



## **Effectiveness of the MIS Units in SUCs Samar-Leyte Islands through Management Functions: Administrators and MIS Personnel Perspective**

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### **Authors' contributions**

*This work was carried out in collaboration between both authors. Author JPCJ designed the study, performed the statistical analysis, wrote the protocol, and wrote the first draft of the manuscript. Author DMP managed the analyses of the study. Both authors read and approved the final manuscript.*

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### **ABSTRACT**

This paper aims to measure and determine the effectiveness of the MIS units in SUCs Samar-Leyte Islands through planning, organizing, leading, and controlling as perceived by the administrators and MIS personnel. Management functions identify and prepare the future activities to enhance the MIS units, determine the ICT resources, create a consultation, and communicate with other offices/units. This aspect brings advantages and benefits to the institution that capture the defined management objective. Benefits management identifies goals and benefits by combining organizational changes and investments in IS/IT, and also by showing the way to achieve them [1].

As a measure to sustain the effectiveness and importance of the management operation of the MIS unit, this determines the stability, identifies the expansion of services, recognized common standard policies and procedures, improvements, and development in every office in the organization. The process uses a descriptive survey, involves collecting information through data review, surveys questionnaires, and interviews. The findings and analysis of the operational status

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of the MIS unit as perceived through the management functions (planning, organizing, leading, and controlling). The performance level of satisfaction and effectiveness of the MIS units in terms of management functions were considered by the respondents as very satisfactory, thus proving the effective performance of the MIS operation. This means that the management functions had facilitated collaboratively integrated policies and procedures to properly address the processes of the MIS operations.

*Keywords: Effectiveness; ICT resources; management functions; management process; MIS.*

## 1. INTRODUCTION

Organizations and other educational institutions have prioritized the implementation of management information systems units to cater to the Information Technology (IT) services and management operation. The majority of the state universities had already implemented plans for the MIS units which will efficiently cater to the school performance in information systems services. The management status of the MIS unit of SUCs in Samar-Leyte Islands in terms of planning, organizing, leading, and controlling have considered determining the performance of the unit administrator and personnel.

The Management Information System (MIS) describes the significant aspect which involves designing, organizing, and developing an information system to support organizational activities and plans to improve administrative functions, decision-making, and functions in delivering ICT services. Management and information systems collaboratively create common concepts and functions in which management and the information systems are subsets of the overall organizational planning, directing, organizing, and controlling operational activities covering the application of technologies, organizational procedures, and human resources.

Management Information Systems (MIS) spread rapidly, endorsed by industrial corporations, consultants, academic researchers, management writers, and computer manufacturers. The system satisfies all the information needs of managers and provides information to people who make choices on the disposition of valuable resources in a timely, accurate, and complete manner at a minimum of the cognitive and economic acquisition cost, processing, storage, and retrieval [2].

Information System (IS) is a critical resource in the operation and management of tertiary institutions. The timely availability of relevant

information is vital for the effective performance of managerial functions such as planning, organizing, leading, and controlling [3].

The MIS unit provides consistent and accurate information thus serving the state universities and colleges (SUCs) research, instruction, production, and decision making. To facilitate the MIS unit, the IT personnel and other officials should address common problems in the SUCs operations in terms of providing and delivering information systems services. It is observed that the current situations and common problems are the lack of training of the IT personnel especially on the technical aspects which should be given attention; the limited supply of computer equipment and facilities due to limited budget; outdated software specifications and inflexible application programs; incompatibility and unresponsiveness of operation; irrelevant report format and inconsistency of information that result in inefficiency; inappropriate updates of policies, and uncompromised standards or procedures of the unit. These issues may escalate to awareness and give certain attention to address the management personnel.

### 1.1 ICT Resources (MIS Operations)

The ICT resources which cast the MIS operations were identified as hardware (the equipment, networking, and other components), software (application programs and system software), and peopleware (identified through the IT skills personnel, system administrator, and application users).

The table shows the list of common IT services offered in the MIS unit as part of the functions of the ICT operations. The MIS unit offers services and assistance to computer related problems, maintenance and repair, installations, configuration, and updates. These services are handled and performed by the assigned skilled MIS personnel.

These IT services, aside from system development, planning, and management

control, also emphasize the technical part of the operation which deals with the hardware and other computer equipment. The computer installation, repair, and maintenance, networking services, internet setup, and software installation, etc. are the common technical problems met by the employees/clients and other offices. This assistance provides better help and support to the organization for faster recovery and easy solutions to the problems.

### 1.2 Management Functions

Management Information Systems play a strategic role in the life of organizations. It provides management with appropriate information in the right place and time to help the management do the various functions of planning, organizing, directing and controlling, and decision-making [4].

## 2. METHODOLOGY

This process uses a descriptive survey, involves collecting information through data review, surveys questionnaires, and interviews. A set of questionnaires used for the administrators and MIS personnel measured the effectiveness of the MIS unit through management functions. The MIS personnel identified the profile of the MIS unit, ICT resources, and clearly, the management functions have also identified the planning, organizing, leading, and controlling aspects. These functions were used in the

survey to determine the units' capability and ability to provide necessary directions, coordination, and organization. Henri Fayol credited as the first person to identify and describe management functions, posited that the management components that comprise a manager's job are planning, organizing, command (leading), coordination, and control. These are often referred to as "the management process" [5].

### 2.1 Respondents and Procedure

The identified respondents were school administrators and MIS personnel of the eight (8) state universities in the Samar-Leyte Islands. Both purposive and random sampling was used to determine the population. Twenty-five percent of the population was used to determine the sample size for each classification in each state university. The respondents were given questionnaires to elicit the necessary data and information. While more than eighty percent (80%) of the respondents were expected to respond to the survey, and only 98 school administrators were able to respond/answer the questionnaires. Two out of 17 school administrators from UEP and 3 out of 12 questionnaires in SSU were not retrieved. The respondents are classified as system administrators and users who handle and manage the ICT operations and perform day-to-day interactions with the information system.

**Table 1. SUCs MIS unit services on systems and delivery**

MIS Services	LNU	NwSSU	UEP	PIT	EVSU	SSU	ESSU	SLSU	Total
1. Hardware Setup & Installation	a	a	a	a	a	a	a	a	8
2. Repair & Maintenance	a	a	a	a	a	a	a	a	8
3. Networking Services	a	a	a	a	a	a	a	a	8
4. Internet Setup & Installation	a	a	a	a	a	a	a	a	8
5. Software Installation	a	a	a	a	a	a	a	a	8
6. Data Recovery & Restoration	a	a	a	a	a	a	a	a	8
7. Disk Formatting	a	a	a	a	a	a	a	a	8
8. Data & File Transfer	a	a	a	a	a	a	a	a	8
9. Audio-visual Recordings	na	na	a	na	a	a	a	a	5
10. Image Editing & Restoration	na	na	a	na	a	na	a	a	4
11. Seminar & Training	na	na	a	na	a	a	a	a	5

Table 2 shows the frequency and percentage distribution of the respondents. EVSU has the most number of administrators - 16; SLSU, the lowest – 8. As to the IT staff, UEP tops the list with 8; SLSU, the lowest – 2. As the number of student respondents, UEP had the highest – 290; PIT, the lowest – 9.

**2.2 Validation of Instrument**

The guidelines and procedures in administering the questionnaire for the data collection were also prepared and followed to sustain the validity of the instrument. The construction of the questionnaire was prepared and based on management function practices and following technical issues in ICT operation and procedure. The validation of the instrument was conducted in the Naval State University (NSU) a state university in Biliran Island whose MIS unit is operationally provided ICT services. The instrument was presented to the identified respondents. The dry run was done to test the reliability of the instruments for the profile and MIS operation of management information systems in SUCs. The data gathered during the

dry run was analyzed by a statistician to determine the instrument’s reliability.

The management functions identified the planning, organizing, leading, and controlling aspects. These functions were used in the survey to determine the units’ capability and ability to provide necessary directions. This part of the questionnaire used a rating scale of 1 to 5 where 5 means “Always”; 4 is “Very Frequently”; 3, “Occasionally”; 2, “Rarely”, and 1, “Never”.

The 10 items in each category got an excellent reliability coefficient which means that the questionnaire was reliable.

**3. RESULTS**

The operational status of the MIS unit of the SUCs in the Samar-Leyte Islands dwells on the management functions of planning, organizing, leading, and controlling. This function describes and identifies individuals that can lead, handle situations, perform corrective actions, provide up-to-date information to the organizations and

**Table 2. Frequency and percentage distribution on the respondents of the study**

State Universities and Colleges (SUCs)	Administrators		MIS personnel		Total	
	f	%	f	%	f	%
1. Leyte Normal University	10	10.20	6	14.63	16	11.51
2. Northwest Samar State University	14	14.29	5	12.20	19	13.66
3. University of Eastern Philippines	15	15.31	8	19.51	23	16.24
4. Palompon Institute of Technology	14	14.29	4	9.76	18	12.94
5. Eastern Visayas State University	16	16.33	4	9.76	20	14.38
6. Samar State University	9	9.18	2	4.88	11	7.91
7. Eastern Samar State University	12	12.24	7	17.07	19	13.66
8. Southern Leyte State University	8	8.16	5	12.20	13	9.35
TOTAL	98	100.00	41	100.00	139	100.00

**Table 3. The operational status of management information systems unit of SUCs in Samar-Leyte islands**

Category	Number of items	Reliability coefficient	Interpretation
Planning	10	0.93	Excellent
Organizing	10	0.96	Excellent
Leading	10	0.96	Excellent
Controlling	10	0.97	Excellent
Overall Result	40	0.99	Excellent

*Legend: (De Guzman-Santos, 2007)*  
 0.90 and above - Excellent Reliability  
 0.80 - 0.89 - Very Good Reliability  
 0.70 - 0.79 - Good Reliability  
 0.60 - 0.69 - Somewhat Low Reliability  
 0.50 - 0.59 - Needs Revision

make decisions for the institution’s efficiency and accomplishments. The operations measure the capability, performance, and effectiveness of the operation of the MIS unit.

Table 4 illustrates the summary of the management functions for the operational status of the SUCs MIS unit as perceived by the respondents. From the administrator’s perspective, the average mean for planning, organizing, leading, and controlling was 3.69, interpreted as “very frequently”; while, from the perspective of the MIS personnel, the average mean for planning, organizing, leading, and controlling was 4.22 interpreted also as “very frequently”.

The results imply that the administrators and MIS personnel both provided aggressiveness in performing their duties and responsibilities in managing the operation of the MIS unit. This also means that the MIS operation and services are effective to achieve goals and success.

Table 5 shows the independent sample using the T-test tool to test the significant difference in the perceptions of the administrators and the MIS staff on the operational status of the MIS units of SUCs in the Samar-Leyte Islands in terms of management functions.

For the planning function of management, the perceptions of the respondents have a mean difference of -0.50. The t-test computed value was -4.300 with a significant value of .000 which was lesser than the 0.05 alpha level of significance. Therefore, the null hypothesis which stated that there was a significant difference in the perception of the administrators and MIS staff was rejected. This means that the administrators and the MIS staff are both effective in discharging their responsibilities. Limited responsibilities of management in three responsibilities which are planning to direct and controlling [6]. On the other hand, it includes the decision making to the managers' responsibilities [7].

**Table 4. Summary Table on the operational status of the SUCs MIS units in Samar-Leyte islands in terms of its management functions as perceived by the respondents**

Operational status of mis unit in terms of the following management functions:	Perceptions of the respondents								
	Administrators			MIS Personnel			Overall Result		
	$\bar{x}$	Int.	SD	$\bar{x}$	Int.	SD	$\bar{x}$	Int.	SD
1. Planning	3.69	VF	0.66	4.19	VF	0.51	3.94	VF	0.59
2. Organizing	3.74	VF	0.68	4.24	VF	0.55	3.99	VF	0.62
3. Leading	3.66	VF	0.70	4.26	VF	0.48	3.96	VF	0.59
4. Controlling	3.68	VF	0.66	4.18	VF	0.51	3.93	VF	0.58
Overall Result	3.69	VF	0.68	4.22	VF	0.51	3.96	VF	0.60
	Scale			Interpretation					
	4.51 - 5.00			Always (A)					
	3.51 - 4.50			Very Frequently (VF)					
	2.51 - 3.50			Occasionally (O)					
	1.51 - 2.50			Rarely (R)					
	1.00 - 1.50			Never (N)					

**Table 5. T-test of the perceptions of the administrators and the MIS staff on the operational status of the SUCs MIS unit in Samar-Leyte islands in terms of its management functions**

Operational status of mis unit in terms of the following management functions:	Perceptions of respondents				Mean Difference	df	T-test	P-value
	Administrators		MIS staff					
	$\bar{x}$	SD	$\bar{x}$	SD				
1. Planning	3.69	0.66	4.19	0.51	-0.50	137	-4.300**	.000
2. Organizing	3.74	0.68	4.24	0.55	-0.50	137	-4.178**	.000
3. Leading	3.66	0.70	4.26	0.48	-0.60	137	-4.970**	.000
4. Controlling	3.68	0.66	4.18	0.51	-0.50	137	-4.313**	.000
Overall Result	3.69	0.68	4.22	0.51	-0.53	137	-5.014**	.000

\*\* Highly Significant at .05 level (p < .01)

For the organizing function of management, the perception of the respondents have a mean difference of -0.50, the t-test value of -4.178 having a significant value of .000 which was lesser than the 0.05 alpha level of significance. Therefore, the null hypothesis which stated that there was a significant difference in the perception of the two respondents was rejected. This means that the two respondents both performed well with their duties and responsibilities on the aspect of organizing and maintaining the operation of the MIS unit. According to Leung and Kleiner, management function organizing is comprised of numerous activities directly or indirectly related to the allocation of resources in ways that support the achievement of goals and plans that were developed in the planning function [8]. For the leading function of management, the perceptions of the administrators and IT staff have a mean difference of -0.60, the t-test value of -4.970 with a significant value of .000 which was lesser than the 0.05 alpha level of significance. Therefore, the null hypothesis which stated that there was a significant difference in the perceptions of the two respondents was rejected. This means that the administrators and MIS staff are both effective in leading, directing, being sensitive to, and expressing gratitude in support of the management. Howell and Costley describe leadership as a multi-dimensional process that includes motivation and influence of employees [9].

The benefits of the use of management information systems in telecommunications companies. Management information systems make it easier to collect, store, and process data and retrieve information easily when needed, which increases the efficiency of the companies and organizations. This study generally encourages the use of management information systems in telecommunication companies [10]. Strategic information systems planning is described as a disciplined, systematic approach to determine the most effective and efficient means of satisfying organizational information needs. It is a top-down, structured approach which to be successful, must employ technical and managerial processes in a systems engineering context. Under this approach, the characteristics of the system's hardware, software, facilities, data, and personnel are identified and defined through detailed design and analysis to achieve the most cost-effective system for satisfying the organization's needs. The process must consider the systems life cycle

management and the organization's policy and budget as important integral factors, to include all organizational participants (e.g., managers, users, maintainers, operators, and designers) throughout the process. It is an iterative process in that changes identified during the process must be evaluated to determine their effect on completed analyses. The process should be revisited periodically to ensure a system's continued viability in meeting information needs and achieving long-term missions [11]. Five major findings were reported from the study of Arjpru. First, there are two patterns of continuous use of an Information System; a passive continuation and an active continuation. Second, system usefulness is an important factor in the employee's continuing use of the system. Third, the system's ability to support individual growth and the status gained by use were new factors to encourage continuing use. Fourth, not all factors that make individuals satisfied were separated from the factors that cause dissatisfaction. Fifth, the employees' perceptions of whether they have a choice to use or not to use the system affect the ways they use the system [12]. Information systems, the evaluation of the effectiveness or success of information systems is an important aspect of information systems field in both research and practice. However, the manner in which they evaluate the success of an information system has changed over time as the context, purpose, and impact of IT has evolved. It is, therefore, essential to understand the foundations and trends in IS success measurement and what they mean for the future [13]. As organizations become technologically and geographically complex, the importance of planning activities rises. This strategic information system planning (SISP) was done to address the strategic directions that Cavite State University (CvSU) must pursue so that it can sustain and enhance its performance using ICT. The institution must be prepared for the increasingly diverse student population that calls for the expansion of teaching, research, and facilities and for the use of technology to improve the quality and efficiency of education and operations [14]. MIS strategy has four distinct components: information strategy, information technology strategy, information management strategy, and Change Management/implementation strategy. MIS resources can be divided into three broad categories human, technological, and relationship resources. Consistent with the importance of intangible resources, is the focus on the intangible dimensions of these three resources.

Specifically, it includes the MIS human capital, IT infrastructure flexibility, and MIS partnership quality and shows how each of these resources will have a direct positive relationship with MIS competencies. Secondly, competencies are socially complex routines that determine the efficiency with which organizations transform inputs into outputs. MIS competencies are the routines within the MIS department that enable it to deliver IT services to the organization. Thirdly, management information systems strategy is a plan for developing management information systems, which maximize the ability of the organization to achieve its agreed objectives. The strategy provides the framework for the organization for ensuring competencies between systems, prioritizing development, and encouraging the elimination of redundant systems [15]. In this era when Information Technology is eminent, firms must not hesitate to adopt to the changing world. Firms, must recognize that information is vital to their everyday operations. Upgrading the computer information system is no longer an option, but a requirement. Information systems can offer the firm the most up-to-date information from internal and external environments which will give the company a competitive advantage over other firms. Because of the up-to-date information, management can better cater to customer's needs and wants, as well as suggestions [16].

For the controlling function of management, the perceptions of the administrators and IT staff have a mean difference of -0.50, the t-test value of -4.313, and having a significant value of .000 which was lesser than the 0.05 alpha level of significance. Therefore, the null hypotheses which stated that there was a significant difference in the perceptions of the two respondents were rejected. This means that the administrators and MIS staff are determined, firm, and responsible for recording and monitoring the operation of the MIS unit. Organizations and managers utilize a variety of strategies or methods related to controlling. The methodology may include the use of various management information systems but has been manifested, in the past, by managers directing employees, telling them how to do their jobs, and by close monitoring of the employees' performance [8].

#### 4. DISCUSSION

The continuous development of information systems and improvement of the delivery quality

of services and operations. MIS unit's personnel and the SUCs administrators perceived to increase the appropriate competencies and skills of the staff personnel in the MIS unit. Administrators must take the full responsibilities as their duties to put full support in every development and improvement of office. Moreover, it increased the stability of the MIS unit operations and services which also the majority of the SUCs have offer common MIS services like hardware setup and installation, repair and maintenance, networking services, internet setup, and software installation.

The administrators and IT staff were very satisfied with the level of responsibility and status of the MIS operation based on the management functions; planning, organizing, leading and controlling. Both respondents agreed that management functions have a role in the performance of desired tasks in the MIS unit operation. The administrators and IT staff collaboratively perform and manage to plan, organize, lead the information systems activity, and control the functions of the MIS services and operation.

The test revealed that there was a significant difference between the status of the MIS operation and management functions as perceived by the administrators and IT staff. The administrators identified their management duties and responsibilities as managers. The IT staff viewed the MIS functions and operations in terms of the system quality, information quality, service quality, intention to use, user satisfaction, and net benefits as the basis for the evaluation of the management information systems operations. Both administrators and IT staff work together following organizational procedures. The administrators and IT staff in their different methods of responsibilities were able to manage the operational services and functions of the MIS unit.

The findings and analysis of the relationship between the operational status of the MIS unit and the MIS operation as perceived through the management functions of planning, organizing, leading, and controlling. The respondents are very satisfactorily agreed on the performance of the MIS unit operations. This means that the management functions had facilitated collaboratively integrated policies and procedures to properly address the processes of the MIS operations.

The performance level of satisfaction and effectiveness of the MIS units in terms of management functions were considered by the respondents as very satisfactory, thus proving the effective performance of the MIS operation. The findings justify further planning and development of the information systems function as to the MIS operation.

## 5. CONCLUSIONS

The management functions and MIS unit/ICT resources were effective, appropriate, useful and easy to understand. The results and analysis of the study show that the IS success model can measure the performance of MIS units, as well as the operation which supports the services provided by the MIS units.

With quality MIS management in planning, organizing, leading, and controlling, it is easy to facilitate and determine the factors that initialize the systematic approach in processing and dealing with the system quality, information quality, service quality, intention to use, user satisfaction, and net benefits. The school officials and other users are therefore expected to have training and abilities along with the ICT areas that concern the operation of the MIS unit.

The MIS units' quality operation and net benefits, were perceived by the administrators, and IT personnel, as very satisfactory, which implied that the unit's operations primarily concern to sustain the MIS unit's efficiency.

## 6. RECOMMENDATIONS

The administration and MIS unit should initiate an annual orientation or seminar to the clients/users, staff, directors/heads of units, and other stakeholders that use the MIS operation. The MIS unit should recommend to the administration to simplify and clarify policies and procedures which could help concerned officials perform their functions effectively and come up with rational decisions. There should be also clearly defined policies and procedures and a conceptual framework for understanding the MIS operation. It will guide in formulating processes and initial findings to determine the proper procedure in managing the information systems operations and functions.

The organizational strategy will justify administrative functions that determine the quality assurance of the unit and improve the

adequacy of information, services of management, and other areas that need attention and improvement for the operation of the MIS unit, users, and the organization.

There should also be a quality check for the policies and standards in the management process and functions, to check their viability and measure the capability of the application systems and the MIS unit.

The administration should provide for the holding of regular reviews and possible updates on management functions, policies, and guidelines for a better understanding of management information systems procedure. In addition, administrators and other heads of units should practice strategies in management to comply with proper methods and approach to planning, organizing, leading and controlling.

It is also recommended that SUCs MIS unit actively participate and contribute to the agencies that promote strategic information systems planning to facilitate their ICT awareness and updated on any conditions that relate to the MIS unit and ICT improvements.

## COMPETING INTERESTS

Authors have declared that no competing interests exist.

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