

Operational Efficiency of Information Technology and Organizational Performance of State Universities and Colleges in Region VI, Philippines

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Abstract - *Over the past years educational institutions have been investing increasingly substantial amount of money in integrating Information Technology (IT) in the course of educational services delivery with the objective of improving operational efficiency and competitive advantage. The important role IT plays in educational institutions is unquestionable. It is regarded as a critical factor of innovation for growth and survival. The evaluation of the impact of this innovation in the educational system drives the researcher to undertake a study on Operational Efficiency of Information Technology and Organizational Performance of State Universities and Colleges (SUCs) of Region VI, Philippines. Descriptive method was used utilizing a validated survey questionnaire which also involved the desk and field research conducted by a panel of two field researchers including the researcher himself covering selected SUCs of Region VI. Deans or department heads and faculty of the different colleges or departments, administrative and academic officials constitute the respondents of the study. Stratified proportional random sampling and purposive sampling were used in the study. Results of the study were viewed and analyzed using the Mean and the Pearson r Correlation Coefficient. Findings revealed that the operational efficiency of the SUCs of Region VI is moderately efficient while the majority of colleges/universities are performing moderately efficient. The study also revealed that the organizational performance of SUCs and the majority of colleges/universities are performing very satisfactory. Likewise, the findings also showed a significant relationship between the operational efficiency of information technology and organizational performance of SUCs. However, a significant relationship between operational efficiency and organizational performance of SUCs in instruction does not exist while a significant relationship exists in research, extension and production.*

Keywords: *Operational Efficiency, Organizational Performance, Information Technology Systems, Efficiency Core Elements*

INTRODUCTION

Information Technology (IT) affects the continuing development of education. As education evolves, information technology becomes inevitable. Among the sectors most affected by IT, schools are the most challenged by its rapid change. Such change creates a significant impact on the operational efficiency and organizational performance of the schools towards the delivery of services.

Today, schools implement IT in the different aspects of its operation. Most schools are equipped with IT system that plays a vital role in processing

data into information, making them more efficient in serving its clientele in particular and the society in general. The basic premise that schools' performance can somehow be attributed towards the operational efficiency of the school is still an argument that needs to be resolved.

According to Rasaouli [1] operational efficiency is the minimizing of waste and the maximizing of resource capabilities in delivering quality services to stakeholders. Services are delivered to stakeholders through processes, so to gain operational efficiency

the processes have to be optimized. However, processes cannot get work done by themselves. It should be executed by people and technology. Hence, obtaining optimum performance requires the right balance among people, processes, and technology. It is along this line that the integration of information system is essential to achieve operational efficiency thereby improving organizational performance. Such that, improvement in productivity is due not only to technology but also to how it is integrated into the organizational processes.

According to Spring [2] to achieve operational efficiency, organizations must determine their value chain -- the core organizational processes that create value for stakeholders. Accompanying these core processes will be management and support processes. A process change initiative has to demonstrate some quick wins regarding performance improvements, so it is important to commission process improvement initiatives for those processes, which gain value-added work done for the organization

Studies of Dehning [3] for private businesses revealed that investments in information technology infrastructures and resources are driving force in enhancing organizational performance. Part of the argument is that IT investment is a precursor to developing agile and flexible IT-based business or operation processes, which have been found to have a positive effect on firm performance, measured regarding equity market capitalization, stock price changes, or return on assets and return on sales.

Findings of Dehning's study indicate a confirmation that the contribution of Information System (IS) capabilities as a source of advantage, enables the organization to create positional advantages to gain superior performance and have a positive effect on market responsiveness, which propels sales performance.

Mahmood [4] on his study on; *Operational Efficiency of IT Systems: Its Impacts on Organizational Performance*; demonstrated a positive and significant relationship between the operational efficiency of IT systems and organizational performance and productivity. He suggested further that in any event, research reflecting relationships between IT investment and organizational performance might be more convincing if it were based on IT investment both current and earlier periods.

The installation of IT system allows the school to adopt and adapt the latest technology in delivering services in the area of registration, accounting, human resource management, administration, library management, data communication, class information, lecture notes, and instruction. Communication among administration, staff, faculty, students, parents, alumni, benefactors and other stakeholders is enhanced. Implementing the latest IT system reduced the over-all time required for students to enroll, for the staff to process and update records and for the accounting personnel to perform the accounting functions. Apparently, the school greatly benefit from the reduction in the time spent for manually handling records, for updating and printing reports. As a result, operational costs are also reduced.

State Universities and Colleges (SUCs) in Region VI have implemented IT systems to perform data management tasks such as storing, retrieving and analyzing data about registration, accounting, administration, and data communication. IT systems may encompass many tasks. The task of implementing a registration system as part of the operational services of the school is to provide an effective and efficient schedule management, encoding and validation of records. Some of the activities in operating an accounting system are the releasing of official receipts, billing, and updating of students' records. The administration system of a school includes such activities as providing user's access and record archiving. Library management tasks which include loaning and returning of books, computation of penalty or overdue books, inventory of books and others. Data communication system tasks consist of providing an efficient transfer of data from one location to another.

With the implementation of IT systems by SUCs in Region VI, the failure of each SUC to monitor and evaluate the impact is evident. As a result, the implementation can never be validated if it provides efficient services towards its stakeholders. Likewise, the SUC's IT infrastructure was not measured if provides return in a form of intangible benefits manifested by its organizational performance.

A realistic examination of IT systems operational efficiency is, therefore, necessary to verify if IT infrastructure investment provides a striking balance between the cost and benefit of implementation. As so said, the existence of IT systems does not guarantee to provide better, quality, efficient, and

effective services to clientele. Rather, a balance among the 3 core elements of IT efficiency such as; people, process, and technology should be met to achieve operational efficiency to improve organizational performance.

Hence, with these implications of optimal use of IT systems and the lack of valid evidence or facts of IT system evaluation this study on "Operational Efficiency of Information Technology and Organizational Performance of State Universities and Colleges of Region VI" was set out to establish whether operational efficiency of IT systems has an effect on organizational performance. It is hoped that this study will give insights to school administrators as to the common parameters or indicators that will contribute IT operational efficiency and positive organizational performance for non-profit service oriented organizations like SUCs.

STATEMENT OF THE PROBLEM

The purpose of the study was twofold: examine the operational efficiency of IT systems and the organizational performance of SUCs in Region VI, and explore the relationship between IT systems operational efficiency and organizational performance.

Specifically, the following problems were pursued by the study; what is the extent of operational efficiency of the college/university in the implementation of IT systems when taken as a whole and when categorized as to SUCs and IT system components such as - security, funding IT systems, IT infrastructure, identity/access management, disaster recovery/business continuity, governance, organization, and leadership, teaching and learning with technology, staffing/HR management/training,

agility, adaptability, and responsiveness, strategic planning; and administrative/enterprise resource planning; what is the extent of organizational performance of the college/university in the implementation of IT systems when taken as a whole and when categorized as to SUCs and SUCs four-fold functions – instruction, research, extension and production; is there a significant relationship between the operational efficiency of information technology and the organizational performance of the college/university when taken as a whole and when categorized as to SUCS four-fold functions.

HYPOTHESIS OF THE STUDY

There is no significant relationship between the operational efficiency of information technology and the organizational performance of the college/university at 0.05 level of significance when taken as a whole and when categorized as to SUCs’ four-fold functions.

METHODOLOGY

The descriptive method was used since the study primarily aims to examine the operational efficiency of IT systems employed by the respondents’ schools and its relationship towards the organizational performance using a modified survey questionnaire. Desk research was also used to hunt out information published by entities that are relevant to the study. The data available in published form were accessed from the Internet, Public Library, Foreign and Local Journals, Researches and other compiled sources.

Similarly, field research was also used in the study because it involves fieldwork in collecting primary data.

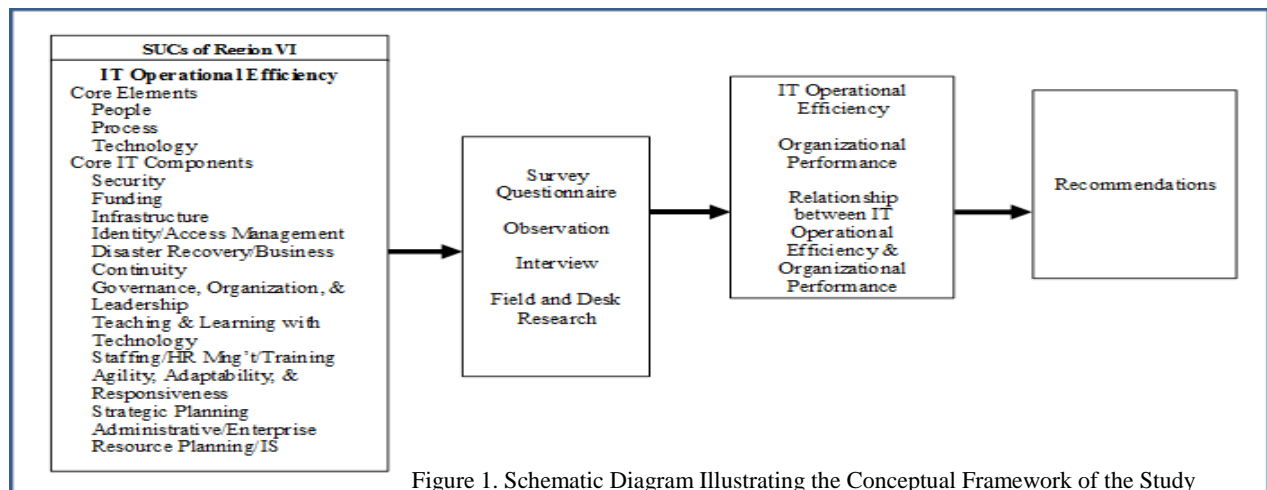


Figure 1. Schematic Diagram Illustrating the Conceptual Framework of the Study

A panel of two researchers and staff including the author himself conducted the fieldwork consisting of a survey and interviews of respondent- schools. In constructing the questionnaire or interview guide, the researcher used the questions raised in the statement of the problem as the guide.

Evaluation and Respondents of the Study

The respondents of the study were the school heads, administrative and academic officials, teaching and non-teaching personnel of the colleges/departments/ sections/divisions/units. These respondents were selected since they have direct access or use of information technology systems as a tool to perform their duties and responsibilities in the operation of the school.

Table 1. Summary of Respondents of the Study Categorized as to SUCs

University /College	Population	Sample Proportion	Sample Size	%age
SUC A	404	0.1059	43	12
SUC B	78	0.1059	8	10
SUC C	68	0.1059	7	2
SUC D	354	0.1059	37	10
SUC E	495	0.1059	52	2
SUC F	619	0.1059	66	15
SUC G	328	0.1059	35	31
SUC H	1,034	0.1059	110	18
Total	3,380		358	100

The researcher used the stratified proportional random sampling in determining the operational efficiency and organizational performance of each SUC. However, to ensure that each mandated function of the SUC are represented the researcher distributed a questionnaire to possible respondents, per function, prioritizing or with consideration to respondents who are not only teaching but also performing research, extension and production. It is in this aspect that purposive sampling was also employed as a complimentary sampling technique to measure the intended purpose. Thus, sample size varies depending on the organizational set-up of the school and SUC level which was determined using the Slovin's formula.

To achieve the objectives set forth under the statement of the problems, the researcher adopted the following, instruments in the collection of data; schools' systems observation, interview, and validated survey questionnaire.

Schools' systems observation was conducted on-site by a panel of 2 composing the researcher himself

and 1 other researcher (colleague) while the interview was conducted by the researcher himself to schools' key officials and school heads. On the other hand, the questionnaire was administered because it will supply the necessary information to complete the research study when answered properly by a required number of properly selected respondents.

The survey questionnaires were constructed after reading and studying samples of the questionnaire from related studies, the internet, books, and journals. A rigorous analysis of SUCs Organizational Performance Indicators Framework (OPIF), Major Final Outputs (MFOs), Accrediting Association of Chartered Colleges and Universities of the Philippines (AACCUP) accreditation instrument, SUC leveling performance indicators, and other performance indicators was also undertaken to gain insights on the parameters of qualitative organizational performance measures. The researcher also consulted several knowledgeable people about how to prepare a very comprehensive instrument to measure SUCs or public organizations' performance. These experts are the ones who evaluated that there are enough items to collect data to cover all aspects of the problem and to answer all the specific questions under the statement of the problem. Then the researcher submitted the questionnaire to his adviser for correction after which it was finalized.

The instrument was of 2 parts, part 1 of which contains items relating to operational efficiency of information technology which included the following IT system components; a) 10 items on security, b) 10 items on funding IT, c) 11 items on IT infrastructure, d) 10 items on identity and access management, f) 7 items on disaster and recovery management, g) 8 items on governance, h) 10 items on teaching, i) 9 items on staffing and HR training, j) 5 items on agility, k) 10 items on strategic planning process, and l) 7 items on administrative processes. Part II of the instrument contains items relating to the organizational performance of SUCs based on its four-fold functions namely; a) 30 items on instruction, b) 23 items on research, c) 28 items on extension and d) 27 items on production. A five-point scale was used in all items where 5 as the highest and 1 as the lowest.

Since the researcher himself constructed the questionnaire, face and content validation by a jury was conducted. The questionnaire was given to 6 experienced and knowledgeable members of the jury as experts' evaluators particularly in the field of

information technology systems, school presidents, vice-presidents and faculty-researchers who validated and evaluated each item and made comments to confirm the validity of the questionnaire used in the study using the Good and Scates and Calderon Criteria for Questionnaire Evaluation. The questionnaire was rated using the scale; 4 - Very Good, 3 - Good, 2 - Fair, and 1 - Poor. These expert-validators did not participate in the study. The summary table for experts' validation and comments enabled the researcher to mark the concordance or discordance of experts' opinion regarding each given item. Content experts usually establish face or content validation. They evaluated the questions formulated by the researcher whether they are valid for use in gathering information. Therefore, if the experts' answers are affirmative, then the questionnaire is valid. The validity index of 3.59 showed that the questionnaire is valid.

The validated instrument was subjected to another round of test, the test of reliability. Reliability means that the instrument is dependable and stable. This means the consistency of the responses from moment to moment. Thus, the validated instrument was administered to 34 part-time teachers and job-orders of SUC C, who were not the actual respondents of the study. The results were interpreted using the Cronbach's Alpha and it showed a very high-correlation value as represented by a 0.976 reliability statistic. After all the improvements had been made, the final copy of the questionnaire was then used for data gathering.

The questionnaire was personally distributed and administered by the researcher with his 1 colleague and staff to the respective area representatives of the respondent school.

The respondents were given adequate time, to answer the questionnaire. Instructions are stated in the questionnaire for the respondents to completely and thoroughly answer the questions. Since the respondents are all professionals, it is deemed that all items are answered. After 2 weeks or a month the researcher personally retrieved the accomplished questionnaires, others are sent back via LBC courier. These questionnaires were ready for tabulation and analysis.

An interview and observation of the school system and actual IT system implementation were also done to assess and gain insight of the actual situation that took place in schools' operations. The

actual observation also validated the responses of the respondents on the items stipulated in the questionnaire. Likewise, it has surfaced best practices and structures of the organizations that attribute efficiency, effectiveness and positive performance.

After the data were collected the researcher processed it into an order and form that allows statistical tabulation and facilitates analysis and interpretation. The hypothesis postulated for the problems formulated in the study was tested in the following manner.

Data Processing and Statistical Treatment

To determine the operational efficiency of the college/university in the implementation of IT systems when taken as a whole, when categorized as to SUC and as to IT system components, the mean was used.

Likewise, the mean was used to determine the organizational performance of the university/college in the implementation of IT systems when taken as a whole, when categorized as to SUC, and as to four-fold functions.

While Pearson Product Moment Coefficient of Correlation (Pearson r) was used to determine if there is a significant relationship between the operational efficiency of IT systems implementation and the organizational performance of the college/university when taken as a whole, when categorized as to SUC, and as to four-fold functions.

RESULTS AND DISCUSSION

The implementation of IT Systems to SUCs has always been geared towards attaining higher efficiency in the provision of services to its stakeholders. It is always seen as a methodology or tool that enhances operational efficiency. However, the measure towards efficiency has always been in the realm of the financial improvement it brings to the organization or the profitability issue. Table 2 shows the mean and verbal interpretation on the extent of operational efficiency of the college/university when taken as a whole and when categorized as to SUCs and IT system components.

When categorized as to SUCs the findings revealed that the operational efficiency of the College/University as a whole is Moderate. On the other hand, SUC E and SUC B are Efficient while other state universities and colleges are Moderately Efficient.

Table 2. Mean and Verbal Interpretation on the Extent of Operational Efficiency of the College/University when taken as a whole and when categorized as to SUCs and IT System Components

SUCs	IT SYSTEM COMPONENTS												MEAN	Verbal Interpretation
	SECURITY	FUNDING	INFRA	IDENTITY	DISASTER	GOVERN	TEACHING	STAFFING	AGILITY	STRATEGIC	ADMIN			
A	3.17	3.10	3.14	3.12	3.04	3.16	3.31	3.27	3.15	3.12	3.11	3.15	ME	
B	3.63	3.50	3.82	3.48	3.45	3.69	3.66	3.67	3.53	3.58	3.64	3.60	E	
C	2.86	3.09	3.08	3.23	2.96	3.34	3.64	3.73	3.43	3.31	3.41	3.28	ME	
D	3.31	3.56	3.36	3.27	3.13	3.42	3.56	3.57	3.57	3.65	3.55	3.45	ME	
E	3.50	3.60	3.55	3.58	3.43	3.66	3.68	3.72	3.72	3.66	3.78	3.62	E	
F	3.13	3.29	3.20	3.21	3.13	3.45	3.36	3.34	3.23	3.31	3.23	3.26	ME	
G	3.29	3.28	3.33	3.24	3.19	3.34	3.47	3.41	3.34	3.37	3.36	3.33	ME	
Mean	3.27	3.34	3.35	3.30	3.19	3.44	3.53	3.53	3.42	3.43	3.44	3.39	ME	
VI	ME	ME	ME	ME	ME	ME	E	E	ME	ME	ME			

E-Efficient; ME- Moderately efficient

It shows that there are SUCs in Region VI who consider IT systems implementation as the number 1 priority among others. Further, when operational efficiency is categorized as to IT system components, it showed that SUCs in Region VI are Efficient in implementing IT systems in Teaching -Learning with Technology and in Staffing/HR Management/Training while Moderately Efficient in all other components.

It means therefore that SUCs in Region VI have mechanisms on monitoring and evaluating proprietary and open-source instructional materials for used in teaching and learning.

Likewise, a clear plan, program, implementation and adoption of emerging technologies in teaching and learning are also evident as manifested by the strong support of the administration in capacitating its human capital through various in-house and sponsored ICT workshops, training, conferences, symposia, and others.

SUCs are monitored and evaluated (or regulated) by the Department of Budget and Management’s (DBM) Organizational Performance Indicators Framework (OPIF), the Commission on Higher Education’s (CHED) Normative Funding, and the Administrative Order (AO)25—Inter-Agency Task Force’s (IATF) Performance-Base Bonus (PBB) in terms of their performance in; (a)utilization of funds, implementation of programs, projects and activities, return on investment, etc.; (b)percentage of board passers, employability of graduates, graduates employed in their field of specialization; and (c) stakeholders satisfaction survey, economic value added, expert services. Thus, this study covers measure of organizational performance that integrates

the OPIF, Normative Funding, AO25, ISO 9001:2008 standards, and AACCUP benchmark statements as performance indicators. Table 3 shows the mean and verbal interpretation on the extent of the organizational performance of the college/university when taken as a whole and when categorized as to SUCs and SUCs four-fold functions.

Table 3 Mean and Verbal Interpretation on the Extent of Organizational Performance of the College/University when taken as a whole and when categorized as to SUCs and SUCs four-fold functions

SUCs	SUCs Four-fold Functions				Mean	VI
	Instruction	Research	Extension	Production		
A	3.52	3.09	3.26	3.17	3.26	S
B	3.88	3.52	3.57	3.42	3.60	VS
C	3.71	3.57	3.52	3.46	3.57	VS
D	3.61	3.53	3.53	3.47	3.53	VS
E	3.73	3.71	3.67	3.81	3.73	VS
F	3.60	3.10	3.21	3.18	3.27	S
G	3.88	3.67	3.69	3.56	3.70	VS
Mean	3.70	3.45	3.49	3.44	3.52	VS
	VS	S	S	S		

VS- Very Satisfactory; S-Satisfactory

The findings revealed that the organizational performance of the College/University as a whole is Very Satisfactory. On the other hand, when categorized as to SUCs, SUC F and SUC A

performances are Satisfactory while other state universities and colleges performances are Very Satisfactory. It shows that there are SUCs in Region VI who are performing well than others. This proves that the organizational performance of SUC cannot be directly associated with the size, budget, infrastructure and the population of the SUC. On the other hand, the kind of human capital the SUC has is one of the major factors.

Further, when organizational performance is categorized as to four-fold functions, it showed that SUCs in Region VI perform Very Satisfactorily in Instruction, Satisfactorily in Research, Extension, and Production. It means therefore that SUCs of PASUC VI are committed and true to their mandate of providing equitable access to quality education through quality instruction as the foreground for research, extension and production. After all, these functions can be considered as the outcome of Instruction.

Over the past decades, local governments have increasingly leveraged information technology to transform relationships with citizens. Through the use of technology, governments have improved the delivery of services to constituents and increased the efficiency of their work processes resulting to improve productivity or performance.

According to Gagnon [5] these improvements have led to greater citizen satisfaction, increased government transparency and significant reductions in operating costs. Hence, in this study, a very comprehensive measures of efficiency was considered that ranges from strategic planning to funding, staffing to infrastructure, and adoption to utilization. This is to ensure the validity of the relationship of efficiency to performance if there exist, otherwise, not significantly related.

Table 4. Mean and Correlation between the Operational Efficiency and the Organizational Performance of the College/University when taken as a whole

	Mean	Std. Deviation	N
Efficiency	3.3843	.17822	7
Performance	3.5229	.18954	7
Correlations			
Test Variables	r	P	Interpretation
Operational Efficiency and Organizational Performance as a Whole	.713*	.036	Significant

Table 4 shows the mean and correlation between the operational efficiency and the organizational performance of the college/university when taken as a whole.

The findings revealed that there is a significant relationship between the operational efficiency of IT and the organizational performance of the college/university at 0.05 level of significance when taken as a whole. This means that the operational efficiency of IT has a direct effect or influence to the organizational performance of the college/university. Thus, the higher the operational efficiency, the higher the organizational performance.

Table 5. Mean and Correlation between the Operational Efficiency and the Organizational Performance of the SUCs as to Instruction

	Mean	Std. Deviation	N
Efficiency	3.3843	.17822	7
Instruction	3.7043	.13915	7
Correlations			
Test Variables	r	P	Interpretation
Operational Efficiency and Organizational Performance as to Instruction	.563	.094	Not Significant

On Operational Efficiency and Organizational Performance of the SUCs as to Instruction, it showed that there was no significant relationship. This proves that there is no direct correlation between IT operational efficiency and organizational performance in instruction. A very objective analysis will tell us that since the majority of the workforces of the college/university are teachers whose primary function is to teach, therefore, with or without IT systems they are duty-bound to perform duties and functions as teachers. Likewise, the predictors of organizational performance in instruction should also be considered and one of which is the students themselves. According to Lausa [6] as cited in the extension paper on “ PaG-ULIKID Eskwelahan sa Barangay (PEB): Empowering Public High Schools through ICT Training Program”, IT systems may somehow improve academic performance of students but improving organizational performance specifically in instruction is still debatable and needs a more rigorous research, historical research as the case may be. Table 6 shows the mean and correlation between

the operational efficiency and the organizational performance of the SUCs as to research.

Table 6 Mean and Correlation between the Operational Efficiency and the Organizational Performance of the SUCs as to Research

	Mean	Std. Deviation	N
Efficiency	3.3843	.17822	7
Research	3.4557	.25612	7
Correlations			
Test Variables	r	P	Interpretation
Operational Efficiency and Organizational Performance as to Research	.676*	.048	Significant

On Operational Efficiency and Organizational Performance of the SUCs as to Research, it showed that there is a significant relationship thus, proving that there is a direct correlation of IT operational efficiency to organizational performance in research. This means that the workforce of the college/university is adopting the use of technology in the conduct of research. This is supported by the study of Whitney, et.al. [7] as cited in Canadian Journal on Aging that the integration of IT system in research increases efficiency resulting to an increase in performance. Further, the expertise of the researchers in optimizing the utilization of the capability of IT systems in the conduct of research is valuable. As a result, the higher the acceptability and integration of IT system in research the higher the efficiency and productivity or performance.

Table 7. Mean and Correlation between the Operational Efficiency and the Organizational Performance of the SUCs as to Extension

	Mean	Std. Deviation	N
Efficiency	3.3843	.17822	7
Extension	3.4929	.18821	7
Correlations			
Test Variables	r	P	Interpretation
Operational Efficiency and Organizational Performance as to Extension	.681*	.046	Significant

Likewise, the SUCs commitment and adaptability in IT systems integration in the conduct of research is very evident. This includes the use and integration of IT systems (SPSS, and other software applications as examples) which provides higher accuracy rate and

expedites data processing resulting in higher efficiency thereby improving performance. The CHEDs priority programs for research and the SUCs strong partnership and linkages to research agencies and other private agencies that range from funding to the grants of the latest technology for research is also a clear indicator of targeting higher research efficiency for a very positive research performance. Table 7 shows the mean and correlation between the operational efficiency and the organizational performance of the SUCs as to extension.

On Operational Efficiency and Organizational Performance of the SUCs as to Extension it showed that a significant relationship exists. Thus, the efficiency of integrating IT systems to SUCs operations directly affects the organizational performance of SUCs in extension. Again, this means that the workforce of the college/university is adopting the use of technology in the conduct of extension. Further, this is supported by the extension plans and programs of SUCs that leverage the use and transfer of technology (including IT systems and others) to various sectors. The rate of leveraging IT systems and another technology in the conduct of extension services is always accorded to enhance the delivery of extension services particularly in efficiency and improvement of performance. Table 8 shows the mean and correlation between the operational efficiency and the organizational performance of the SUCs as to production.

Table 8. Mean and Correlation between the Operational Efficiency and the Organizational Performance of the SUCs as to Production

	Mean	Std. Deviation	N
Efficiency	3.3843	.17822	7
Production	3.4386	.22117	7
Correlations			
Test Variables	r	P	Interpretation
Operational Efficiency and Organizational Performance as to Production	.727*	.032	Significant

On Operational Efficiency and Organizational Performance of the SUCs as to Production, findings revealed that there is a significant relationship. Thus, the organizational performance of SUCs concerning Production is directly influenced by the efficiency of integrating IT systems to SUCs production operations.

This is perhaps the results of the SUCs commitment to streamline and strategize the production activities of the college/university through IT system integration to generate sufficient funds from this income generating projects to augment other maintenance and operating expenses. The goal of each SUCs and the planned regulation of reducing the subsidies of the government agencies including SUCs is also a factor that drives the utilization of IT systems in production operation to increase service efficiency and increasing organizational performance.

These findings and analyses are supported by the study of Weill [8] that stated: "information technology efficiency is the most important factor affecting organizational performance and competitive advantage." According to him, correct application of information technology in organizations can respond to the needs and demands of customers and citizens more accurately and faster and make them more satisfied.

Thus, in this era of communication and information technology where virtual network and non-border organizations and citizen-centered e-government/governance are gaining importance, it is necessary and inevitable to use IT for all organizations, because with the expansion of the labor market, globalization, and rapid technological changes, organizations need to have the required flexibility to comply with environmental changes which cannot be achieved except through IT.

CONCLUSIONS AND RECOMMENDATIONS

Based on the aforementioned findings derived from the study, the following conclusions were drawn:

The operational efficiency of SUCs in Region VI, when taken as a whole, is moderately efficient. Likewise, 5 or majority of the SUCs in Region VI are moderately efficient in the implementation of IT systems, while 2 SUCs are efficient. Further, SUCs in Region VI are moderately efficient in terms of IT systems security, funding, infrastructure, identity and access management, disaster recovery and business continuity, governance, organization and leadership, agility, adaptability and responsiveness, strategic planning, and on administrative and enterprise resource planning, while efficient on teaching and learning and staffing, HR management and training.

The organizational performance of SUCs in Region VI, when taken as a whole, is very satisfactory. Likewise, 5 or a majority of the SUCs in

Region VI are very satisfactory in their performances of the four-fold functions of SUCS, while 2 SUCs are satisfactory. Further, SUCs in Region VI are very satisfactory concerning their performance in Instruction, while satisfactory in Research, Extension, and Production.

There is a significant relationship between IT operational efficiency and the organizational performance of SUCS when taken as a whole. Likewise, a significant relationship also exists between IT operational efficiency and organizational performance of SUCs as to Research, Extension, and Production, while, no significant relationship exist between IT operational efficiency and organizational performance of SUCs as to Instruction.

Based on the findings and conclusions derived from this investigation, the following recommendations were set;

The role of values or work attitude in the improvement of performance may be given more attention by the administrators and the management such that more employees' value or work attitude is seen than to systems and structures.

Public sector agencies may consider the integration and utilization of modern information and communication technologies (ICT) to establish efficient organizations and offer services in a fast, easy and convenient way

Policy-makers and decision-makers in different organizations may be educated in understanding the importance of IT application in the state sector to increase organizational productivity, customer and citizens' satisfaction and may consider it as a guideline in enacting related policies.

Administrators may consider human resource development through the application of information technology in aspects of skills development of employees, enhancement of perception skills, enhancement of decision-making skills, the formation of standard-oriented thinking and strengthening self-control.

SUCs, PHEIs, and other HEIs Administrators may consider an ICT master plan that is formulated according to the school's vision-mission to promote effective integration of ICT in the teaching-learning process and other functions.

Education policy makers and planners may first of all be clear about what educational outcomes are being targeted and these broad goals should guide the

choice of technologies or IT systems to be used and their modalities of use.

Education policy makers and planners may consider a very relevant, strategic and rigorous IT security policy and IT investment plan. These policies and work plans for ICT infrastructure may be implemented to increase ICT penetration.

School administrators may consider harmonization of ICT implementation across all programs, all functions, and all units/departments/divisions/offices by clearly defining the roles and responsibilities of all departments in the implementation of ICT master plans, showing clearly the different components of project activities, including budget allocations, manpower requirements, and timetables.

Study on leveraging ICT in education vis-à-vis organizational and/or students' outcomes relative to the cost of ICT investment may be undertaken to measure cost-efficiency of the ICT investment.

Further research on the integrated use of ICT in schools to increase efficiency, productivity, and performance, both quantitative and qualitative methodologies may be used, employing various data gathering instruments, such as case studies, historical or trending analysis and focus groups.

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