ICT Development and Challenges among State Universities

and Colleges (SUCs) in the Island of Samar

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Doctor in Philosophy

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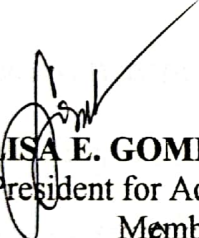**MARYJES G. CALADES**

March 2019

APPROVAL SHEET

This dissertation entitled "**ICT DEVELOPMENT AND CHALLENGES AMONG STATE UNIVERSITIES AND COLLEGES (SUCS) IN THE ISLAND OF SAMAR**" has been prepared and submitted by **MARYJES G. CALADES,** who having passed the comprehensive examination, is hereby recommended for oral examination.

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DEDICATION

I devote my humble work to my parents Mr. & Mrs. Jesus G. Grata, my husband Dr.

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Calades, they are my source of joy and happiness.

ABSTRACT

This study aimed to determine the ICT development and challenges among State Universities and Colleges in the Island of Samar. This study employed the descriptive-correlation research design using the questionnaire as the main instrument of the study. The study is descriptive considering that it will determine the development milestone on ICT along leadership, management, technical and non-technical. The respondents considered four indicators as "filled-up" while the remaining two were "not filled-up." The filled-up indicators were the following: Director of ICT – ICT Professional Learning Support and Teaching, Computer Services Manager, Computer Technician and Database Manager. Thematic Analysis of Respondents' `Responses during the FGD resulted one theme that emerged regarding ICT development and utilization. Allocation is always provided among state universities in the Island of Samar to support CT development and utilization to provide the necessary facilities for the improvement of the quality of instruction and to provide capacity building for the faculty and personnel for the effective use of ICTs. The SUCs both developed and adopted ICT-based innovation usually on student support and library services while they moderately develop and adopt ICT-based innovation and the other areas. ICT managers and staff should explore more possibility to develop ICT-based innovations aside from the adopted ones to improve organizational productivity and performance along faculty support services, administrative services and the areas on technology transfer and commercialization.

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CHAPTER I

THE PROBLEM AND ITS BACKGROUND

<u>**Introduction**</u>

Information Communication Technology (ICT) has been originated back when modern computer begin with Analytical Engine designed by Charles Babbage (1837) following the mathematical ideas of George Boole, the mathematician who first stated the principles of logic inherent in today's digital computer.

Babbage's assistant and collaborator, Lovelace (1840), is said to have introduced the ideas of program loops and subroutines and is sometimes considered the first programmer. Apart from mathematical calculators, the first really useable computers began with the vacuum tube, accelerated with the invention of the transistor, which then became embedded in large numbers in integrated circuits, ultimately making possible the relatively low-cost personal computer (Datta, 2006).

Computers were introduced in the Philippines in the late 60's by IBM Philippines, Inc. This computer was big and a whole room was needed to accommodate this computer, more commonly known as main frames , their basic function was more on data storage , and not just anymore can operate the computer, it needed a highly trained technician to use it and translate its

data, the language used by these computers were Binary language a series of 0's and 1's, it was not a user friendly machine and it was very expensive, in the Philippines only multi-national companies had one, in mid 70's a highly evolved computer came in to the scene,

Apple with its Apple 1 had a great impact on the Philippines market, this new computers were compact and space needed was very small, these computers were called mini's personal computers popularly called PC's, this started an era of computerization in the Philippines, because of its affordability and the introduction of a New Operating System developed by Mr. Bill Gates, who's company was soon to be known as (Microsoft), made the use of computers very easy and almost all the companies as well as individuals made full use of them in their homes and in their business, the Windows 3-11 was born a new operating system that was very easy to use, during the 80's and 90's control for the computer market in the Philippines was intense, Apple came out with their Apple 11, Apple 11+, Apple 11 C's and Apple ac's, in which IBM retailed with their 256,286,386, 486 and eventually with their Pentium class units P-1, P-2,P-3, which made IBM predominant in the field of computers in the Philippines.

Before the turn of the century computers was a necessity rather than a luxury in the Philippines, more and more schools are incorporating computer as part of their curriculum, the Filipinos have evolved to a new breed of men women and children who are dependent on computers for their

researches and   school activities, companies in the Philippines are now relaying on these computers for their researchers and school activities, companies in the Philippines are now relaying on these computers in their day today activities from payroll to communication via E-mail to their clients, and Filipinos are more and more aware of the importance of these gadgets in business and countries economy. In the early part of the 21st century, more and more different types of computer are being introduced to the Philippines and these are laptop's mini desktop's and more proving the Philippines and its people the Filipinos are now part of the hi-tech community.

In many sectors around the globe, ICT has become an important source of innovation and improvement of efficiency. For the education sector, particularly, the application of ICT has become a critical part of the learning process for university students both outside and inside the classroom setting. The government and other stakeholders in the education sector such as university management and researchers have invested millions of dollars to adopt ICT in the education system during the last two decades. Most universities that have fully adopted ICT have recorded immense advancement in the application of ICT for the improvement of learning methods, teaching, research, and development (W. Basri, Alandejani & Almadani, 2018).

Information and communication technologies (ICTs) which include radio and television, as well as newer digital technologies such as computers and the Internet have been touted as potentially powerful enabling tools for educational change and reform. "When used appropriately, different ICTs are said to help expand access to education, strengthen the relevance of education to the increasingly digital workplace, and raise educational quality by, among others, helping make teaching and learning into an engaging, active process connected to real life". (M. Khan & Khan, 2015)

An important component of ICT is the Internet. This needs the quality of broadband internet connection. Broadband is defined as "high speed internet access which always –on and capable of multiple service provision simultaneously" (broadband Commission 2010 as cited by Mirandilla-Santos, 2016). Broadband internet access has been widely considered as a tool that can help achieve development and accelerate economic growth especially in a globalized setting. According to the World Bank (2010), a 10% increase in broadband penetration could lead to a 1.38% increase in country's GDP.

Notwithstanding the improvement in the Philippines access to fixed broadband technology, which is second to Singapore among the ASEAN, broadband services in the Philippines have remained poor based on Akamai's State of Internet Report for the first three quarters of 2015, the Philippines' average download speed of 2.9 megabits per second (mbps) is

only higher that Indonesia (2.5 mpbs). This was validated by Ookla (2015) when it reported that   the Philippines has the second slowest average download speed in Asia at 3.64 mbps next to Afghanistan at 2.5 mpbs.

A study of LIRNEasias' broadband quality of service experience (QoSE) last 2014 found that the largest ISP's in the Philippines offered the lowest value for money- in terms of actual download speed experiences by customers vis-à-vis the cost of monthly data plan-compared to other ISPs in Asia. Factors affecting the poor broadband connection in the country include lack of competition due to the presence of barriers to the entry, the lack of infrastructure such as national broadband network and the weak and ineffective regulation.

Another study conducted by Agan and Kim (2016) reveals poor broadband connection. This study suggests that this inefficiency hampers the motivation of users to innovate in a way that could contribute to inclusive growth and the development of an inclusive information society. Through a comparison of the current global ICT situation with the current situation in the Philippines, it shows that the country`s Internet infrastructure lags behind among those of contemporary developing countries in Asia, particularly in terms of Internet connectivity. In 2015, Thailand had an average Internet speed of 7.4 Mbps, Sri Lanka 7.4, and Malaysia 4.3. Meanwhile, the Philippines had a meager average Internet speed of 2.8 Mbps, placing the country at 104 among 160 countries, with developed countries in Asia such as

South Korea (23.6 Mbps) and Singapore (12.9 Mbps) ranking 1 and 12, respectively. Findings show that the lack of competition in the Internet connectivity market, among other reasons, is at the root of the dilemma of slow and costly Internet connection.

Based on the gathered data on the current status of ICT in the Philippines, it has relatively weak uptake of ICT services, aside from inadequate ICT infrastructure. There were three factors identified which contribute to poor ICT infrastructure in the Philippines namely ICT infrastructure, ICT policy and ICT service providers. Studies have been conducted and showed that the factors affecting the poor broadband connection in the country include lack of competition due to the presence of barriers to the entry, the lack of infrastructure such as national broadband network and the weak and ineffective regulation.

Since the Philippines has poor ICT infrastructure, it also follows on its schools. Research in this domain, especially at the province level particularly in Samar, is lacking. Thus, this study dwells on this domain and specifically focused on the ICT development and challenges in SUCs in the Samar Island.

Statement of the Problem

This study aimed to determine the ICT development and challenges among State Universities and Colleges in the Island of Samar.

Specifically, it sought to answer the following questions:

1. What is the development milestone on ICT utilization along:

    1.1 leadership;

        1.2 management;

        1.3 technical; and

        1.4 Non-technical?

    2. What are the ICT support systems along:

        2.1 policies;

        2.2 Budgetary;

        2.3 monitoring and evaluation;

        2.4 linkages; and

        2.5 training?

3. What is the ICT-based innovation developed and adopted:

    3.1 student services;

        3.2 faculty support services;

        3.3 administrative services;

        3.4 library services;

        3.5 technology transfer; and

        3.6 commercialization?

    4. What is the state of ICT literacy of the following:

        4.1 students; and

        4.2 personnel?

5. What are the problems and challenges encountered along ICT development?

Theoretical Framework

This study is anchored on Uses and Gratification (U&G) Theory by Palmgreen (1985) as a frame in developing a taxonomy of why ICT is very weak and not fully adopted in the HEIs.. Further, it seeks to contribute to the theory by extending the Uses and Gratification (U&G) theory by examining the development and challenges of SUC in the Samar Island. Furthermore, the Theory of Reasoned Actions by Ajzen and Fishbean (1980:302) defined links between the beliefs, attitude, norms, intentions and behavior of individuals. The theory assumes that a person's behavior is determined by the person's behavioral intention to perform it, and the intention itself is determined by the person's attitudes and his subjective norms toward the behavior. The subjective norm refers to the person's perception that most people who are important to him think he should perform the behavior in question.

Moreover, the Theory of Planned Behavior (TPB) by Taylor and Todd (1995:250) focuses on self-regulation. It is similar to the TRA model, but the difference is that it takes into account an additional construct, namely: perceived behavior control. Perceived behavior control refers to the perception of control over the performance of a given behavior.

In TRA rational considerations determine the choices and behaviors of individuals, and individual intentions determine behavior. Intentions refer to individuals' plans and motivations to commit a specific act. Intentions also reflect individual attitudes and the extent to which individuals perceive a specific act as desirable or favorable. The theory suggests that human behavior is governed by personal attitudes, but also by social pressures and a sense of control.

Finally, the Unified Theory of Acceptance and Use of Technology (UTAUT) by Venkatesh, et al. (2003:115-120) reviews eight models which explain ICT usage, namely: TRA, TAM, the motivational model, TPB, a model combining TAM and TPB, the model of PC utilization, and the social cognitive theory. The purpose of UTAUT is to explain a user's intentions to use ICT and the subsequent user behavior, namely: performance expectancy, social influence, and facilitating conditions. There are four key moderating variables: gender, age, experience and voluntariness of use. It provides a tool for managers to assess the likelihood of success of technology introductions and to understand the drivers of acceptance in order to design interventions, which include training or marketing. UTAUT focuses on users who may be less willing to adopt and use new systems.

The need of innovating and developing ICT to answer the need of HEIs cannot be denied. The different aspects of growth and development of ICT among HEIs have to be identified so that necessary action can be done in order to come up with a developing and interesting environment.

Conceptual Framework

Figure 1 presents the conceptual framework of the study depicting its working processes.

Information Communication Technology (ICT) plays a vital role to support efficient processing for administrative activities in higher Education particularly the State University and Colleges (SUCs).

Based on the gathered data on the current status of ICT in the Philippines, there were three factors identified which contribute to poor ICT infrastructure in the Philippines namely ICT infrastructure, ICT policy and ICT service providers, as presented in parallel boxes at the upper portion. The findings show that the factors affecting the poor broadband connection in the country include lack of competition due to the presence of barriers to the entry, the lack of infrastructure such as national broadband network and the weak and ineffective regulation.

However, while it is recognized that ICT plays a key role in State University and Colleges, research in this domain, especially at the province level particularly in Samar, is lacking, especially on the ICT development and challenges they have encountered.

The figure shows at the start with the National ICT which is connected to smaller frame inclosing the three boxes which represents the factors is further connected to a bigger frame which depicts the status of ICT in SUC's as it is dependent on the National ICT Infrastructure. The two boxes at the right which are vertically positioned depicts the factors which contributes the kind of ICT in SUCs, the top box reflects the ICT development milestone along leadership, management, technical and non-technical. The bottom box reflects the ICT support systems along policies, budgetary, monitoring and evaluation, linkages and training while the lower box reflects the ICT-based innovations developed and adopted along: student services; faculty support services; administrative services; library services; technology transfer; and commercialization. Lastly, the two boxes are connected to ICT in SUCs.

It was presented in geometric shape oblong the research environment namely: University of Eastern Philippines (UEP) in Catarman, Northern Samar; Northwest Samar State University (NwSSU) in Calbayog City; Samar State University (SSU) in the City of Catbalogan; and Eastern Samar State University (ESSU) in the City of Borongan, involving its ICT infrastructure and human personnel such as ICT Directors, ICT staffs, personnel, and students as respondents of the study. It is then connected to a box at the left side depicts the ICT-based innovations developed and adopted along student services, faculty support services, administrative services ,library services, technology transfer and commercialization.

Furthermore, the state of ÌCT literacy was elicited among students and personnel. The problems and challenges encountered along ICT development were determined also. After undertaking the aforementioned processes, findings and implications were drawn which provided feedback mechanism and was communicated to the research environment that led to the attainment of the ultimate aim of the study which focused toward innovative and strategic ICT development and utilization among SUCs.
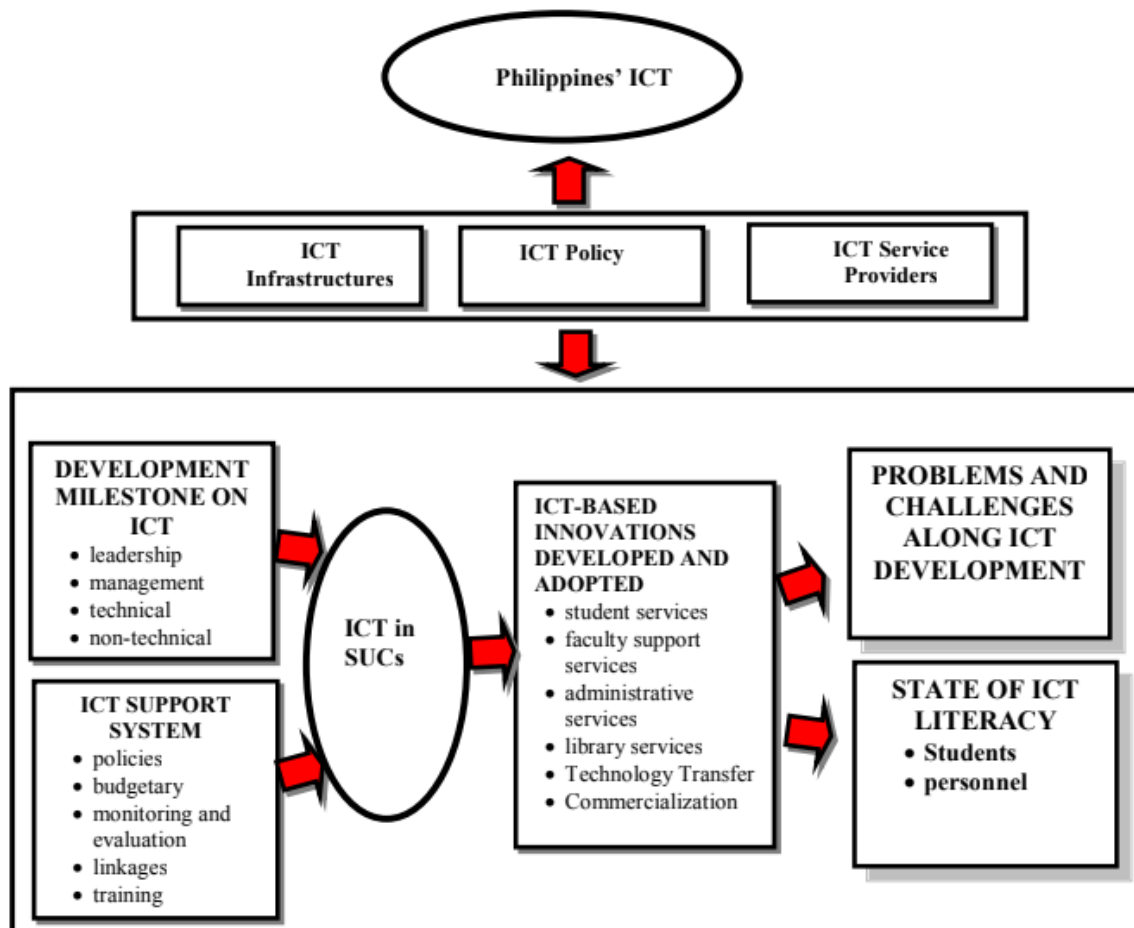
Figure 1. **The Conceptual Framework of the Study**

Significance of the Study

The findings of this study proved beneficial to the following stakeholders: **HEIs.** The findings of the study served as first-hand information as regards ICT development and utilization among HEIs as well as challenges for future redirection.

IT Directors. The results of this study served as input for the ICT Directors as regards the recent trend in ICT as well as give them information on the ICT requirements of the HEI and inventory of available equipment for the challenges in ICT development and utilization.

ICT Staffs. This study gave input to the ICT Staffs on their present status regarding ICT development and utilization so that their respective HEI would be updated, needless to say for the procurement of ICT requirement of HEI.

Personnel. The findings of the study assessed the personnel with the available ICT resources of their respective HEI and encourage them for its utilization.

Students. The findings of the study, as well encouraged students to utilize available ICT resources as a support to their studies.

Future Researchers. The results of this study served as reference for the future researchers who would be prompted to conduct similar studies in the future.

Scope and Delimitation

This study basically focused on the ICT development and challenges among state universities and colleges in Samar Island.

The study involved four groups of respondents, namely: ICT Directors, ICT Staffs, Personnel, and students among HEIs in the Island of Samar, namely: UEP – Catarman, Northern Samar; NwSSU, Calbayog City; SSU, City of Catbalogan; and ESSU, City of Borongan that assessed the development milestone on ICT along leadership, management, technical and non-technical. Likewise, it determined the ICT support system along policies, budgetary, monitoring and evaluation, linkages and training, as well as the ICT-based innovations developed and adopted along student's services, faculty support services, administrative services, library services, technology transfer and commercialization.

Furthermore, the state of ICT literacy of students and personnel elicited and the problems and challenges encountered along ICT development. Figure 2 presents the map showing the research environment. This study was conducted during the School Year 2018-2019.

Definition of Terms

      The following terms used in this study are herein defined conceptually and operationally:

      Administrative Service. Conceptually, the term refers to managing facilities and supervises activities that include recordkeeping, mail distribution, and office upkeep (Truity, 2018). Operationally, the term referred to managing and supervising activities in human resource, property management, transport, building, water supply, electrical and telecommunication.

      Bandwidth. Conceptually, the term refers bandwidth is the data transfer capacity of a computer network in bits per second (Investopedia, 2018). Operationally, the term referred to the amount of data that can be transmitted in a one workstation to another.

      Challenge. Conceptually, the term refers to something needing great mental or physical effort in order to be done successfully, or the situation of facing this kind of effort (Cambridge Dictionary). Operationally, it refers to a call for Higher Education Institution to work with its operation using ICT.

      Commercialization. Conceptually, the term refers to commercialization is the process of bringing new products or services to market (Investopedia, 2018). Operationally, the term referred to the process of managing or running product or technology for financial gain.

Computer. Conceptually, the term refers an electronic machine that is used for storing, organizing, and finding words, numbers, and pictures, for doing calculations, and for controlling other machines (Cambridge Dictionary, 2018). Operationally, it refers to a device use the Higher Education Institute to carry out its operation.

Development. Conceptually, the term refers to the process in which someone or something grows or changes and becomes more advanced (Merriam Webster, 2018). Operationally, it refers to a process that creates growth, progress, positive change in ICT.

Developmental Milestone. Conceptually, the term refers to significant event (Your Dictionary). Operationally, it refers to an important event along ICT utilization.

Extension Service. Conceptually, the term refers to an educational opportunity provided by colleges and universities to people who are not enrolled as regular students (thefreedictionary). Operationally, the term referred to CHED mandates for Higher education institutions to conduct activities that will lead in the development of communities, especially those that are underserved.

Faculty Support Service. Conceptually, the term refers to Faculty Support Services provides resources and guidance to faculty (Harvard Law School). Operationally, it refers to services provide to faculty in enhancing teaching learning processes.

Hub. Conceptually, the term refers to a hub is the connection point in a computer device where data from many directions converge and are then sent   out in many directions to respective devices (Technopedia) . Operationally, the term refers to a device that connects multiple computers or other network devices together.

ICT. Conceptually, the term refers to Information and communications technology (or technologies), is the infrastructure and components that enable modern computing (Techtarget 2005). Operationally, it refers to technologies that provide access to information through telecommunications.

Internet Connectivity. Conceptually, the term refers to the way people are hooked up to the Internet, and may include dial-up telephone lines, always-on broadband connections, and wireless devices (Encyclopedia, 2019). Operationally, it refers to the way people in Higher Education Institute are connected to the Internet through dial-up telephone lines, always-on broadband connections, and wireless devices.

ICT Directors. Conceptually, the term refers to a person who is responsible for all tasks related to the installation, maintenance and management of the School computer network to meet the needs of curricula and administrative tasks (Dwight School Seoul, 2017). Operationally, the term refers to the person appointed to monitors operational requirements,

researches strategies, technology solutions, and builds most cost-effective and efficient systems in a Higher Education Institute.

Library Service. Conceptually, the term refers to Services provided by the library to students to address their information needs (IGI Global). Operationally, the term referred to the services provided by the library which includes Library orientation, Borrowing and circulation, Internet access, Online Public Access Catalog (OPAC), and Dissemination of the newly acquired books, audio visual materials and periodicals.

Research Service. Conceptually, the term supports academics and researchers at the University in preparing, submitting and managing research grants (University of Kent, 2019). Operationally, the term refers to services provided by the research office which includes Data collection, Analysis of the data, Documentation, Results presentation and Implementation.

Router. Conceptually, the term refers the router is a piece of network hardware that connects a local network to the internet (Lifewire, 2019). Operationally, it refers to a networking device that forwards data packets between computer networks.

Server. Conceptually, the term refers A server is a computer that provides data to other computers. It may serve data to systems on a local area network (LAN) or a wide area network (WAN) over the Internet (Techterms,

2014). Operationally, the term refers to a computer device that provides services to other computer device.

Student Service. Conceptually, the term refers to e the divisions or departments which provide services and student support in higher education (LUMEN, 2013). Operationally, the term refers to a department that provides services and support for student success at Institutions of Higher Education.

Switch. Conceptually, the term refers facilitate the sharing of resources by connecting together all the devices, including computers, printers, and servers, in a small business network. Thanks to the switch, these connected devices can share information and talk to each other, regardless of where they are in a   building or on a campus (CISCO,2019). Operationally, the term referred to a networking device that connects devices together on a computer network.

Teaching-Learning Service. Conceptually, the term refers to comprehensive instructional support, innovative spaces, and an array of services that promote digital fluencies (Penn Libraries, 2019). Operationally, it refers to process of learning that actively involves students in a wide range of experiences.

Technical. Conceptually, the term refers having special knowledge especially of a mechanical or scientific subject a technical expert

(Merriam Webster's Dictionary, Eleventh Edition). Operationally, the term refers devices the field of Information Communication Technology.

Technology Transfer. Conceptually and operationally, the term refers to the transfer of new technology from the Higher Education Institute to the Community.

Utilization. Conceptually, the term refers to the act of using something in an effective way (Cambridge Dictionary, 4th Edition). Operationally, the term refers to the use of the technology by the community.

ICT-Based Innovations. Conceptually and operationally, the term refers to ICT developed and adapted by the State University and Colleges in improving their quality of teaching-learning and services to their clientele.

Support Systems. Conceptually, the term refers to tools and technologies that provides leverage the power of the human capacity to think and to solve problems (The National Academies Press, 2019). Operationally, the term refers to the support for ICT which includes policies, budgetary monitoring and evaluation, linkages and training.

ICT Staff. Conceptually and operationally, the term refers to personnel who assist the ICT Director in performing duties as assigned within the scope of ICT to the school administration and all of its departments, campuses and offices to develop and implement plans to address technology needs and management of information relating to student and offices operational data or information.

CHAPTER II

REVIEW OF RELATED LITERATURE AND STUDIES

This chapter presents the review of literature and studies sourced from books, journal, magazines, other published materials, these including electronic sources which are deemed relevant to the study at hand.

Related Literature

The history of ICT originates from, which include the abacus. The abacus is thought to have been previously invented 3'000 years before the birth of Jesus Christ. Revisions to its use/design continued for many years, there was even a version developed in Egypt. Early versions of the calculator were gradually replacing this primitive method of math. In 1624, the first ever four-function calculator-clock was built by Wilhelm Schickard, thus heralding a new era. During 1930's, Hewlett-Packard is founded. David Packard and Bill Hewlett together found Hewlett-Packard. Their first product was the HP 200A Audio Oscillator. Walt Disney ordered eight of the 200B model to use as sound effects generators for the 1940 movie titled "Fantasia". In 1943, The US Navy approaches the Massachusetts Institute of Technology (MIT) on the design of a flight simulator for the training of bomber crews. . Further, IBM's Selective Sequence Electronic Calculator computed scientific data on public display near the company headquarters in Manhattan. The SSEC had produced the moon-

position tables used to plot the course of the Apollo flight to the moon in 1969 before its decommissioning in 1952.

In 1950′s, the first commercial computer was released and built by Engineering Research Associates (ERA), the U.S Navy was their first customer. It stored data on magnetic drums and had a capacity of 1million bits. Drums progressed eventually to allow a limit of around 4′000 words. As it progressed, in the year 1962, the first Interactive Computer Game, SpaceWar was wrote by MIT students. This was first played at MIT and the large scope display featured inspired future generations video games. A player could duel other players spaceship using a very early version of the first ever "Joystick". In 1971, this was the year wherein, the first e-mail was sent by Ray Tomlinson of the research firm Bolt and Newman. The "@" symbol is what Tomlinson was most credited for when using e-mail. He sent his e-mail over a military network called ARPANET. In 1988, the first Computer Virus was created and sent by Robert Morris. The "Worm" virus causes a lot of trouble for about 6′000 to 60′000 people linked to the same network. He was fined $10′050, 400 hours of community work and 3 years of probation.

In 1990′s, the famous WorldWideWeb (WWW) was born when Tim Berners-Lee developed Hypertext Mark-up Language. HTML as it is more commonly known as allows the internet to expand into the WorldWideWeb using specification such as Uniform Resource Locator (URL) and Hyper Text Transfer Protocol (HTTP).

Early 2000, Facebook the social networking site was launched in February 2004 and privately owned by Facebook Inc. and founded by Mark Zuckerberg, Eduardo Saverin, Dustin Moskovitz and Chris Hughes. As of a query in 2011, Facebook was valued at about $41 billion and has over 800 million active users.

ICT, or information and communications technology (or technologies), is the infrastructure and components that enable modern computing. Although there is no single, universal definition of ICT, the term is generally accepted to mean all devices, networking components, applications and systems that combined allow people and organizations (i.e., businesses, nonprofit agencies, governments and criminal enterprises) to interact in the digital world. The diagram in this section shows the component of ICT (Pratt, 2018).

Arellano (2017) pointed out that the development of Information and Communication Technologies (ICT) has strong potential to transform economies and societies in several ways, such as reducing information and transaction costs, creating new collaborative models to increase the efficiency of workers, promoting innovation, and improving education and access to basic services. Innovation seems to be everywhere in the lives of consumers, in industry and service production processes, as well as in public sector tasks.

Figure 2. **Components of ICT**

(source: https://searchcio.techtarget.com/definition/ICT-
information-and communications-technology-or-technologies)

It was noted that one of UNESCO's overriding aims is to ensure that all countries, both developed and developing, have access to the best educational facilities necessary to prepare young people to play full roles in modern society and to contribute to a knowledge nation. Maintaining a capacity to advise national governments on the use of technology in schools and, in particular, on the optimal balance, given local circumstances, between ICT and older educational technologies and assisting countries in developing educational software and materials that reflect their own national and regional

cultures are key components of the organization's strategy to achieve the Education for All goals.

In today's knowledge-based economy, the competitiveness of a country depends on the efficiency of its information and communications technology (ICT) sector. As such, the Philippines needs to have a reliable ICT infrastructure and an ICT-competent workforce to keep up with the digital economy.

Currently, roughly three in every five (58%) Filipinos have access to the internet, according to the report, Digital, in 2017 by social media consultancy firm, We Are Social, and social media management platform, Hootsuite. This places the Philippines fifth in Southeast Asia in terms of the number of internet users, and slightly above the average global ranking based on internet penetration level, which is at 50 percent.

However, while the Philippines has experienced an incredible internet population growth since 2000, researchers Albert, Serafica & Lumbera (2016) from the Philippine Institute for Development Studies (PIDS) still noted a relatively weak uptake of ICT services in the country.

In their study, Examining Trends in ICT Statistics: How Does the Philippines Fare in ICT? Albert et al., (2016) attributed this to the high cost of ICT services. Despite this high cost, the Philippine ICT environment remains   significantly   below   the   international   standards.

In a study, by Ortiz & Bairan (2017) entitled Rebooting Philippine Telecommunications through Structural Reform revealed that the country was poor in the performance along ICT governance and regulation. Specifically, the study cited the country's failure to institute an independent regulatory body for the ICT sector, the presence of unnecessary and biased policy of requiring legislative franchise to authorize ICT service providers, and the none-issuance of unified license, as factors behind the ineffective regulatory environment in the country.

To achieve an ideal ICT environment, Albert et al. urged the government to explore partnerships with the private sector for building new and better infrastructures and for upgrading the capacities of ICT staff to keep up with the fast-changing technologies.

According to Kaka (2008), nowadays the role of Information and Communication Technology (ICT), especially internet in the education sector plays an important role, especially in the process of empowering the technology into the educational activities. Technology (internet) in another side can be the most effective way to increase the student's knowledge. ICT is not just the bloom of the educational activities, but also it will be the secondary option to improve the effective and meaningful educational process.

Furthermore, according to PSDT (Promoting and Supporting the integration of ICT in education (2015), the overview of ICT infrastructure in schools must be the image below that highlights some key ICT areas for schools, including school wireless networks, which connect teacher and student mobile devices via broadband to cloud based tools and applications.

While each school is unique in terms of size, location and where they are in terms of using ICT, there are some common shifts and trends that are happening in how schools are using ICT. These include increased use of cloud based tools and applications by schools. Further, the importance of fast/reliable broadband to connect with cloud based applications, use of mobile computing devices by teachers and students, including in SEN areas, Importance of suitable wi-fi networks within schools to support mobile learning, changes in how screens are being mirrored and alternatives to projectors in classrooms and cloud based tools and applications.
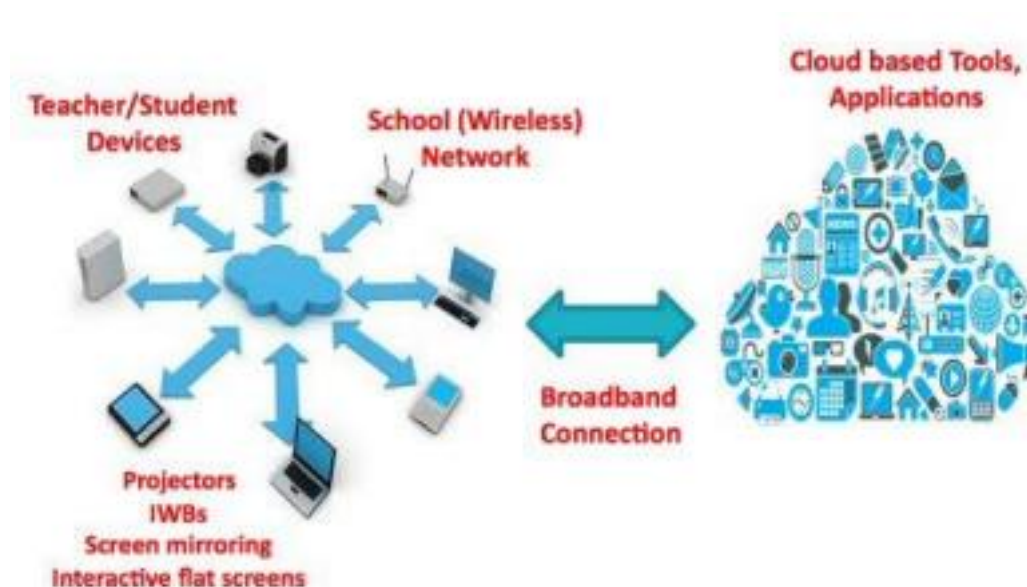
Figure 3. **ICT infrastructure in Schools**

(source:
https://www.pdsttechnologyineducation.ie/en/Technology /T
echnology %20Overview/)

Schools are increasingly using a wide range of useful cloud based tools and applications to support teaching and learning. Many are free and provide a diverse and evolving range of possibilities to enhance learning. For more refer to our advice section on 'Cloud based Tools/Applications'.

Related Studies

Likewise, the researcher review relevant studies taken from theses and dissertations to establish the need for the conduct of the study at hand. Salient findings are presented in this section.

In the study of Dodallo (2015) entitled, "Higher Education Institutions Information Systems Acquisition Decision Model Development,"

he disclosed that the profile of HEIs in terms of current IS utilization showed that students' enrollment and records management, finance and accounting management, and payroll processing ranked 1, 2, and 3, respectively. On the mode of IS project acquisition 53.85 percent acquired their information systems via outsourcing while 46.15 percent through in-house development. As regards to IS implementation duration, majority of the HEIs had been implementing their information systems for five years. Furthermore, there were 46.20 percent whose information systems had budget of Php1M and below.

Furthermore, Dodallo (2015) exposed that on the IS management structure, 76.92 percent of the HEIs had at most two personnel who managed the system. Moreover, most of the HEIs have qualified head and personnel and 38.46 percent have an organizational structure of the office that managed the IS. The study of Dodallo (2015) is similar to the present study considering that both studies delve on information technology among HEIs which include utilization as a variable. However, the two studies differ in the focus of the study. The former focuses on the Information Systems acquisition decision model development while the latter focused on ICT development and challenges. A parallel study was conducted by Moya (2015) titled, "Technology Protection and Licensing of Higher Education Institutions in the Philippines." Findings of the aforementioned study revealed that on utilization performance of HEIs, 10.3 percent of the respondents registered patents and/or utility models. Of these, 98 percent are from public HEIs.

Furthermore, it was revealed also that most of the HEIs in the Philippines does not have written policy or strategic management plans for the protection and licensing of their generated technologies or intellectual property.

The study of Moya (2015) is similar to the present study considering that both studies delve on technology. However, the two studies differ in the focus of the study. The former focuses on the technology protection and licensing while the latter focused on ICT development and challenges.

A study by Ubogu (2008) supported the view that multimedia resources facilitate access to all human knowledge, anytime, and anywhere in a friendly, multi-modal, efficient and effective way, by overcoming barriers of distance, language and culture, and by using multiple Internet-connect devices. The foregoing study is in parallel with the present study. Both study delve on computer as part of the information technology. However, the two studies differ in the focus of the study. While the previous study focused on multimedia, the present study focused on the ICT utilization in HEIs.

In a study conducted by Simpson et al (2009) it was found that 64 percent of the teacher educators used ICT in the production of traditional resources of overhead transparencies and hand-outs using standard word processing package; 27 percent indicated that they made use of and had experience with more powerful communication and presentation software; 32 percent incorporated the use of any ICT software into the lectures and only 24 percent made use of CDi resource materials.

The study also revealed that in the tutors' delivery of the courses, the students seldom experienced demonstrations of the use of ICT as a teaching tool, that is, the tutors seldom modelled its use through their own practices. However, these tutors gave lack of time to practice skills and the limited accessibility of some specialized facilities as constraint factors on their use of ICTs in teaching.

The previous study is similar to the present study for both studies delve on ICT. However, they differ in the area of study. The previous study focused on the use of ICT in classroom instruction while, the present study focused on ICT challenges and utilization among HEIs.

In the study of Adekunmisi (2012), he disclosed the following results: 1) most respondents do not have access to on - campus multimedia resources likely to be responsible for using these materials in their homes and on - campus cafes; 2) respondents consider the multimedia collection in these faculties to be grossly inadequate; 3) 28 (35.00%) of the respondents had access to the multimedia resources available on the campus while the remaining 52 (65.00%) do not have access; 4) it was also found that the majority of respondents did not use multimedia resources in practical teaching, but rather in the development of lecture notes to teach their students, paper presentations, research and publishing / outlets activities.; 5) it was also found that the most frequently used multimedia facilities were used for research and publishing instead of teaching their students; 6) Furthermore,

the study found that the Internet and its facilities, as well as computers and CD - ROMs, were the most frequently used multimedia resources, while television and transparency were the least used.; and 7) Lack of supporting infrastructure ; lack of time to spend on technology, inadequate and/or lack of training, inadequate funding from individual lecturers and high technology costs were the main constraint limiting the use of multimedia for real - life teaching of their students. The previous study is similar to the present study for both studies delve on ICT. However, they differ in the area of study. The previous study focused on the use of ICT in classroom instruction while, the present study focused on ICT challenges and utilization among HEIs.

In the study of Patterson (2016), she revealed that the reader remains fully aware of the importance of constructing an IT department and infrastructure with great care and deliberation. While it is tempting to develop a piecemeal operation that reacts to needs as they arise, this book makes it clear how important it is to be proactive. From the delicacy of dealing with touchy faculty and staff morale, to the need to stop occasionally to assess the institution's progress, this volume is an extremely readable introduction to creating and maintaining an efficient and effective IT operation.

The previous study is similar to the present study for both studies delve on ICT. However, they differ in the area of study.

The previous study focused on the structuring of ICT while, the present study focused on ICT challenges and utilization among HEIs.

In the study of Macori (2016) entitled, "Digital technology acceptance in transformation of university libraries and higher education institutions in Kenya," she disclosed that the objective number one of the study stating, "which applications of digital technologies are provided by university libraries to support education, research and learning practices," sought to investigate the applications of digital technologies used to support education, research and learning practices in the university library. The respondents identified and ranked digital technology applications used in academic and research institutions as well as information management organizations (university libraries and information centers) to support educational, research and learning practices. Modern and traditional technological solutions are among the top digital brands widely used in higher education and information management institutions. Mobile computer devices, preferably portable digital gadgets (laptops and tables), handheld devices (smart phones and personal digital assistants) and e - learning platforms, ranked among the top digital brands to improve information organizations ' learning, information and knowledge. The adoption and use of these technological brands among digital natives has increased significantly, although traditional sources of information such as internet and web resources and electronic information still hold the lead in online transactions (80 %).

Digital repositories and information portals were rated second with 78 percent each, followed by Facebook and Twitter social media interfaces with a percentage equal to 77 percent. In academic institutions and information management organizations, the two social media technologies are widely used.

The previous study is in parallel to the present study for both studies delve on ICT. However, they differ in the area of study. The previous study focused on the digital evolution in support to education, research, and the like while, the present study gave emphasis on ICT challenges and utilization among HEIs.

The study of Harris (2016) entitled, "The effective integration of technology into schools' curriculum," disclosed that it is evident that more research is needed to discover best practices for technology integration.

However, current research suggests guidelines that administrators can follow to support effective technology integration in their schools. By following the guidelines mentioned above school administrators will be able to effectively support teachers in their technology integration efforts. A supportive environment gives teachers the confidence they need to effectively design technology enhanced instruction that "more directly and powerfully" influences student learning outcomes.

The previous study is in parallel to the present study for both studies delve on ICT. However, they differ in the focus of the study.

The previous study focused on the integration of technology in school's curriculum while, the present study focused on ICT challenges and utilization among HEIs.

In the study of Mathevula and Uwizeyiman (2014,) the findings revealed that, with the exception of a TVs, photocopiers and laptop/desktop computers, there is a scarcity of ICT resources available at schools for ICT integration, and that the teaching and curriculum administration functions of most teachers have been negatively impacted by a lack ICT equipment and/or insufficient use of these ICT resources for those schools who have them. In addition, while some teachers had received some form of ICT training, it was evident that such training has had minimal or no impact at all on the abilities and confidence of teachers to use ICT in their teaching.

The previous study is in parallel to the present study for both studies delve on ICT. However, they differ in the focus of the study. The previous study focused on the challenges facing integration of technology in school's curriculum while, the present study talked about on ICT challenges and utilization among HEIs.

The foregoing citations and findings of the study helped the researcher in the conceptualization of the study at hand and they strengthen the need for the conduct of the study at hand.

CHAPTER III

METHODOLOGY

This chapter presents the methods and procedures undertaken in the conduct of the study. Included in this chapter are the following: research design, instrumentation, validation of instrument, sampling procedure, data gathering and statistical treatment of data.

Research Design

This study employed the descriptive-correlation research design using the questionnaire as the main instrument of the study. The study is descriptive considering that it determined the development milestone on ICT along leadership, management, technical and non-technical. Likewise it determined the ICT support system along policies, budgetary, monitoring and evaluation, linkages and training, as well as the ICT-based innovations developed and adopted along student's services, faculty support services, administrative services, library services, technology transfer and commercialization. Furthermore, the state of ICT literacy of students and personnel was elicited to determine the computer level proficiency of personnel and students.

On the other hand, the study is correlational considering that the ICT development milestone was associated with the ICT support system for any significant relationship between the two variables.

Likewise, development milestone will be associated with the ICT-based innovations developed and adopted for any significant linear association.

Data gathered were treated statistically using appropriate descriptive and inferential statistical tools, namely: frequency count, percentage, arithmetic mean, standard deviation, weighted mean and linear regression.

Instrumentation

The sole data-gathering instrument in this study that captured the different variables delved into was the questionnaire. There were three sets of questionnaire that was devised by the researcher.

Set 1 was intended for the ICT directors which composed of five parts. Part I will elicit the development milestone on ICT along leadership, management, technical and non-technical while Part II captured the ICT support system along policies, budgetary, monitoring and evaluation, linkages and training; Part III was used to determine the ICT-based innovations developed and adopted along student's services, faculty support services, administrative services, library services, technology transfer and commercialization; Part IV was used to elicit the state of ICT literacy of students and personnel; and Part V determined the problems encountered and challenges along ICT development.

Set 2 of the questionnaire was intended for ICT Staffs. It was composed of five parts. Part I the development milestone on ICT along leadership, management, technical and non-technical. Part I was used to elicit the ICT support system along policies, budgetary, monitoring and evaluation, linkages and training while Part II was used to capture the ICT-based innovations developed and adopted along student's services, faculty support services, administrative services, library services, technology transfer and commercialization; Part III was used to elicit the problems and challenges encountered along ICT development.

Set 3 of the questionnaire was an online computer literacy questionnaire which was intended for personnel and students. It was composed of five parts. Part I was used to elicit the general skills along basic knowledge on hardware, files extension and keystrokes while Part II was used to elicit the file management skills along basic file processes. Part III captured the word processing skills along font, paragraph and file menus. Part IV elicited the printing skills and Part V examined online communication, browser and navigation skills.

Validation of Instrument

The researcher adapted and it was a researcher-made instrument. It went through the process of expert validation. Research experts were identified who looked into the questionnaire and validated as to its face, content, and construct.

The experts were composed of the Vice-President for Academic affairs, Vice President for Research, Dean of the College of Graduate Studies, Research professors and other experts in research.

Furthermore, to ascertain the reliability, the validated questionnaire was submitted for pilot testing among ICT managers, administrators, faculty, and students who were not part of the sampling frame. It was revised or some items were revised upon the result of the validation of expert. Then, the questionnaire was reproduced and ready for data collection.

Sampling Procedure

This study utilized the total enumeration among ICT directors and staffs, that is, all that belongs to this category of respondents was part of the sampling frame.

On the other hand, stratified random sampling with equal probability was employed for the personnel- and student-respondent. More or less the number of faculty- and students in the four HEIs in the Island of Samar was similar. In the calculation of the sample size, the Slovin's formula (Sevilla, et al., 1992:182) was used.

Data Gathering Procedure

Before the conduct of the study, the researcher sought permission each from the four University Presidents of the four HEIs in the Island of Samar establishing her intention and the objectives of the study.

The approved permit was used by the researcher in seeking the cooperation of the respondents, aside from the cover letter of the questionnaire. Strict confidentiality of the information was emphasized to the respondents to encourage their participation and cooperation.

Data generation was expected to last for about two months considering the travel time in going to and fro and in the course of the distribution of the questionnaire and its retrieval. To further understand and validate the deeper level on ICT development and challenges among HEIs, a Focus Group Discussions (FGDs) were conducted among ICT directors and ICT Staffs. Manual editing and coding were conducted by the researcher for the data analysis. Machine processing followed through encoding and the generation of the statistical information in tabular form using available statistical software.

Statistical Treatment of Data

To give meaning to the data collected, descriptive statistical tools were employed, namely: frequency count, percentage, arithmetic mean, standard deviation, weighted mean, and linear regression.

Frequency Count. This tool was used to determine the historical milestone on ICT utilization.

Percentage. This measure was used to convert the magnitude of occurrence of each variable with respect to the total respondents using the following formula of Sevilla et al, (1992:200).

Arithmetic Mean. This was used to express the averages of some of the identified characteristics of the respondents specifically on the data that are in interval scale. The formula of Freud and Simon (1992:35) was used.

Standard Deviation. This statistic was utilized to support the calculation   of the Arithmetic Mean by calculating the deviation of the observations from   calculated averages. The formula of Freud and Simon (1992:52) used.

Weighted Mean. This statistic was employed to determine the collective   perceptions of the respondents relative to ICT management practices and the ICT utilization in the HEI of which the data are measured by scale. The formula of Pagoso (1997:111) was used.

Linear Regression. This was used to determine the linear association between the ICT management practices and ICT utilization with the aid of available statistical software or packages.

CHAPTER IV

PRESENTATION, ANALYSIS AND INTERPRETION OF DATA

This chapter presents the data gathered with the corresponding analysis and interpretation of data. Included in this chapter are the development milestone on ICT utilization, ICT support systems, ICT-based innovation developed and adopted, relationship between the development milestone on ICT and ICT support system, relationship between the ICT support system and ICT based innovation, relationship between the development milestone on ICT and ICT-based innovation, status of ICT literacy and problems and challenges along ICT development.

Development Milestone on ICT Utilization

This part presents the development milestone on ICT utilization along leadership, management, technical and non-technical.

Leadership. Table 1 presents the development milestone on ICT utilization along leadership. The table shows that of the 13 indicators, five indicators were considered as "moderately practiced" with weighted means ranging from 2.53 to 2.82. Of these indicators, Number 1, with the statement stating, "Develop ICT Strategic Plan to ensure that is aligned with views of the school community and is referenced by the appropriate National, Regional and local policies" obtained the highest weighted mean, while Number 3 stating,

Table 1

**Development Milestone on ICT Utilization
along Leadership**

Indicators	Weighted Mean	Interpre -tation
1. Develop ICT Strategic Plan to ensure that is aligned with views of the school community and is referenced by the appropriate National, Regional and local policies.	2.82	MP
2. Regular meetings to ensure ICT implemented and sustained.	2.25	SP
3. Conduct budget planning to ensure a steady spending pattern that will achieve the school's goals for ICT integration.	2.53	MP
4.Review and conduct ICT priorities to adapt to current pedagogical trends and emerging technologies	2.07	SP
• Conferences/Training/Workshop. • Professional learning	2.62	MP
• magazines	2.16	SP
• newspapers	2.06	SP
• online subscriptions	2.58	MP
• school visits	2.39	SP
• purchase of new software and hardware	1.88	SP
5. Evaluate using annual surveys, the effects of integrating ICT within teaching, learning and administration.	2.37	SP
6. Make ICT resources up-to-date and allow the school to respond to modern trends and rapidly take advantage of future improvements in ICT delivery and infrastructure.	2.61	MP
7. Establish local and global learning communities which contribute to learning for students.	2.33	SP
Grand Weighted Mean	**2.36**	**SP**

Legend: 4.51-5.00 Extremely Practiced (EP)
                   3.51-4.50 Highly Practiced (HP)
                   2.51-3.50 Moderately Practiced (MP)
                   1.51-2.50 Slightly Practiced (SP)
                   1.00-1.50 Not Practiced (NP)

"Conduct budget planning to ensure a steady spending pattern that will achieve the school's goals for ICT integration" obtained the least.

The rest of the indicators were considered "slightly practiced" by the respondents with weighted means ranging from 1.88 to 2.39. Among these indicators, Number 4.6 obtained the highest weighted mean stating, "Review and conduct ICT priorities to adapt to current pedagogical trends and emerging technologies – school visits" while Indicator Number 4.7 stating, ""Review and conduct ICT priorities to adapt to current pedagogical trends and emerging technologies – purchase of new software and hardware.

Taken as a whole the respondents averred that the development milestone on ICT utilization along leadership was "slightly practiced" by them being shown by the grand weighted mean of 2.36.

Management. Table 2 shows the development milestone on ICT utilization along Management. It can be gleaned from the table that the respondents considered five indicators as "moderately practiced" with weighted means ranging from 2.62 to 2.93. Indicators Numbers 7 and 5 obtained the highest and the least weighted means, respectively with statements stating, "Backup Systems and Disaster Recovery – Backup Server mirrors all critical data;" and "Hardware Delivery – All teachers have personal desktop/laptops which are to be upgraded every 3 years, All students use desktop and upgraded every 3 years, Administrative staff have desktops if they do not receive a laptop,

Networked printers and photocopiers /scanners are available throughout the school, Digital camera and video cameras available, Servers and desktops are fitted with UPS, Wireless access points are available, All servers and network switches/routers highly integrated using VLANs and capable of expansion, All computer areas fitted with air conditioning, Computer systems replaced on a 3 year cycle, and Multimedia projector systems installed in rooms."

The remaining two indicators were considered by this group of respondents as "slightly practiced" with weighted means of 2.06 and 2.42 with statements stating, "Provide ICT systems that facilitate the creation, sharing, reviewing and integration of digital content within the school and globally;" and "Software Delivery – Licensing agreements in place and Network licenses are purchased unless software is only required in specified specialist areas," respectively.

Taken as a whole, the respondents considered the development milestone on ICT utilization along Management as "moderately practiced" being indicated buy the grand weighted mean of 2.64.

Table 2

**Development Milestone on ICT Utilization
along Management**

Indicators	Weighted Mean	Interpre-tation
1. Provide ICT systems that facilitate the creation, sharing, reviewing and integration of digital content within the school and globally.	2.06	SP
2. Prioritization of professional learning with ICT and about ICT		
• Basic skills in general applications, communication, internet research, administrative procedures and computer care is covered by all teachers	2.83	MP
• In-house and external tuition for specific skills with applications or integration into teaching practice is provided.		
3. Provide automated system for the efficient and effective delivery of all business processes along:		
• Student records		
• Timetabling		
• Daily organization		
• Student attendance		
• Content management for curriculum		
• Improved student behavior management	2.82	MP
• Purchase orders		
• Student assessment and reporting		
• Data for tracking student progress		
• Library		
• Staff communication		
• School website		
• School Intranet		
4. All physical learning spaces are ICT ready for the use of wired or wireless mobile technologies and where possible allow for the flexible arrangements of groups for collaborative learning.	2.83	MP
• To adapt classroom furniture to assist in more flexible configurations required for collaborative group work		

Continuation

5. Hardware Delivery

- All teachers have personal desktop/laptops which are to be upgraded every 3 years   2.62   MP
- All students use desktop and upgraded every 3 years.
- Administrative staff have desktops if they do not receive a laptop
- Networked printers and photocopiers /scanners are available throughout the school
- Digital camera and video cameras available
- Servers and desktops are fitted with UPS
- Wireless access points are available
- All servers and network switches/routers highly integrated using VLANs and capable of expansion
- All computer areas fitted with air conditioning
- Computer systems replaced on a 3 year cycle
- Multimedia projector systems installed in rooms

6. Software Delivery

- Licensing agreements in place   2.42   SP
- Network licenses are purchased unless software is only required in specified specialist areas.

7. Backup Systems and Disaster Recovery

- Backup Server mirrors all critical data   2.93   MP

Grand Weighted Mean	**2.64**	**MP**

Legend: 4.51-5.00 Extremely Practiced (EP)
                 3.51-4.50 Highly Practiced (HP)
                 2.51-3.50 Moderately Practiced (MP)
                 1.51-2.50 Slightly Practiced (SP)
                 1.00-1.50 Not Practiced (NP)

Technical. Table 3 shows the development milestone on ICT utilization along technical. From the table it can be noted that the respondents considered four indicators as "filled-up" while the remaining two were "not filled-up." The filled-up indicators were the following: Director of ICT – ICT Professional Learning Support and Teaching, Computer Services Manager, Computer

Technician and Database Manager. This means that personnel had been designated to the aforementioned positions to take its role responsibilities in the ICT development and utilization.

Table 3

Development Milestone on ICT Utilization
along Technical

Indicators	Status
1. Director of ICT – ICT Professional Learning Support and Teaching	Filled-up
2. Computer Services Manager	Filled-up
3. Network Manager	Not Filled-up
4. Computer Technician	Filled-up
5. Database Manager	Filled-up
6. Web Manager	Not Filled-up

Non-Technical. Table 4 provides the information as regards the development milestone on ICT utilization along non-technical. From the table, it can be seen that of the four required personnel, only two positions had designated personnel to take its role and responsibilities in the ICT development and utilization. These are the system user and encoder.

Table 4

**Development Milestone on ICT Utilization
along Non-Technical**

Indicators	Status
1. System User	Filled-up
2. Encoder	Filled-up
3. Computer Operator	Not Filled-up
4. In-Charge of budgetary for ICT programs	Not Filled-up

Furthermore, no designated personnel was assigned yet to act a computer operator and in-charge of budgetary for ICT programs.

Samar State University

Figure 4. **Samar State University ICT Milestone**

An earlier ICT infrastructure occurred when SSU acquired projectors, computers and telephones. Before 2000, DSL with 2mbps was used for the Internet connection of the school.

In 2001, enhancement of its internet connection was made using DSL with 10 mbps. Globe had been the key player in providing internet connectivity from the beginning and up to the present time. In line with SSU's dream to efficiently service it clientele, computerization was one of its agenda in the year 2004. During this year, SSU Local Area Networking (LAN) was also established. It launches the Student Information System (SIS) which had been developed in-house with Mr. Hideki and Zaldy Jabinar as the lead persons. During the year 2006, development of SSU website existed with the effort made by the head of MIS office (Management Information System), Zaldy Jabinar. By the year 2008, Biometric System was introduced and used to facilitate SSU's personnel attendance. This improvement was made during the presidency of Dr. Simon P. Babalcon. In 2011, a more enhance LAN (local Area Networking) was propounded to structure the existing local area network. Later, SSU partnered with Google in 2014 to use their available applications for Education during the Presidency of Dr. Eusebio T. Pacolor. The need for a more speedy and long range internet connection prompted the University to upgrade its internet connection in the year 2015. It uses dedicated t1 radio internet with the capacity of 20 mbps.

With the leadership of the current University President, Dr. Marilyn D. Cardoso, she positively supported the enhancement of Student Information System to augment features on the previous system.

This was coined as (SIAS) Student Information and Accounting System, an outsource software developed by Digital Software Technology Consultancy. During the year 2018, an additional system was developed. But this this time, it is an in-house software to facilitate transactions in the Human resource office. In addition to SSU's system development, KIOS for student Information System was introduced and used in 2019. These developments were made under the management of the ICT Director, Zaldy Jabinar.

Eastern Samar State University (ESSU)
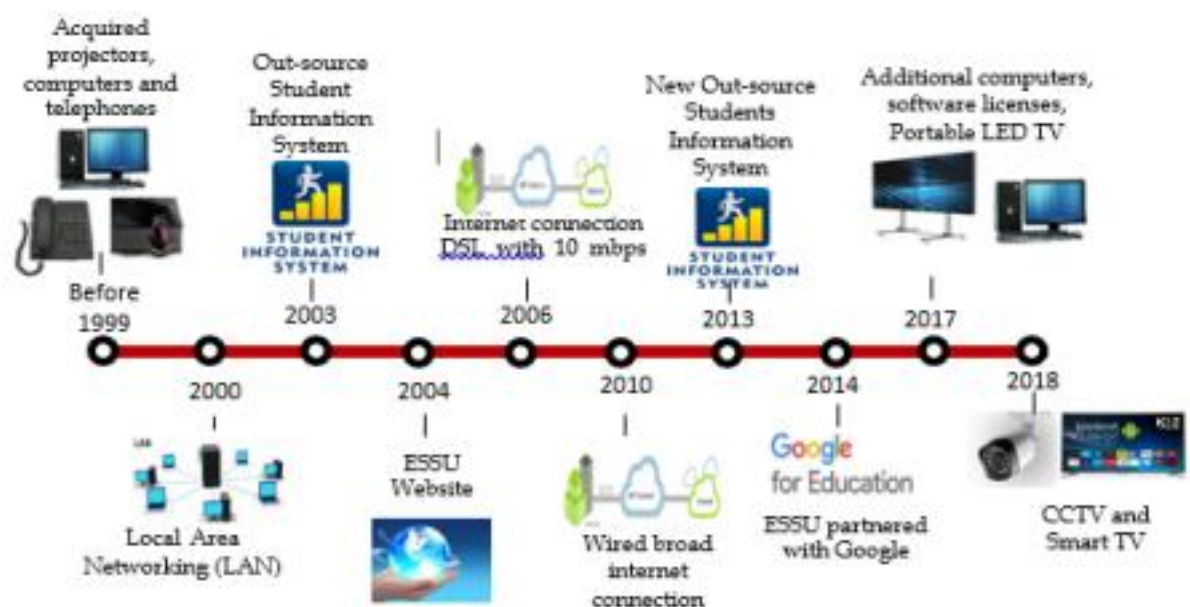
Figure 5. **Eastern Samar State University ICT Milestone**

ESSU's ICT infrastructure started with the use of computers, projectors and telephones. In year 2000, ESSU Local Area Networking (LAN) was established. To facilitate a more efficient way of serving the students, computerization was implemented back in 2003 through an

outsource system developed by the ABG Computer Technology. The system involved enrolment and accounting processes.

During the year 2004 development of ESSU website existed with the effort made by the head of MIS. Later in 2006, DSL Internet connection was established with capacity of 10 mbps. In 2010, ESSU ventured in wired broad internet connection with 18 units of Smart Bro with Smart as their service provider. This venture was spearheaded by their technical staff assigned in their network, Michael Cruz and during the Presidency of Dr. Reynaldo Lumbri.

A more upgraded internet connection was established using 28 units Home broad Ultera with 1 mbps and 13 unit Smart bro wireless broadband. During the start of their internet connection, computer training was present also to train personnel and faculty members on software and internet use. In 2013, a new system for Student Information System was acquired from Digital Soft Technology and Solution. It has more enhanced feature which involves enrolment, accounting, cashiering and scholarship. This was made through the effort of Mr. Michael Cruz and President Dr. Edmundo A. Campoto. Later, ESSU partnered with Google in 2014 to use their available applications for Education. It was in 2015 that the institution realizes that they need faster internet connection to cope up with the demand of the institution in terms of internet connectivity.

Continues improvement was made in 2017 to uplift current infrastructure of ICT by purchasing additional computers, software licenses and LED TV for instructional purposes. In 2018, purchase of Smart TV and CCTV was made through the effort of the ICT Director Kenneth Afable.

University of Eastern Philippines (UEP)
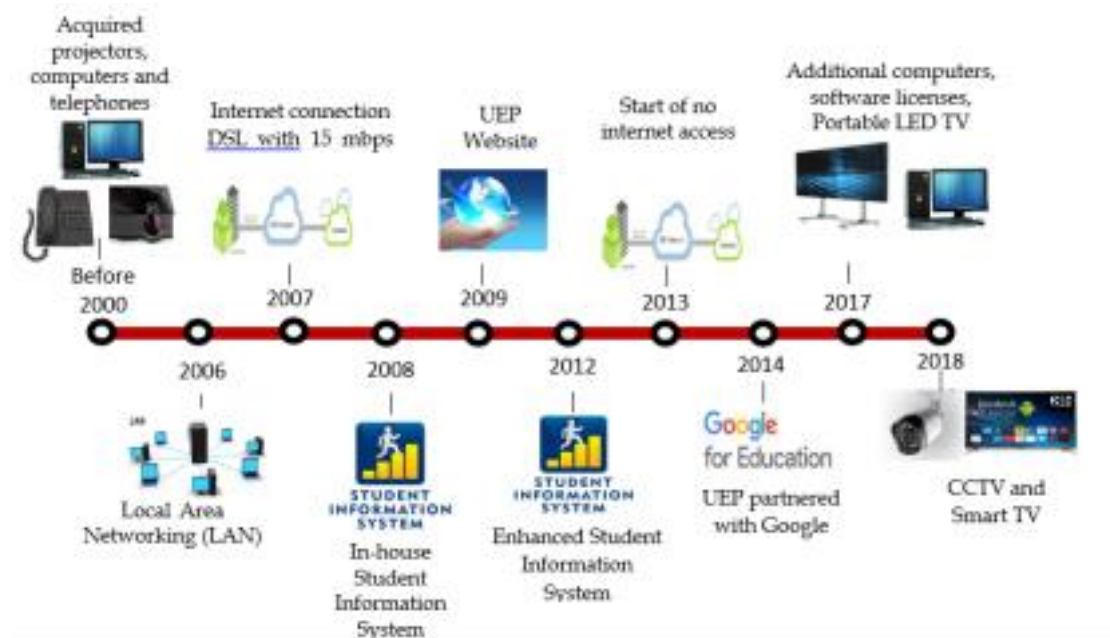
Figure 6. **University of Eastern Philippines ICT Milestone**

ICT infrastructure occurred when the school started to acquire projectors, computers and telephone. During the year 2006, development of UEP local area networking existed with the effort made by the head of MIS.

UEP had its internet connection back in 2007, Bayan tel was their internet service provider that time. They started with 15 units with 1.5 mbps. Additional units were provided to cater the needs of different department.

UEP's realization to speed up the process of their daily transaction specifically in line with serving students was made with the concept of computerization. The group of IT faculty initiated in crafting UEP's student information system. By the year 2008, Jose Ariel E. Geriane led the group of IT faculty namely: Dr. Jose Ching, Dr. Celeste Chan, Engr. Maximo Reswelio and Francis Tunog to develop the Student Information System. At present, the system still running and continually is being enhanced since 2012 until now through the effort of the group and a new programmer, John Mark Dokdok. In 2009, development of UEP website existed with the effort made by the head of MIS.

Unfortunately, when Tacloban City was hit by Typhoon Haiyan, the internet connection in Samar and Leyte were down. Northern Samar was one affected its telecommunication facilities during the devastating effect of Typhoon Haiyan. Towards the end of 2013 and until now, Internet connection in UEP has not been re-stablished in its normal state. However, there was a big effort exerted by the Administration on this matter unfortunately, no Internet Service Provider (ISP) ever tried to accept the bid.

At present, UEP is still hoping for the best, that in the coming months or years re-establishing of its internet connectivity would materialize.

UEP partnered with Google in 2014 to use their available applications for Education.

Since then, UEP ICT infrastructure was continuously enhanced through acquiring additional computers, purchasing Smart and LED TV, as well as CCTV to improve its instructional facilities and security system within the University premise.

Northwest Samar State University
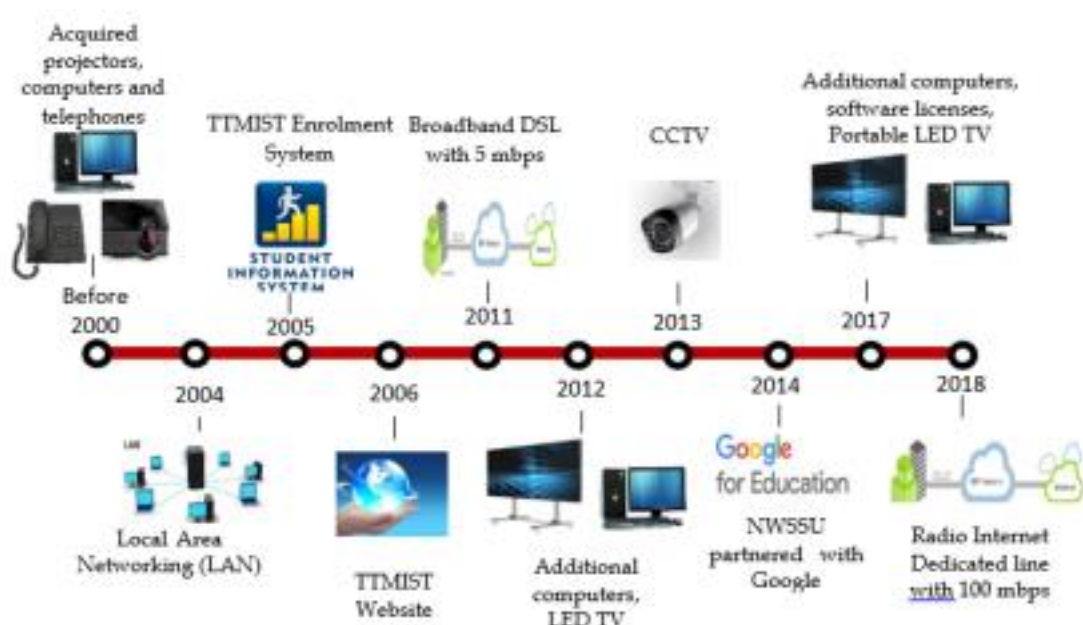
Figure 7. **Northwest Samar State University ICT Milestone**

NWSSU's ICT infrastructure started during the acquisition of ICT equipment such as computers, projectors and telephones. During the year 2004, NWSSU Local Area Networking (LAN) was also established. The initial computerization was developed during the year 2005. It was coined as "TTMIST Enrolment System" with acronym TES. It was an in-house software initiated by a Japanese Volunteer named Miki Sato.

This enrolment system happened during the termed of presidency of Dr. Cailo and also with the effort made by head Gilbert Ortiz of the Information Technology Training Development Center. In 2006, development of UEP website existed with the effort made by the head of MIS.

Back in 2011, the University started to use broadband DSL with 5 mbps to have internet connection. Back in 2013, Engr. Primitivo Montanez led the purchase of CCTV to insure safety along selected area in the University. In the succeeding year, orientation of the Student Information System was conducted through the effort of Engr. Romeo T. Corsiga. It was in 2014 that 7 units of Broad Band DSL with 15mbps were used to cope up with the demand of the University in communication and internet needs. The continuous enhancement on the internet infrastructure was made using 5 units of wired VDSL internet connectivity with capacity of 50 mbps. The latest improvement made was in 2018 when the University ventured to use Radio Internet Dedicated line with the capacity of 100 mbps. This time, the technology can cater to distribute wireless connectivity within the University premise.

LED TV and computer units were purchased during the year 2018 by the College Deans for instructional purposes. By the year 2012 and up to the present, additional computer and LED TV were purchased to augment the Universities' equipment intended for its instructional and data processing purposes. NWSSU partnered with Google in 2014 to use their available applications for Education.

Later, LED Display was purchased in 2019 to satisfy the demand of time in terms of multimedia presentation in the Socio Cultural Center.

ICT Support System

This part presents the ICT support system along policies, budgetary, monitoring and evaluation, linkages and training.

Policies. Table 5 presents the ICT support system in along policies. The table shows that, the respondents affirmatively viewed all the five indictors along ICT support system along policies. This implies that the institutions provide written policies to support ICT development and utilization which are revised from time to time to be relevant with the trend of ICT.

Table 5

ICT Support System along Policies

Indicators	Status
1. Integrate ICT into teaching	Yes
2. Make information and resources available supporting academic activities?	Yes
3. Insure data and system security?	Yes
4. Provide ICT training	Yes
5. Implement rules and regulations of the Data Privacy Act of 2012.	Yes

Budgetary. Table 6 presents the ICT support system in along budgetary. As gleaned from the table, the respondents, likewise positively averred the existence of budgetary support to ICT development and utilization.

This means that allocation is always provided to support CT development and utilization to provide the necessary facilities for the improvement of the quality of instruction and to provide capacity building for the faculty and personnel for the effective use of ICTs.

Monitoring and Evaluation. Table 7 shows the ICT support system in along monitoring and evaluation. From the table it can be noted that, the respondents affirmatively signified that a regular monitoring and evaluation of the equipment and facilities was conducted to ensure that these equipment are in operational conditions as well as its usage.

Table 6

ICT Support System along Budgetary

Indicators	Status
1. Deliver quality instruction	Yes
2. Create a common ICT infrastructure.	Yes
3. Develop the capacity of faculty and personnel on ICT.	Yes
4. School maintenance and operating expenses	Yes
5. Personnel benefits and allowances	Yes

Linkages. Table 8 shows the ICT support system in along linkages. The table presents that of the five indicators considered in this area, the respondents were affirmative along three indicators which are: Research and Development Collaboration Agreement, Partnership Conference Agreement and Information Exchange Agreement while they were negative along the two

indicators which are Student Exchange Agreement and Faculty Exchange Agreement.

However, the data signified that the institutions sought partnership with stakeholders to support their ICT development and utilization though an exchange agreement.

Training. Table 8 shows the ICT support system in along Training. The table shows that the respondents affirmatively confirmed that trainings were conducted to transfer the technology among personnel in support to the ICT development and utilization program of the institution.

Table 7

ICT Support System along Monitoring and Evaluation

Indicators	Status
1. Inventory of ICT equipment/facilities? How often?	Yes
2. Inventory of Operating systems, office applications and other software's installed	Yes
3. Monitoring of computer laboratory conditions	Yes
4. Monitor of electrical systems	Yes
5. Monitor the computer usage of your school	Yes

ICT-Based Innovation Developed and Adopted

This part appraises the ICT-based innovation developed and adopted along student services, faculty support services, administrative services, and library services, technology transfer and commercialization.

Student Services. Table 10 appraises the ICT-based innovation developed and adopted. The table shows that, the respondents appraised the developed ICT-innovation along students services as "extremely developed" along two indicators which corresponded to the indicators stating, "Display information about University on its Website" and "Online access to information," with weighted means of 4.68 and 4.61, respectively. The remaining three indicators were considered as "highly developed" with weighted means ranging 4.41 to 4.47. The indicator stating, "Registration/enrolment of students" obtained the highest mean while the indicator stating, "Grade results and assessment" obtained the least weighted mean. Taken as a whole the respondents appraised the ICT-based innovation along student services as "extremely developed being manifested by the grand weighted mean of 4.52.

Table 8

ICT Support System along Linkages

Indicators	Status
1. Student Exchange Agreement	No
2. Faculty Exchange Agreement	No
3. Research and Development Collaboration Agreement	Yes
4. Partnership Conference Agreement	Yes
5. Information Exchange Agreement	Yes

Likewise, Table 10 appraises the adopted ICT-based innovation also. As gleaned from the table, the respondents considered four indicators as

"extremely adopted" with weighted means ranging from 4.56 to 4.72. "Fee payments" obtained the highest weighted mean while the indicators stating, "Display information about University on its Website," and "Online access to information," equally obtained the least weighted mean. The remaining indicator was considered as "highly adopted" which corresponded to the indicator stating, "Grade results and assessment."

Table 9

ICT Support System along Training

Indicators	Status
1. Technical training ex. Software	Yes
2. Quality training ex. ISO	Yes
3. Skills training	Yes
4. Soft skills & Team training	Yes
5. Safety training	Yes

Taken as a whole, the respondents appraised the adopted ICT-based innovation as "extremely adopted being supported by the grand weighted mean of 4.60.

Faculty Support Services. Table 11 appraises the ICT-based innovation developed and adopted. The table shows that based on the assessment of the respondents, they considered only one indicator along this area as "highly developed" corresponding to Indicator Number 2 stating, "Attendance and leave management ," with a weighted mean of 3.72. The remaining four indicators were viewed by the respondents as "moderately

developed" with weighted means ranging from 3.17 to 3.47. Of these indicators, Numbers 3 and 5 were rated with the highest and least weighted means, respectively, corresponding to "Travel request," and "Faculty compensation."

Taken as a whole, the respondents appraised the developed ICT based Innovation as "moderately developed" being shown by the grand weighted mean of 3.40.

Table 10

ICT-Based Innovation – Student Services

Indicators	Developed		Adopted	
	Weighted Mean	Interpre-tation	Weighted Mean	Interpre-tation
1. Registration/enrolment of students	4.47	HD	4.67	EA
2. Fee payments	4.44	HD	4.72	EA
3. Grade results and assessment	4.41	HD	4.47	HA
4. Display information about University on its Website	4.68	ED	4.56	EA
5. Online access to information	4.61	ED	4.56	EA
Grand Weighted Mean	**4.52**	**ED**	**4.60**	**EA**

Legend:
4.51-5.00	Extremely Developed(ED)	Extremely Adopted (EA)
3.51-4.50	Highly Developed (HD)	Highly Adopted (HA)
2.51-3.50	ModeratelyDeveloped(MD)	ModeratelyAdopted(MA)
1.51-2.50	Slightly Developed (SD)	Slightly Adopted (SA)
1.00-1.50	Not Developed (ND)	Not Adopted (NA)

On the other hand, Table 11 shows that the respondents appraised all indicators along adopted ICT-based innovation as "moderately adopted" with weighted means ranging from 2.55 to 3.36.

Corollary, Indicators Numbers 2 and 4 obtained the highest and the least weighted means, respectively, stating: "Attendance and leave management," and "Prepayment and travel reimbursement."

Table 11

ICT-Based Innovation – Faculty Support Services

Indicators	Developed		Adopted	
	Weighted Mean	Interpre-tation	Weighted Mean	Interpre-tation
1. Recruitment and work allotment	3.42	MD	2.60	MA
2. Attendance and leave management	3.72	HD	3.36	MA
3. Travel request	3.47	MD	2.82	MA
4. Prepayment and travel reimbursement	3.21	MD	2.55	MA
5. Faculty compensation	3.17	MD	3.00	MA
Grand Weighted Mean	**3.40**	**MD**	**2.87**	**MA**

Legend:
4.51-5.00   Extremely Developed(ED) Extremely Adopted (EA)
3.51-4.50   Highly Developed(HD)   Highly Adopted (HA)
2.51-3.50   ModeratelyDeveloped(MD)ModeratelyAdopted(MA)
1.51-2.50   Slightly Developed (SD)   Slightly Adopted (SA)
1.00-1.50   Not Developed (ND) Not Adopted (NA)

Taken as a whole, the respondents considered the adopted ICT-based innovation as "moderately adopted" being indicated by the grand weighted mean of 2.87.

Administrative Services. Table 12 appraises the ICT-based innovation developed and adopted. From the table, it can be noted that the respondents considered one indicator as "highly developed" which

corresponded to the indicator stating, "Human resource management," with a weighted mean of 3.83. The rest of the indicators were viewed by this group of respondents as "moderately developed" with weighted means ranging from 2.79 to 3.50. Indicators Numbers 2 and 5 obtained the highest and least weighted means, respectively, corresponding to "Property management," and "Electrical and telecommunication maintenance."

Table 12

ICT-Based Innovation – Administrative Services

Indicators	Developed		Adopted	
	Weighted Mean	Interpre-tation	Weighted Mean	Interpre-tation
1. Human resource management	3.83	HD	3.36	MA
2. Property management	3.50	MD	3.09	MA
3. Transport and motor pool management	3.28	MD	2.91	MA
4. Building and water supply management	3.16	MD	2.55	MA
5. Electrical and telecommunication maintenance	2.79	MD	2.55	MA
Grand Weighted Mean	**3.31**	**MD**	**2.89**	**MA**

Legend:
4.51-5.00	Extremely Developed(ED)	Extremely Adopted (EA)
3.51-4.50	Highly Developed (HD)	Highly Adopted (HA)
2.51-3.50	ModeratelyDeveloped(MD)	ModeratelyAdopted(MA)
1.51-2.50	Slightly Developed (SD)	Slightly Adopted (SA)
1.00-1.50	Not Developed(ND)	Not Adopted (NA)

Taken as a whole, the respondents appraised the developed ICT-based innovation as "moderately developed" being manifested by the grand weighted mean of 3.31.

Furthermore, Table 12 shows that the respondents appraised all indicators regarding adopted ICT-based innovation as "moderately adopted" with weighted means ranging from 2.55 to 3.36. Indicator Number 1 stating, "Human resource management" obtained the highest weighted mean while Numbers 4 and 5 were equally rating with the least weighted mean stating: "Building and water supply management," and "Electrical and telecommunication maintenance."

Taken as a whole, the respondents averred that the adopted was "moderately adopted" being indicated by the grand weighted mean of 2.89. **Library Services.** Table 13 shows the ICT-based innovation developed and adopted. From the table, it can be noted that the respondents considered three indicators along this area as "highly developed" with weighted means ranging from 3.53 to 4.21 whereby Indicators Numbers 5 and 2 obt5ained the highest and the least weigh5ted means, respectively, stating: "Online Public Access Catalog (OPAC)," and "Borrowing and circulation." The remaining two indicators were considered by the same group of respondents as "moderately developed" with weighted means of 3.40 to 3.51 corresponding to the indicators stating, "Library orientation," and "Dissemination of the newly acquired books, audio visual materials and periodicals." Taken as a whole, the respondents considered the developed ICT-based innovation as "highly developed" being supported by the grand weighted mean of 3.67.

Table 13

ICT-Based Innovation – Library Services

Indicators	Developed		Adopted	
	Weighted Mean	Interpre-tation	Weighted Mean	Interpre-tation
1. Library orientation	3.40	MD	3.67	HA
2. Borrowing and circulation	3.53	HD	3.80	HA
3. Internet access	3.89	HD	3.53	HA
4. Dissemination of the newly acquired books, audio visual materials and periodicals.	3.31	MD	2.79	MA
5. Online Public Access Catalog (OPAC)	4.21	HD	4.38	HA
Grand Weighted Mean	**3.67**	**HD**	**3.63**	**HA**

Legend:
4.51-5.00	Extremely Developed(ED)	Extremely Adopted (EA)
3.51-4.50	Highly Developed (HD)	Highly Adopted (HA)
2.51-3.50	Moderately Developed(MD)	Moderately Adopted(MA)
1.51-2.50	Slightly Developed (SD)	Slightly Adopted (SA)
1.00-1.50	Not Developed(ND)	Not Adopted (NA)

Likewise, Table 13 shows that the respondents appraised four indicators along adopted ICT-based innovation as "highly adopted" with weighted means ranging from 3.53 and 4.38. Numbers 5 and 3 obtained the highest and the least weighted means, respectively stating: "Online Public Access Catalog (OPAC)," and "Internet access." In the remaining indicator, the respondent appraised it as "moderately adopted" corresponding to "Dissemination of the newly acquired books, audio visual materials and periodicals," with weighted mean of 2.79. Taken as a whole the respondents considered the adopted ICT-based innovation as "highly adopted" being shown by the grand weighted mean of 3.63.

Table 14

ICT-Based Innovation – Technology Transfer

Indicators	Developed		Adopted	
	Weighted Mean	Interpre-tation	Weighted Mean	Interpre-tation
1. Documentation	3.50	MD	3.43	MA
2. Policy and technology protection	3.40	MD	3.29	MA
3. Collaboration and exchange of information	3.20	MD	3.14	MA
4. Development of Human Capital	3.14	MD	3.14	MA
5. Creation of Tools, Manuals and Training Materials	3.47	MD	3.42	MA
Grand Weighted Mean	**3.34**	**MD**	**3.28**	**MA**

Legend:
4.51-5.00	Extremely Developed(ED)	Extremely Adopted (EA)
3.51-4.50	Highly Developed(HD)	Highly Adopted (HA)
2.51-3.50	ModeratelyDeveloped(MD)	ModeratelyAdopted(MA)
1.51-2.50	Slightly Developed (SD)	Slightly Adopted (SA)
1.00-1.50	Not Developed (ND)	Not Adopted (NA)

Technology Transfer. Table 14 presents the ICT-based innovation developed and adopted along technology transfer. The table shows that the respondents considered all indicators along developed ICT-based innovation as "moderately developed" with weighted means ranging from 3.14 to 3.50. Indicators Numbers 1 and 4 were rated with the highest and least weighted means, respectively corresponding to: "Documentation," and "Development of Human Capital."

Taken as a whole, the respondents viewed the developed ICT-innovation as "moderately developed" being supported by the grand weighted mean of 3.34.

Further, Table14 shows that the respondents considered all indicators along adopted ICT-based innovation as "moderately adopted" with weighted means ranging from 3.14 to 3.43. Indicator Number 1 obtained the highest weighed mean stating; "Documentation," on the other hand Numbers 3 and 4 equally obtained the least weighted mean stating: "Collaboration and exchange of information," and "Development of Human Capital."

Taken as a whole, the respondents considered the adopted ICT-based innovation as "moderately adopted" being manifested by the grand weighted mean 3.28.

Commercialization. Table 15 presents the ICT-based innovation developed and adopted along commercialization. The table shows that the respondents considered all indicators along developed ICT-based innovation as "moderately developed" with weighted means ranging from 3.00 to 3.23. Number 1 was rated with the highest weighted mean stating, "Patent application for the technology" while Numbers 2 and 4 equally obtained the least weighted means stating, "Market opportunity assessment" and "Proprietary protection and planning."

Taken as a whole, the respondents considered the developed ICT-based innovation as "moderately developed" being signified by the grand weighted mean of 3.09.

Moreover, Table 15 presents that the respondents considered all indicators along adopted ICT-based innovation as "moderately adopted with weighted means ranging from 2.69 to 3.00. Indicator Number 3 obtained the highest weighted mean stating, "Commercialization strategy and plan development. On the other hand, Numbers 2, 4 and 5 equally obtained the least weighted mean stating: "Market opportunity assessment," "Proprietary protection and planning," and "Creation of policy on Royalty-Sharing and Distribution."

Taken as a whole the adopted ICT-based innovation according to the assessment of the respondents was "moderately adopted" being indicated by the grand weighted mean of 2.80.

Table 15

ICT-Based Innovation – Commercialization

Indicators	Developed		Adopted	
	Weighted Mean	Interpre-tation	Weighted Mean	Interpre-tation
1. Patent application for the technology	3.23	MD	2.92	MA
2. Market opportunity assessment	3.00	MD	2.69	MA
3. Commercialization strategy and plan development	3.15	MD	3.00	MA
4. Proprietary protection and planning	3.00	MD	2.69	MA
5. Creation of policy on Royalty-Sharing and Distribution.	3.08	MD	2.69	MA
Grand Weighted Mean	**3.09**	**MD**	**2.80**	**MA**

Legend:
4.51-5.00   Extremely Developed(ED) Extremely Adopted (EA)
3.51-4.50   Highly Developed(HD)   Highly Adopted   (HA)
2.51-3.50   ModeratelyDeveloped(MD)ModeratelyAdopted(MA)
1.51-2.50   Slightly Developed (SD) Slightly Adopted   (SA)
1.00-1.50   Not Developed(ND)   Not Adopted   (NA)

Regression Analysis Between the Development Milestone on ICT and ICT Support System

Table 16 presents the relationship between the development milestone on ICT and ICT support system. From the table it can be gleaned that the coefficient of linear correlation was posted at 0.142 which denoted very weak linear association with an obtained F-value of 0.475 and a p-value of 0.497. In comparing the obtained p-value with the level of significance = .05, it was noted that the former turned greater than the latter which signified that the linear association between the two afore-stated variables was not significant. This meant that the ICT support system was not influenced by the development milestone on ICT utilization.

Table 16

Regression Analysis Between the Development Milestone on ICT and ICT Support System

R-Value	Linear Association	F-Value	p Value	Evaluation
0.142	Very Weak	0.475	0.497	Not Significant

Regression Analysis Between the ICT Support System and ICT-Based Innovations

Table 17 presents the relationship between the ICT support system and ICT based innovation along developed and adopted. From the table it can be gleaned that the coefficient of linear correlation was posted at 0.410 which denoted moderate linear association with an obtained F-value of 4.650 and a

p-value of 0.042. In comparing the obtained p-value with the level of significance = .05, it was noted that the former turned lesser than the latter which signified that the linear association between the two afore-stated variables was significant. This meant that the ICT-based innovations were significantly influenced by the ICT support system.

Table 17

Regression Analysis Between the ICT Support System and
ICT-Based Innovations

R-Value	Linear Association	F-Value	p value	Evaluation
0.410	Moderate	4.650	0.042	Significant

**Regression Analysis Between the Development Milestone
on ICT and ICT-Based Innovations**

Table 18 presents the relationship between the development milestone on ICT and ICT-based innovation along developed and adopted. From the table it can be gleaned that the coefficient of linear correlation was posted at 0.065 which denoted very weak linear association with an obtained F-value of 0.097 and a p value of 0.758. In comparing the obtained p-value with the level of significance = .05, it was noted that the former turned greater than the latter which signified that the linear association between the two afore-stated variables was not significant. This meant that the ICT support system was not influenced by the development milestone on ICT utilization.

Table 18

Regression Analysis Between the Development Milestone on ICT and
ICT-Based Innovations

R-Value	Linear Association	F-Value	p value	Evaluation
0.065	Very Weak	0.097	0.758	Not Significant

Status of ICT Literacy

Table 19 presents the status of ICT literary among students and personnel. **Students.** Table 19 shows that the ICT literacy of the student was appraised by themselves as "very good" in all areas, namely: general skills, file management skills, Word processing skills, printing skills and Online Communication, Browser and Navigation Skills with weighted means of 4.04, 4.32, 4.44, 4.08 and 4.20, respectively.

Taken as a whole, the literacy of the students was "very good" also being shown by the grand weighted mean of 4.22. This signified that the students possessed a very favorable ICT literacy which was an advantage to their studies.

Personnel. Likewise, Table 19 presents that the ICT literacy of the personnel was appraised by themselves as "very good" also in all areas, namely: general skills, file management skills, Word processing skills,

printing skills and Online Communication, Browser and Navigation Skills with weighted means of 4.10, 4.22,4.35,4.23,and 4.16, respectively.

Taken as a whole, the literacy of the students was "very good" also being shown by the grand weighted mean of 4.21. This signified that the personnel have a very favorable ICT literacy, also which was an advantage to the institution being competent enough to handle its manpower requirement.

Table 19

Status of ICT Literacy

Indicators	Students		Personnel	
	WM	I	WM	I
A. General Skills				
1. I am able to familiarize the basic computer system parts and concepts (e.g. hard drive, RAM, etc.	3.83	VG	3.93	VG
2. I am able to use Help menus to find answers to my question	3.85	VG	3.95	VG
3. I am able to understand file extensions and differences between file types (e.g. .doc, .gif., .html, .ppt., , mp3., rm., etc	3.96	VG	3.93	VG
4. I am able to shut down a computer appropriate	4.34	VG	4.38	VG
5. I am able to perform a safe reboot of the operating system with keystroke	3.73	VG	3.72	VG
6. I am able to understand the difference between *Table18 continued* closing/minimizing/hiding windows and quitting a program	4.21	VG	4.32	VG
7. I am able to use the mouse right-click menu function	4.34	VG	4.45	VG
Sub-Weighted Mean	**4.04**	**VG**	**4.10**	**VG**
B. File Management Skills				
8. I'm able to navigate through files and directories (e.g. using Windows Explorer)	4.15	VG	4.17	VG
9. I'm able to organize, copy and paste files in directories	4.41	VG	4.28	VG
10. I'm able to move unwanted files into my recycle bin and delete them permanently from my hard drive	4.39	VG	4.22	VG
Sub-Weighted Mean	**4.32**	**VG**	**4.22**	**VG**
C. Word Processing Skills				
11. I am able to edit, copy, cut and paste a block of text or selected objects	4.40	VG	4.36	VG
12. I am able to use undo/redo functions	4.45	VG	4.31	VG
13. I am able to save, print and preview	4.46	VG	4.38	VG

14. I am able to select and change fonts sizes and types, styles (e.g. boldface, italics, underlining, etc.)	4.49	VG	4.40	VG
15. I am able to create itemized lists (e.g. bullets, numbered lists)	4.40	VG	4.29	VG
Sub-Weighted Mean	**4.44**	**VG**	**4.35**	**VG**
D. Printing Skills				
16. I am able to change printer parameters like page numbers, paper orientation, margins and proportions, etc.	4.14	VG	4.25	VG
17. I am able to change printing options from grayscale, normal, fast draft or best	4.02	VG	4.21	VG
Sub-Weighted Mean	**4.08**	**VG**	**4.23**	**VG**
E. Online Communication, Browser and Navigation Skills				
18. I am able to use the browser basic commands to surf the Internet	4.30	VG	4.22	VG
19. I am able to request, activate my email account	4.27	VG	4.33	VG
20. I am able to compose, send, receive, reply to and forward email messages	4.29	VG	4.34	VG
21. I am able to attach/detach documents to/from email messages	4.24	VG	4.26	VG
22. I am able to understand the difference between Search Engines (e.g. Google) and Directories (e.g. *Table18 continued* Yahoo)	4.20	VG	4.11	VG
23. I am able to understand that some copyright restrictions apply to computer software and Internet documents	4.14	VG	4.01	VG
24. I am able to understand how I can use gathered information from the Internet without violating copyright laws	4.10	VG	4.06	VG
25. I am able to demonstrate an understanding of what constitutes plagiarism	4.14	VG	4.04	VG
26. I am able to know basic steps to ensure your online privacy and comp. security	4.08	VG	4.08	VG
Sub-Weighted Mean	**4.20**	**VG**	**4.16**	**VG**
Grand Weighted Mean	**4.22**	**VG**	**4.21**	**VG**

Legend:	4.51-5.00	Excellent	(E)
	3.51-4.50	Very Good	(VG)
	2.51-3.50	Satisfactory	(S)
	1.51-2.50	Fair	(F)
	1.00-1.50	Poor	(P)
		Weighted Mean	(WM)
		Interpretation	(I)

Problems and Challenges Encountered along ICT Development

Table 20 provides the problems and challenges encountered along ICT development. There were 10 identified problems whereby the respondents ranked the extent how the felt the problem.

Table 20

Problems and Challenges Encountered along ICT Development

Problems and Challenges	Rank
1. Lack of genuine software	10
2. Inadequate computer in the classroom	9
3. Without proper maintenance of equipment	6
4. Poor software upgrading and management	7
5. Low speed internet	8
6. Lack of motivation from both teacher and student side to use ICT	5
7. Lack of proper training skills	2
8. Unavailability of latest ICT equipment	4
9. Lack of expert technical staff	1
10. Poor administrative support	3

The table shows that the first three problems encountered along ICT development which served as its challenges were: Lack of expert technical staff, Rank 1; Lack of proper training skills, Rank 2; and Poor administrative support, Rank 3. These problems need to be addressed by the institutions properly.

Thematic Analysis of Respondents' `Responses. This part appraises how the respondents perceived the ICT development and utilization among SUCs through the Focus Group Discussion with the ICT Director, ICT staff and IT/IS faculty.

From the data analysis, only on theme emerged regarding ICT development and utilization. This theme can be explained by its questions that the researchers gathered from the formulated meanings. This theme suggested that the respondents find ICT relevant and necessary for SUCs amidst the introduction of paperless sources which made it more convenient in its operation and one way of introducing innovation to improve productivity and performance.

The following sections present the major theme and subthemes for further illustration:

Perceived Relevance of ICT. Perceived relevance can be explained by 10 questions developed to draw how the respondents appraised ICT utilization among SUCs. From the analysis, it can be understood that ICT is still relevant today for it provides reliable management too that improved operation and resulted to an improved performance and productivity.

Question 1. ICT Strategic Plan. Strategic plan had been an integral part in ICT development and utilization. Usually the strategic plan was crafted for three years. In crafting of the strategic plans the respondents disclosed that the following are usually involved: Vice-President for Academic Affairs, ICT Director and staff and Planning Officer.

Question 2. Regularity of the ICT Meeting. Regular meeting iron things out particularly when budget and staff competence are the issues. From the FGD, it came out that most of the SUCs convened the ICT committee twice a year. Respondents believed that implementation of the plans rests upon the ICT manager thus they considered meetings are called for the purpose of monitoring as well as evaluation.

Question 3. Process in Allocating ICT Fund. Usually funding allocation is not an item in the budget but it falls part of the annual procurement. Therefore the required facilities are incorporated in the PPMP.

Question 4. Provision of On-line Training. Respondents believe that enhancing competences of the ICT users is necessary to so that training is provided.

Considering that the staff could always attend trainings outside station, on-line training is provided for them through the Google LMS.

Question 5. Provision of ICT Training. It is imperative that users of the system need orientation and training. SUCs usually provide orientation and capacity development training for system users particularly the newly acquired ones software.

Question 6. Licensed Software. Respondents believed that SUCs bank on the pre-installed operating system upon purchase of computer units or they availed of the OEM. Usually, there is no software that is licensed for the exclusive use of a particular SUC.

Question 7. Development or Adoption of Information Software/System. Each SUC developed or adopted information system or software package which is usually the University Information System that focus more on its administrative aspects.

Question 8. Developer of the Adopted Information System. Usually SUCs adopt Information System rather than developing it which is time consuming aside from the cost in developing it. SUCs adopt software or information system from the reputable Digital Software Consultancy.

Question 9. Provision of Back-up to the System. System error and data loss are issues that need to be addressed. With this, SUCs have the Automated Data Base Back-up. And the database is stored through the Cloud.

Question 10. Challenges Encountered. Among the challenges encountered by SUCs regarding ICT utilization are Software licenses and system acceptance by stakeholders. Respondents believed that incorporating the procurement in the PPMP the problem would be addressed and the proper orientation and System Appreciation Session would invite the acceptance and utilization of the software among stakeholders.

CHAPTER V

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

This chapter presents the summary of the finding with the conclusions drawn and recommendation formulated.

Summary of Findings

The following were the salient findings of the study:

1. The respondents averred that the development milestone on ICT utilization along leadership was "slightly practiced" by them being shown by the grand weighted mean of 2.36.

2. The respondents considered the development milestone on ICT utilization along Management as "moderately practiced" being indicated by the grand weighted mean 2.64.

3. The respondents considered four indicators as "filled up" while the remaining two were "not filled up." The filled-up indicators were the following: Director of ICT – ICT Professional Learning Support and Teaching, Computer Services Manager, Computer Technician and Database Manager.

4. Of the four required personnel, only two positions had designated personnel to take its role and responsibilities in the ICT development and utilization. These are the system user and encoder.

5. The respondents affirmatively viewed all the five indicators along ICT support system along policies.

6. The respondents, likewise positively averred the existence of budgetary support to ICT development and utilization.

7. The respondents affirmatively signified that a regular monitoring and evaluation were conducted to ensure that this equipment is in operational conditions as well as its usage.

8. The respondents were affirmative along three indicators which are: Research and Development Collaboration Agreement, Partnership Conference Agreement and Information Exchange Agreement while they were negative along the two indicators which are Student Exchange Agreement and Faculty Exchange Agreement.

9. The respondents affirmatively confirmed that trainings were conducted to transfer the technology among personnel in support to the ICT development and utilization program of the institution.

10. The respondents appraised the ICT-based innovation along student services as "extremely developed being manifested by the grand weighted mean of 4.52 while they appraised the adopted ICT-based innovation as "extremely adopted being supported by the grand weighted mean of 4.60, also.

11. The respondents appraised the developed ICT-based Innovation along faculty support services as "moderately developed" being shown by the grand weighted mean of 3.40 while they considered the adopted ICT-based innovation as "moderately adopted" being indicated by the grand weighted mean of 2.87.

12. The respondents appraised the developed ICT-based innovation along administrative as "moderately developed" being manifested by the grand weighted mean of 3.31. On the other hand, they averred that the adopted was "moderately adopted" being indicated by the grand weighted mean of 2.89.

13. The respondents considered the developed ICT-based innovation along library as "highly developed" being support by the grand weighted mean of 3.67 and they also considered the adopted ICT-based innovation as "highly adopted" being shown by the grand weighted mean of 3.63.

14. The respondents viewed the developed ICT-innovation along technology transfer as "moderately developed" being supported by the grand weighted mean of 3.34. Furthermore, they considered the adopted ICT-based innovation as "moderately adopted" being manifested by the grand weighted mean of 3.28.

15. The respondents considered the developed ICT-based innovation as "moderately developed" being signified by the grand weighted mean of 3.09. Likewise, the adopted ICT-based innovation according to the assessment of the respondents was "moderately adopted" also being indicated by the grand weighted mean of 2.80.

16. The coefficient of linear correlation posted at 0.475 which denoted very weak linear association with an obtained F-value of 0.475 and a p-value of 0.497. In comparing the obtained p-value with the level of significance =.05, it was noted that the former turned greater than the latter which signified

that the linear association between the two afore-stated variables was not significant.

17. The coefficient of linear correlation between the ICT support system and ICT-based innovation was posted at 0.410 which denoted moderate linear association with an obtained F-value of 4.650 and a p-value of 0.042. In comparing the obtained p-value with the level of significance =.05, it was noted that the former turned lesser than the latter which signified that the linear association between the two afore-stated variables was significant. ICT-based innovations were significantly influenced by the ICT support system.

18. The coefficient of linear correlation between the development milestone on ICT and developed ICT-based innovation was posted at 0.065 which denote very weak linear association with an obtained p-value of 0.097 and a p-value of 0.758. In comparing the obtained p-value with the level of significance =.05, it was noted that the former turned greater than the latter which signified that the linear association between the two afore-stated variables was not significant.

19. The literacy of the students was "very good" also being shown by the grand weighted mean of 4.22, the literacy of the students was "very good" also being shown by the grand weighted mean of 4.21.

20. The first three problems encountered along ICT development which serve as its challenges were: Lack of expert technical staff, Rank 1; Lack of proper training skills, Rank 2; and Poor administrative support, Rank 3.

21. Thematic Analysis of Respondents' Responses during the FGD resulted one theme that emerged regarding ICT development and utilization.

Conclusions

From the findings of the study, the following conclusions were drawn:

1. The development milestone on ICT utilization among state universities in Samar Island was not fully practiced which indicated that ICT is not fully utilized at present.

2. The state universities in the Island of Samar provide written policies to support ICT development and utilization which are revised from time to time to be relevant with the trend of the ICT.

3. Allocation is always provided among state universities in the Island of Samar to support ICT development and utilization to provide the necessary facilities for the improvement of the quality of instruction and to provide capacity building for the faculty and personnel for the effective use of ICTs.

4. The state universities in the Island of Samar have system to monitor and evaluation their ICT resources and as a strong support to their ICT development and utilization, they establish partnership with stakeholders.

5. Training had been an integral part of the ICT development and utilization so that SUCs conduct trainings for their staff.

6. The SUCs both developed and adopted ICT-based innovation usually on student support and library services while they moderately develop and adopt ICT-based innovation the other areas.

7. The ICT support system was not influenced by the development milestone on ICT utilization.

8. The ICT-based innovations were significantly influenced by the ICT support system in a direct proportional linear association which meant that the higher the ICT support system, the more ICT-based innovation was adopted.

9. Both the ICT-based innovations were not influenced by the development milestone on ICT utilization.

10. Both the student and personnel of SUCs in the Island of Samar possessed a very favorable ICT literacy.

11. There were problems along ICT development which SUCs encountered that served its challenges and these problems should be addressed properly.

12. Thematic Analysis of Respondents' 'Responses during the FGD resulted that the respondents find ICT relevant and necessary for SUCs amidst the introduction of paperless sources which made it more convenient in its operation and one way of introducing innovation to improve productivity and performance.

Recommendations

Based on the conclusions drawn from the findings of the study, the following are hereby recommended:

1. SUCs are encourage to review their ICT development and utilization and encourage all concerned to maximize its utilization to improve the organizational performance.

2. ICT managers and staff should explore more possibility to develop ICT-based innovations aside from the adopted ones to improve organizational productivity and performance along faculty support services, administrative services and the areas on technology transfer and commercialization.

3. Enhance more the status of the ICT literacy of the personnel to excellence to improve their performance as well as the productivity of the SUCs.

4. Another study maybe conducted considering other variables on ICT development and utilization.

5. A follow-up study maybe conducted also to monitor and evaluated the improvement on ICT development and utilization among SUCs in a wider scope, region wide.

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APPENDICES

Republic of the Philippines
SAMAR STATE UNIVERSITY
College of Arts and Sciences

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Acc. No.: M2700909PM
Certificate No.: AJA17.1013

January 10, 2019

DR. MARILYN D. CARDOSO
University President
This University

Madam:

I am currently enrolled in the Dissertation in partial fulfillment of the requirement for the degree Doctor in Technology Management. I had my pre-oral defense of my study entitled **"ICT Development and Challenges among SUC in Samar Island".** In this connection, I would like to seek permission to conduct data gathering and focus group discussion in our institution. I hope that the school administration will allow me to conduct the said activity with the ICT Personnel/MIS/IT Faculty in our main and satellite campuses.

If approved, the intended focus group discussion will be set on January 16, 2018 at 8:30 am in the main campus, January 16, 2018 at 2:00 pm in Mercedes Campus ,January 18, 2018 at 8:30 in Paranas Campus and 2 pm at Basey Campus. This activity will be made in a classroom or other quiet setting on the school site. The process should take no longer than one and a half hours. Attached herewith is the **Focus Group Discussion Guide Template** for the guidance of the participants. Rest assured that the information and results of this study will remain absolutely confidential and anonymous.

Your approval to conduct this study will be greatly appreciated. Thank you in advance to your consideration on this request.

Respectfully yours,

(Sgd)MARYJES G. CALADES
Assistant Professor

Noted:

(Sgd)VIVIAN L. MOYA,Ph.D.
Adviser

(Sgd)ESTEBAN A. MALINDOG, Jr., Ph.D.
Dean, College of Graduate Studies

Recommending Approval:

(Sgd)FELISA E. GOMBA , Ph.D.
Vice-President for Academic Affairs

APPROVED:

(Sgd)MARILYN D. CARDOSO, Ph.D.
University President

Republic of the Philippines
SAMAR STATE UNIVERSITY
College of Arts and Sciences

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JAS-ANZ

Certificate No.: AJA17.1013

February 1, 2019

DR. BENJAMIN L. PECAYO
University President
Northwest Samar State University
Calbayog, City

Sir:

I am currently enrolled in the Dissertation and had my pre-oral defense of my study entitled **"ICT Development and Challenges among SUC in Samar Island"**. I am writing to request permission to conduct data gathering and focus group discussion in your institution. I hope that the school administration will allow me to conduct the said activity with the ICT Director/ICT Manager/ICT Personnel/MIS/IT Faculty in your main and satellite campuses.

If approval is granted, the intended focus group discussion will be set on convenient day and time. This activity will be made in a classroom or other quiet setting on the school site. The process should take no longer than one and half hours. Attached herewith is the **Focus Group Discussion Guide Template and questionnaire** for the guidance of the participants. The information and results of this study will remain absolutely confidential and anonymous.

Your approval to conduct this study will be greatly appreciated. I will follow up with a telephone call this week and would be happy to answer any questions or concerns that you may have at that time. You may contact me at my cell no. 09184699312.

Thank you in advance for your consideration of this request.

Respectfully yours,

(Sgd)MARYJES G. CALADES
Assistant Professor

Arteche Blvd., Guindapunan, Catbalogan City, 6700 Samar, Philippines | Telephone No. (055) 251 – 2139 | Fax: (055) 543 - 8394 | Website: www.ssu.edu.ph | Page 1 of 1

Republic of the Philippines
SAMAR STATE UNIVERSITY
College of Arts and Sciences

Certificate No.: AJA17.1013

February 1, 2019

EDMUNDO A. CAMPOTO, D.V.M.,Ph.D.
University President
Eastern Samar State University
Borongan, Eastern Samar

Sir:

I am currently enrolled in the Dissertation and had my pre-oral defense of my study entitled **"ICT Development and Challenges among SUC in Samar Island".** I am writing to request permission to conduct data gathering and focus group discussion in your institution. I hope that the school administration will allow me to conduct the said activity with the ICT Director/ICT Manager/ICT Personnel/MIS/IT Faculty in your main and satellite campuses.

If approval is granted, the intended focus group discussion will be set on convenient day and time. This activity will be made in a classroom or other quiet setting on the school site. The process should take no longer than one and half hours. Attached herewith is the **Focus Group Discussion Guide Template and questionnaire** for the guidance of the participants. The information and results of this study will remain absolutely confidential and anonymous.

Your approval to conduct this study will be greatly appreciated. I will follow up with a telephone call this week and would be happy to answer any questions or concerns that you may have at that time. You may contact me at my cell no. 09184699312.

Thank you in advance for your consideration of this request.

Respectfully yours,

(Sgd)MARYJES G. CALADES
Assistant Professor

Republic of the Philippines
SAMAR STATE UNIVERSITY
College of Arts and Sciences

Certificate No.: AJA17.1013

February 1, 2019

ROLANDO A. DELORINO, Ph.D.
University President
University of Eastern Philippines
Calbayog, City

Sir:

I am currently enrolled in the Dissertation and had my pre-oral defense of my study entitled **"ICT Development and Challenges among SUC in Samar Island".** I am writing to request permission to conduct data gathering and focus group discussion in your institution. I hope that the school administration will allow me to conduct the said activity with the ICT Director/ICT Manager/ICT Personnel/MIS/IT Faculty in your main and satellite campuses.

If approval is granted, the intended focus group discussion will be set on convenient day and time. This activity will be made in a classroom or other quiet setting on the school site. The process should take no longer than one and half hours. Attached herewith is the **Focus Group Discussion Guide Template and questionnaire** for the guidance of the participants. The information and results of this study will remain absolutely confidential and anonymous.

Your approval to conduct this study will be greatly appreciated. I will follow up with a telephone call this week and would be happy to answer any questions or concerns that you may have at that time. You may contact me at my cell no. 09184699312.

Thank you in advance for your consideration of this request.

Respectfully yours,

(Sgd)MARYJES G. CALADES
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QUESTIONNAIRE
(For ICT Director)

Name (optional): _____

HEI: (Please check)

☐ UEP   ☐ NwSSU

☐ SSU   ☐ ESSU

PART I.   **Development milestone on ICT along LEADERSHIP**

Direction: Kindly assess the ICT Leadership practices by checking appropriate column using the following scale as follows:

5 – Extremely Practiced   (EP)
4 – Highly Practiced   (HP)
3 – Moderately Practiced   (MP)
2 – Slightly Practiced   (SP)
1 – Not Practiced   (NP)

Indicators	SY 2011-2012					SY 2012-2013					SY 2013-2014					SY 2014-2015					SY 2015-2016					SY 2016-2017					SY 2017-2018				
	5	4	3	2	1	5	4	3	2	1	5	4	3	2	1	5	4	3	2	1	5	4	3	2	1	5	4	3	2	1	5	4	3	2	1
1. The Head of the Institution develops ICT Strategic Plan to ensure such is aligned with views of the school community and is referenced by the appropriate national, regional SUC/University policies, memos and office orders.																																			
2. Conducts regular meetings to ensure ICT implemented and sustained.																																			
3. Conducts budget planning to ensure a steady spending pattern that will achieve the school's goals for ICT integration.																																			

Indicators	SY 2011-2012					SY 2012-2013					SY 2013-2014					SY 2014-2015					SY 2015-2016					SY 2016-2017					SY 2017-2018				
	5	4	3	2	1	5	4	3	2	1	5	4	3	2	1	5	4	3	2	1	5	4	3	2	1	5	4	3	2	1	5	4	3	2	1
4. Reviews and conducts ICT priorities to adapt to current pedagogical trends and emerging technologies – • Conferences/Training/Workshop • Professional learning • magazines • newspapers • online subscriptions • school visits • purchase of new software and hardware.																																			
5. Evaluates using annual surveys, the effects of integrating ICT within teaching, learning and administration.																																			
6. Makes ICT resources up-to-date and allow the school to respond to modern trends and rapidly take advantage of future improvements in ICT delivery and infrastructure.																																			
7. Establishes local and global learning communities which contribute to learning for students.																																			

PART II.   Development milestone on ICT along MANAGEMENT

Direction: Kindly assess the Management practices by checking appropriate column using the following scale as follows:

5 – Extremely Practiced   (EP)
4 – Highly Practiced   (HP)
3 – Moderately Practiced   (MP)
2 – Slightly Practiced   (SP)
1 – Not Practiced   (NP)

Indicators	SY 2011-2012					SY 2012-2013					SY 2013-2014					SY 2014-2015					SY 2015-2016					SY 2016-2017					SY 2017-2018				
	5	4	3	2	1	5	4	3	2	1	5	4	3	2	1	5	4	3	2	1	5	4	3	2	1	5	4	3	2	1	5	4	3	2	1
1. The management provides ICT systems that facilitate the creation, sharing, reviewing and integration of digital content within the school and globally.																																			
2. Observes prioritisation of professional learning with ICT and about ICT •Basic skills in general applications, communication, internet research, administrative procedures and computer care is covered by all teachers • In-house and external tuition for specific skills with applications or integration into teaching practice is provided.																																			
3. Provides automated system for the efficient and effective delivery of all business processes along: • Student records • Timetabling • Daily organisation • Student attendance • Content management for curriculum • Improved student behaviour management • Purchase orders • Student assessment and reporting • Data for tracking student progress • Library • Staff communication • School website • School Intranet																																			
4. Assures that all physical learning spaces are ICT ready for the use of wired or wireless mobile technologies and where possible allow for the flexible arrangements of groups for collaborative learning. • To adapt classroom furniture to assist in more flexible configurations required for collaborative group work																																			

Indicators	SY 2011-2012					SY 2012-2013					SY 2013-2014					SY 2014-2015					SY 2015-2016					SY 2016-2017					SY 2017-2018				
	5	4	3	2	1	5	4	3	2	1	5	4	3	2	1	5	4	3	2	1	5	4	3	2	1	5	4	3	2	1	5	4	3	2	1
5. The management implements hardware delivery of ICT resources as: • All teachers have personal desktop/laptops which are to be upgraded every 3 years • All students use desktop and upgraded every 3 years. • Administrative staff have desktops if they do not receive a laptop •Networked printers and photocopiers /scanners are available throughout the school • Digital camera and video cameras available • Servers and desktops are fitted with UPS • Wireless access points are available • All servers and network switches/routers highly integrated using VLANs and capable of expansion • All computer areas fitted with air conditioning • Computer systems replaced on a 3 year cycle • Multimedia projector systems installed in rooms																																			
6. The management implements software delivery of ICT resources as: • Licencing agreements in place • Network licences are purchased unless software is only required in specified specialist areas.																																			
7. The management provides backup systems and disaster recovery • Backup Server mirrors all critical data																																			

PART III. Development milestone on ICT along TECHNICAL

Direction: Kindly put a check in the space provided if in the stated years a technical personnel is designated as:

Indicators	SY 2011-2012	SY 2012-2013	SY 2013-2014	SY 2014-2015	SY 2015-2016	SY 2016-2017	SY 2017-2018
1. Director of ICT –ICT Professional Learning support and Teaching							
2. Computer Services Manager							
3. Network Manager							
4. Computer Technician							
5. Database Manager							
6. Web Manager							

PART IV. Development milestone on ICT along NON-TECHNICAL

Direction: Kindly put a check in the space provided if in the stated years a non-technical personnel is designated as:

Indicators	SY 2011-2012	SY 2012-2013	SY 2013-2014	SY 2014-2015	SY 2015-2016	SY 2016-2017	SY 2017-2018
1. System user							
2. Encoder							
3. Computer Operator							
4. In-charge of budgetary for ICT programs							

PART V. ICT SUPPORT SYSTEM

Direction: Kindly assess if the following ICT support system are present in your school. Please check the appropriate column.

Indicators	YES	NO
A. Policies		
1. Integrate ICT into teaching		
2. Make information and resources available supporting academic activities?		
3. Insure data and system security?		
4. Provide ICT training		
5. Implement rules and regulations of the Data Privacy Act of 2012.		
B. Budgetary		
1. deliver quality instruction		
2. Create a common ICT infrastructure.		
3. Develop the capacity of faculty and personnel on ICT.		
4. School maintenance and operating expenses		
5. Personnel benefits and allowances		
C. Monitoring and evaluation		
1. Inventory of ICT equipment/facilities? How often?		
2. Inventory of Operating systems, office applications and other software's installed		
3. Monitoring of computer laboratory conditions		
4. Monitor of electrical systems		
5. Monitor the computer usage of your school		
D. Linkages		
1. Student Exchange Agreement		
2. Faculty Exchange Agreement		
3. Research and Development Collaboration Agreement		
4. Partnership Conference Agreement		
5. Information Exchange Agreement		
E. Training		
1. Technical training ex. software		
2. Quality training ex. ISO		
3. Skills training		
4. Soft skills & Team training		
5. Safety training		

PART VI. **ICT BASED INNOVATION DEVELOPED AND ADOPTED**

Direction: Kindly assess by checking the appropriate column if the ICT-based innovation are developed and adopted in your school.

5 – Extremely Developed (ED) 5 – Extremely Adopted (EA)
4 – Highly Developed (HD) 4 – Highly Adopted (HA)
3 – Moderately Developed (MD) 3 – Moderately Adopted (MA)
2 – Slightly Developed (SD) 2 – Slightly Adopted (SA)
1 – Not Developed (ND) 1 – Not Adopted (NA)

Indicators	DEVELOPED					ADOPTED				
	5	4	3	2	1	5	4	3	2	1
A. Student Services										
1. Registration/enrolment of students										
2. Fee payments										
3. Grade results and assessment										
4. Display information about University on its Website										
5. Online access to information										
B. Faculty Support Services										
1. Recruitment and work allotment										
2. Attendance and leave management										
3. Travel request										
4. Prepayment and travel reimbursement										
5. Faculty compensation										
C. Administrative Services										
1. Human resource management										
2. Property management										
3. Transport and motor pool management										
4. Building and water supply management										
5. Electrical and telecommunication maintenance										
D. Library Services										
1. Library orientation										
2. Borrowing and circulation										
3. Internet access										

Indicators	DEVELOPED					ADOPTED				
	5	4	3	2	1	5	4	3	2	1
4. Dissemination of the newly acquired books, audio visual materials and periodicals.										
5. Online Public Access Catalog (OPAC)										
E. Technology Transfer										
1. Documentation										
2. Policy and technology protection										
3. Collaboration and exchange of information										
4. Development of Human Capital										
5. Creation of Tools, Manuals and Training Materials										
F. Commercialization										
1. Patent application for the technology										
2. Market opportunity assessment										
3. Commercialization strategy and plan development										
4. Proprietary protection and planning										
5. Creation of policy on Royalty-Sharing and Distribution.										

PART VII.   PROBLEMS ENCOUNTERED ALONG ICT UTILIZATION

Direction: Kindly rank(1-11) the problems you encounter along ICT utilization, on the space provided and indicate N.A if no problem exists.

_____ lack of genuine software

_____ inadequate computer in the classroom

_____ without proper maintenance of equipment

_____ poor software upgrading and management

_____ low speed internet

_____ lack of motivation from both teacher and student side to use ICT

_____ lack of proper training skills

_____ unavailability of latest ICT equipment

_____ lack of expert technical staff

_____ poor administrative support

_____ if other, please specify _____

QUESTIONNAIRE
(For ICT Staff)

Name (optional): _____

HEI: (Please check)

☐ UEP   ☐ NwSSU

☐ SSU   ☐ ESSU

PART I.   Development milestone on ICT along LEADERSHIP

Direction: Kindly assess the ICT Leadership practices by checking appropriate column using the following scale as follows:

5 – Extremely Practiced   (EP)
4 – Highly Practiced   (HP)
3 – Moderately Practiced   (MP)
2 – Slightly Practiced   (SP)
1 – Not Practiced   (NP)

Indicators	SY 2011-2012					SY 2012-2013					SY 2013-2014					SY 2014-2015					SY 2015-2016					SY 2016-2017					SY 2017-2018				
	5	4	3	2	1	5	4	3	2	1	5	4	3	2	1	5	4	3	2	1	5	4	3	2	1	5	4	3	2	1	5	4	3	2	1
1. The Head of the Institution develops ICT Strategic Plan to ensure such is aligned with views of the school community and is referenced by the appropriate national, regional, SUC/University policies, memos and office orders.																																			
2. Conducts regular meetings to ensure ICT implemented and sustained.																																			
3. Conducts budget planning to ensure a steady spending pattern that will achieve the school's goals for ICT integration.																																			

Indicators	SY 2011-2012					SY 2012-2013					SY 2013-2014					SY 2014-2015					SY 2015-2016					SY 2016-2017					SY 2017-2018				
	5	4	3	2	1	5	4	3	2	1	5	4	3	2	1	5	4	3	2	1	5	4	3	2	1	5	4	3	2	1	5	4	3	2	1
4. Reviews and conducts ICT priorities to adapt to current pedagogical trends and emerging technologies – • Conferences/Training/Workshop • Professional learning • magazines • newspapers • online subscriptions • school visits • purchase of new software and hardware.																																			
5. Evaluates using annual surveys, the effects of integrating ICT within teaching, learning and administration.																																			
6. Makes ICT resources up-to-date and allow the school to respond to modern trends and rapidly take advantage of future improvements in ICT delivery and infrastructure.																																			
7. Establishes local and global learning communities which contribute to learning for students.																																			

PART II. Development milestone on ICT along MANAGEMENT

Direction: Kindly assess the Management practices by checking appropriate column using the following scale as follows:

5 – Extremely Practiced (EP)
4 – Highly Practiced (HP)
3 – Moderately Practiced (MP)
2 – Slightly Practiced (SP)
1 – Not Practiced (NP)

Indicators	SY 2011-2012					SY 2012-2013					SY 2013-2014					SY 2014-2015					SY 2015-2016					SY 2016-2017					SY 2017-2018				
	5	4	3	2	1	5	4	3	2	1	5	4	3	2	1	5	4	3	2	1	5	4	3	2	1	5	4	3	2	1	5	4	3	2	1
1. The management provides ICT systems that facilitate the creation, sharing, reviewing and integration of digital content within the school and globally.																																			
2. Observes prioritisation of professional learning with ICT and about ICT •Basic skills in general applications, communication, internet research, administrative procedures and computer care is covered by all teachers • In-house and external tuition for specific skills with applications or integration into teaching practice is provided.																																			
3. Provides automated system for the efficient and effective delivery of all business processes along: • Student records • Timetabling • Daily organisation • Student attendance • Content management for curriculum • Improved student behaviour management • Purchase orders • Student assessment and reporting • Data for tracking student progress • Library • Staff communication • School website • School Intranet																																			
4. Assures that all physical learning spaces are ICT ready for the use of wired or wireless mobile technologies and where possible allow for the flexible arrangements of groups for collaborative learning. • To adapt classroom furniture to assist in more flexible configurations required for collaborative group work																																			

Indicators	SY 2011-2012					SY 2012-2013					SY 2013-2014					SY 2014-2015					SY 2015-2016					SY 2016-2017					SY 2017-2018				
	5	4	3	2	1	5	4	3	2	1	5	4	3	2	1	5	4	3	2	1	5	4	3	2	1	5	4	3	2	1	5	4	3	2	1
5. The management implements hardware delivery of ICT resources as: • All teachers have personal desktop/laptops which are to be upgraded every 3 years • All students use desktop and upgraded every 3 years. • Administrative staff have desktops if they do not receive a laptop •Networked printers and photocopiers /scanners are available throughout the school • Digital camera and video cameras available • Servers and desktops are fitted with UPS • Wireless access points are available • All servers and network switches/routers highly integrated using VLANs and capable of expansion • All computer areas fitted with air conditioning • Computer systems replaced on a 3 year cycle • Multimedia projector systems installed in rooms.																																			
6. The management implements software delivery of ICT resources as: • Licencing agreements in place • Network licences are purchased unless software is only required in specified specialist areas.																																			
7. The management provides backup systems and disaster recovery • Backup Server mirrors all critical data																																			

PART III. Development milestone on ICT along TECHNICAL

Direction: Kindly put a check in the space provided if in the stated years a technical personnel is designated as:

Indicators	SY 2011-2012	SY 2012-2013	SY 2013-2014	SY 2014-2015	SY 2015-2016	SY 2016-2017	SY 2017-2018
1. Director of ICT –ICT Professional Learning support and Teaching 2. Computer Services Manager 3. Network Manager 4. Computer Technician 5. Database Manager 6. Web Manager							

PART IV. Development milestone on ICT along NON-TECHNICAL

Direction: Kindly put a check in the space provided if in the stated years a non-technical personnel is designated as:

Indicators	SY 2011-2012	SY 2012-2013	SY 2013-2014	SY 2014-2015	SY 2015-2016	SY 2016-2017	SY 2017-2018
1. System user 2. Encoder 3. Computer Operator 4. In-charge of budgetary for ICT programs							

PART V. ICT SUPPORT SYSTEM

Direction: Kindly assess if the following ICT support system are present in your school. Please check the appropriate column.

Indicators	YES	NO
A. Policies		
1. Integrate ICT into teaching		
2. Make information and resources available supporting academic activities?		
3. Insure data and system security?		
4. Provide ICT training		
5. Implement rules and regulations of the Data Privacy Act of 2012.		
B. Budgetary		
1. deliver quality instruction		
2. Create a common ICT infrastructure.		
3. Develop the capacity of faculty and personnel on ICT.		
4. School maintenance and operating expenses		
5. Personnel benefits and allowances		
C. Monitoring and evaluation		
1. Inventory of ICT equipment/facilities? How often?		
2. Inventory of Operating systems, office applications and other software's installed		
3. Monitoring of computer laboratory conditions		
4. Monitor of electrical systems		
5. Monitor the computer usage of your school		
D. Linkages		
1. Student Exchange Agreement		
2. Faculty Exchange Agreement		
3. Research and Development Collaboration Agreement		
4. Partnership Conference Agreement		
5. Information Exchange Agreement		
E. Training		
1. Technical training ex. software		
2. Quality training ex. ISO		
3. Skills training		
4. Soft skills & Team training		
5. Safety training		

PART VI **ICT BASED INNOVATION DEVELOPED AND ADOPTED**

Direction: Kindly assess by checking the appropriate column if the ICT-based innovation are developed and adopted in your school.

5 – Extremely Developed	(ED)	5 – Extremely Adopted	(EA)
4 – Highly Developed	(HD)	4 – Highly Adopted	(HA)
3 – Moderately Developed	(MD)	3 – Moderately Adopted	(MA)
2 – Slightly Developed	(SD)	2 – Slightly Adopted	(SA)
1 – Not Developed	(ND)	1 – Not Adopted	(NA)

Indicators	DEVELOPED					ADOPTED				
	5	4	3	2	1	5	4	3	2	1
A. Student Services										
1. Registration/enrolment of students										
2. Fee payments										
3. Grade results and assessment										
4. Display information about University on its Website										
5. Online access to information										
B. Faculty Support Services										
1. Recruitment and work allotment										
2. Attendance and leave management										
3. Travel request										
4. Prepayment and travel reimbursement										
5. Faculty compensation										
C. Administrative Services										
1. Human resource management										
2. Property management										
3. Transport and motor pool management										
4. Building and water supply management										
5. Electrical and telecommunication maintenance										
D. Library Services										
1. Library orientation										
2. Borrowing and circulation										
3. Internet access										

Indicators	DEVELOPED					ADOPTED				
	5	4	3	2	1	5	4	3	2	1
4. Dissemination of the newly acquired books, audio visual materials and periodicals.										
5. Online Public Access Catalog (OPAC)										
E. Technology Transfer										
1. Documentation										
2. Policy and technology protection										
3. Collaboration and exchange of information										
4. Development of Human Capital										
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1. Patent application for the technology										
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3. Commercialization strategy and plan development										
4. Proprietary protection and planning										
5. Creation of policy on Royalty-Sharing and Distribution.										

PART VII. PROBLEMS ENCOUNTERED ALONG ICT UTILIZATION
Direction: Kindly rank(1-11) the problems you encounter along ICT utilization, on the space provided and indicate N.A if no problem exists.

_____ lack of genuine software
_____ inadequate computer in the classroom
_____ without proper maintenance of equipment
_____ poor software upgrading and management
_____ low speed internet
_____ lack of motivation from both teacher and student side to use ICT
_____ lack of proper training skills
_____ unavailability of latest ICT equipment
_____ lack of expert technical staff
_____ poor administrative support
_____ if other, please specify _____

ONLINE QUESTIONNAIRE

Computer literacy questionnaire

Good day everyone!

I am currently conducting a research entitled "ICT Development and Challenges among SUCs in Samar Island". Part of my study is to determine the computer level proficiency of students and personnel. Please answer the following questions.

Rest assured that pieces of information and the results of this study will remain confidential and anonymous. Thank you in advance for answering this questionnaire.

MARYJES G. CALADES
Researcher

SCHOOL

O UEP

O SSU

O NwSSU

O ESSU

CATEGORY

O Personnel

O Student

○ Personnel

○ Student

1. GENERAL SKILLS

	Poor	Fair	Satisfactory	Very good	Excellent
I am able to familiarize the basic computer system parts and concepts (e.g. hard drive, RAM, etc.)	○	○	○	○	○
I am able to use Help menus to find answers to my questions	○	○	○	○	○
I am able to understand file extensions and differences between file types (e.g. .doc, .gif, .html, .ppt_, .mp3, .rm, etc.)	○	○	○	○	○
I am able to shut down a computer appropriately	○	○	○	○	○
I am able to perform a safe reboot of the operating system with keystrokes	○	○	○	○	○
I am able to understand the difference between closing/minimizing/hiding windows and quitting a program	○	○	○	○	○
I am able to use the mouse right-click menu functions	○	○	○	○	○

2. FILE MANAGEMENT SKILLS

	Poor	Fair	Satisfactory	Very good	Excellent
I'm able to navigate through files and directories (e.g. using Windows Explorer)	○	○	○	○	○
I'm able to organize, copy and paste files in directories	○	○	○	○	○
I'm able to move unwanted files into my recycle bin and delete them permanently from my hard drive	○	○	○	○	○

3. WORD PROCESSING SKILLS

	Poor	Fair	Satisfactory	Very good	Excellent
I am able to edit, copy, cut and paste a block of text or selected objects	○	○	○	○	○
I am able to use undo/redo function	○	○	○	○	○

https://docs.google.com/forms/d/e/1FAIpQLSfVe8lW0WMTmpP1h2LXcP5W9uo6O17Np3a1baWDiuW42Rh7rw/viewform

3. WORD PROCESSING SKILLS

	Poor	Fair	Satisfactory	Very good	Excellent
I am able to edit, copy, cut and paste a block of text or selected objects	○	○	○	○	○
I am able to use undo/redo functions	○	○	○	○	○
I am able to save, print and preview documents	○	○	○	○	○
I am able to select and change fonts sizes and types; styles (e.g. boldface, italics, underlining, etc.)	○	○	○	○	○
I am able to create itemized lists (e.g. bullets, numbered lists)	○	○	○	○	○

4. PRINTING SKILLS

	Poor	Fair	Satisfactory	Very Good	Excellent

4. PRINTING SKILLS

	Poor	Fair	Satisfactory	Very Good	Excellent
I am able to change printer parameters like page numbers, paper orientation, margins and proportions, etc.	○	○	○	○	○
I am able to change printing options from grayscale, normal, fastdraft or best	○	○	○	○	○

5. ONLINE COMMUNICATION, BROWSER AND NAVIGATION SKILLS ONLINE.

	Poor	Fair	Satisfactory	Very Good	Excellent
I am able to use the browser basic commands to surf the Internet	○	○	○	○	○
I am able to request, activate my email account	○	○	○	○	○
I am able to compose, send,	○	○	○	○	○

4. PRINTING SKILLS

	Poor	Fair	Satisfactory	Very Good	Excellent
I am able to change printer parameters like page numbers, paper orientation, margins and proportions, etc.	○	○	○	○	○
I am able to change printing options from grayscale, normal, fastdraft or best	○	○	○	○	○

5. ONLINE COMMUNICATION, BROWSER AND NAVIGATION SKILLS ONLINE.

	Poor	Fair	Satisfactory	Very Good	Excellent
I am able to use the browser basic commands to surf the Internet	○	○	○	○	○
I am able to request, activate my email account	○	○	○	○	○
I am able to compose, send,	○	○	○	○	○

5. ONLINE COMMUNICATION, BROWSER AND NAVIGATION SKILLS ONLINE.

	Poor	Fair	Satisfactory	Very Good	Excellent
I am able to use the browser basic commands to surf the Internet	○	○	○	○	○
I am able to request, activate my email account	○	○	○	○	○
I am able to compose, send, receive, reply to and forward email messages	○	○	○	○	○
I am able to attach/detach documents to/from email messages	○	○	○	○	○
I am able to understand the difference between Search Engines (e.g. Google) and Directories (e.g. Yahoo)	○	○	○	○	○
I am able to understand that some copyright restrictions apply to computer software and Internet documents	○	○	○	○	○

I am able to understand that some copyright restrictions apply to computer software and Internet documents

I am able to understand how I can use gathered information from the Internet without violating copyright laws

I am able to demonstrate an understanding of what constitutes plagiarism

I am able to know basic steps to ensure your online privacy and computer security

Note

*this questionnaire was adapted from this site https://www.quia.com/sv/359509.html

SUBMIT

CURRICULUM VITAE

MARYJES G. CALADES
P-4, Brgy. Mercedes, Catbalogan City, Samar
Email address: maryjes.calades@ssu.edu.ph

PERSONAL BACKGROUND

Birth Date	:	October 14, 1975
Birth Place	:	Brgy. Pilar San Antonio, Northern Samar
Civil Status	:	Married
Nationality	:	Filipino
Height	:	1.64 m.
Weight	:	61 kg.

FAMILY BACKGROUND

Spouse 's Name	:	Dr. Nicanor Michael M. Calades
Name of Children	:	Michael Rafael G. Calades
		Jemimah Rose G. Calades
Father's Name	:	Jesus G. Grata
Mother's Name	:	Myrna T. Grata

EDUCATIONAL ATTAINTMENT

LEVEL	NAME OF SCHOOL	BASIC EDUCATION/DEGREE /COURSE	INCLUSIVE DATES From	To
Elementary	Catbalogan I	Primary Education	1982	1988
Secondary	Sacred Heart College	Secondary Education	1988	1992
College	Southwestern University	Bachelor Of Science In Computer Science	1992	1995
Graduate Studies	Southwestern University	Masters Of Arts In Teaching Computer Science	1999	2008
Post Graduate Studies	Samar State University	Doctor In Technological Management	2008	2019

CIVIL SERVICE ELIGIBILITY

CAREER SERVICE/ RA 1080 (BOARD/ BAR) UNDER SPECIAL LAWS/ CES/ CSEE	RATING	DATE OF EXAMINATION / CONFERMENT	PLACE OF EXAMINATION / CONFERMENT	LICENSE (if applicable)	
				NUMBER	Date of Validity
CAREER SERVICE PROFESSIONAL EXAM(CAT)	81.35	10/29/1999	CANDAHUG ,PALO LEYTE	08-060330-063	N/A

ACADEMIC EXPERIENCE

AREA OF WORK EXPERIENCE	POSITION TITLE	AGENCY	INCLUSIVE DATES (mm/dd/yyyy)		NO. OF YEARS
			From	To	
Academic	Assistant Professor 3	Samar State University	01/03/2017	PRESENT	
	Assistant Professor 2	Samar State University	12/1/2014	01/02/2017	2
	Instructor II	Samar State University	07/01/2010	11/30/2014	4
	Instructor I	Samar State University	08/18/1997	06/30/2010	12

SEMINARS/TRAINING PROGRAMS ATTENDED

TITLE OF THE SEMINAR/CONFERENCE/WORKSHOP	INCLUSIVE DATES OF ATTENDANCE (mm/dd/yyyy)	NUMBER OF HOURS	CONDUCTED/ SPONSORED BY
Information management training course	December 6-7,2019	16	Philippine Society of Information Technology Educators (PSITE) Region VIII
Training workshop on writing and packaging research articles for journal publication	September 22,2019	8	Samar State University

Seminar-workshop in writing effective and well-designed test questions	June 14, 2019	8	College of Arts & Sciences
Communication protocol & social graces and work ethics seminar workshop	December 5-6,2018	16	Samar State University - Office of the Admin. Services/HRMO
Seminar/Workshop on OBE Paradigm and Program Assessment for Information Technology Education	November 15-16,2018	16 HRS	Philippine Society of Information Technology Educators (PSITE) Region VIII
Grand challenges in computing 2018	July 27-28,2018	16	Computing Society of the Philippines - Special Interest Group on Information and Computing Education
Enhancement of SSU OBE & GE courses implementation strategies & IMS development seminar-workshop, ISA & Abet Orientation	June 18-22,2018	40	Samar State University
Seminar on Thesis & Dissertation Writing	January 13-14,2018	16 HRS	SSU-College of Graduate Studies
Workshop on Writing & Publishing in ISI Journals	July 25-26/2017	16 HRS	SSU-Office of the Planning Research and Extension Services
Seminar-Workshop on Accreditation, Quality, Assurance and Academic Processes	July 17/2017	8 HRS	SSU-Office of the Vice-President for Academic Affairs
In-House Seminar-Workshop on Academic Processes towards SSU Quality and Excellence	May 29-June 1,2017	42 HRS	SSU-Office of the Vice-President for Academic Affairs
Seminar-Workshop on the Development of Instructional Materials (Module and Activity Workbook/TextBook)	November 4,2016	8	Samar State University
"College Strategic Planning: In Service	July 25,2016	8	Samar State

Seminar Workshop on SWOT Evaluation Towards the Academic Excellence of the CAS			University
Outcomes-Based Education Seminar and Revision of Policies in the College of Graduate Studies	July 2,2016	8	Samar State University
In-house Seminar-Workshop on Academic and Administrative Processes towards Increasing Productivity and Excellence	May 25-27,2016	24	Samar State University
Stress Management Seminar-Workshop	March 4,2016	8	Samar State University
4th National Conference on Open and Distance eLearning (NCODeL) with the theme "Philippine Education Revolution through Open and Distance e-Learning	November 5-6,2015	16	NCODel Crowne Plaza Manila
Seminar –workshop of the Barangay Development Plan using the Sustainable Integrated Management and Planning to Local Ecosystem (SIMPLE) approach	January 20-24,2015	40	Samar State University
	November 5-7,2014	24	
Moodle-Learning Management System Training	October 20-23,2014	24	Information & Communications Technology Office, UP Diliman
Global Positioning System (GPS) and Geographic Information System(GIS) Training	October 1-3,2014	24	R&DC-Samar State University
Participatory Rural appraisal (PRA) Training for Samar State University Extension Service Providers	August 27-29,2014	24	Samar State University
Engineering and Technology training Program (Electropneumatics)	May 26-30,2014	40	College of Engineering, EARIST, Manila
Engineering and Technology training Program (Mechatronics)	May 19-23,2014	40	College of Engineering, EARIST, Manila
University-Based Orientation Seminar Workshop on Emergency Preparedness & Disaster Risk Reduction Management	July 3-4,2013	16	Bureau of Fire Protection & Samar State University
Hands-On Seminar Workshop on Patent Drafting	June 17-18,2013	16	R&DC-Samar State University

In-House Seminar Workshop for Academic Personnel of SSU entitles "Towards Excellence in Teaching"	May 28-30,2013	24	Samar State University
GAP Labs Webcamp 2013	February 23-24,2013	16	Go Abroad Philippines ,Tacloban ,City

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