

Information Systems Strategic Plan for Sorsogon State College

Completed Research Paper

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Abstract

The Information Systems Strategic Plan of Sorsogon State College is a three-year plan that outlines in detail how information and communications technology (ICT) will be used to support the College's vision and mission. The study was conducted at Sorsogon State College with respondents of 104 employees. The IS/IT planning methodologies used were SWOT, critical success factors, and gap analyses. Data were gathered through document analysis, survey, observation, and an interview with the key informants. The study used the framework suggested by Anita Cassidy (2006) and streamlined Information Systems Strategic Plan template (revised in 2014) of the Philippine government. The study emphasized a collaborative and careful information systems planning, in support of e-government project initiatives and their strategic direction, as well as factors such as budget allocation, organizational culture and values, management practices and processes, the readiness of staff in terms of skills and knowledge, IS/IT strategy, and network infrastructure.

Keywords: Information Systems Strategic Plan, SWOT Analysis, Gap Analysis, IT Strategic Planning, Information Systems Planning

Introduction

The importance of strategic information systems plan (SISP) has been widely recognized in business to promote organizational success and competitiveness. SISP is the process of identifying a portfolio of computer-based application (Lederer & Sethi, 1996) for the implementation and use of information systems (IS) to achieve its objective. Teo and King (1997) also discussed that SISP is the process of formulating IS objectives, defining strategies, policies, and developing detailed plans to achieve organizational objectives.

An information system strategic plan (ISSP) presents the overall strategic plan for the development and implementation of information systems, the use of ICT, as well as the corresponding resource requirements over a fixed long-term period (MITHI.gov.ph, 2014). According to Cassidy (2006), an ISSP improves the management of the IS asset, improves communication between the management and IS department, aligns the IS direction with the business direction, obtains organizational opportunities and increases the value of the organization in utilizing technology, and plans the flow of information and processes.

In line with the need of appropriate planning for computerization, the Philippine government adopted the Government Information System Plan (GISP) and updated the E-Government Master Plan (EGMP) in 2014. The EGMP, being a master plan, serves as the singular authoritative strategic blueprint for Philippine e-Governance project. With the Joint Memorandum Circular No. 2014-01, all

national government agencies, including local government units and state college and universities are mandated to align their respective computerization projects for inclusion and priorities identified into the EGMP. The Department of ICT (DICT) in the Philippines is the government agency that harmonizes and coordinates all national ICT plans and initiatives to ensure knowledge, information and resource-sharing, database-building and agency networking linkages among government agencies, consistent with EGMP objectives in particular, and national objectives in general. These functions provide a transparent online service for the use of information systems and technologies throughout the government (dict.gov.ph, 2017).

ICT in Education

According to Mikre (2011), ICT in education has a significant contribution to changes in teaching practices, school change and innovations, and community services. The proper use of computers at an early age helps students learn ICT skills, which are considered as primary tools in the education process. Similarly, UNESCO (2014) emphasizes that ICT in education has a multiplier effect throughout the education system, by enhancing learning and providing students with new sets of skills; by reaching students with poor or no access especially those in rural and remote regions; by facilitating and improving the training of teachers; and by minimizing costs associated with the delivery of traditional instruction. Ujunju, Wanyembi, and Wabwoba, (2012), suggested some recommendations for better use of ICTs in management practice in education, which includes providing opportunities for ICT training, developing clear policies, guidelines and strategies, and training users properly on any new upcoming software or computer hardware that constitute ICT infrastructure.

Information Systems/Information Technology (IS/IT) Strategy

Cassidy (2006) defined strategy as a global level of thinking about the IS organization and its integration of information technology (IT) architecture. Grant, Hackney, & Edgar, (2010) mentioned that the IS/IT strategy is the organization's requirement for information and system to support the overall strategy of the business. Moreover, Ward and Peppard (2003) explained that IT strategy is concerned with outlining the vision of how the organization's demand for information and system that will be supported by technology particularly IT supply. With an aligned business and IS/IT, an organization is a better position in the marketplace and improved customer service effectively and consistently.

Hammouri et al. (2015) stated that the success of an ISSP in an organization is based on the process that is used in developing the ISSP, the comprehensiveness in its framework, and a strategy that contributes to providing a positive impact. Arvidsson, Holmstrom, & Lyytinen, (2014) also cited that IT implementation can be successful when a system implementation is on time, at a reasonable cost with accepted risks and is embedded in organizational routines, and, thus, accepted by its users. In the same way, the study of Marcial (2013) stressed that participation and involvement of management information systems (MIS) managers and top officials during planning considerably contribute to the effectiveness and success of their ISSP.

The Sorsogon State College (SSC) is utilizing automated systems such as the enrolment system, cashiering, and grade submission. However, the existing system has limited modules to support critical functions of the college. Likewise, SSC also encounters several IT-related problems which lead to delay of enrolment, long queues in the frontline, especially when students transact simultaneously in the offices like the admission, the registrar, and the cashiering unit, and difficulty in accessing information from different units. These IT issues include lack of network infrastructure, the insufficient budget allocated to IT infrastructure; shortages in ICT staffs; and/or inadequate ICT training. Consequently, improvements in ICT implementation is seen as a means to generate quality academic-related services of educational institutions. The College ICT strategic direction as presented in the strategic planning 2017 are the following: (1) to establish a centralized repository of all transaction documents in all campuses; (2) to prioritize online management information system for instruction, research, extension, production, administration and support services; (3) to further extend

the linkages and collaboration with other institutions not only regional or national rather internationally; (4) to strengthen the quality education anchored on its mission and vision through the adoption of ICT. In order to overcome the gap between systems or processes that have not utilized ICTs, the proponents developed a strategic plan for information systems that focused on the alignment of business processes with IT, particularly in SSC.

Methodology

The study utilized a mixed method on the analysis and execution of the information systems planning process, which was gathered from top management officials of the College, ICT staff, and faculty through a survey questionnaire, interview, and on-site observation. The study also included a review of official documents from external and internal entities. This study follows the proposed ISSP development framework by MITHI (2014), as seen in Figure 1, in order to identify the components of the proposed ISSP for SSC. The coverage of the plan is from year 2019 to year 2021.

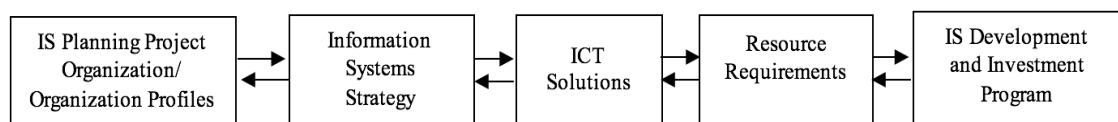


Figure 1. Framework for ISSP Formulation by MITHI (revised 2014)

Setting and Participants

The study was conducted in Sorsogon State College (SSC) in the province of Sorsogon, Philippines. At present, the SSC is operationalized through a province-wide umbrella system where four campuses are integrated: the Sorsogon City Campus, Bulan Campus, Magallanes Campus, and Castilla Campus. It has 413 employees in the academic year 2018, which is composed of staff and faculty under permanent, temporary, contractual and casual, job order, and/or part-time statuses.

The participants of the study were 104 employees consisting of staff and faculty. Out of 104 employee respondents, 13 or 12.5% are department deans or unit heads; 91 or 87.5% are in the non-executive position; 73 or 70% are members of the faculty and with 31 or 30% members of the staff. This only means that the majority of the employees hold non-executive positions belonging to the faculty in the teaching positions which are 73 or 70% compared to the staff which is 31 or 30%. It has 60 or 57.7% are males and 44 or 42.3 % are females. There is only one (1) or 0.96% under the age range of 65-60 years. Seven (7) or 6.73% belong to 59-50 years old; 19 or 18.27% are in the age bracket from 49- 40; 25 or 24.04% range from 39-30 and there are 52 or 50% were hired below the age 30 showing that half of the SSC employees belonging to the millennials or young generations. Seventy-one (71) or 68.27% belong to the permanent status; 11 or 10.57% were hired as temporary; 8 or 7.70% are casual employees and 14 or 13.46% are contractual or job order.

Data Collection

A technical team was organized to work together for the refinement of the ISSP. The composition of a team were employees of the SSC who are assigned to the ICT Department. The data gathering begun by reviewing the vision and mission of the College. Since the vision and mission are clearly defined, the external and internal environment was analyzed, then environmental scanning was performed through strength, weaknesses, opportunities, and threats (SWOT) analysis. Survey questionnaire and interview to current employees (staff and faculty) was conducted among top management and heads of offices to gain significant information regarding the existing system and strategic issues of the College. The data collected was further examined through the gap and critical success factors (CSF) analyses. The results of analyses were validated through focus group discussion (FGD). On-site observation was conducted in order to gain more understanding of the actual circumstances such as present status of the college relating to the available ICT materials/equipment, how equipment is utilized, its users, and the existing management practices on handling ICT equipment.

Instrument

The study used the survey questionnaire-checklist to gather the responses of the target respondents, with close coordination to his adviser and consultant to prepare the instrument. The guidelines used in the preparation of the survey questionnaire were based on ICT services assessment survey suggested by Cassidy (2006). The prepared survey assessment was divided into two parts. The first part focused on the personal information of the respondent. The second part focused on ICT services with the following sections: Department/Office Services, Training, Application/Software Projects, and the Overall Services of the ICT Office. It used the five-point of Likert Type Scale with 0.6 intervals to rate the ICT services offered by ICT department/office as responses by the respondent using the following rating scale: 5 (5.00 – 4.40) – means Strongly Agree; 4 (4.39 – 3.79), means Agree; 3 (3.78 – 3.18), means Agree nor Disagree, or Undecided; 2 (3.17 – 2.57), means Disagree; 1 (2.56 – 1.96), means Strongly Disagree; and N/A for questions not applicable.

Validation of Research Instrument

Prior to the distribution of the survey questionnaire to the target respondents, the study employed face validity by consulting expert statisticians to evaluate/review the appearance of the questionnaire in terms of usability, readability, consistency of the style and formatting, and the clarity of the language used. Face validity assesses the degree of relevancy and representativeness of each item in the questionnaire to make suitable and appropriate for the purpose of the study. After collecting all the feedback, items found unclear was subjected to modification or change.

ISSP Methodology of SSC

This study follows the four general planning stages (refer to Figure 2) presented by Cassidy (2006) namely: Visioning, Analysis, Direction, and Recommendation phases. The processes start with pre-planning activities to organize the preparation of the entire work plan and seeking approval for the conduct of the study. The visioning and analysis phases are needed for data gathering and analysis of the study. While the direction and recommendation phases are used for information system planning.

The Visioning Phase focused on the understanding of the current organizational situation, its direction, vision, goals, values, objectives and how it will function in the future. During this stage, a careful analysis of the internal and external environment of the organization, which includes partner government agencies, non-government organizations (NGOs), other higher institutional organizations (HEI), and industry. While, the internal business environment is composed of elements within the organization including culture, policies, formal structure, and commitment of the current employee to organization objectives in order to satisfy the demands of the external environment. The goal of the analysis of internal and external IS/IT environment is to identify IT trends in similar organizational environments and opportunities of IT using gap analysis, CSF analysis, and SWOT analysis. This helped the proponents gain a deeper understanding of the problem existing in the institution related to e-government projects. This was done through observation, survey, and interviews with the key informants. The data gathered in this phase served as an input to the next phase.

The Analysis Phase is an examination of organizational strategy and formulation of IS/IT strategy. The aim of analyzing business/organizational strategy is to update a previous analysis of organizational environment, as it shall guide the organization in a direction that will lead to achieving the objectives. Based on the result from a previous analysis of IS/IT environment, this phase covered the identification of needs and IT opportunities which can be used in designing the IS strategy.

Next, the Direction Phase consists of the actual activities to be performed such as formulation of IS vision and direction, and the development of the following outputs: a detailed description of IS plan, detailed description of ICT projects, resource requirements, and an operational investment program. The last phase is the Recommendation Phase. This phase documents the detailed roadmap of the project and guidelines to communicate the plan and activities during actual implementation of ISSP. Further, the proposed IS/IT mission statements, strategies, ICT solutions, training, and

implementation schedule are defined and endorsed to the management of Sorsogon State College for further review and/ or approval.

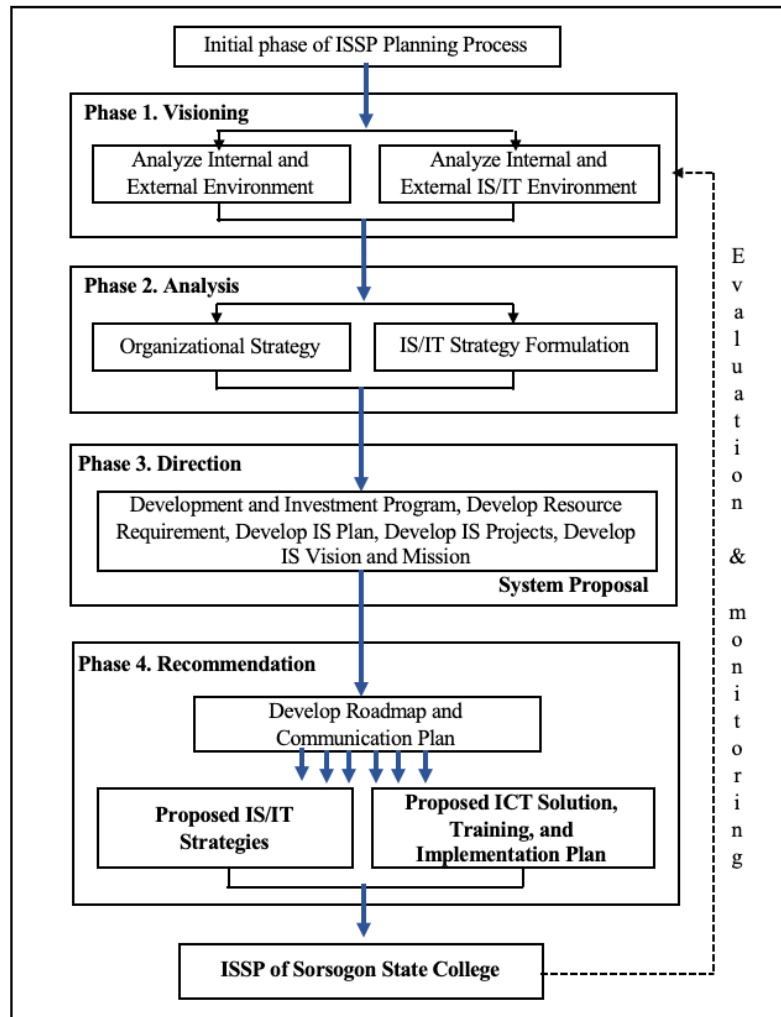


Figure 2. ISSP Methodology of SSC

Upon implementation, it is important to evaluate and monitor the contents of ISSP development particularly of which plans are already accomplished, still on-going, and need to be added. These were further analyzed if there is a problem that may arise in the process so that the management/administration can make some adjustments to the plans.

Result and Discussions

ICT Services Assessment

This study applied the survey instrument of Cassidy (2006) in conducting the ICT Services Assessment on one hundred four (104) employees of Sorsogon State College (SSC), province of Sorsogon during the academic year 2018. The assessment centered on the following areas: ICT Department Services (Numbers 1-16, Table 1), Employee Training (Numbers 17-19, Table 2), Application/Software Project Development (Numbers 20-28, Table 3), and overall services of ICT office (Numbers 29-34, Table 4).

The assessment shows (Refer to Table 1) an average weighted mean of 3.58 having a description “Undecided”. Results imply that the ICT Department staff have the ability to communicate professionally whenever requests for assistance. Though the respondents are unsure of the knowledge proficiency of ICT staff and whom to contact when certain needs arise.

Table 1. Department / Office Services

Variables	\bar{X}	Description
1. I am aware of the process to follow and whom to contact with when I need ICT-related assistance.	3.54	Undecided
2. The hours of operation of the ICT Department/Office are sufficient to meet my needs.	3.51	Undecided
3. I have the ability to provide input into the priority of my requests.	3.52	Undecided
4. When I work with the ICT Department/Office, the staff seeks to understand the problem I describe to them.	3.71	Undecided
5. ICT Department/Office staff communicates with me professionally.	3.80	Agree
6. I receive the information I need regarding the status of my request.	3.53	Undecided
7. The ICT Department/Office follows through and resolves my request to successful completion.	3.61	Undecided
8. The ICT staff is knowledgeable and capable.	4.03	Agree
9. My request for assistance is resolved in a timely fashion.	3.98	Agree
10. I have adequate computer hardware and software for my job assignment.	3.98	Agree
11. I am aware of the available software and adequate tools.	3.60	Undecided
12. The computer equipment I use (software, hardware, and network) is reliable enough to allow me to get my work done.	3.77	Undecided
13. My hardware and software are generally fast enough to get my work done efficiently.	3.35	Undecided
14. I am able to connect from external location when necessary.	3.00	Disagree
15. I have easy access to the organization information and reporting I need to do my job.	3.05	Disagree
16. The organization information (data needed) I get from the current system is accurate.	3.41	Undecided
Average Weighted Mean	3.58	Undecided

The survey got an average weighted mean of 3.44 to describe as “undecided” in terms of training (Refer to Table 2). The result implies that respondents agree, and they are comfortable using the software and tools they are given by the College for work/training. The respondents claim “undecided” that the training they receive on the computer and software they have do not meet their office needs while respondents claim “disagree” on the ICT training they attended is sufficient. Meaning they have a lack of ICT training attended.

Table 2. Employee Training

Variables	\bar{X}	Description
17. I am comfortable using the available software and tools I have.	3.82	Agree
18. The training I received on the computer and software meets my needs.	3.66	Undecided
19. The documentation on training I attended is sufficient.	2.83	Disagree
Average Weighted Mean	3.44	Undecided

According to the employees’ responses, as shown in Table 3, the section on Application/Software Project Development obtained an average weighted mean of 4.17 with a description of “Agree”. The respondents claim “Agree” that they are aware and knowledgeable of the process for submitting a request for an application project. The respondents claim “Strongly Agree” believe that they have input into the prioritization of project requests they make, seeks to understand the College’s goals, ICT department communicates in non-technical language and they are courteous and professional, and ICT projects are usually completing in a timely fashion. While respondents claim “Undecided” that

the ICT department delivers quality solutions that meet the College’s strategic directions and ICT projects are managed.

Table 3. Application/Software Project Development

Variables	\bar{X}	Description
20. I am aware of the process for submitting request for an application project or enhancement.	4.18	Agree
21. I have input into the prioritization of my project request.	4.45	Strongly Agree
22. ICT Department/Office seeks to understand the College’s goals and define its requirements.	4.49	Strongly Agree
23. ICT staff communicates professionally in a non-technical language.	4.70	Strongly Agree
24. ICT Department/Office delivers quality solutions that meet the College’s strategic directions.	3.78	Undecided
25. I am satisfied with the way that ICT projects are managed.	3.48	Undecided
26. ICT project resources (workforce) follows through and resolves my project request to successful completion.	3.70	Undecided
27. ICT project resources are knowledgeable and capable.	4.19	Agree
28. ICT completes projects in a timely fashion.	4.56	Strongly Agree
Average Weighted Mean	4.17	Agree

Lastly, the responses on the below-mentioned items on the Overall Services of the ICT Office (refer to Table 4) got a weighted means of 3.85, 3.95 and 3.50 distinctively. However, there were some who disagreed that the department/office has strong customer service focus, in providing input for ICT direction and that it is generally responsive to employees’ needs. Foregoing statements got weighted means 2.82, 3.13 and 3.05 respectively. The preceding statements got weighted mean of 3.21 and 3.28 which is “undecided”. the respondents claim that overall, they are not satisfied with the service they receive from ICT and in general, surprisingly, ICT is not responsive to their needs. The preceding statements obtained an average weighted mean of 3.29 which is “undecided”. Results mean that a strong customer service focus can be offered to the SSC employees as one of a good strategic direction and priorities which must be aligned with its goals or objectives. Furthermore, respondents indicate less satisfaction with ICT services if the department is less responsive to their needs. Thus, a significant strategic plan is made available for an ICT robust service to concerned individuals’ employees or clientele.

Table 4. Overall Services of the ICT Office

Variables	\bar{X}	Description
29. ICT has strong customer service focus.	2.82	Disagree
30. ICT has a good strategic direction that is aligned with the College’s direction and priorities.	3.85	Agree
31. I am able to provide input to the ICT direction as necessary.	3.13	Disagree
32. ICT provides a strategic advantage to the College.	3.50	Agree
33. Overall, I am satisfied with the service I receive from ICT.	3.21	Undecided
34. In general, ICT is responsive to my needs.	3.28	Undecided
Average Weighted Mean	3.29	Undecided

Out of 104 SSC respondents, 47.2% ask help from individual ICT employees 25.45 % of them seek help from other employees in the department; 19.09% ask help from the ICT department; 3.64% of them ask help from external individuals or companies and 4.62% request help from other sources. Data reveals that majority of the employees ask technical help to individual ICT employees. It only shows that most of SSC employees rely on the expertise of the ICT employees to assist their needs.

According to the employees' responses, around 51.04% of the employees perceived 1-3 hours, 19.79% of them said it will take 1-3 hours for assisting and servicing, 11.46 % perceived 3-8 hours, 9.38% assumed that it will take services about 8-24 hours and 8.33% of them apparently take more than 24 hours. Results mean that the number of hours to be of service to customers depends upon on assistance or support needed by the ICT staff. Though they perceived 1 to 3 hours, somehow it is an ideal period to render adeptness to computer technology/equipment.

Employee-respondents of SSC seek frequent help for needed applications to individual ICT employees which got the highest frequency of 61.06% and 12.39% of them go to the ICT department. The 8.85% asked for assistance in the management or administration and 7.97% go to external individual/companies. While only 3.54% ask for assistance in ICT management and 6.9% seek help from other sources, which were not specifically mentioned. Results entail that majority of the employees of SSC seek help/assistance from individual ICT employees in the department.

SWOT & Gap Analysis

This study made use of SWOT analysis as one of its strategic planning tools. It was used to evaluate the strength, weaknesses, opportunities, and threats (SWOT) involved in Sorsogon State College along with five (5) key results area in terms of Instruction, Research, Extension, Production, and General Administration and Support Services. The proponents used the SWOT analysis presented by the college in its 2017 strategic plan workshop participated by the top officials of the college, from the president, vice-president going to directors and representatives from different unit heads, which served as inputs to identifying the contents of ICT concern in SWOT analysis. Results of the SWOT analysis provided the researcher with a basis for identifying solutions to underlying ICT development plans and the problems being faced by the college and as presented in the gap analysis. It reveals four (4) essential elements that are considered to the attainment of the proposed information systems and ICT projects. These are (1) strong leadership (2) good financial condition, having a regular budget allocation (3) selected ICT faculty started initiating ICT-related projects for College computerization; and (4) affordable and available technologies that the College administration can acquire and deploy to improve the efficiency of its various services.

Although the college initiated a few e-government initiatives such as procurement of an enrollment system, CCTV security, among others, these are still not enough to support the overall organizational goals and direction. The capability of the college to implement e-government project is also threatened by certain problems such as expensive price of IS hardware and software, inefficient planning and budgeting system, weak policy implementation, inadequately used of technology in internal processes, and highly budget dependent on national government's approval.

Table 5. Identified Gaps and Strategic Alignment from Gap Analysis

Key Result Area	Gaps	Organizational Strategies	IS/IT Vision
Instruction	<p><i>Organizational Application:</i> 90% vendor packages are not license and only 2-3% are license. 6% freeware & open source.</p> <p><i>IS/IT Resources:</i> lack of ICT equipment, books and other instructional references. 50% internet penetration.</p> <p><i>People and Skill:</i> 65%</p>	<ul style="list-style-type: none"> ▪ Support and strengthen faculty development program. ▪ Outcomes-based Education (OBE) ▪ Build additional facilities and adopt innovative technologies for instruction purposes. ▪ Training of the faculty for the use of 	<ul style="list-style-type: none"> ▪ A State-of-Art facilities and equipment's help students to enrich their knowledge and skills. ▪ Adoption of new emerging technologies for instruction such as interactive whiteboards and online learning. ▪ Adequate books, references, instructional materials and online learning tools.

	<p>are computer literate</p> <p><i>Processes:</i> unclear e-government project in the implementation. 85% manual process. 15% partial automated.</p> <p><i>Management:</i> no concrete policy for collaborative work within employees.</p> <p><i>Budget:</i> limited budget</p>	<p>ICT to support learning.</p> <ul style="list-style-type: none"> ▪ Proper allocation of ICT resources. ▪ New acquisition of necessary books, references, and other teaching materials intended for instruction. ▪ Provide a secure databank of departmental examination, syllabus, student records and faculty members. ▪ Proper allocation 	<ul style="list-style-type: none"> ▪ Relevant trainings and seminars for faculty and staff members that will enhance their knowledge and skills in ICT. ▪ Target (IS): (enrolment information system (IS), accounting, finance, and budget IS, Student IS, Library IS, E-learning Management System, Queuing Management System, Automated Voting System).
Research	<p><i>Organizational Application:</i> 97% vendor packages are not license and only 2-3% are license.</p> <p><i>IS/IT Resources:</i> lack of ICT equipment and facilities. 50% internet penetration.</p> <p><i>People and Skill:</i> competent staff</p> <p><i>Processes:</i> 100% manual process</p> <p><i>Management:</i> 98% management support in terms of research projects and activities</p> <p><i>Budget:</i> Enough budget but not utilize 100%.</p>	<ul style="list-style-type: none"> ▪ Improve policy and administrative support. ▪ Encourage faculty members to engage in national and international research presentation and fora. ▪ Provide online repository for unpublished and published research work. ▪ Strengthened linkages to other institutions for related-researched undertaking locally, nationally, and internationally. ▪ Continuous joint planning/packaging and implementation of relevant R&D projects/programs with stakeholders. ▪ Published research outputs in referred journals for information dissemination. 	<ul style="list-style-type: none"> ▪ Establishment and maintenance of information network and dissemination of information on education and other useful data of students, personnel, faculty, researchers to the institution and the community as well. ▪ Reliable high-speed internet access to connect on research online publication and IT-based research resources. ▪ Secured online repository for data storage/archive. ▪ Target (IS): Research & Extension Information System (IS).
Extension	<p><i>Organizational Application:</i> 97% vendor packages are not</p>	<ul style="list-style-type: none"> ▪ Conduct research-based extension activities. 	<ul style="list-style-type: none"> ▪ Adapt innovative technologies and

	<p>license and only 2-3% are license.</p> <p><i>IS/IT Resources:</i> lack of ICT equipment and facilities. 50% internet penetration.</p> <p><i>People and Skill:</i> competent staff</p> <p><i>Processes:</i> 100% manual process</p> <p><i>Management:</i> 98% management support in terms of extension projects.</p> <p><i>Budget:</i> less budget, need to outsource from external funding</p>	<ul style="list-style-type: none"> ▪ Strengthened community needs assessment. ▪ Proper training of faculty and staff to enhanced knowledge and skills in conducting extension services. ▪ Establish and intensify existing linkages/partnership with government line agencies, LGUs, NGOs and private organization. ▪ Establish of extension data bank system 	<p>continue transfer the services of extension to stakeholders of the institution and community as well.</p> <ul style="list-style-type: none"> ▪ Extend IS/IT services to the stakeholders of the institution. ▪ Strong and stable relationship with the outside community and partners agency by developing technology to cater their needs. ▪ Target (IS): Research & Extension Information System (IS).
Production	<p><i>Organizational Application:</i> 97% vendor packages are not license and only 2-3% are license.</p> <p><i>IS/IT Resources:</i> lack of ICT equipment and facilities. 50% internet penetration.</p> <p><i>People and Skill:</i> less training on staff in terms of IGPs.</p> <p><i>Processes:</i> 100% manual process</p> <p><i>Management:</i> other sources of IGPs are not utilize properly. No ICT strategy and policy.</p> <p><i>Budget:</i> less budget, need to outsource from external funding</p>	<ul style="list-style-type: none"> ▪ Commercialize IGPs projects with intellectual property rights. ▪ Stabilize existing income generating projects. ▪ Establish feasible and viable IGPs. ▪ Augment the financial stability of the College through more IGPs. ▪ Establish partnership with the private sectors. 	<ul style="list-style-type: none"> ▪ Provide technologies that help produce, sell, market, assess and evaluate, and monitor production activities of the College. ▪ Establishment of ICT policies to strengthen implementation of IGPs.
Administration and Support Services	<p><i>Organizational Application:</i> 95% vendor packages are not license and only 5% are license.</p> <p><i>IS/IT Resources:</i> lack of ICT equipment and facilities. 50% internet penetration.</p> <p><i>People and Skill:</i> less</p>	<ul style="list-style-type: none"> ▪ Implementation of full operation of the Records and Human Resource Management Automation. ▪ Review automation of the procurement services. ▪ Implement cost cutting measures. 	<ul style="list-style-type: none"> ▪ Acquire, develop, upgrade software and hardware components. ▪ Enhance personnel competency in ICT. ▪ Modernization of the security paraphernalia. ▪ Cost cutting measures in all department and offices.

	<p>training on staff.</p> <p><i>Processes:</i> 96% manual process and 4% partially automated.</p> <p><i>Management:</i> e-government projects is not clear, and lack of management supports. No ICT strategy and policy.</p> <p><i>Budget:</i> budget allocation in ICT is very minimal.</p>	<ul style="list-style-type: none"> ▪ Upgrade skills through staff development program ▪ Provide ICT-based management information system 	<ul style="list-style-type: none"> ▪ Maintained and established ICT projects to further strengthen the operation and services of the College through a web-based application interfacing the existing legacy applications. ▪ Online ICT-based management information system for instruction, research, extension, production, administration and financial operations
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ICT Projects, Performance Measurement Framework, and Security Plan

Detailed descriptions for a total of 11 ICT projects were developed (refer to Table 5), with a 3-year duration from 2019 to 2021. The descriptions for each project included objectives, duration (target academic year), deliverables, and proposed solutions for existing IS. Additionally, a tally and proposed acquisition, deployment, maintenance, and replacement periods of necessary hardware, software, and network requirements were determined. An inventory of ICT training needs was also identified.

Table 6. List of ICT Projects

Internal		Cross-Agency
<ol style="list-style-type: none"> 1. Improvement of ICT Services 2. Enrolment Information System 3. Accounting, Finance, and Budget Information System 4. Tracking Management System 5. Student Information System 	<ol style="list-style-type: none"> 6. Library Information System 7. E-learning Management System 8. Queueing Management System 9. Research & Extension Information System 10. Automated Voting System 	<ol style="list-style-type: none"> 1. Accreditation Information System

A performance measurement framework was also developed, wherein a set of specific targets were set for each identified ICT project. Refer to Table 6 for a sample Section in the Performance Measurement Framework for the Improvement of ICT Services internal project.

Table 7. Sample Section in the Performance Measurement Framework

Hierarchy of targeted results	Objectives Verifiable Indicators	Baseline Data	Targets	Data Collection Methods	Responsibility to Collect Data
<p>Intermediate Outcome</p> <p>Improved frontline services</p>	<p>Level of Satisfaction of Stakeholder</p> <p>Processing Time</p>	<p>30% level of satisfaction</p> <p>Minimum 2 days</p>	<p>100% level of satisfaction</p> <p>2 hours or less</p>	<p>Customer feedback survey</p> <p>Customer feedback survey</p>	<p>MIS/ICT Services Office</p> <p>MIS/ICT Services Office</p>

Immediate Outcome Improved accessibility of network resources.	% of users to access data over the network	60% of users to access data over the network	100% of users to access data over the network	Inventory, Ocular Inspection and Survey	MIS/ICT Services Office
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While a specific security plan has not yet been developed, the proponents are recommending to adopt the elements from Heywood’s (2014) work as generally described in Table 8.

Table 8. Proposed Elements of Security Plan

Culture & Awareness	Risk Management	Information
<ul style="list-style-type: none"> • A security culture that supports organization and security priorities that is aligned to vision, mission, and goals of the college. • Proper training that tackled personal responsibility and good security behaviors. • Mechanisms to drive continuous improvement, tackle poor and inappropriate behavior, enforce sanctions and encourage the sharing of best practice. 	<ul style="list-style-type: none"> • A clearly-communicated set of security policies and procedures, which reflect organizational objectives to support good risk management. • Mechanisms and trained an employee to analyze threats, vulnerabilities, and potential impacts which are associated with organization activities. • Assurance processes to make sure that mitigations are, and remain, effective. 	<ul style="list-style-type: none"> • Staff who are well trained to exercise good judgment, take responsibility and be accountable for the information they handle, including all partner information. • Mechanisms and processes to ensure assets are properly classified and appropriately protected. • Confidence that security controls are effective, and that systems and services can protect the information of the organization.
Technology & Services	Personnel Security	Physical Security
<ul style="list-style-type: none"> • Identified if technology and services are to the organization and risk manage accordingly. • Mitigate applicable threats. • Protect against, detect and correct malicious behavior. • Ensure that critical technology and services are resilient to disruptive challenges such as cyber-attacks and have a contingency plan. 	<ul style="list-style-type: none"> • Strengthen policy in hiring personnel especially those with access to the sensitive information or assets of the organization. • Check and inspect outsider entering the campus for any means of transaction. • Have regular security appraisals, promote a security-conscious culture, and drive staff and line management engagement. 	<ul style="list-style-type: none"> • Keep building design and plan that might use in developing appropriate physical security and risk assessment plan. • Have a mechanism to implement internal and external security controls in a layered fashion that deter or prevent unauthorized access and protect assets, especially those that are critical or sensitive, against forcible or secret attack.

Figure 4 shows the proposed ICT Services (ICTS) Organizational structure. Detailed job descriptions for the proposed positions in ICTS were also written, where the ICTS coordinator is given the task of developing, managing, supporting, and encouraging the use of ICT within the College. The offices headed by a qualified officer equipped with adequate management experience and technical skills.

The management must support all the activities and projects of the ICTS office, given their alignment to the College’s strategic thrust. The ICTS aims to provide quality service that facilitate, enhance and support the goals and objectives of a diverse College community through technology updates, and stream line of processes.

Proposed ICT Organizational Structure

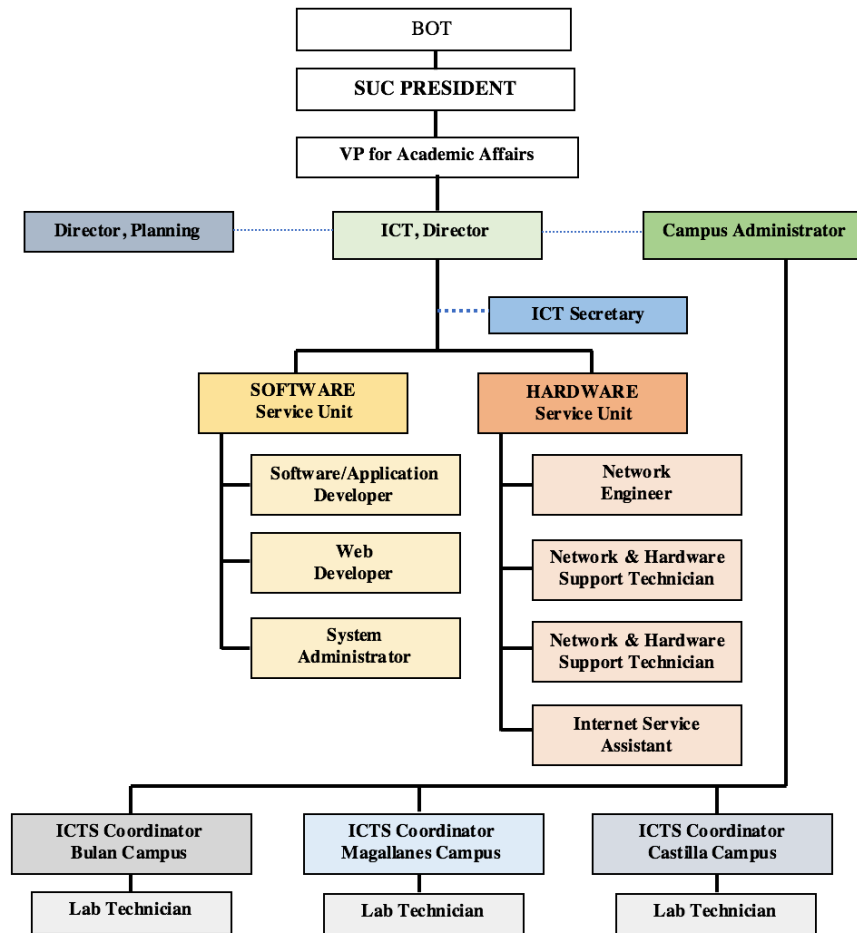


Figure 4. Proposed ICT Services (ICTS) Organizational Structure

Conclusion

The ISSP was proposed to address current issues experienced by SSC, including the following: the need to improve the way information is managed in the college, particularly, on storing, retrieving, and disseminating and keeping secure of information to the satellite campuses; the lack of ICT knowledge/skills; and the limited technology and software, appropriate high-end network infrastructure and equipment facilities.

While a proposed ISSP is in place, the following are the recommended solutions that will promote successful implementation of the proposed IS and ICT projects indicated in the ISSP component of this study: [1] Strengthen the operation of ICT in the college through formulation of a comprehensive set of ICT policies; top management support of the proposed ICT roadmaps; and hiring of highly-qualified and skilled ICT staff for maintaining ICT network supports and information systems; [2] the administrators of the college must prioritize the installation of specialized ICT Committee for Planning and Development Office; the ISSP, once approved and finalized must be subjected to regular evaluation in order to ensure updated and relevant content; [3] increase and upgrade ICT Infrastructure and Technology Investments; [4] the ICT Director must develop policies and implement IT strategies in securing ICT resources; a comprehensive college-wide disaster plan be

designed; support and advocate the use of licensed software or open-sourced technology and enforce security measures to mitigate threats and ensure that critical technology and services are resilient to disruptive challenges such as cyber-attacks and malicious behavior; and [5] SSC must increase research activities that prioritize the ICT-enabled researchers.

Hence, this research is believed to provide a valuable guide for educational MIS managers or strategic planners who are initiating or conducting information systems strategic planning implementation in higher educational institutions, and for researchers interested in information systems management and strategic planning.

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