking up Management Information System courses, the results of this study may serve as an example and basis for their lecture discussions.

#### ***1.4 Scope and Limitation of the Study***

This investigation was conducted to assess the Management Information System (MIS) of QUEDANCOR as assessed by the employees/end-users. The aspects looked into were the profile of each department in terms of computer resources in relation to hardware and software allocations, profile of the MIS division in terms of its structure and personnel, the effectiveness of information systems implementation in terms of management support, users involvement and commitment, MIS personnel, planning and training, users assessment on the computerized system, problems and suggested solutions to the problems.

Furthermore, the applicability of the findings, conclusions and recommendations of this study are limited only to Quedan and Rural Credit Guarantee Corporation (QUEDANCOR).

#### ***1.5 Definition of Terms***

Within the context of this study, the following terms are defined;

**Accuracy.** The accuracy of information refers to the degree to which information is free from error. Information is usually assumed to be accurate unless it is presented otherwise. Accuracy and verifiability go hand in hand.

**Completeness.** Information can be completely accurate and verifiable but it may not tell the whole story. Complete information contains all of the important facts. For example, an investment report that does not include all important costs is not complete.

**Computer-literate personnel.** An employee who feels comfortable in the use and operations of a computer system. He can make the computer work for him using a software and he can interact with computer-that is generate inputs to the computer and interprets output from it.

**Database.** An organization's data resource for all computer-based information processing in which data are integrated and related so that data redundancy is minimized.

**End-users.** Also called as users are people who use an information system or the information it produces.

**Guarantee Financing Institution (GFI).** A financing institution that administer a guarantee fund that encourages the banking sector to lend an amount of money by putting up a counterpart loan fund and at the same time extending a full guarantee on the lending bank's exposure.

**Hardware Resources.** It includes all physical devices and materials used in information processing. Specifically. It includes not only machines, such as computers and other equipment, but also all data media and other peripherals according to the authors [8].

**Information System Strategic Plan (ISSP).** It is a six-year plan developed for the entire organization to expand and improve the agency's information system in terms of computer operation, systems development and information management.

**Information System (IS).** Sometimes called “computerized application system” is a system that uses the resources of hardware, software, procedures and people designed to collect, record, process, store, retrieve and display information. In this research, it is operationally defined as the management information systems as computerized, mechanized and automated systems required to support the organization.

**Management Control.** It is concerned with systems planning and evaluation of the performance both for an equipment as well as personnel standpoint. In this research it is used as a basis for assuring that the operations are going well.

**Relevance.** It refers to the appropriateness of the information as input to a particular decision.

**Software Resources.** It includes all the sets of information processing instructions.

**Timeliness.** The timeliness quality of information refers to the time sensitivity of information. Up-to-date information on today’s market may be of significant value to an executive. The same information will have less value in a month and probably no value in a year.

## **2. Review of Related Literature**

This part presents the different views, concepts, ideas from related literature and studies underlying the use of information technology which have bearing and similarities to the present study.

Management information system has been defined by various authors and information technology practitioners in a number of ways. It as a formal method of making available to management the accurate and timely information necessary to facilitate the decision-making process and enables the organization’s planning, control and operational functions to be carried out effectively.

A management information system (MIS) is a business system that provides past, present, and project information about a company and its environment according to the author [5].

MIS as a formalized computer information system that can integrate data from various sources to provide the information necessary for management decision-making. MIS is a system relevant to managerial decisions for control and strategic planning while the authors [12] defined MIS as the system that monitors and retrieves data from the environment, captures data from transactions and operations within the firm, filters, organizes, and selects data and presents them as information to managers and provides the means for manager to generate information as desired.

The author [10] desirably characterized MIS as the following:

- An MIS supports the data processing functions of transaction handling and record keeping.
- An MIS uses an integrated database and support a variety of functional areas
- An MIS provides operational, tactical and strategic level managers with easy access to timely

information

- An MIS is somewhat flexible and can be adapted to meet changing information needs of the organization.
- An MIS caters to the information needs of all levels of management.

The objective of an MIS is to provide the operational and tactical managers of an organization with the information which they need to carry out their functions. In all such definitions or descriptions, there are common threads with respect to what it does. That is, the purpose it serves. As the concept of MIS was conceived, it focused on providing managerial end-users with predefined reports that would give managers the information they needed for decision-making purposes.

Management information systems are the most common form of management support systems. They provide end-users with information products that support much of their day-to-day decision-making needs. MIS products are specified in advance by managers so that they contain information that managers need. MIS retrieves information about internal operations from databases that have been updated.

The authors [11] cited that information products provided to managers include displays and reports that can be furnished (1) on demand, (2) periodically, according to a predetermined schedule, or (3) whenever exceptional conditions occur. The type of information required by decision-makers is directly related to the level of management decision-making. Most companies have three levels of management: operational, tactical and strategic according to the author [4].

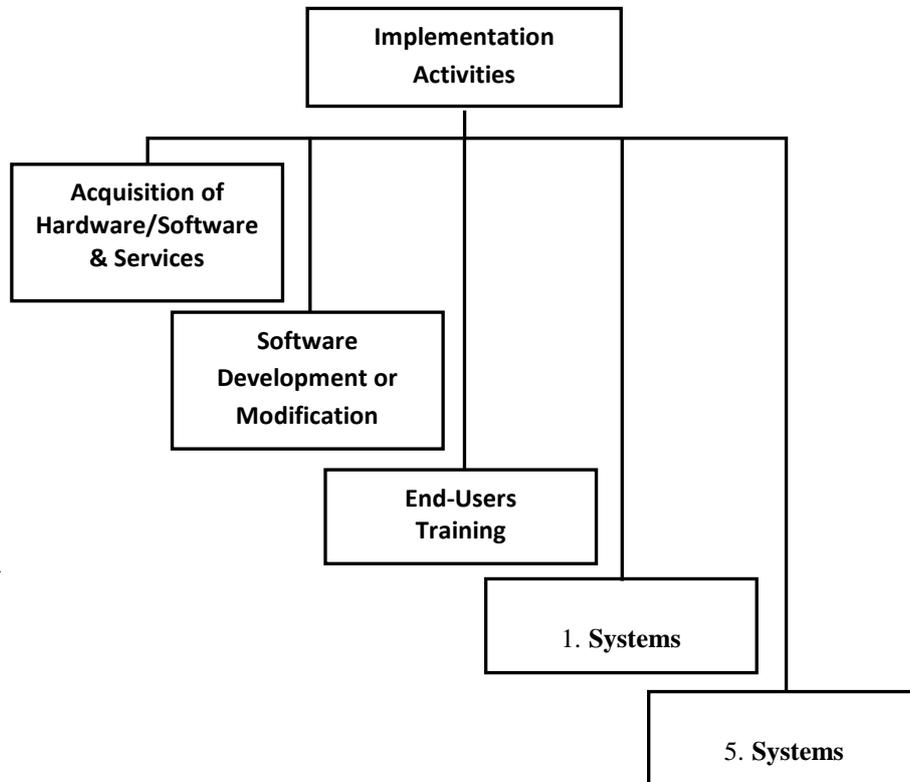


**Figure 1:** The Business System Level of Management

Figure 1 shows the business system three levels of management such as: operational, tactical and strategic. Therefore, information system must be designed to produce a variety of information products to meet the changing needs of decision-makers throughout the organization. For example, decision-makers at the strategic management level require more summarized, ad hoc, unscheduled reports and forecasts to support their more unstructured planning and policy-making responsibilities. Decision-makers at the operational management level, on the other hand, may require more pre-specified internal reports emphasizing detailed current and historical data comparisons that support their more structured responsibilities in day-to-day operations.

Management information system produces information products that support many of the day-to-day decision-making needs of management. Reports, displays, and responses produced by such systems provide information

that managers have specified in advance as adequately meeting their information needs. Such predefined information products satisfy the information needs of decision-makers at the operational and tactical levels of the organization who are faced with more structured types of decision situations declared by the authors [11].



**Figure 2:** Implementation Activities of Information Systems

Once a new information system has been designed, it must be implemented. Figure 2 illustrates that the system implementation stage involved hardware and software acquisition, software development, testing of programs and procedures, development of documentation and a variety of installation activities. It also involved education and training of end-users and specialists who will operate the new systems.

Finally, implementation involves a conversion process from the use of a present system to the operation of a new or improved application.

The development and implementation of virtually any MIS involves change according to the author [10]. Therefore, to achieve an orderly transition, managers must pay particular attention to the effects of change. A good manager is proactive and does not react to the problems of change. He should keep everyone informed. Inevitably, the implementation of the new system will result in some shifts in responsibilities and sometime may prompt a major reorganization of personnel.

Perhaps the most important managerial concern is the attitude of subordinates toward the changes brought about by automation. To combat negative attitudes, managers must demonstrate to subordinates how the proposed system will help them to do their jobs better and how it will provide greater career opportunities. Employees

who understand the benefits of an MIS are much more willing to participate in a conversion effort.

The successful use of information technology to transform business process and gain competitive advantages are widely acknowledged. However, it is important to realize that information technology and information system can be mismanaged and misapplied that's why they create both technological and business failures. Some of the major reasons of the failure of MIS development according to author [13] are the deficiency of user's input, incomplete and changing requirements and specifications, lack of executive support and technological incompetence of the people especially the IS personnel. In contrast she acknowledged that users' involvement, executive management support, clear statements of requirements, proper planning and realistic expectations of people in the organization are the major reasons of the success of MIS implementation.

Studies by management consulting firms, computer user groups, and university researchers have shown that many businesses have not been successful in managing their computer resources and MIS departments. The possible reasons are IT efforts are poorly prioritized, executives lack personal relationship, IS does not understand the business environment, MIS fails to meet its commitments, IS not seen as critical resource, IS fails to achieve key goals and IS management lacks leadership.

Various case studies of the interface between managers and computer processing in the United States and the United Kingdom are detailed in his book [14]. Based on these cases, the author drew a picture of the impact that computer processing is having on management. These findings and the lessons to be drawn from them by management are listed below:

- **Finding:** The greatest impact on management from the development of some of the applications studied came from the stimulus provided to reexamine policies or procedures.
- **Lesson:** The more advanced computer applications are one method, among others, of stimulating management to reappraise its assumptions and methods. To get the best benefit, management must be both willing and sufficiently flexible to be able to do so.
- **Finding:** The most common impact on the managers involved in the development of the applications studied was substantial extra work.
- **Lesson:** Management should not underrate the amount of management time and effort needed in most applications. Management should not forget the opportunity cost of this time and effort, and should ask itself what problems may be neglected as a result.
- **Finding:** The development of computer systems for planning, control or policy can help to highlight areas of ignorance or uncertainty.
- **Lesson:** The development of advanced computer systems can help management to understand more about the problems of their organization, but only if management adopts a questioning approach. "It is one remarkable," said one systems manager, "how little we know about what actions result in a profit."
- **Finding:** The impact of the computer is a combination of the machine facility and the contribution of the computer specialists to thinking about the organization's problems.
- **Lesson:** For the computer specialists to be able to make an effective contribution, they need both an understanding of the organization's problems and a good relationship with user management.

- **Finding:** Management's responsibility for overseeing the development and implementation of computer systems is similar to that for other projects; namely, setting objectives, controlling and organizing. There is a danger that management may fail to do so because it feels that they don't know enough about these new areas, and is afraid to ask common-sense questions.
- **Lesson:** Management must not abdicate its normal responsibilities when it is dealing with computer projects. Its most important additional contribution is to make considered criticisms from an operating viewpoint

Information is a vital role in business success. They can provide the information the business needs for efficient operations, effective management and competitive advantage. However, it can also fail the business if it does not properly support the strategic objectives, business operations or management needs of an organization. Therefore, managers must contrive the information system well.

### ***2.1 Management Support and Governance***

The experiences of successful organizations reveal that extensive and meaningful managerial and end-user involvement is the key ingredient of high-quality information systems performance. Involving business managers in the governance of the IS function and end-users in the development of information systems applications should thus shape the response of management to the challenge of improving the business value of information technology. Many organizations have developed policies and procedures that require managers to be involved in IT decisions that affect their business units. This helps managers avoid IS performance problems. Without this high degree of involvement, managers cannot hope to improve the strategic business value of Information Technology.

Executives have been surprisingly unaware of the value of information and, therefore, have been reluctant to involve themselves in MIS-related activities. If an executive does not realize the value of information, then he or she must be convinced, usually by the head of the MIS department. Once the executives recognize the strategic significance of MIS, they must take it upon themselves to learn about the capabilities of computers and information processing and how these capabilities can be applied to their jobs. Once they comprehend the scope and potential of MIS executives will begin to allocate a substantial amount of their time to MIS-related activities. Because the handling of information is core to business, according to the authors [2], managers should become engaged in IT as in any other important business functions. Too many managers have remained distance from IT that's why information systems are often thought of as too complex and unmanageable.

### ***2.2 Users Involvement and Commitment***

One of the keys to solving problems of end-users resistance to new information technologies is proper education and training. Even more important is end user involvement in organizational changes and in the development of new information systems. Direct end user participation in systems development projects before a system is implemented is especially important in reducing the potential for end user resistance. This involvement helps ensure that end-users assumed ownership of a system, and that its design meets their needs. Systems that tend to

inconvenience or frustrate users cannot be effective system no matter how technology elegant they are and how efficient they process data.

### **2.3 MIS Planning**

Planning is one of the five management functions, but often, planning is given a lower priority than are the more immediate functions of staffing, organizing, directing and controlling as cited by the author [10]. According to him the lack of MIS planning has resulted in the MIS department being placed in a predicament that could have been avoided with planning and the common threads among today's successful enterprises would surely be a commitment to a comprehensive MIS planning effort. Management personnel who neglect the MIS planning functions maybe doomed to a short term, crisis-oriented environment.

Although, executives understand the importance of MIS planning, some must be convinced to its primary benefits. He mentioned that MIS planning promotes better communication between top management , users and MIS personnel. It leads to a more effective use of corporate resources and provides a vehicle for accountability. According to him, planning encourages self-evaluation and enables managers to cope with long system development lead times.

### **2.4 Training**

Information technology (IT) increasingly changes jobs, skill needs, work and relationship. Technical change has become synonymous with organizational change. Such change can be complex, painful, and disruptive. The people side of IT is often more difficult to anticipate and manage smoothly than is the technological side as pointed out by the authors [6]. It is for this reason that training is the most important way a company should do in order to adopt these changes.

### **2.5 Information as a Major Resource**

The author [3] cited that the focus of information system is not only to produce reports for all levels of management whose objective is to "get the right information to the right person at the right time" but also to improve the performance of people in organization through the use of information technology. Information has to be managed. The authors [3] added that the information required at each position for making decisions and controlling performance must be established and information system and technologies must support an organization's business strategies, business processes and organizational structure. Information produced by the computerized application system must conform to the following criteria as enumerated by the authors [3].

- Timeliness - Available when needed and not outdated when made available
- Accuracy - Corresponds to the reality it represents; free of errors
- Precision - Offers quantitative information with the degree of exactness appropriate to

the underlying data and to the decision-making situation

- Completeness - Includes all the user needs to know about the situation
- Relevance - Has direct bearing on the decision-making situation

### ***2.6 MIS People as a Resource***

According to the author [8] the success or failure of an MIS department rests primarily on the quality of its people. Many computer-using firms consider recruiting, training, and retaining qualified IS personnel a one of their greatest challenge. One of the most important jobs of information services is to recruit qualified personnel and to develop, organize, and direct the capabilities of existing personnel. Employees must be continually trained to keep up with the latest developments in a fast-moving and highly technical field. Employee job performance must be continually evaluated and outstanding performances rewarded with salary increases or promotions. Salary and wage levels must be set, and career path must be designed so individuals can move to new jobs through promotions and transfer as they gain in seniority and expertise. For example, many firms provide MIS personnel with individual career paths, opportunities for merit salary increases, project leadership opportunities, and attendance at professional meetings and educational seminars. These opportunities help provide flexible job environment needed to retain competent personnel. Challenging technological and intellectual assignments and a congenial atmosphere of fellow professionals are other major factors frequently cited in helping to retain MIS personnel.

The author [10] mentioned that the most valuable resource that any company has is its people. Time and time again, he acknowledged that education has proven to be one of the most cost-effective investment that a company can make.

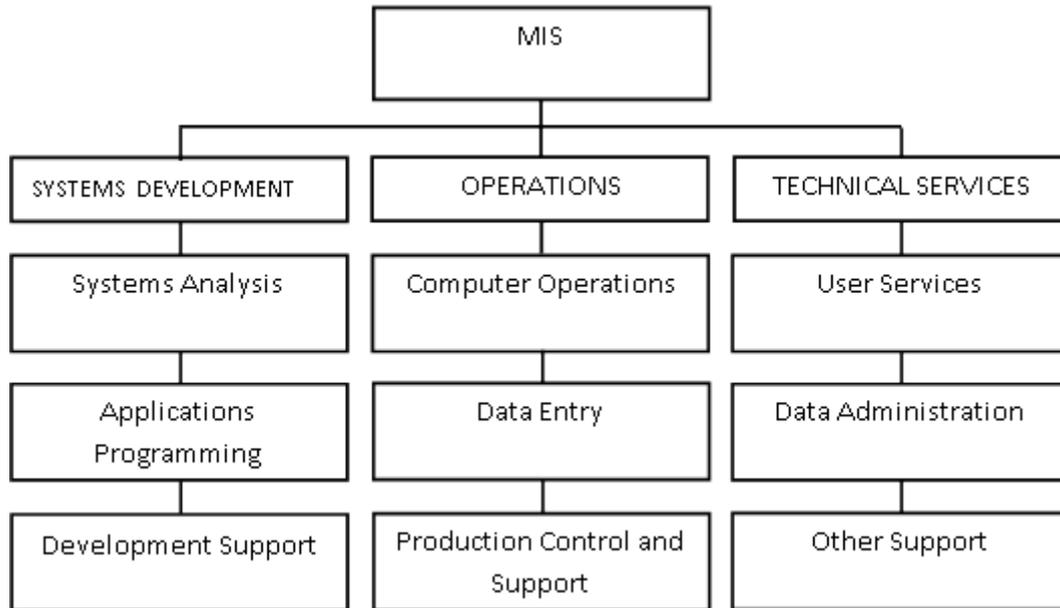
### ***2.7 MIS Organizational Structure***

The basic functional organization structure of an MIS can be grouped into three basic IS functions such as: systems development, operations, and technical services. The systems development functions include systems analysis, applications programming and development support. The operations functions include computer operations, data entry and production control while technical services includes data administration, user services and other support as shown in the next figure.

### ***2.8 MIS Functional Description***

The quality of an information system and the potential profitability of a corporation are very much dependent on a clear definition of MIS roles and responsibilities. The primary functions of MIS division includes development, ongoing operation and maintenance of production information system, acting as an advisor to users throughout the corporation on computer-related matters, serving as a catalyst for improving operations through systems enhancement or new systems development and coordinating data and systems integration throughout the corporation. MIS division is also in charge of establishing standards, policies, and procedures

relating to computers and information processing, evaluating and selecting hardware and software and conducting end user education programs.



**Figure 3:** The Functional Organization Structure of an MIS Group

According to the author [10], the quality of information systems are very much dependent on clear definitions of MIS personnel’s roles, responsibilities and functions. The author [10] mentioned that the Chief Information Officer (CIO) performs the traditional management functions: planning, organizing, staffing, directing and controlling. He has the responsibility for all information services activity of the company. At least half the CIO’s time is spent interacting with the user manager and executives. In this capacity, he coordinates the integration of data and information systems and serves as the catalyst for new systems development. The remainder of his time is devoted to managing the information services division. The systems analyst analyzes, design and implement information systems. The analysts work closely with people in the user areas to design information system to meet their information needs while computer programmers translates analyst-prepared system and input/output specifications into programs. He designs the logic, then code, debug, test and document the programs. Computer operator performs those hardware-based activities that are needed to keep production information systems operational. The database administrator designs, creates and maintains the integrated database. He coordinates discussions between user groups to determine the content and format of the data base so that data redundancy is kept to a minimum. The integrity and security of the database are also responsibilities of the DBA.

The chief information officer has responsibility for all information services activity in the company. The systems development group composed of systems analysts, programmers and data communication specialists are in charge of the information systems prototyping and development. The technical support group designs, develops, maintains and implements software which are fundamental to the general operation of the computer

systems. This group usually made up of systems programmer and data base administrator. People in the operations group perform a variety of jobs in the day-to-day operations of the information systems and is composed of computer operators, schedulers, control clerks, data entry operators and training coordinators. He added that if there is any confusion about who should do what and when, management should insist those duties and responsibilities in the form of procedure and policy.

The success of business is determined by how well its executive performs the activities of management functions such as planning, organizing and controlling and how well these functions are carried out is dependent in part, upon how well the information needs of managers are being met. It is because each function involves decision-making and must be supported by quality information. Quality information is necessary to support the decision-making capability of a manager.

Computer-related matters that will likely have an impact on the organizational performance should be managed in an effective and efficient way. The responsibility of the top level executives to define the mission of the computer department and to establish the general plans and policies that will provide guidance to data processing managers. It is then the responsibility of these managers to additional plans to manage computer departments' resources. Controlling a computer facility usually involves making efforts to improve operating efficiency and avoiding the problems that may result from failure to safeguard data integrity, system security and privacy.

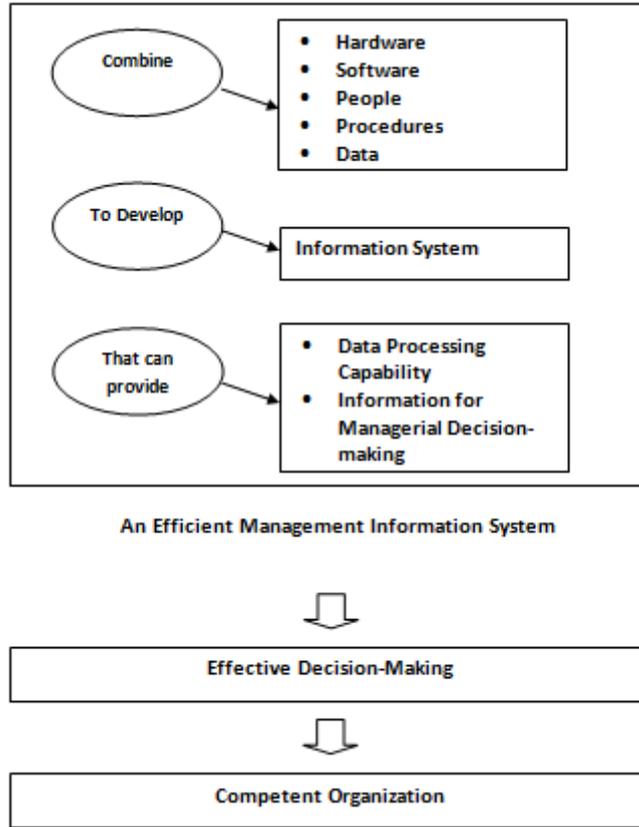
According to the author [5], in a centralized management organization, major decisions are made by few top executives, subordinates exercises little (if any) in decision-making. Even when there are multiple branches, most decision are made at the main office rather than the local branch. A centralized MIS consists of a server that provides control's information for the entire organization.

He added that a decentralized management organization represent a systematic effort to delegate to lower levels all authority, except which can only be exercised at the higher level. It consists of components, decisions and functions that are available in the branches or divisions on the user's premises with no central control. There was no enough support from the management on the computerization of their data processing operations. In his conclusions, he showed that unpredicted deployment of computers were the cause of problems among the employees; secondly, the rising cost of hardware and software application adds to their operational problems; and finally, poor management of computer operations were caused by lack of support from the management due to lack of computer know-how by some managers, and lack of technical people responsible for data processing operations. He recommended the centralization of computer operations. He also cited that the lack of users' awareness, involvement and commitment in the process of computerization occurred generally due to the uncertainty managers. Management failed to envision the implications of computerization so that it could provide the appropriate introduction for the entry of MIS. Management chose to man MIS with neophytes trained from within the company part of whose learning process inevitably concurred with some systems development.

He concluded that training always took last priority in the budget and in cost reduction moves was, therefore,

among the first to go. The absence of human resource development makes it difficult for any unit involved in introducing changes such as MIS, to be effective.

**2.9 Conceptual Framework**



**Figure 4:** Conceptual Paradigm of the Study

Figure 4 expresses a fundamental conceptual framework for the major components and activities of management information systems. An information system depends on the resources of people (end-users and IS specialists), hardware (machines and media), software (programs), procedures ( methods and policies) and data to perform input, processing, output, storage, and control activities that convert data resources (input) into meaningful results (output) and disseminates the same in an organization that’s why people have relied on information systems to communicate with each other. Information is the bonding glue that holds an organization together. Timely information with requisite accuracy, completeness and relevance must be developed for management at various levels so that it may be employed efficiently in the decision-making process. Quality information in the hands of those who can effectively use it will support good decisions, which will lead to effective performance of managerial activities. An effective managerial performance will lead to successful attainment of organizational goals. Effective decision-making leads to a competent organization that will cope in today’s complex business in its dynamic market environment.

The information system is the heart of an organization. Just as the heart pumps blood and life-giving oxygen

throughout the body, an information system is constantly creating and disseminating information, the life-blood of the organization.

### **3. Materials and Methods**

This part presents the methods and procedures used in the study. It includes the description of the research method employed, selection of respondents of the study, research instrument and its validity, and the statistical treatment of data.

#### **3.1 Research Design**

This is to present facts and information on the present status of the Management Information System (MIS) of QUEDANCOR. The method used in this study is the descriptive method of research because the study involves an assessment on the status of implementation of the computerized information system. It describes with emphasis what actually exist such as the current conditions, problems, practices and situations.

#### **3.2 Respondents**

The company at the time of the study is composed of nine departments. The respondents of the study consists of all employees who are who are directly users of the computer system and those engaged in the use of computer generated information. Both primary and secondary sources of data were used in the study to come up with a comprehensive and complete analysis. The primary source included the questionnaire form that was answered by the respondents, along with the important notes which were accumulated through informal interviews with the users of the system, albeit indirect users of the system. Secondary data that were sourced from document materials such as standard operating procedures (SOP's), memoranda, reports, flowcharts, books, journals, magazines, related research/studies and other relevant materials which served immensely in contributing towards the development of the research paper.

#### **3.3 Sample and Sampling Technique**

The study adopted purposive sampling for the direct users of the computer systems and convenience sampling through the use of internet and telephone to get speedy response from regional respondents. Respondents were sampled from the five departments namely; the Planning Services Office, Finance Services Department, Loans Management Department, Administrative Services Department and the Regional Offices where the computerized application systems were installed and implemented. The other departments namely; Internal Audit Office, Wholesale Guarantee Department, Credit Assessment Department and Legal Affairs Department were excluded from the sampling because the computerized systems were not yet installed on their area. Those directly engaged in the use of computer generated information and those direct users of information systems where taken as members of the population.

The sample size was determined by the formula by the author [16]:

$$n = \frac{N}{1 + N(e)^2}$$

where

$$n = \text{sample size} \quad (1)$$

$$N = \text{population}$$

$$e = \text{error tolerated}$$

The sample for each group of respondents was determined by multiplying the sample size (n) by the corresponding percentage or proportion to the total population. The respondents were stratified according to the department they belong. The table below summarizes the values showing the relative sizes of the samples:

**Table 1:** Stratified Distribution of Respondents

Department	Population	Sample
Planning Services Office (PSO)	27	19
Finance Services Department (FSD)	45	32
Loans Management Department (LMD)	22	15
Administrative Services Department (ASD)	52	36
Regional Offices	26	18
<b>T O T A L</b>	<b>172</b>	<b>120</b>

Questionnaires were distributed to a predetermined sample size of 120 respondents. This sample composed of 19 employees from PSO, 32 employees from FSD, 15 employees from LMD, 36 employees from ASD and 18 from the Regional Offices and from which the retrieval rate was 100 percent or 120 respondents. Thus, the analysis of the information system in terms of its implementation was based on the retrieved data.

### 3.4 Instruments

The researcher used the following instruments in the study:

**Questionnaire.** The researcher used questionnaire as the main instrument for data gathering. This was designed to obtain information about their department's profile as well as to gather the opinions of respondents regarding their assessment on the current management information system practices, evaluation of their computerized application systems, problems encountered and suggestions to improve the implementation of their Management Information System.

**Interview.** The researcher utilized the unstructured interview as a tool for cross-checking the responses during retrieval of the questionnaires.

**Documentary analysis.** The researcher also referred to the official documents of the corporation for its organizational structure, flowcharts, reports, special orders and memoranda, standard operating procedures and other policies.

### ***3.5 Validation of the Instrument***

To establish the content validity of the instrument, the researcher utilized the following procedure:

- 1. Consultation with experts.** Draft of the developed questionnaire was presented to experts in the areas to be studied, for their comments and suggestions, that helped for the content validity. Of these experts, one is the researcher's adviser; another is a computer analyst who is directly involved in MIS development; a MIS consultant who conducts seminars in Information Technology and a college professor who gives lectures in computer subjects specifically Management Information System. All comments and suggestions from consultations and referrals were used to improve the draft before the instrument was tried out.
- 2. Pre-testing.** The revised draft was presented again to the researcher's adviser for approval, then was reproduced and tried out to one respondent for every division (employee under the try out group are not part of the actual respondents). These employees were requested to determine other problems related to the activity and were requested to give recommendations and suggestions about the items in the questionnaire. The results served as the bases for the researcher whether or not to change the format of the questionnaire to ensure an efficient result.

### ***3.6 Treatment of Data***

To get answers to the specific problems and for easier understanding and interpretation of data, the following treatment were used: **Percentage.** This refers to the computation on the stratified proportion of respondents taken from each departments, its formula is as follow:

$$\text{Percentage (\%)} = \frac{n}{N} * 100 \quad (2)$$

Where:

n = sample size

N = population

**Weighted Mean.** This technique is used to compute for the mean of data to measure the perception of the respondents. It was computed by the following formula:

$$X = \frac{\sum fx}{N}$$

Where: X = weighted mean (3)

Σ = summation

f = number of times the item occurs

x = value of the item scale

N = total number of items/respondents

a. To determine the perceptions of the respondents toward certain areas on IS implementation, the weighted mean was used based on an arbitrary four-point scale where:

**Table 8**

Assigned Value	Range	Descriptive Response
4	3.51 – 4.00	Very Effective
3	2.51 – 3.50	Effective
2	1.51 – 2.50	Fair
1	1.00 – 1.50	Ineffective

b. To determine the assessment of the respondents on the information produced by computerized application systems, the weighted mean was used based on an arbitrary five-point scale where:

**Table 9**

Assigned Value	Range	Descriptive Response
5	4.51 - 5.00	Always
4	3.51 – 4.50	Most of the time
3	2.51 – 3.50	Sometimes
2	1.51 – 2.50	Seldom
1	1.00 – 1.50	Never

c. To determine the perceptions of the respondents on the seriousness of problems in the aspect of computerization, the weighted mean was used based on an arbitrary four-point scale where:

**Table 10**

Assigned Value	Range	Descriptive Response
4	3.51 – 4.00	Very Serious
3	2.51 – 3.50	Serious
2	1.51 – 2.50	Somewhat Serious
1	1.00 – 1.50	Not Serious

d. To determine the perceptions of the respondents on the importance of the proposals to solve the problems in the aspect of computerization, the weighted mean was used based on an arbitrary four-point scale where:

**Table 11**

Assigned Value	Range	Descriptive Response
4	3.51 – 4.00	Very Important
3	2.51 – 3.50	Important
2	1.51 – 2.50	Somewhat Important
1	1.00 – 1.50	Not Important

**Ranking** was also utilized to show the degree or extent of seriousness on the perceptions of the respondents and the importance of some recommendations to solve the problems besetting their department. Highest rank of 1 was allotted to the highest mean followed by the next lower value and so on.

#### 4. Results and Discussion

This part presents the data gathered from documentary analysis, interviews and questionnaires answered by the employees of each department. The data presented herein were collated, classified, analyzed and interpreted.

##### 4.1 Profile of Each Department

##### 4.1.1 Hardware Resources

**Table 2:** Ratio of Computer Units Allocation per Department

Department	End-users	Number of Computer Units	Approx. Ratio
Planning Services Office (PSO)	27	19	2:1
Finance Services Department (FSD)	45	10	5:1
Loans Management Department (LMD)	22	7	3:1
Administrative Services Department (ASD)	52	5	10:1
Regional Offices	26	13	2:1
<b>Total</b>	<b>172</b>	<b>54</b>	

Table 2 presents the ratio of computer units against the number of each department' end-users. Since MIS is under the department of PSO where every personnel has its own allotted computer unit, it appears to be the lowest ratio of almost two users to one computer unit.

Regional offices claimed to have two users to one computer unit proportion considering the data coordinator and accountant. Other employees aside from the two positions are excluded from the sampling. The other departments namely; FSD, LMD and ASD garnered 5:1, 3:1 and 10:1 ratio respectively.

These means that computer units seemed to be insufficient as compared to the number of users as far as per department is concerned. It obviously appears that insufficiency in the number of available hardware is perceived by the respondents as one of the major problems.

Figure 5 shows the connection of regional/district offices to the central office through wide area network (WAN) via internet technology. Data from the source were transmitted on-line as e-mails. If connection has interferences or communication barriers, they resulted to the use of fax machine to transfer data from them to the central office in Quezon City.

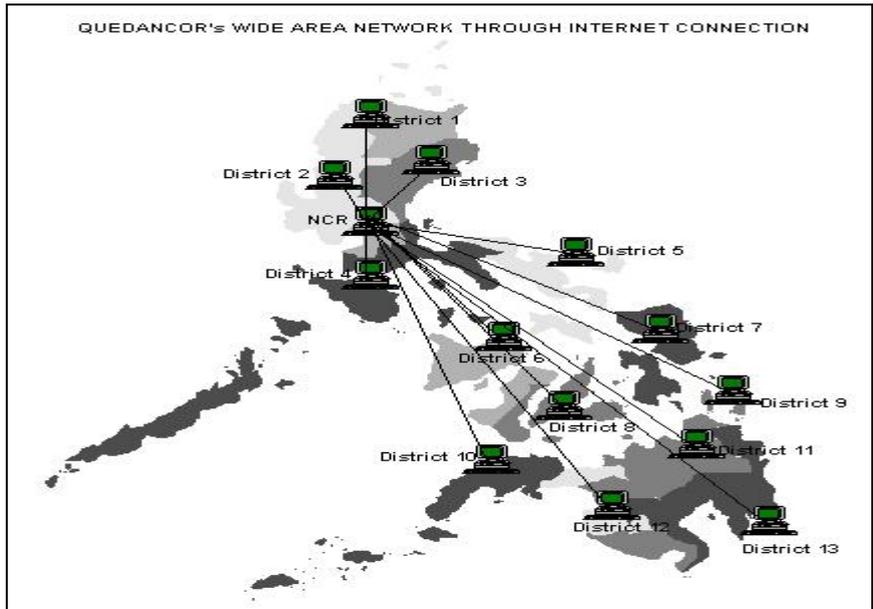


Figure 5: Quedancor’s Wide Area Network (WAN) Through Internet Connection

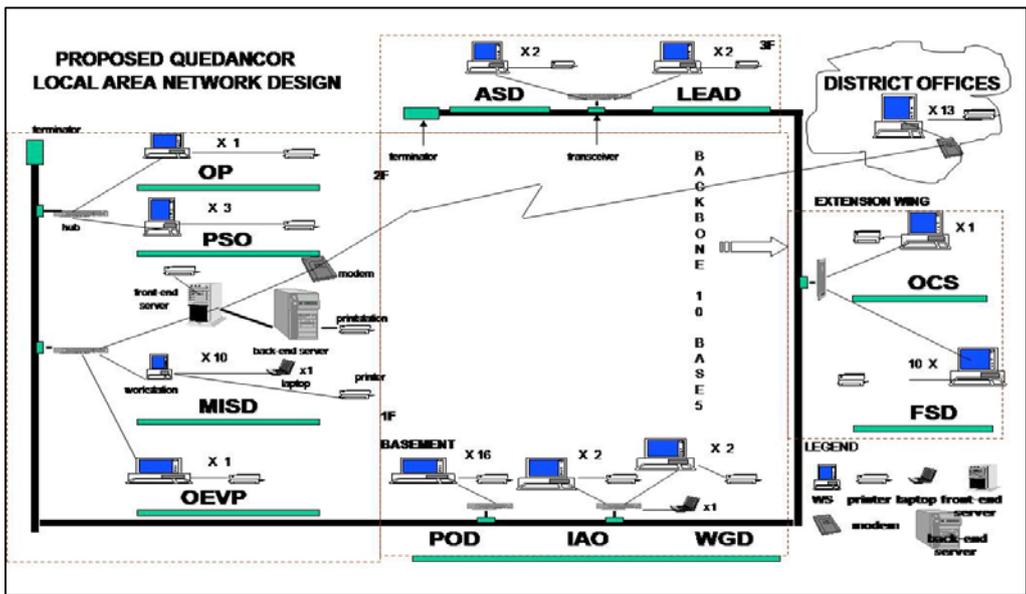


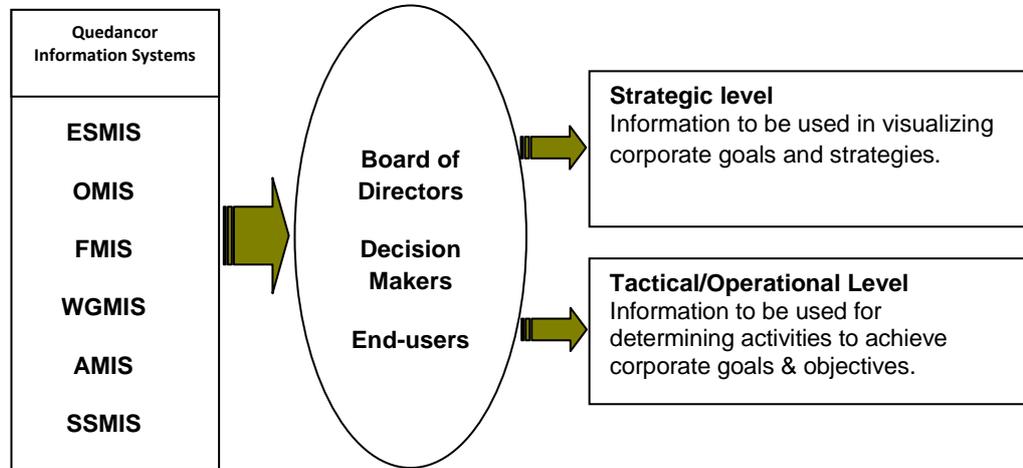
Figure 6: Quedancor’s Wide Area Network (WAN) Through Internet Connection

Figure 6 shows the proposed plan of the hardware network setup of the central office with its linkage to the regional offices but the company is still in the preliminary stage of installation. Three departments namely; PSO, LMD and FSD maintain their own set-up of local area network for themselves only. The interconnection of all the departments is still not operational. The connection from department to other departments should be the priority in the plan to facilitate the effective implementation of information systems, network is necessary.

4.1.2 Software Resources/Information Systems

All information systems shall be integrated in the back-end server allowing access by the different units of the

Corporation, using internet technology. This will formulate Quedancor Information System Architecture that supports the agency’s business functions and mission: to chisel a significant lending and guarantee scheme in the agriculture and fisheries sector.



**Figure 7:** Information Systems Architecture

Figure 7 shows the Information Systems Architecture that describes the critical information systems for management, operations and business functions of the agency which are categorized into two levels – strategic and tactical/operational.

**Strategic level** – visualizes the significant directions of the agency by formulating corporate goals and outlining operating procedures. The critical IS designed under this level is the: Executive Summary Management Information System (ESMIS)

**Tactical and Operational level** - contains a collection of information used in determining operational strategies. The critical information systems in this level include:

**Support Services Management Information System (SSMIS)**

- Planning Information System
- Library Information System
- Legal Information System
- Audit System

**Financial Management Information System (FMIS)**

- Payroll Information System
- Accounting Information System
- Budget Information System

## Wholesale Guarantee Management Information System (WGMIS)

## Administrative Management Information System (AMIS)

- Personnel Information System
- Property and Supply Information System
- Records Management Information System

## Operations Management Information System (OMIS)

### Loans Management Information System

- OMIS for Food & Agricultural Retail Enterprises (FARE)
- OMIS for Coordinated Agricultural Marketing and Production (CAMP)
- OMIS for Livelihood & Aqua-Marine Productivity (LAMP)
- OMIS for Fisherfolk Integrated Livelihood Project (FILP)
- OMIS for CARP Barangay Marketing Center and Farm Level Grains Center I (CBMC & FLGC I)
- OMIS for Rice and Corn-Based Farming System (RCBFS)
- OMIS for High Valued Commercial Crops (HVCC)
- OMIS for Sugar Farm Modernization (SFM)
- OMIS for Hybrid Corn/Hybrid Palay
- OMIS for Dairy Credit Guarantee
- OMIS for Special Agricultural Financing Window
- OMIS Integration

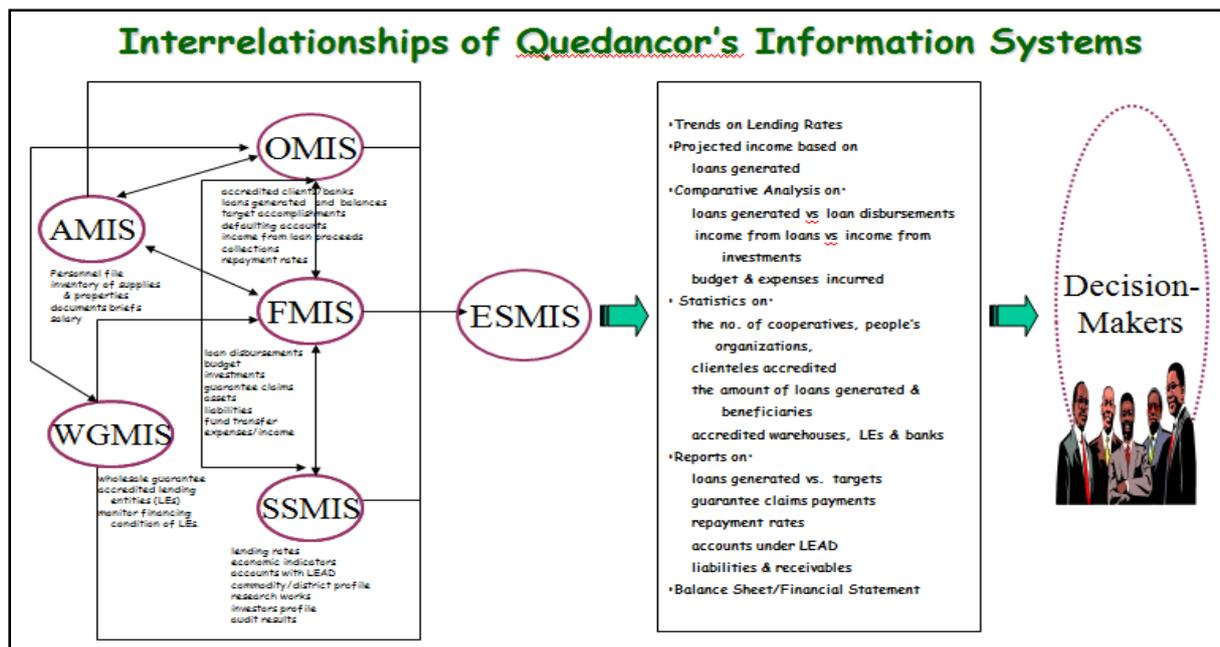


Figure 7: Interrelationships of Quedancor's Information Systems

Figure 7 is the schematic diagram of Quedancor’s information system which illustrates the flow and inter-dependence of information generated by the various information systems i.e. SSMIS, WGMIS, AMIS, FMIS and OMIS. For instance, the symbiotic relationship between OMIS and FMIS indicates, among others that the formers’ output is an input to the latters’ system and vice-versa. In addition, the major information (e.g. loans generated vs targets, income and expense statements) produced by the first five information systems will be channeled to the last system – ESMIS for efficient decision-making of the top executives of the corporation.

From the six critical information systems mentioned, only three among them are installed partially in their respective departments down to the regional level. These information systems are FMIS for FSD, AMIS for ASD and OMIS for PSO, LMD and other regional offices. Information systems were not deliver in full installation but instead by modules that’s why it is perceived to be a problem. Respondents do not view the system as a whole. End-users keep themselves of the frustrations regarding the failure of some computerized systems and hold firmly their old legacy systems. End-users are not convinced of the benefits of computerization because of unfinished information systems.

**4. 1.3 People Resources/End-users**

**Table 3:** Summary of Estimated Number of Computer-literate Personnel per Department

Department	Total No. of Personnel	Approx. % of Computer-literate Personnel	Estimated Number of Computer-literate Personnel					
			Less than 10	10 – 20	21 – 30	More than 30		
PSO	35	60% - 85%			✓			
FSD	52	58% - 86%					✓	
LMD	31	32% - 64%		✓				
ASD	82	36% - 63%					✓	
Regional Offices	10	31% - 50%	✓					

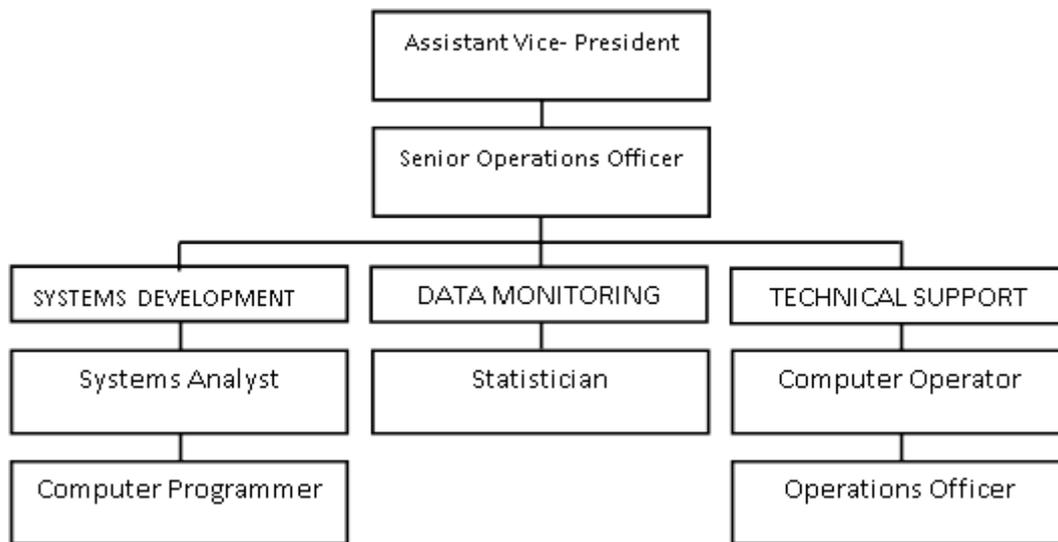
Table 3 presents the number of computer-literate personnel in each department namely PSO, FSD, LMD, ASD and the regional offices as estimated by the respondents from the concerned parties. The table shows that 21-30 employees from PSO are computer-literate, only 10-20 employees from LMD are computer-literate, both FSD and ASD have more than 30 computer-literate employees. Regional offices where the field people were deployed have less than 10 computer-literate employees. Based on interview, still majority of personnel are not computer-literate especially in the regional offices. This is one of the factors of delayed reports because most of

them are not that familiar in the operation of computer system.

#### 4.2 Profile of the Management Information Services

##### 4.2.1 MIS Organizational Structure

The Information Management Division (IMD) is a division under the Planning Services Department and the one in-charge of the implementation of the management information systems and the one performing Information Technology (IT) services for the agency.



**Figure 8:** The Present MIS Organizational Structure

Figure 8 shows the present organizational structure of the MIS Group which is composed of three groups: systems development, data monitoring and technical support. The functions of the division caters to all IT-related functions and data monitoring were monitoring can be done better by other departments who were directly involved and exposed to such areas and functions. Due to the limited number of MIS personnel, the functions of one person does not focus only on his actual position but instead doing other functions. This could also be the reason why respondents perceived the delayed actions of MIS technical support. The organizational structure of the current MIS division is very lean because of the limited number of positions as far as the degree of computerization needs of the whole agency is concerned.

##### 4.2.2 MIS Personnel

The current manpower consists of one(1) Assistant Vice-President, two(2) systems analysts, three(3) computer programmers, two(2) computer operators and two non-IT positions. The Senior Operations Officer and one systems analyst positions are vacant. Some IT personnel are not functioning to the assumed duties and responsibilities but instead doing other functions. In effect, one IT personnel is tasked to do other IS functions to accommodate the deficiency of personnel.

#### 4.2.3 IMD Functional Description

Based on the division’s roles and responsibilities stated in the organization functional descriptions of the agency, IMD is the one that analyzes, designs and develops systems and procedures involved in the various financing programs. Undertakes monitoring and evaluation of data and translates the same into management information. The division is tasked to provide the electronic data processing services required by the Office of the President and other operating units for planning, decision-making and management purposes as well as develops and maintains data bank for planning and policy studies.

It can be observed that the scope of the division’s functions and area of responsibility are broad enough vis-à-vis the number of IMD personnel. As far as the range of computerization of the agency is concerned, it is accepted that IMD manpower is inadequate and technically insufficient.

#### 4.2.4 Effectiveness of MIS Implementation

**Table 4:** Respondents’ Assessment on the Effectiveness of the Implementation of Information Systems

Area	Mean	Descriptive Response
Management support	1.95	Fair
User involvement and commitment	1.49	Ineffective
Communication and coordination of MIS personnel to the rest of the company	1.48	Ineffective
MIS Planning	2.29	Fair
Training	2.19	Fair

Table 4 presents the respondents perceived effectiveness in some areas of concern such as management support, user involvement and commitment, communication and coordination of MIS personnel to the rest of the company, MIS planning and training.

User involvement and MIS personnel communication to the rest of the company appear to have a mean of 1.49 and 1.48 respectively. This shows that the respondent’s perceptions with these concerns are ineffective as far as MIS implementation is concerned.

Users are interviewed at the start of the systems analysis and are requested to fill-up the information requirement analysis form (IRA form) which served as the basis of the designers and programmers in the development of the system. Users has no intensive participation during the development stage but instead they are required to deal with the system after it was installed in their area for test run. There is no extensive involvement from users during the development of these information systems, causing a significant jolt in the user organization when turn over occurs.

Information systems development are not thoroughly discussed to the concerned department that's why some of the employees are unaware of the on-going project. Communication between the MIS personnel and the rest of the company is perceived to be ineffective.

Employees are hesitant to involve themselves in the project development simply because they are not convinced enough to participate. They are afraid of some unknown reasons that hinders them to get involved maybe because of insufficient information campaign and lack of department's coordination.

There is a poor communication and coordination of the MIS personnel to the rest of the company. The management has not clearly communicated the computerization plan to the entire corporation that's why users are unable to relate properly to MIS due to inadequate IS orientation. The MIS personnel on the other hand, do not understand enough about user-section orientation disabling them to communicate properly.

But the management support, MIS planning and training obtained mean of 1.95, 2.29 and 2.19 respectively. These show that the employees perceived these areas as fairly effective as far as MIS implementation is concerned.

The success of a computerization project also depends on the adequate orientation of the executives as far as the advantages of information technology is concerned. It is a fact that some of the managerial level personnel are not technically oriented in this modern technology that restrict them and causing delays in some of their decisions.

MIS planning is central to IMD personnel and is not properly disseminated to other departments keeping other employees unattended to the future computerization plans.

Training is also an important investment a company should have especially the MIS personnel to keep them abreast on the latest trend in this fast-pacing technology.

Other employees also need training and workshop to keep themselves aware of the new office productivity tools that they can use in their day-to-day functions. Managerial-level personnel need some executive-support seminars that will acquaint them on the latest issue on computerization that will help them in some decision-making functions. But this undertaking are seldom happens because of some management priorities and budgetary constraints.

#### ***4.3 Respondents' Assessment on the Information Produced by the Computerized Application System***

**Table 5:** Respondents' Evaluation on the Information Produced by Computerized Application Systems

Criteria	Mean	Descriptive Response
Accuracy	2.43	Sometimes
Completeness	2.39	Sometimes
Timeliness	2.56	Most of the time
Relevance	2.55	Most of the time

Table 5 presents the mean score distributions of the respondents' assessment on the information produced by the computerized application system in terms of accuracy, completeness, timeliness and relevance. The breakdown of mean are as follows: 2.43 for accuracy, 2.39 for completeness, 2.56 for timeliness and 2.55 for relevance.

The respondents perceived that the computer-generated information was occasionally accurate and complete. Since information systems are installed in their area by phase or by module, it was judged insufficient and unsatisfactory. Input data are also inadequate and delayed thus, producing incomplete and understated reports.

On the contrary, respondents perceived information systems as constantly producing timely and relevant results. It is for obvious reasons that computations and processing are done electronically providing immediate pre-formatted outputs at a click of button.

#### **4.4 Problems Encountered Regarding Computerization**

Table 6 presents the problems that were encountered and observed by the employees in the implementation of the information systems. It can be gleaned from the table that there are seriousness in the problems encountered by the respondents as evidenced by their individual mean

It obviously appears that deficiency in the number of available hardware/software with a mean value of 3.23 suggests that there are seriousness in each department as far as problem in numbers of computer unit is concerned. Procurements of hardware and software passes through a long process, from the filing of requisition slip up to approval takes a long time to wait and the management has to prioritize the distribution of units depending on the urgency of need.

Lack of regular feedback mechanism such as meetings involving management, technical personnel and users regarding information systems appears to be the second problem with a mean value of 3.11. There is no monitoring of information systems development conducted by the management such as regular assessment and evaluation through meetings involving all of the concerned parties.

Information systems were not being used efficiently and effectively by the concerned division keeping the

computerized application system unexplored. The table shows a mean value of 2.98 which indicates a serious concern. Employees still using their old practice of traditional manual work. They are sometimes afraid or hesitant to use the system for they themselves are not familiar of operating the computer which according to some keep them less productive compared to their manual systems where they are used to it for the past years.

**Table 6:** Respondents' Assessment on the Problems Encountered Regarding Computerization

Problems	Mean	Descriptive Response	Rank
Insufficient number of available hardware/software needed for the day-to-day operations	3.23	Serious	1
Inadequate knowledge of rank-and-file personnel in the operation of computer systems	2.95	Serious	4.5
Insufficient knowledge of the IT technical personnel regarding the latest trends in information technology	2.93	Serious	6
Lack of awareness/appreciation of supervisory level personnel in the advantages of information technology	2.67	Serious	11
Redundancy in the functions of some divisions especially in the areas of loans monitoring	2.49	Somewhat Serious	12
Lack of management involvement and support on financial allocation for hardware/software acquisition	2.88	Serious	7.5
Incomplete identification of managerial information needs which cause the delay in the production of information needed for the decision-making process by the management	2.46	Somewhat Serious	13
Information systems are not being used efficiently and effectively or economically by the concerned division	2.98	Serious	3
Lack of regular feedback mechanism, ie. regular meeting involving management, technical personnel and users regarding information systems	3.11	Serious	2
Lack of continuous monitoring on systems development and implementation by IT personnel and the concerned division	2.80	Serious	10
Lack of evaluation on the system's actual performance against information systems' goal	2.81	Serious	9
Delayed response from technical personnel regarding problems on the computer systems	2.95	Serious	4.5
Lack of security measures on the protection of computer programs and system's resources	2.88	Serious	7.5

Inadequacy of knowledge of ranked-and-file employees in the computer operations and delayed response from technical personnel regarding problems on the computer systems followed next with mean values of both 2.95.

These two were the cause and effect of each other where if rank-and-file employees are properly guided through orientations and workshops, minor problems in the computer operations can be solved immediately by them. There is only one technical person tasked to do the troubleshooting and hardware repair functions so he cannot satisfy all the requests of all departments keeping them waiting for a couple of days. Sometimes other IMD staff temporarily pause their work and attend to these problems if urgency is needed.

IT technical personnel are also needing important training to keep them abreast with the trend of the modern technology that's why it is perceived to be a serious problem with a mean value of 2.93. Inventions and development of both hardware and software are fast pacing and IT people should not be left behind. Training is seldom happens to IMD staff due to some priorities and budgetary constraints.

Lack of management involvement and support on financial allocation for hardware/software allocation is also a serious problem as perceived by the respondents with a mean value of 2.88. Budget for the hardware and software procurements is not on top priority of the management resulting in the problem as far as the proportionality of the number of users as compared to the number of computer units is concerned.

There is also lack of security measures on the protection of computer programs and system's resources. The table shows the mean value of 2.88 which indicates a seriousness in this problem. End-users were not acquainted and oriented on the basic security measures in the proper management of the computer components and peripherals.

Lack of continuous monitoring on systems development and implementation by IT personnel and users regarding information systems as well as the evaluation on systems performance perceived to be some serious problems as shown in the table with mean value of 2.80 and 2.81 respectively. The IMD systems development group are developing and enhancing several information systems almost simultaneously which confused them to what system will be the priority and which system needs more attention. Limited number of the group is mainly the reason of not delivering what system is expected to finish on the given timeframe. There is no close monitoring and evaluation on the systems' performance.

There is also problem on the appreciation level of supervisory personnel in the aspects of information technology as evidenced by the mean value of 2.67 as shown in the table. These people need some awareness seminar that will keep them knowledgeable enough in this new field of technology that might help them in some decision making functions.

There is also confusion in the functions of some divisions due to the realignment of some departments of the agency. It appears to be somewhat serious problem as shown in the table with a mean value of 2.49.

Incomplete identification of managerial information needs considered also as something serious problem with a mean value of 2.46 as depicted in the table. It is due to some redundancy of report requirements and incomplete entries in the IRA form given before the conception of an information system. IRA is not being verified properly with the concerned parties.

**4.5 Respondents' Recommendation to Solve the Problems Encountered Regarding Computerization**

**Table 7:** Respondents' Recommendation to Solve Perceived Problems in the Computerization

Recommendation	Mean	Descriptive Response	Rank
Management involvement and support on financial allocation for hardware/software acquisitions	3.16	Important	1
Training on the proper usage of computer system to rank-and-file personnel	3.13	Important	4.5
Regular training for IT technical personnel to keep adept on the latest trends in information technology	3.06	Important	6.5
Conduct an IT awareness and appreciation seminar to supervisory level personnel	3.06	Important	6.5
Reassess the functions of some divisions especially in the areas of loans monitoring	2.98	Important	7
Identification of managerial information needs to a speedy production of information for the decision-making process of the management	2.94	Important	9.5
Valuable information systems should be used efficiently and effectively or economically by the concerned division	3.11	Important	3
Conduct regular feedback mechanism, ie. regular meeting involving management, technical personnel and users for continuing information exchange	3.15	Important	2
Conduct regular system evaluation on the actual performance against information systems' goal	2.94	Important	9.5
Immediate response from technical personnel regarding problems on the computer systems	3.13	Important	4.5
Provide security measures for the protection of computer systems and programs	2.97	Important	8

Table 7 presents the recommended solutions to their problems encountered regarding computerization with their individual mean values and ranks of importance.

As shown in the table , the mean value of 3.16 indicates that each respondent believes that management involvement and support on financial allocation for hardware and software acquisition is very important to satisfy the most serious problem in the computerization project of the company which is the shortage of computer hardware and software. It is recommended that management must give ample importance on this matter.

There is a need to conduct regular meeting regarding information systems by the concerned parties such as management, technical personnel and end-users regarding the computerization plan as evidenced by the mean value of 3.15. In so doing, there will be a continuing information exchange like updates in the development, problems encountered can be identified and settled.

Information systems should be imposed to be used effectively. The mean value of 3.11 suggested that the computerized application system need an important attention. These system must be finished and completed on time so that optimum performance can be achieved

Training of rank-and-file personnel and IT awareness and seminar to supervisors seemed also important. The table shows their mean values of 3.13 and 3.06 respectively which suggests to prepare training programs for them. They must be equipped with the necessary tools in their day-to-day and managerial functions. If they are properly oriented on the basic management of the computer system, problems in the operation can be lessen and addressed.

It can be depicted from the table with a mean value of 3.06 that IT technical personnel need regular training in information technology to keep them adept to the latest trends.

Due to realignment of some departments, the mean value of 2.98 recommends a reassessment of some functions especially in the divisions related to loans monitoring.

The mean value of 2.97 also suggests that there should be security measures on the protection of computer system's resources and can be answered if the end-users are properly oriented with technical know-how in the management of computer system.

Evaluation of information system's performance and identification of managerial information needs with mean values of both 2.94 suggest that information requirements of each level of management must be identified at the start of the systems development so that problems in systems performance can be solved and expected results can be delivered on time.

## **5. Summary of Findings, Conclusions and Recommendations**

This study was an attempt to analyze the implementation of management information systems of Quedan and Rural Credit Guarantee Corporation from the end-users point of view. The use of descriptive method of research contributed in gathering the required data and information from a purposive and convenience sample size of respondents.

### ***5.1 Summary of Findings***

#### ***5.1.1 Computer Resources***

##### ***A. Hardware Resources***

A.1 The ratio of computer units versus computer users as depicted in Table 4 appears that the highest ratio was approximately ten (10) users per one computer.

A.2 Regional offices transfer data through wide area network via internet and sent as e-mails. If connection has interferences or communication barriers, they resulted to the use of fax machine.

A.3 The hardware network set-up as proposed in the Appendices A and B is not yet fully operational. Computers in the three departments were attached to a local area network namely; PSO, LMD and FSD and the rests of the departments are stand-alones.

## **B. Software Resources**

B.1 There are six major critical information systems which are about to develop namely; OMIS, FMIS, WGMIS, SSMIS, AMIS and ESMIS. Each of which are composed of several subsystems. All information systems shall be integrated in the back-end server allowing access by different units of the corporation formulating the IS Architecture to support the agency's functions. Each major system should be connected and inter-dependent to other systems as shown in the schematic diagram in Figure No. 8. Only three among the six critical systems are installed partially in their respective departments down to the regional level. Other systems are still under development.

B.2 Information systems were not delivered in full installation but instead by phase or by module only.

B.3 Other software installed were operating systems, productivity and development software, graphics, utilities among others which are used by each departments for their operational functions.

## **C. End-users Computer Literacy**

The number of computer-literate personnel in each department namely PSO, FSD, LMD, ASD and the regional offices as estimated by the respondents from the concerned parties that 21-30 employees from PSO appear to be computer-literate, only 10-20 employees from LMD are computer-literate, both FSD and ASD have more than 30 computer-literate employees. Regional offices where the field people were deployed have less than 10 computer-literate employees.

### **5.1.2 Profile of the MIS Division**

#### **A. Organizational Structure**

The Information Management Division (IMD) is a division under the Planning Services Department and the one in-charge of the implementation of the management information systems and the one performing Information Technology (IT) services for the agency. The MIS division is composed of three groups: systems development, data monitoring and technical support.

#### **B. MIS Personnel**

The current manpower consists of one (1) Assistant Vice-President, two (2) systems analysts, three (3) computer programmers, two (2) computer operators and two non-IT positions. The Senior Operations Officer and one systems analyst positions are vacant since April, 2014 and October, 2015 respectively.

### ***5.1.3 Effectiveness of MIS Implementation***

The respondents assessed that the areas of management support, MIS planning and training, were fairly effective as far as MIS implementation is concerned. Users' involvement/commitment and communication/coordination of MIS personnel to the rest of the company were assessed to be ineffective.

### ***5.1.4 Respondents' Assessment on the Information produced by the Computerized Application Systems***

The respondents assessed the computer-generated information produced by the computerized application systems in terms of accuracy, completeness, timeliness and relevance and obtained the mean values as follows: 2.43 for accuracy, 2.39 for completeness, 2.56 for timeliness and 2.55 for relevance. The respondents evaluated that the computer-generated information was occasionally accurate and complete. On the contrary, respondents assessed information systems constantly producing timely and relevant results. It is for obvious reasons that computations and processing are done electronically.

### ***5.1.5 Problems Encountered Regarding Computerization***

Respondents in each department encountered problems regarding computerization and obviously appears that the top five serious problems faced by each department are as follows: insufficiency in the number of available hardware/software ranked number one, lack of regular feedback mechanism such as meeting involving management, technical personnel and users regarding information systems comes in second, followed by problems of not using the information systems efficiently and effectively in third and inadequacy of knowledge of ranked-and-file employees in the computer operations and delayed response from technical personnel regarding problems on the computer systems followed next. Other problems are also given with their corresponding mean that defined its seriousness.

### ***5.1.6 Respondents Recommendation to Solve the Perceived Problems***

Employees believed that the five most important solutions to help solve the problems regarding computerization are as follows: management involvement and support on financial allocation for hardware and software acquisition is very important for it is ranked first. Conduct regular meeting regarding information systems by the concerned such as management, technical personnel and end-users comes in second and information systems should be imposed to be used effectively and efficiently by the concerned divisions or departments. Training of rank-and-file personnel and IT awareness and seminar to supervisors seemed also important.

## ***5.2 Conclusions***

Based on the foregoing analysis, the researcher arrived at the following conclusions:

1. Computer illiteracy is still considered a pressing problem even among contemporary business institutions whose operations depend on information technology most of the time.
2. Effective decision-making especially on institutional innovations should be dependent on communication that is two-way; up-down, down-up, and across or within departments.
3. Financial constraints remain as one of the top reasons for organizational failures in adopting computerized operations.
4. Not all aspects of organizational operations, like accounting can be easily programmed and computerized.

### **5.3 Recommendations**

Based on the findings and conclusions, the following are the researcher's recommendations:

1. If and when financial conditions permit, there should be immediate installation of hardware resources and development of information systems. Procurement and acquisition of hardware and full development of the critical information systems are necessary to carry-out the effective implementation. Fast tracking installation of network must be the priority in the plan and information systems must be simultaneously done. Management must support these undertakings.
2. There should be a consultative budgeting in the financial allocations to hardware and software procurement and prioritize budget for any computerization project of the agency.
3. There should be continuous training for all users and operators including the manager within the computerized system development and application.
4. Full involvement and participation of users and operators during the future systems development or enhancement. Coordination with the concerned departments is important. Let them participate in the development as systems analysts' counterpart. It is recommended to involve them as member of the development team, inform them of their critical role in the output of information systems.
5. There should be an upgrading of job positions especially composition of IMD division. Additional IT positions are recommended and be able to employ highly-qualified personnel to fill-up the vacancies. In so doing, the group might deliver the systems on time and what is expected from them. Reassess the functions of the MIS division. Therefore, to just concentrate on the IT aspects of responsibilities.
6. Reorganization of IMD as MIS Department separating from the Planning Services Office which will be managed by a chief information officer is recommended.

### **References**

- [1] A. Alenizi, "Challenges Facing Today's Information System Development". Internet: [www.linkedin.com/pulse/challenges-facing-todays-information-system-ali-alenizi](http://www.linkedin.com/pulse/challenges-facing-todays-information-system-ali-alenizi), February 5, 2015 [October 20, 2016].

- [2] B. Gates and C. Hemingway, "Business @ The Speed of Thought: Succeeding in the Digital Economy", Warner Books, USA, 2000
- [3] B. McNurlin, R. Sprague and T. Bui, "Information Systems Management", Pearson Education Limited, 2013
- [4] C. Iñigo. "Management for Filipinos-Principles and Practices", 6<sup>th</sup> Edition, Gemini Graphic Arts, Manila, 2013
- [5] D. Kroenke, "Using MIS", 7th Edition, Pearson Publishing, 2015
- [6] G. Merrill and C. Gallabraith, "The Politics of Forecasting: Managing the Truth", California Management Review, 1996
- [7] J. Claggett, J. Ross and R. Murdick, "Information Systems for Modern Management", PHI Learning, 2009
- [8] J. O'brien and M. Marakas, "Management Information Systems," 10<sup>th</sup> Edition, McGraw-Hill, 2011
- [9] K. Chetan, "Concept, Role and Importance of MIS". Internet: [www.linkedin.com/pulse/concept-role-importance-mis-kumar-chetan](http://www.linkedin.com/pulse/concept-role-importance-mis-kumar-chetan) July 4, 2015 [October 20, 2016].
- [10] L. Long, "Management Information Systems", Prentice Hall Publishers, Englewood Cliffs, NJ, 1989
- [11] N.Ch, "Decision Making: Strategic, Tactical and Operational Decisions." Internet: [www.linkedin.com/pulse/decisions-making-strategic-tactical-operational-neeth-ch](http://www.linkedin.com/pulse/decisions-making-strategic-tactical-operational-neeth-ch), June 8, 2015 [October 15, 2016].
- [12] J. Claggett, J. Ross and R. Murdick, "Information Systems for Modern Management", PHI Learning, 2009
- [13] R. Cafasso, "Few IS Projects In on time, On Budget", Computerworld, 2004
- [14] R. Stair and G. Reynolds, "Principles of Information Systems", 12<sup>th</sup> Edition, Cengage Learning, 2016
- [15] R. Stewart, "How Computer Affect Management", Springer Customer Service Center, 2013
- [16] T. Ryan, "Sample Size Determination and Power", John Wiley and Sons, 2013