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# COMPLIANCE WITH THE WIRELESS ACCESS FOR HEALTH (WAH) INFORMATION SYSTEM IN THE PROVINCE OF TARLAC: AN EVALUATION

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## ABSTRACT

Title: **COMPLIANCE WITH THE WIRELESS ACCESS FOR HEALTH (WAH) INFORMATION SYSTEM IN THE PROVINCE OF TARLAC: AN EVALUATION**

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The study investigates the compliance of the partner Local Government Units with the Wireless Access for Health Information System in the Province of Tarlac.

A quantitative descriptive research approach was employed, including surveys and interviews with physicians, nurses, and other staff members. The study found that overall compliance with EMR for three consecutive years from 2020, 2021, and 2022 are

8, 9, and 9 consecutively with an adjectival rating of Partially Compliant for all years and this affirms that there are still some barriers to adoption and utilization. These included concerns about privacy and security, lack of training, and resistance to change. The results of this study suggest that in order to promote more widespread and effective use of EMRs, healthcare organizations need to address these barriers and provide additional support and training for their staff.

Thus, one of the foremost recommendations is that the Government of Tarlac should refer to the latest pronouncements from the Department of Health and PhilHealth governing electronic reporting of patient and health data through validated Health Information System like the WAH Digital Health platform. These are DOH Memorandum 2021-0035 enumerating revisions in the Field Health Services Information System (FHSIS) Manual of Procedures and the DOH-PHIC Joint Administrative Order (JAO) 2021-0002 titled "Mandatory Adoption and Use of National Health Data Standards for Interoperability. The LGU should mandate all LGUs to use the system for recording and reporting to properly maximize the use of data from recording, reporting, and decision-making purposes.

## Chapter 1

## THE PROBLEM AND ITS BACKGROUND

### Background of the Study

The healthcare industry has gained a huge boost in technological advancement through the implementation of a Health Information System. The use of a Health Information System (HIS) such as electronic medical records or electronic health records has brought a gargantuan effect on the health industry.

Health Information System is a digital health solution developed for local governments and small health facilities. It allows chief executives to oversee multi-level governance, health managers to execute inter- and intra-facility management, and facility supervisors to supervise multiple users. The Wireless Access for Health (WAH) platform is Philhealth Konsulta and

eClaims compliant and follows the Department of Health FHSIS reporting standard.

Several developed countries are now using Health Information Systems, at least in part. One of the main advantages of HIS is its ability to produce timely data about the patient and population's health to support healthcare delivery and management at all levels. The sharing of information amongst all healthcare professionals is made possible by health information exchanges, which help improve care coordination (Bates, 2015).

It is commonly acknowledged that the usage of EHR lowers costs while also improving the standard of hospitalized patient care. Safety, quality, and efficiency of healthcare are advantages of an EHR system in use. On the other hand, a number of organizational, social, and technical issues could appear during the implementation stage. Each nation has different priorities for implementing EHRs. Unscheduled care is a priority in the Netherlands, while primary care is in Denmark (Fragidis, 2015).

EHR implementation is a multifaceted, continuing endeavor rather than a one-time event. The difficulties in implementing EHRs do not stop with the initial implementation phase; they can continue for a very long time. In order to fully utilize an EHR system, adoption must be part of a well-designed plan that considers the aforementioned difficulties and continually strives to ensure EHR functionality (Zoobook, 2021).

The use of HIS helps in improving the quality of patient care, reducing operational costs, making administration data error-free, shaping the entire internal management process more organized, and helping the management of healthcare data with utter efficiency. In general, its implementation will boost public health, improve total patient care, and improve decision-making while protecting each individual's right to privacy. The implementation of Kalusugan Pangkalahatan, or Universal Health Care, aims to meet the health system's goals of improved health outcomes, long-term health finance, and a responsive health system (Carlos, 2014).

One of the UN Sustainable Development Goals focuses on ensuring healthy lives and promoting well-being for all ages. Understandably, achieving the goals will require reliable

data, considering the scale of the work to be done to make the right choice on health priorities, and knowing how to allocate resources for the most efficient and effective results.

Under the Universal Health Care Act (Republic Act No.11223 Section 36), all health service providers are required to maintain a health information system on electronic health records which shall be electronically uploaded regularly through interoperable systems consistent with standards set by the Department of Health and PhilHealth and in consultation with the Department of Information and Communications Technology and National Privacy Commission.

Since the 1990s, public health institutions have recognized the critical role of health information systems (HIS) in delivering prompt and effective health services, developing sound health policies and programs, and making informed decisions for setting the public health agenda. Unfortunately, existing HISs at the time were mostly manual (paper-based) systems that required data aggregation at several levels of the health system, which made health data prone to delay, manipulation, and human error. Further aggravating these concerns in HIS was the fragmentation of the healthcare delivery system in the Philippines due to the devolution of healthcare from a monolithic health system into several independent health systems.

Almost 30 years after decentralization, the Department of Health (DOH) concedes, that the number one constraint to decentralization in health remains the unreliability of submitted data and information. Field Health Service Information System (FHSIS) reporting is time-consuming, bureaucratic, and mainly done for ceremonial rather than practical benefits. Since data submitted at the municipal and provincial levels are aggregates, these reports remove the human aspect of health reporting and pose problems for field validation. On average, national FHSIS data are “delayed” by at least three years thereby discounting the possibility of timely health intervention at the national and subsequently, at the local level.

Before the adoption of the Health Information System, the WAH-EHR in Tarlac,

FHSIS reports were done and delivered manually. This took a lot of time, and tremendous effort on the part of clinicians, and took away consultation time by clinicians with patients as they do their routines of health reporting.

In 2009, Wireless Access for Health was launched in the province of Tarlac to address the longstanding problems and leverage the promise of health information technologies to improve access and care for poor Filipino communities across the province. This program delivered technical assistance to help RHUs in Tarlac improve their operations and quality of care.

This project was made possible by the cooperation and collaboration of public- private partners, including the Tarlac State University, the University of the Philippines Manila-National Telehealth Center, the National Epidemiology Center, the Information Management Service, and the Center for Health Development for Region 3; Local Governments in Tarlac; Qualcomm's Wireless Reach Initiative; RTI International; Smart Communications, Inc., and the U. S Agency for International Development Organization (USAID).

The partnership was focused on what each party can do, which improved the platform's functionality and the overall collaboration amongst various but willing parties. The cooperation and collaboration is still expanding.

Now, 17 LGUs in 37 Rural Health Units from the Tarlac Province have digitized patient information and have enabled clinics and LGUs to record, transmit and analyze health records and statistics at the point of care through the WAH e-Health platform.

Finally, the WAH statistics aggregator allows for real-time monitoring of submitted monthly reports by RHUs in the province, giving decision-makers like the governor and the mayors complete access to relevant and reliable statistics for policy planning and health program implementation. With the WAH statistics aggregator, health statistics are compiled not on an annual basis or quarterly (as in the FHSIS), but every month.

While computerization has been applied by the partner LGUs, the needs of end- users, program managers, and policymakers continue to develop. Operational gaps, policy, and

infrastructure are encountered that hamper the effective utilization of the system. Further, scrupulous research studies need to be done to evaluate WAH's effects on public health.

And, with almost a decade of exposure in the field of Health Information Systems as a Supervising Partner for Health Programs, the researcher's role is deemed important in the study. The researcher is involved in facilitating the training and capacity-building activities of the end users, developing and implementing innovative practices in the effective use of digital health technology, and taking the lead in the training and monitoring of Health Care Institutions (HCI). It is also their responsibility to work closely with LGUs and other partner organizations to achieve full usability of digital health data leading to better health governance and management and providing supportive supervision to the LGUs in monitoring compliance and performance of WAH facilities and management of the administration which entails the researcher to also partake in the management of the specific processes and procedures thereby facing challenges and hurdles in the sustenance of quality of care.

Thus, the study undertaken has provided an ample amount of information and data on the compliance of the Wireless Access for Health System in the Province of Tarlac with the primary purpose of shedding enlightenment and support to ventures seeking the urgency to achieve universal health care.

**Statement of the Problem**

This study aimed to evaluate the compliance on the Wireless Access for Health System among Partner Local Government Units in the Province of Tarlac.

In particular, the research sought to answer the following questions:

1. How is the compliance on Wireless Access for Health (WAH) System among Partner Local Government Units in the Province of Tarlac be described and evaluated in terms of:

    1.1 Electronic Medical Record Usage

    1.2 DOH and PhilHealth Standards

    1.3 National Privacy Commission Standards

1.4 Technical Audit

1.5 Reports Submission

2. What are the problems encountered by Partner Local Government Units in compliance with the utilization of the WAH Health Information System?
3. What measures can be proposed to enhance the compliance of the Wireless Access For Health System among Partner Local Government Units in the Province of Tarlac?
4. What are the implications of the study for Public Administration?

**Significance of the Study**

This study focused on the evaluation of the compliance on the Wireless Access for Health System among Partner Local Government Units in the Province of Tarlac. After the evaluation, the study has served as a basis for the concerned parties and will be propitious to the following:

**To the Department of Health (DOH)**, this study may be useful in providing statistics on how partner LGUs are performing in terms of compliance with the standard requirements and FHSIS reports to effectively deliver basic services to the citizenry. The agency can help develop policies and programs that enhance social health outcomes to achieve the goal of universal health care for all Filipinos.

**To Philippine Health Insurance Corporation (PhilHealth),** this study may be useful in monitoring the partner LGU's compliance with the system requirement which will help facilities' profiling, recording, and reporting processes easier and more efficient.

With the Universal Health Care Act, PhilHealth now aims at lessening the burden of health care cost among the poor by reducing claims submission expenses by up to 50%. The current study provided a better understanding on how the Health Care Institutions utilized the eClaims Module in the WAH system.

**To the Provincial Government of Tarlac (PGT),** this study may serve as a basis for

what assistance the government can offer and allocate resources to help LGUs perform better. This study can be used as a basis in the extension of financial services for underserved rural communities.

**To the Partner Local Government Units (LGU),** this study may track and assess the overall outcome of implementing a health information system in the LGU and take a closer look at the experiences that were able to reap the benefits of health devolution to analyze the performance and standing of their compliance on the utilization of HIS. This study can help highlight the role of Local Government Units in assisting Rural Health Units to improve the health and wellbeing of their constituents.

**To the Wireless Access for Health (WAH) and the Provincial Health Office (PHO)**, this study may give additional interventions and recommendations that may serve as a guide to better prepare and assists the partner LGUs to effectively utilize the WAH system and achieve the full automation of their health reporting systems. Through this study, they can develop strategies and approaches that help them assist their partners HCIs and expand the utilization of WAH system in the Tarlac Province.

**To the Students,** the researcher strives to provide sufficient information and background on how Health Information System plays an important role in the healthcare setting.

**To future researchers who will explore the same concern and interest**, this study may help contribute to the field of Public Health Management and shall serve as a reference, source of information, and citation as related research.

**Scope and Delimitation**

The study evaluated the compliance on the Wireless Access for Health System of the participating Partner LGUs in Tarlac Province in terms of EMR usage, compliance with the DOH, PhilHealth, and NPC standards, Technical Audit, and Reports Submission. The study

involved all WAH Partner LGUs as endorsed by the Health Program Team of Wireless Access for Health. Specifically, it should only involve the 16 Municipalities and 1 component City of the Province. The study involved a total of two hundred thirty-five participants coming from the Municipality of Anao, Bamban, Capas, Concepcion, Gerona, La Paz, Mayantoc, Moncada, Paniqui, Pura, Ramos, San Clemente, San Jose, San Manuel, Santa Ignacia, and Victoria, and Tarlac City.

This study did not cover the non-WAH site specifically the Municipality of Camiling. The Municipality of Camiling has implemented the WAH platform back in 2013 but has decided to shift from another EMR provider in 2016 due to lack of budget for the annual subscription fee. The LGU partnered with iClinicsys a DOH empowered system.

Furthermore, the study covered the years 2020 to 2022. Areas of concern and gaps that were identified were addressed, as well as the recommendations to effectively utilized the overall usage of the system. Moreover, the difficulties that municipalities faced in utilizing the system were evaluated. Considering the data collected within the localities of the participating municipalities. So as the preventive measures thereof.

Documentary analysis was used to answer the first question stated in the Statement of the Problem in evaluating the compliance on Wireless Access for Health (WAH) System among Partner Local Government Units in the Province of Tarlac. The documentary analysis likely helped to identify the current state of compliance with the WAH System among these LGUs and may have provided insights into the factors that affect compliance or non-compliance.

**Literature Review and Related Studies**

This chapter presents a review of related literature and studies, which served as a frame of reference for this study. Readings on research reports and publications relevant to this study were summarized and used as the basis for the conceptual framework for the study. The researcher made use of available resources, books, journals, magazines, theses, and other printed materials.

***Electronic Medical Record Usage and Implementation***

Health Information Systems help healthcare organizations analyze data, knowledge, and information to support effective, high-quality patient care. Since the HIS is viewed as a component of the entire health system, its proper operation is essential to providing quality care and being compensated for that care (Tummers, 2021).

Doctors, nurses, and health care administrators with access to patient and population health data can make critical decisions regarding patient treatment that could mean the world to their patients. Health information systems, which smoothly and intelligently combine health care with information technology, are essential for getting health data into the correct hands as soon as possible.

Systems for tracking health information assist health workers in ensuring better patient outcomes. One of the main goals of a health information system is to assist organizations in gathering, analyzing, and applying data like the number of surgeries performed, the number of consultations catered, the average length of hospital stays, changes in patient health, insurance claims, and billing, the price of providing patient care, and other factors. Patient records that are simple to transfer guarantee that every physician has access to the same fundamental knowledge, facilitating seamless collaborative patient care (Online Master of Health Administration, 2020).

The study of Hubaish (2022) emphasized the significance of the use of health information systems (HIS) in decision-making. The objective of the study recognized the elements of computerized HIS and how they relate to managerial decisions. As it works to store and recover information quickly at all administrative levels, medical information plays a significant role in enhancing health care. The technicians and administrators will

be better able to make informed decisions if they have corrected information about the patients, their health status, and the results of all administrative procedures. Many academics define HIS as a system made up of physical, technical, human, and organizational elements that collaborate to process data before broadcasting and retrieving it.

The cited study above is related to the current study because it also assessed the decision making of the concerned personnel through their submitted monthly report. With electronic and digital encoding encryption, patient records are more secure while also providing afforded accessibility to authorized RHU personnel. Finally, since electronic reports can be aggregated and disaggregated, health managers and decision-makers alike can track up-to-date health indicators and do timely health interventions like logistics and personnel planning, drug purchases, etc.

The care of patients and the professional lives of family physicians have both benefited from the use of electronic medical records (EMRs). Through improved management, a decrease in medication errors, a decrease in pointless investigations, and improved communication and interactions between primary care providers, patients, and other providers involved in care, electronic medical records improve the quality of care, patient outcomes, and safety. Point-of-care data are recorded in electronic medical records, and these data are used to guide practice improvement initiatives, practice-level interventions, and enlightening studies (Manca, 2015).

Electronic health record (EHR) system adoption and use are moving forward quickly, which is generating enormous amounts of data from ordinary healthcare delivery. Numerous variables, including physicians' choices of diagnostic procedures and treatments

as well as the workflows and regulations of payer and provider organizations, have an impact on the recording process. These are dynamic in that they change over time because of changing population demographics, changing demand for care, and changing standards of care (BMJ, 2018).

Implementing electronic Health Information Systems has been viewed as a challenging and complex procedure. To support the planning, improvement, and decision-making processes of the numerous players involved in related processes, HIS is intended to produce and organize information and knowledge generated and used in the healthcare sector (Lippeveld, Sauerborn & Bodart, 2000).

The foundation for decision-making in the healthcare industry is accurate and trustworthy health information and data, which are also essential for the development and implementation of health system policy by decision-makers. To efficiently use the resources for the improvement of mother and child health, strict monitoring and assessment of the current program design and its implementation are needed at the micro level (Chowdhury, 2017).

In the main medical institutions, the public health information management system is particularly important. It addresses the issues with traditional paper records, including their storage, verification of quantity and quality, repeated service by different agencies, loss of records due to resident movement, waste of paper and waste of paper records, limited information exchange due to time and space constraints, and difficulty in business sharing. It does not only result in increased productivity and decreased doctor workload, but it also raises patient health awareness and lowers the need for hospitalization (Yan, Li, Yanbo, 2020).

EMR implementation is a slow, difficult procedure that must take into account the time required for staff to comprehend the entire information system. The qualities of doctors and patients have a direct impact on the outcomes, while healthcare quality is the consequence of a mix of structures, processes, and outcomes. To lessen the workload on doctors and nurses and maintain efficiency, the right training is required (Lin, 2020).

Health Information Systems have also increased the capacity for pandemic prevention and control, given complete information technology support, and increased the accessibility and effectiveness of healthcare delivery (Ye, 2021).

This study of Alshamari (2016) focused on Saudi Arabia and examined the existing HIS-related difficulties. Patient safety is greatly impacted by the usability of health information systems. It can raise a system's effectiveness and efficiency. A functional system can greatly assist practitioners in giving their patients more time to develop. The top usability considerations that should be taken into account when building and implementing HIS were identified as privacy and mistakes. Response speed and accessibility were listed as other crucial considerations that should be carefully taken into account.

The cited study above is comparable to the related study because it also assessed the different factors that hinders the effective use of the WAH platform. The study assessed the different indicators that the facilities are facing and were given different recommendations to be able to improve and continue the digitization of process.

Technology is advancing quickly, and stakeholders in the healthcare sector are constantly investigating how to best use it to improve healthcare deficiencies. This problem coexists with the demand for healthcare services, which has been gradually rising due to

population expansion worldwide, longer life expectancies, and more complex health issues, as well as an increased focus on delivering higher-quality care.

Electronic Health Record (EHR) system deployment has emerged as one of the most widely used strategies to advance healthcare delivery, address problems, and serve as the foundation of any e-health system. Electronic health records (EHRs) are described as "a repository of patient data in digital form, maintained and exchanged securely, and accessible by numerous authorized users. Its main objective is to promote continuous, effective, and high-quality integrated health, and it contains retrospective, contemporary, and prospective information (Alsadi, 2019).

The caliber of clinical and managerial decisions and practices is significantly influenced by the caliber of the health information that is provided. With the huge number and variety of health data and information, HITs assist healthcare management and providers in handling health information effectively (Alollayan, 2020).

According to the study of Ceken (2014), systems for managing healthcare information are essential to improving healthcare coordination. They put a lot of emphasis on how health data should be generated, transmitted, stored, and retrieved. It goes without saying that the foundation of wise decision-making is the creation of accurate, pertinent, and timely health information.

The present study is similar to the study of Ceken because it also emphasizes how the yearly accomplishment of the Local Government Units helps improve the decision making based on the data generated in the WAH platform and how to address them. Compliance on the report's submission is required in the WAH to be able to generate accurate, pertinent and timely health information.

At the regional and federal levels, eHealth is built on health information systems. They offer the electronic upkeep of conventional medical records in hospitals and outpatient clinics. The health status of people with specific diseases is also being monitored by specialist registries. Nevertheless, it is no longer advisable to create registers as independent information systems, although this still happens today, as the relevant data may be found in the electronic healthcare record or electronic medical record. Specialized registers are implemented here as temporary or permanent virtual systems. In terms of patient registers, they combine information from patients' or their families' records with data from electronic medical records (Kobrinskii, 2019).

Databases are necessary to store, process, and share data gathered on daily activities, which inevitably leads to the computerization of patient records. In the 1990s, the electronic medical record was developed with the intention of raising the standard of treatment. Computing is at the core of modern medicine, which depends on information sharing between participants in the health system and the patient in order to coordinate and maintain continuity of care. Computing is not simply a helpful tool for healthcare professionals. Nearly all hospitals in developed nations have electronic databases that contain information on all inpatients and outpatients, including names, addresses, diagnoses, and treatments. After receiving approval from a hospital's ethical committee, researchers can access these databases to find participants for a study (Kane, 2019).

A crucial piece of technology for raising the standard of treatment is the electronic medical record. It could provide valuable information, improve the quality of care and increase patient satisfaction (Ghanbari, 2015).

Technology is advancing quickly, and stakeholders in the healthcare sector are constantly investigating how to best use it to improve healthcare deficiencies. This problem coexists with the demand for healthcare services, which has been gradually rising due to population expansion worldwide, longer life expectancies, and more complex health issues, as well as an increased focus on delivering higher-quality care. Electronic Health Record (EHR) system deployment has emerged as one of the most widely used strategies to advance healthcare delivery, address problems, and serve as the foundation of any e-health system. Electronic health records (EHRs) are described as "a repository of patient data in digital form, maintained and exchanged securely, and accessible by numerous authorized users. Its main objective is to promote continuous, effective, and high-quality integrated health, and it contains retrospective, contemporary, and prospective information (Alsadi, 2019).

The Philippines continues to have a significant demand for the EMR system from both local governments and healthcare professionals. At all levels of the health care system, effective patient care delivery requires accurate information. Healthcare professionals can give patients more effective, efficient, and complete care when they have access to patient-level information. The use of EMRs can increase the time spent by health workers on consultation thereby helping improve patient care, can improve access to higher quality health data, and can facilitate data analysis and utilization by health workers and local chief executives, thereby helping promote health policy planning and timely health intervention.

***Health Information System Standards***

The quality of a health information system refers to how well it meets internal and external standard requirements as well as the end user's expectations. As technology and informatics have advanced, health practitioners can now work with and send massive volumes of data and information.

One way to describe the Philippines' efforts to meet interoperability and standards in eHealth goals is as a work in progress. As eHealth is a complicated undertaking that encompasses a wide range of topics, it is expected that the public and private sectors, as well as physicians, patients, and other stakeholders, would work together and consistently build a shared vision (Sylim 2022).

Information can be shared between systems to support ongoing medical care. Insufficient data flow between these systems is caused by their lack of integration. Systems that are networked, offering services to customers, resulting in continuous workflow and integrated information flow, and facilitating healthcare decision-making are the goal of integrated HISs. Most people agree that integrated HISs offer greater performance in terms of quality and safety. Information systems lower expenses, give quick and easy access to healthcare services, and span multiple geographic zones. Additionally, information systems could be used to promote health (Iran J. Public Health, 2016).

In terms of creating and utilizing high-quality data to support a digital transformation in healthcare, the health industry lags behind other sectors. Even the very enormous and varied volumes of "Big Data" that the industry today creates may be synchronized, shared, accessed, and used. A successful digital transformation is possible with integrated information systems, the right knowledge and attitudes, ethical

frameworks, and involved stakeholders. However, without a fundamental revision to the institutional and policy frameworks in place that guide the behavior of the health system, the development will continue to be sluggish (Colombo, Oderkirk, 2020).

The study of Tamsaco and Marquez (2022) has evaluated the standard quality of a Health Information System and showed that a number of social and technical barriers prevent HIS quality goals from being successfully met. More specifically, HIS quality assessment provides a way to gauge the effects of modifications to clinical procedures that are incorporated into systems. These components work together to process data and information using both manual and automatic procedures in order to distribute it inside a certain organization or entity according to its goals.

The study cited above was comparable to the present study because it also evaluated Health Information System standards and how the Local Government Units comply with the set of characteristics and attributes that define and govern the usefulness and existence of information systems as to their quality.

***National Privacy Commission Standards***

Data privacy standards provide the client with the confidence that their information is secure. It provides consumers with a guarantee that their data will always be safe from risks and vulnerabilities such as illegal access, processing, sharing, and disclosure. Privacy, security, and confidentiality are major concerns that must be addressed in electronic medical record systems. Although they have a close relationship, security and privacy are actually rather different. While security is defined as the level at which access to someone's personal information is restricted and allowed for those who are authorized only, privacy

refers to the right that someone has to decide for themselves when, how, and the extent to which personal information is transferred or shared by others.

When sensitive health information is transferred or shared without authorization, a data breach may result. The unavoidable systemic identification that occurs throughout the entire electronic health infrastructure and via centralized databases are two more ways that privacy might be violated (Sittig, 2015).

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Securing vast quantities of electronic medical records kept in many formats and locations while ensuring availability to authorized users is seen to be a difficult task. A major driving force behind the creation of security rules is the maintenance of personal information protection and privacy. For healthcare companies to address the issue and create the appropriate rules to protect the security of medical information, it is essential that they access, analyze, and ensure security policies. Therefore, the issue is how to ensure patient data privacy while yet maintaining the accessibility of electronic medical records (Bensefia, 2014).

Government must assist the health technology sector in creating and evaluating secure, adaptable, and open telehealth systems. To guarantee that telehealth solutions are fully accessible, that data is kept private and safe, and that solutions are user-friendly, adaptable, and suited to organizational needs, healthcare organizations must collaborate with professionals and patients (Marc, 2021).

***Technical Audit***

Digital transformation is costly, rarely goes smoothly, and frequently results in higher expenditures than expected. It might be difficult to show how investments in digital health help to achieve healthcare goals like population health and workforce sustainability (Nguyen, 2022).

The use of technology in healthcare, in the form of electronic health records (EHR), is the most crucial and essential issue to address in order to improve the quality of care. Studies have shown that this is because EHRs provide access to clinical data and records, electronic communications, comprehensive training and management, and an accurate representation of patients' conditions (Farzianpour, 2015).

The socio-technical structure of EHR systems restricts the capacity to undertake accurate, repeatable, objective usability metrics. They are frequently extremely adjustable, and different service providers will put them into use using distinctly diverse methods and techniques. Completion rate (or error rate), time on task, and subjective user satisfaction are examples of typical usability metrics. These metrics require multiple measures or a composite score to be useful to developers and users. Many effects of health IT can be considered "emergent" or only discovered after monitoring a system in use (Middleton, 2013).

As to the study by Macabasag and Mallari (2022), the necessity for the quick adoption of technology can handle the ongoing and changing needs of the health industry. However, a mutual alignment between technology and local context is required for technologies to work in local health contexts. Despite the fact that there is literature on the adoption of health technology, few studies have looked at how human and non-human actors adopt the technology.

The current study is similar with the study of Macabasag and Mallari because it assessed how healthcare practitioners dealt with the many and competing motions of human and non-human entities throughout the adoption of health technology using the mobilities lens.

According to the World Health Organization (WHO), the application of information and communication in healthcare technology (ICT) for health; E-Health, taken in its broadest sense is involved with enhancing information flow through using technological methods to assist in the provision of health care and the administration of healthcare systems.

The national initiative to institutionalize eHealth is still essential to the country's ability to maintain it. A system and structure for electronic health care in which the various parts are interconnected.

The Philippine healthcare system works tirelessly to offer each and every Filipino high-quality medical care. Technology is crucial to this journey because it opens the door for industry players to innovate and adapt to the changing needs of healthcare. The digitalization of patients' medical records is at the heart of this technological revolution in healthcare.

***Reports and Data***

To improve service quality and fulfill reporting obligations, primary care practices must make an excessive amount of effort to extract meaningful data from their EHRs. It has been challenging for practices and cooperatives to produce timely and useful data for quality measurement and improvement despite the significant national investment in health IT and significant time and expertise investments by these entities (Cohen, 2017).

A relevant finding in the study of Siyam (2021) who conducted an empirical study on the burden of recording and reporting health data in primary health care. Among the experience in the registration areas, patient registration may take as much as one-third of consultation time, and completing monthly reporting forms can take up to two working days per health worker. Data is first collected in the registration to record patient health data and care process and tallied into nationally designed reporting forms. While there is anecdotal evidence of large numbers of registers and reporting forms for primary health care facilities, there are few systematic studies to document this potential burden on health workers. This should lead to greater efficiency and rationalization of data collection and reporting, which is likely to further improve data quality and greater use of data for decision-making at all levels of the health system.

The study cited above has similarities when it comes to the utilization of the WAH Platform, the health care workers practiced the data input and can generate standard reports from the Department of Health. Reports Submission compliance of the LGUs is being evaluated in this study.

There is a possibility for a rapid shift from paper-based to electronic data collection which other countries can achieve with an equitable pace and sustainable success.

However, electronic systems do not necessarily reduce the burden of recording. The results of their study show that electronic systems did not necessarily involve real-time data entry by health workers, rather than provider-patient consultations were still paper-based, and later the health worker or clerk enters the information into the computer.

***Problems Encountered to Effective EHR Implementation***

One significant and evident advantage of using EMR is legibility. In the past, illegible handwriting has been a major contributor to pharmaceutical errors; according to one source, more than 60% of these mistakes occur in hospitals. Through patient portals, patients can read, print, and share their health information with clinicians from their own EHRs. This gives patients the ability to act as their own advocates. Electronic health information exchanges are currently available as directed exchanges, query-based exchanges, and consumer-mediated exchanges. This provides providers with crucial information about a patient's medical history, past and present medications, allergies, family history, and any other relevant information that may be required to correctly diagnose and treat a patient. In the end, the EHR provides healthcare professionals with comprehensive data that can direct them toward more precise, dependable diagnoses. Facilities must incorporate clinical and informatics nurses early in the process, thoroughly educating them for the move without overwhelming them with knowledge, in order to increase nursing satisfaction with EHRs. Staff should get training prior to implementation and ongoing support after the EHR is in place (Hoover, 2017).

EMR is regarded as having the potential to be one of the forces transforming healthcare. From the perspective of patient care, EMR is anticipated to increase information accuracy, support clinical decision-making, and enhance information

accessibility for continuity of care. From a functional perspective, EMR should produce vital health statistics essential to the planning and management of healthcare services. To facilitate interoperability and portability horizontally and vertically across the referral chain, the ideal EMR should be on a single platform across the country. The main criticism of EMR is that it has replaced the essential doctor-patient relationship, which is the very soul of medicine, with a new check box-based doctor-computer-patient interaction, undermining customized face-to-face patient care. EMR was never intended to support a personalized human story, rational thought, and experience-based clinical analysis. The foundation of a traditional doctor-patient relationship is clinical reasoning, so a medical record—whether paper or digital—must preserve the information that the physician carefully and thoughtfully elicits from the patient in a form that, above all, facilitates clinical reasoning. EMR providers need to learn more about how doctors practice and develop the software to fix actual practice difficulties rather than create a solution in search of a problem and to satisfy the demands of the doctors who will use it (Opthalmol, 2020).

Paper records are difficult to read, simple to misplace, and rarely complete. In contrast, instantaneous, trustworthy, and readable access to the patient's medical history may be possible with electronic health records. Along with these much-needed upgrades, the EHR has made it possible for additional features that were not possible with paper records. New care models are made possible by EHRs, such as team-based care, where members of the care team can contribute to the clinical documentation from various locations and at various times. With paper-based records, this feature would have been much more difficult, if not impossible, as team members would not have been able to see

the same information, communicate asynchronously, or participate in generating care plans while being spread out in space and time (Graber, 2017).

A healthcare worker's ability to deliver individualized treatment to a client is supported by an electronic health information system (EHIS), which also makes it possible for service providers to share data. Due to the sheer amount of patient data and the necessity of keeping patients in care, there is now a much greater need to investigate the use of EHIS for the diagnosis and management of both communicable and non-communicable diseases. Additionally, the emergence of the Coronavirus Disease 2019 (COVID-19) pandemic LMICs with significant disease burdens has heightened the need for a strong EHIS to enable effective pandemic surveillance (Khubone, Tlou, 2020).

Paper records are difficult to read, simple to misplace, and rarely complete. In contrast, instantaneous, trustworthy, and readable access to the patient's medical history may be possible with electronic health records. Along with these much-needed upgrades, the EHR has made it possible for additional features that were not possible with paper records. New care models are made possible by EHRs, such as team-based care, where members of the care team can contribute to the clinical documentation from various locations and at various times. With paper-based records, this feature would have been much more difficult, if not impossible, as team members would not have been able to see the same information, communicate asynchronously, or participate in generating care plans while being spread out in space and time (Graber, 2017).

Various systems, ranging from straightforward charting to more sophisticated decision assistance and integration with medical equipment, are included in health information technology. Numerous prospects for enhancing and revolutionizing healthcare

are presented by health information technology, including lowering human error rates, enhancing clinical outcomes, facilitating care coordination, increasing practice effectiveness, and tracking data over time. There has been rapid advancement and uptake of health information technology and there is now a range of evidence about how this technology affects patient safety (Alotaibi, Federico, 2017).

The study of Deriel (2017) assessed the success factors for implementing and sustaining a mature electronic medical record in a low-resource setting in Haiti. In the study, it was discovered that electronic health information systems, including electronic medical records (EMRs), can improve access to information and quality of care, among other things. The success factors and challenges for EMR implementations in low-resource settings have identified seven categories such as ethical-for regulatory and cultural issues, concerns of privacy/security; financial- for resources including human and funding, including the need for efficiency; Functionality- system features, and functions, including data handling, reports; Organizational- managerial circumstances within the organization itself, including human resources/skilled staff/local buy-in, leadership and governance, project management and commitment to implementation, data use; Political- health policies and country-wide circumstances, including health care infrastructure, characteristics, such as trust and willingness to change; Technical- infrastructure, software architecture, data standards, privacy/security; and Training- skills training as well as computer literacy and educational background, ongoing user support.

The study conducted by Deriel was similar to the present study simply because both of the studies primarily focus on the evaluation of the implementation and utilization of the Health Information System. However, the previous study emphases primarily the success

factors and challenges for EMR implementations in low-resource settings, wherein the comparison of factors for low-resource and high-resource settings are identified, while the present study will be focusing on the evaluation of utilization of HIS in the Province of Tarlac which makes the study unique and different at the same time, the study would be conducted in the year 2021 among local government units in the Province of Tarlac.

Today's global health priorities rely on health information systems that support the collection, maintenance, and accessibility of patient data over time. The overall evaluation and suggestion to effectively utilized the use of the Health Information System are ways to refine the identified categories of success for EMR implementation, making them more relevant for national and sustainable long-term implementations.

As to the study of Cresswell, Bates, and Sheikh (2013), the reality is, however, that these technologies may prove frustrating for frontline clinicians and organizations as the systems may not fit their usual workflows and the anticipated individual and organizational benefits take time to materialize. They mentioned different factors associated with an effective implementation like Technical-usability, system performance, integration and interoperability, stability and reliability, adaptability and flexibility, cost, accessibility and adaptability of hardware; Social: attitudes and concerns, resistance and workarounds, expectations, benefits/values and motivations, engagement and user input in design, training, and support, champions, integration with existing work practices; Organizational-getting the organization ready for change, planning, leadership, and management, realistic expectations, user ownership, teamwork, and communication, learning, and evaluation; and Wider socio-political: other healthcare organizations, industry, policy, professional groups, independent bodies, the wider economic environment, international developments.

The study mentioned above is similar to the study because it also cited the failures in the implementation and utilization of a HIS. Problems were also mentioned like rejections by users, bandwidth undermining system performance, user feedback, and tracking system performance. Careful planning and ongoing, critical evaluation of progress are central to the successful implementation of major health information systems. Taking a lifecycle perspective on the implementation of technological systems will help organizations to avoid some of the all too commonly encountered pitfalls and improve the likelihood of successful implementation and adoption.

The study of Caban and Wald (2020), identified the opportunities to advance the use of Information Technology for health services to develop a relevant policy and development agenda.

The availability of health data in electronic form has increased as a result of hospitals and healthcare professionals using electronic health records (EHR) and health information technology (IT) systems more frequently. Using health data gathered in EHRs and other types of health IT, there is a growing need to understand more about diseases, safety, inequities, therapies, and how care is provided. However, due to restricted access, poor data quality, and inconsistent data collection, using health IT data for research is currently difficult. To employ health IT and health IT data in research effectively, these issues must be addressed broadly.

For a health information system to be used effectively and to increase the output of medical professionals, it must be evaluated. The study of Hussain and Sohaib (2021) discovered numerous issues and obstacles crop up at every stage, from planning to implementing, monitoring to quality assurance, which results to poor deployment and

utilization. Some of these include poor planning and financing, resource mismanagement, inadequate monitoring and supervision, skill development issues, poor data quality, and a lack of dedication and leadership. The major "actors" in the implementation phase are the healthcare professionals, whose dedication to and knowledge of the new system are essential to its success. The main potential obstacles that healthcare workers may encounter when utilizing the HMIS are the high initial cost and uncertain financial benefits, high initial physician time costs because of laborious and complicated technology, challenging complementary changes and insufficient support, insufficient electronic data exchange, lack of incentives, and physicians' resistance to change.

Many healthcare professionals believe that Health Information Technology can reduce medical errors, according to El-Kareh et al. (2013).

In the same way that Information technology effectively reduces human errors in the banking and aviation industries (Turan and Palvia, 2014), Health Information technology also reduces medical errors (Balicer and Cohen-Stavi, 2020; El-Kareh et al., 2013; Rodziewicz and Hipskind, 2019).

Medical errors that arise from a lack of understanding about things like allergies, pertinent drug and laboratory information, past medical histories, and poor provider communication will be reduced if electronic access is provided to complete a patient's health information (Risko et al., 2014; Rodziewicz and Hipskind, 2019; Wears, 2015).

On the other hand, the study of Topaz, Ronquillo, Peltonen, et al, (2016) assessed the satisfaction of nurses and the problems encountered with the use of EHRs. The rising adoption of EHRs by healthcare practitioners has been followed by a greater understanding of the significance of usability and other system issues. The potential advantages of this

technology in assisting with patient care and clinical documentation were identified by a systematic review of empirical studies of EHRs.

However, in order to experience these advantages, implementation, adoption, and satisfaction issues with EHRs must be resolved. The American Medical Association's 2014 appeal for remedies to badly designed EHRs is an example of the far-reaching negative effects of poor system usability. Physicians' discontent and dissatisfaction with the usability of EHRs, as well as their opinions of EHRs evolved negatively after 2010.

More than half of the comments pointed out system-level problems (such as poor system usability, a lack of integrated systems and poor interoperability, a lack of standards and standardization, and limited functionality/missing components), which were then followed by user-task problems (such as the fact that systems don't meet nursing's clinical needs and aren't nursing-specific) and environmental problems (such as the low prevalence of EHR systems and a lack of EHR systems in general) and problems with the environment of user education).

The scaling up and full adoption of electronic medical record (EMR) systems were strategically planned and supposed to be finished in 2020 as part of enhancing eHealth in the Philippines to support the universal health care (UHC) law. The study written by Claro, Estuar, et al, (2021) assessed the status of EMR adoption of primary clinics in Rural Health Units and recognize the usage frequency, especially during the pandemic.

The study observed that RHUs used EMR in a variety of ways, with significantly low and high utilization both during and after work hours. The findings point to a possibly uneven level of EMR usage at the primary care level, which may affect the ability to support the full implementation of the UHC law.

According to Lu and Marcelo (2021), the application of eHealth eliminates geographical restrictions, time restraints, a shortage of medical experts, and poor service delivery.

The study examined the eHealth challenges in Southeast Asia. The most crucial issue in Southeast Asia is the difficulty in providing healthcare in "reaching the unreached" population, given the significant disparities that are now occurring concerning healthcare services accessibility.

In the study of Ebardo and Celis (2019), the barriers encountered by healthcare workers in adopting EMR were investigated and enumerated in three categories. Complexity, a lack of infrastructure, and bad interface design are all examples of technological hurdles. User reluctance and a lack of suitable skills are organizational impediments. Environmental obstacles include difficulties complying with regulations and inadequate orientation in medical schools.

The study is comparable to the present study, in order to overcome these obstacles, productive collaboration among the stakeholders in the healthcare business to profit from electronic medical records in the service of long-term health should be addressed. Delivery of services needs to be encouraged.

In the study of Sylim (2022), the best way to describe the Philippines' efforts to meet interoperability and standards in eHealth goals is as a work in progress. As eHealth is a complicated undertaking that encompasses a wide range of topics, it is expected that the public and private sectors, as well as physicians, patients, and other stakeholders, would work together and consistently build a shared vision.

The study by Pulmano (2016) identified the feasibility of integrating an intelligent agent within EMRs for automatic diagnosis prediction based on unstructured clinical notes. He cited that the use of Electronic Medical Records (EMR) is necessary to address the need for efficient delivery of services and informed decision-making, especially at the local level where health facilities and practitioners may be lacking.

According to Esparagoza (2020), every doctor strives to provide their patients with quality healthcare, which is also the Philippine healthcare system's objective. Over time, as a result of various challenges encountered in the Philippine health issues such the poverty-related diseases that spread quickly and the disparity in health outcomes of information systems, the improvement of the national and local health systems, and the problems through the involvement of health equity, the Philippine healthcare system has improved various policies and changes.

The scaling up and full adoption of the electronic medical record (EMR) systems were strategically planned and supposed to be finished in 2020 as part of enhancing eHealth in the Philippines to support the universal health care (UHC) law. However, the Covid-19 epidemic delayed these strengthening initiatives.

The study of Bayani and Tan has observed that the existing resources were used to carry out COVID19-related duties, which interfered with existing record-keeping and surveillance mechanisms. Through referral systems and the implementation of telemedicine services, local health systems strengthened gatekeeping mechanisms for secondary and tertiary care, thereby reducing the need for face-to-face consultation.

The Philippines' health system has had varying effects depending on the municipal income level and terrain, which has been a result of long-standing signs of unequal resource distribution.

**Conceptual Framework**

The acceptance of health information systems is seen worldwide as one method to mitigate the widening of healthcare and supply inconsistencies.

Healthcare facilities are constantly seeking new ways to improve patient outcomes and create an efficient way to make the process seamless. Health information systems such as electronic records are transforming the way healthcare facilities operate by storing all patient records and tests centrally providing instant access for medical staff and improving doctor-patient interactions.

As the highlight of this framework encompasses the topic which pertains to compliance with the utilization of the WAH Health Information System in the respective municipalities within the Province of Tarlac. Thus, a description and evaluation of how the participating LGUs in the Province of Tarlac performed in this research were thoroughly classified based on the WAH Digital Health Scorecards. Evaluation of the compliance with Electronic Medical Record usage, policy standards of the DOH, PhilHealth, and NPC, technical audit of hardware, and monthly report submission was main focus of the study. Hence, this research also addressed the problems that were encountered by the respondents that hinder the compliance with the effective utilization of the system to attain the full digitalization process in the facility.

The data gathered in this study served as the basis for recommendations in mitigating the concerns of the LGUs in the province of Tarlac and helping them prepare to

meet the health digitalization requirements of RA 11223. Furthermore, it also identified the implications on Public Administration as it proposes applicable measures in improving quality health care and safety.

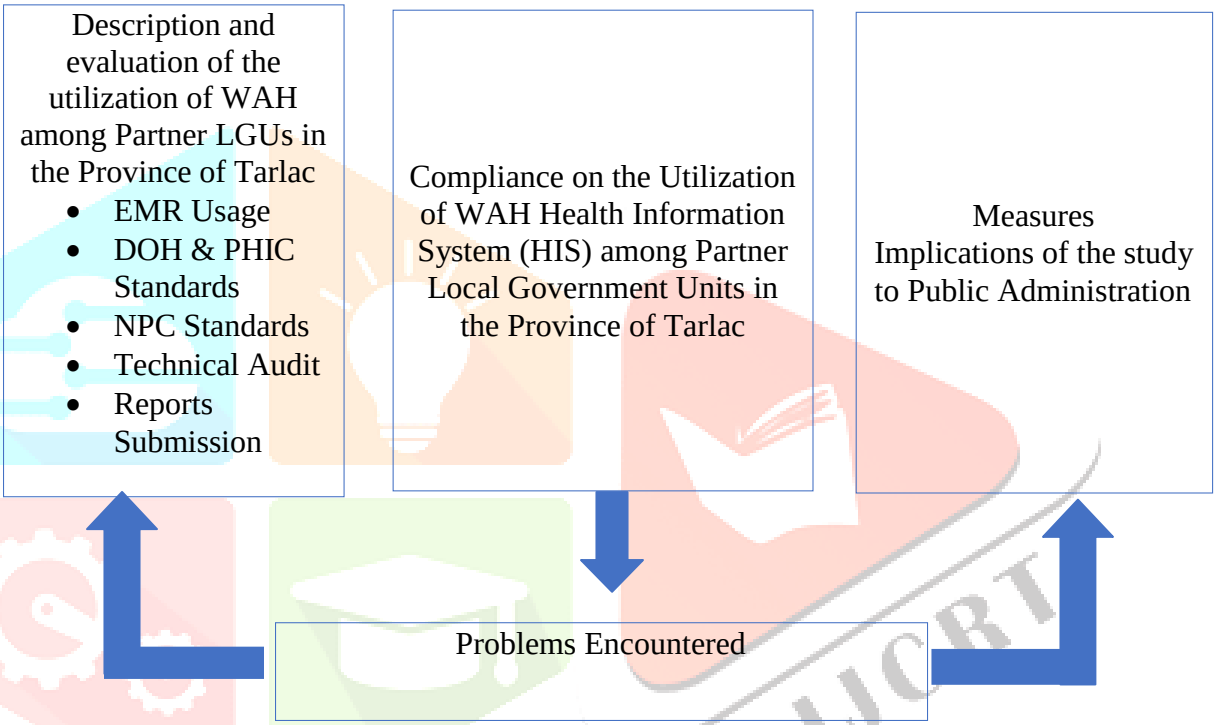


**Figure 1: Paradigm of the Study**

## Chapter 2

## METHODOLOGY

This chapter presents the methods upon collected data and the processes of its interpretation relevant to the completion of the study. It is divided into four components: Research Locale, Data Collection Methods, Research Tools or Instruments, and Statistical Treatment required for data collection.

### Research Design

The researcher evaluated the utilization of the WAH Health Information System in the Province of Tarlac; hence, it used the Quantitative Descriptive Study. This is possible through the collection of data through a questionnaire and with the corresponding annual scorecards that is provided by WAH.

The current study benefitted from a descriptive investigation since it analyzed the frequency of perceived benefits and challenges among the Local Government Units in the Province of Tarlac, as well as how these events manifested themselves as they utilized the use of the system.

The research also validated that most of the Local Government Units in the Province of Tarlac complied with the digitization of the process and are utilizing the system. Identifying the issues that hinder effective utilization among contributing local government offices in Tarlac Province were also tackled. In addition to the survey, a semi-structured interview was conducted to support the qualitative data for its analysis.

## Locale of the Study

The research was conducted in the Province of Tarlac. Tarlac is a Philippine province located in the Central Luzon region. The province is divided into 17 municipalities as well as one component city, Tarlac City, which serves as the province's capital.

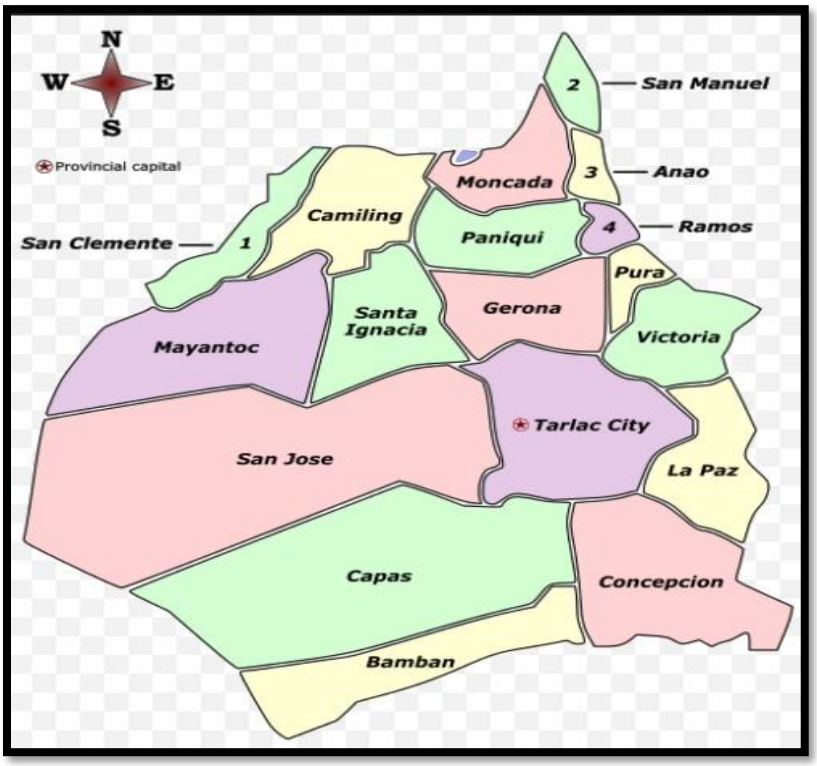


**Figure 2. Map, Province of Tarlac**

## Sampling Design

The researcher used the purposive sampling technique which involves examining the entire population that has a particular set of characteristics (Laerd dissertation, 2018). Patients, health workers, and individuals involved in the use of the WAH Health Information System were the respondents in this case.

**Respondents of the Study**

The respondents of the study were the health workers in the Rural Health Units with a total of two hundred thirty-five (235) respondents. The respondents were combinations of doctors, nurses, midwives, and barangay health workers who are directly involved in the utilization of the Health Information System. They were asked to participate in the survey. They were the primary sources of information for the research's data requests.

The Cochran sampling formula was used in this study to ensure that the sample size is appropriate for the research question that is being investigated and that the results are reliable and accurate.

**Table 1**
**Respondents of the Study**

| Local Government Unit | Respondents |
|---|---|
| Anao | 2 |
| Bamban | 13 |
| Capas | 26 |
| Concepcion | 28 |
| Gerona | 16 |
| Lapaz | 11 |
| Mayantoc | 5 |
| Moncada | 10 |
| Paniqui | 17 |
| Pura | 4 |
| Ramos | 4 |
| San Clemente | 2 |
| San Jose T | 7 |
| San Manuel T | 5 |
| Santa Ignacia | 9 |
| Victoria | 12 |
| Tarlac City | 64 |
| **Total Number** | **235** |

**Data Gathering Procedure**

A letter of permission was issued to the Wireless Access for Health/Provincial Health Office in order to obtain official endorsements to conduct the study with the Tarlac Local Government Units in the Province of Tarlac. After the request to perform the study is approved, the researcher requested the three-year scorecard summary on file of the LGUs and prepared the appropriate interview guide and survey questionnaires, and letters of consent for the participants to undertake the planned study.

**WAH Scorecard**. The researcher requested the three-year scorecard summary of the Local Government Units to the Wireless Access for Health. The researcher collated the results on each indicator and evaluated the valuable insights into the strengths and weaknesses of the different LGUs.

**Questionnaire.** The researcher produced questionnaires that are based on the scorecards of Wireless Access for Health and may aid in finding a solution to the study's difficulty. The researcher presented to the respondents the questionnaire on which they wrote down and mark their responses.

**Interview.** The researcher conducted this supplemental interview to validate and support the respondents' responses and assertions in the survey questions.

**Observation.** The researcher personally observed whether digitization of the processes is being applied by municipalities and adopted by the patients.

**Data Analysis**

The researchers' collected data were tabulated and arranged into tables for creating a compelling presentation of findings. As a result, it was subjected to the following statistical treatments:

**Frequency.** The frequency of a data value in statistics is the number of occurrences of the following predetermined problems and suggestive measures that have been met by the respondents.

**Ranking.** As the data is sorted out, this tool will be used to convert numerical findings that are modified by rank.

**Percentage.** It is computed for data visualization in order to demonstrate the scope of analysis among respondents based on the calculation of their rating on the problems encountered and possible enhancement measures.

**Mean.** It is determined by dividing the sum of all observations with tbyotal number of observations.

The following formula was used in order to present the response options of the respondents and the corresponding value was assigned to get the weighted mean of each item.

The formula used was as follows:

Weighted mean = [f (3)+ f(2)+ f(1)]/N

Where 5,4,3,2,1 = corresponding value

F = frequency of each response option

N = total number of respondents

In this study, the researcher used the WAH LGU scorecard to assess the effective utilization of the WAH Health Information System of the participating municipalities in the

Province of Tarlac. The table below will be used for the summary of the Annual Digital Health Scorecard of the LGUs.

**Table 2**
**Annual Scorecard**

| ANNUAL SCORECARD | COLOR | INTERPRETATION |
|---|---|---|
| 12-10 | | Compliant |
| 9-7 | | Partially Compliant |
| 6 below | | Non-Compliant |

To determine if the LGUs are actively using the system in real-time data encoding, the scoring for this indicator is found below. This will be used for the assessment of the EMR usage of the LGUs.

**Table 3**
**EMR Usage Scorecard**

| EMR Usage | Compliant | Partially Compliant | Non-Compliant |
|---|---|---|---|
| Status | Active | Irregular | Not Active |
| Using Real Time | Real-Time Encoding | Backencoding | None Usage of the System |

To determine if the LGUs are complying with the standard legal requirement of the Department of Health and regularly filing PhilHealth Claims Reimbursement for all services provided, the scoring for this indicator is found below.

**Table 4**
**DOH and PhilHealth Compliance Scorecard**

| Department of Health and PhilHealth Standards | Compliant | Partially Compliant | Non-Compliant |
|---|---|---|---|
| MOA | With Existing MOA | Expiring in 6 months | Expired or No MOA |
| PhilHealth Accreditation | Accredited | In Process | In Process |
| eClaims Submission | >30% | <30% | Not Using |

To determine if the LGUs are complying with the National Privacy Commission Standards the scoring for this indicator is found below.

**Table 5**
**NPC Compliance Scorecard**

| National Privacy Commission Standards | Compliant | Partially Compliant | Non-Compliant |
|---|---|---|---|
| DPO, NDA, & Consent Form | Using | Partially Used | Not Using |

The scoring for Technical Audit standards is found below.

**Table 6**
**Technical Audit Compliance Scorecard**

| Technical Audit | Compliant | Partially Compliant | Non-Compliant |
|---|---|---|---|
| Server Age | 1-2 Years | 3 Years | 3 Years Above or No Server |
| Client Units | 6 or More Units | 3-5 Units | 1-2 Units |
| Internet Connectivity | 5 MBPS & Above | 4.9-2.1 MBPS | Below 2 MBPS or No Internet |

The scoring for the Reports Submission Compliance is found below.

**Table 7**
**Reports Submission Compliance Scorecard**

| Reports Submission | Compliant | Partially Compliant | Non-Compliant |
|---|---|---|---|
| Timeliness | On Time | Late | No Report |
| Completeness | All Modules | General Consultation only | No Modules used |
| Reliability | 0% Discrepancy | <30% Discrepancy | >30% Discrepancy |
| Accuracy | 0% Discrepancy | <30% Discrepancy | >30% Discrepancy |

**Ethical Consideration**

The researcher briefed and explained to the respondents the main goal of the study by means of providing a Non-Disclosure Agreement and Consent Form. Respondents can opt out of having their names and personal information published. Along with guarantees from the researcher about the respondents' safety and well-being while collecting data. Furthermore, the data that was collected was handled with the utmost discretion and confidentiality, and it will only be used for academic purposes. It is vital to take purposeful actions to protect personal information, as stated in Section 8 of the Data Privacy Act of 2012, which highlights the necessity of protecting the secrecy of personal information that always comes into its knowledge and ownership.

## Chapter 3

## PRESENTATION, ANALYSIS, AND INTERPRETATION OF DATA

This chapter deals with a detailed analysis of the data gathered. The interpretation of findings based on the research problems was presented accordingly. The findings are presented in a tabular form in accordance with the specific questions posited in the statement of the problem.

### 1. Compliance on Wireless Access for Health (WAH) System among Partner Local Government Units in the Province of Tarlac

The "Universal Health Care (UHC) Act," also known as Republic Act (RA) No. 11223, emphasizes the vital importance of the LGU Health Scorecard as a performance evaluation instrument to track and assess the results of health sector changes in the provincial and municipal health systems.

The Evidence-Informed Sectoral Policy and Planning for UHC provisions of Chapter VIII, Section 31(a) of the UHC Act is aligned with the LGU Health Scorecard's implementation. Additionally, the information produced by the LGU Health Scorecard may be consulted for developing health policies and doing systems studies.

The WAH RHU Scorecard is a mechanism for monitoring and assessing the RHU's progress in putting the Health Information System into practice. It is implemented in the WAH-managed facilities in September 2009. It seeks to assist Local Chief Executives and Health Managers in detecting gaps and potential areas for improvement in the execution of significant public health initiatives in the province.

The WAH RHU Scorecard tracks health data quality according to five sets of indicators: Electronic Medical Record Usage, compliance on the Department of Health and PhilHealth Standards, National Privacy Commission Standards, Technical Standards and on Monthly Reports Submission.

The scorecards on file were unequivocally utilized to answer the question number one in the Statement of the Problem. The tables provided the three-year analysis per indicator on the annual scorecard of the WAH-managed facilities in the province of Tarlac.

**1.1. Electronic Medical Record Usage**

Electronic medical record (EMR) usage refers to the adoption and use of computerized systems for storing, managing, and accessing patient health information. EMRs have become increasingly popular in recent years as healthcare providers seek to improve efficiency, accuracy, and coordination of care.

The indicators for the Electronic Medical Record Usage tracks if the facility is actively, and consistently using the WAH System for real time data entry on the following modules in the system: Patient Registration, Consultation Records, Health Program Services, and eClaims Transmission.

The facility has choice between real-time encoding and back encoding, but it will depend on the specific situation and the needs of the healthcare provider. It is important to consider the potential benefits and drawbacks of each approach in order to ensure compliance with regulations and to provide high-quality patient care.

**Table 8**
**Electronic Medical Record Usage Status of LGUs for 2020-2022**

| LGUs | Electronic Medical Record Usage | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 2020 | | 2021 | | 2022 | | Weighted Average | Interpret-ation |
| | Score | Interpret-ation | Score | Interpret-ation | Score | Interpret ation | | |
| Anao | 1.5 | Partially Compliant | 1.5 | Partially Compliant | 1.5 | Partially Compliant | 1.5 | Partially Compliant |
| Bamban | 1.5 | Partially Compliant | 1.5 | Partially Compliant | 2 | Compliant | 1.6 | Partially Compliant |
| Capas | 1.5 | Partially Compliant | 1.5 | Partially Compliant | 2 | Compliant | 1.6 | Partially Compliant |
| Concepcion | 1.5 | Partially Compliant | 1.5 | Partially Compliant | 2 | Compliant | 1.6 | Partially Compliant |
| Gerona | 1.5 | Partially Compliant | 1.5 | Partially Compliant | 2 | Compliant | 1.6 | Partially Compliant |
| La Paz | 2 | Compliant | 2 | Compliant | 2 | Compliant | 2 | Compliant |
| Mayantoc | 2 | Compliant | 2 | Compliant | 2 | Compliant | 2 | Compliant |
| Moncada | 0 | Non-Compliant | 2 | Compliant | 2 | Compliant | 1.3 | Partially Compliant |
| Paniqui | 1.5 | Partially Compliant | 1.5 | Partially Compliant | 1.5 | Partially Compliant | 1.5 | Partially Compliant |
| Pura | 1.5 | Partially Compliant | 1.5 | Partially Compliant | 2 | Compliant | 1.6 | Partially Compliant |
| Ramos | 1.5 | Partially Compliant | 1.5 | Partially Compliant | 2 | Compliant | 1.6 | Partially Compliant |
| San Clemente | 2 | Compliant | 2 | Compliant | 2 | Compliant | 2 | Compliant |
| San Jose | 0 | Non-Compliant | 0 | Non-Compliant | 0 | Non-Compliant | 0 | Non-Compliant |
| San Manuel | 1.5 | Partially Compliant | 1.5 | Partially Compliant | 1.5 | Partially Compliant | 1.5 | Partially Compliant |
| Santa Ignacia | 2 | Compliant | 2 | Compliant | 2 | Compliant | 2 | Compliant |
| Tarlac City | 1.5 | Partially Compliant | 2 | Compliant | 2 | Compliant | 1.8 | Compliant |
| Victoria | 2 | Compliant | 2 | Compliant | 2 | Compliant | 2 | Compliant |
| Total | 1.4 | Partially Compliant | 1.6 | Partially Compliant | 1.7 | Partially Compliant | 1.6 | Partially Compliant |

**Table 9**
**Summary on Electronic Medical Record Usage Status of LGUs for 2020-2022**

| EMR Usage | Compliant | Partially Compliant | Non-Compliant |
|---|---|---|---|
| **Year 2020** | 29% | 59% | 12% |
| **Year 2021** | 41% | 53% | 6% |
| **Year 2022** | 76% | 18% | 6% |

The findings presented in Table 8 above presents the three-year assessment of the compliance of the LGUs on EMR usage.

When the pandemic strikes our country, particularly around the start of the Covid- 19 outbreak in years 2020 and 2021, Health Care Facilities saw fewer consultations and cancellations from appointments and secondary care doctors, even if they continued to offer outpatient care. EMR usage decreased significantly during the years 2020 and 2021 consecutively with scorecards of 59% and 53% partially compliant, 12% and 6% non-compliant, and 29% and 41% compliant when it comes to real-time encoding and active usage of the system.

Due to the COVID-19 pandemic, many healthcare providers especially the Local Government Units of Anao, Bamban, Capas, Concepcion, Gerona, Paniqui, Pura, Ramos, San Manuel, and even the City of Tarlac have had to change their workflows and reduce in-person patient encounters to limit the spread of the virus. This may have led to a reduction or pause in real-time encoding for almost one to two years.

These LGUs did not stop encoding during the pandemic, as encoding or documentation of patient records is a crucial aspect of healthcare delivery. However, most of the Tarlac LGUs may have experienced delays or interruptions in encoding due to increased workload. The pandemic has placed an enormous strain on the healthcare system, resulting in an increased workload for healthcare providers. With more patients requiring care, healthcare providers may have had less time to document patient records. The pandemic has also caused a shift in work settings, with healthcare providers working

remotely or in different locations. This shift has resulted in delays in accessing patient records, leading to delays in encoding. During the pandemic, healthcare providers prioritized patient care and administering Covid Vaccines to its people. This focus on patient care have resulted in a delay in encoding patient records.

However, it is important to note that accurate and timely documentation is still crucial for patient care, even during a pandemic. The LGUs of La Paz, Mayantoc, San Clemente, Santa Ignacia and Victoria had to adapt their workflows to ensure that documentation is completed in a timely and accurate manner. Real-time encoding become even more important to these LGUs due to the increased demand for healthcare services. Some of the reasons why real-time encoding is crucial, even during the pandemic, include improved patient care. It also allows healthcare providers to access up-to-date patient information, enabling them to make informed decisions about patient care. This is particularly important during the pandemic, where patients' conditions can change rapidly. It also helped healthcare providers diagnose and treat patients more quickly and can identify potential issues and develop treatment plans promptly. The facilitates like of La Paz, Mayantoc, San Clemente, Santa Ignacia and Victoria had better communication among healthcare providers by providing real-time access to patient records, all members of the care team can stay informed about a patient's condition and progress. Real-time encoding can improve the efficiency of healthcare delivery.

Real-time encoding is essential for compliance with regulatory requirements. Many regulatory bodies require healthcare providers to maintain accurate, up-to-date patient records, which can be achieved through real-time encoding.

By 2022, EMR usage started to improve, 76% compliant, 18% partially compliant, and 6% non-compliant are the scorecards of the WAH-managed facilities for this indicator. Health Care Facilities implemented improvements to practice organization and healthcare delivery promptly. There has been a movement toward consultations over the phone, in-home visits, and unorthodox consultations like those through the practice window.

It is likely that EMR (Electronic Medical Record) usage will continue to improve even as the number of pandemic cases decreases in 2022. This is because the pandemic has accelerated the adoption of digital health technologies, including EMRs, and has highlighted the importance of remote access to patient information.

As the Province of Tarlac has become more comfortable with using EMRs and other digital health technologies, they are likely to continue to rely on them even after the pandemic subsides. Additionally, as the healthcare industry continues to evolve, the WAH Platform is likely to introduce new features and capabilities that make the software even more valuable to healthcare providers.

However, the LGU of San Jose has stopped for three years and the LGU Moncada was stagnant for a year because they have experienced challenges in using EMRs during the pandemic. They had to adjust their workflows to accommodate remote work, which could have impacted their use of EMRs. They also had to address technical issues or changes in regulations of their management related to the use of EMRs during the pandemic.

If these LGUs do not comply with the mandatory usage of electronic medical records (EMRs), there may be several consequences. They could not file a License to Operate with the Department of Health which provides assurance to patients that the services they receive are of good quality and are being provided by a legally operating health facility. They could not also apply for any Accreditation with PhilHealth. PhilHealth accreditation is necessary for health facilities to participate in the PhilHealth program, receive reimbursement for services provided to PhilHealth members, and ensure that they meet the standards of quality and safety set by the program. Additionally, they may experience decreased efficiency, increased errors, and decreased quality of patient care due to the continued use of outdated and inefficient paper-based record-keeping systems. The facility may also suffer a loss of reputation and patient trust if they are perceived as being behind the times in terms of technology and innovation. Ultimately, non-compliance with mandatory usage of EMRs could have serious negative impacts on both the facility and its patients.

### 1.2 Department of Health and PhilHealth Standards

According to Section 36.1 of the Implementing Rules and Regulations of the Universal Health Care (UHC) Act, interoperability of health services and information flow across geographical and health sector boundaries has been identified as a critical strategy to improve the nation's health information system. This can be accomplished through the adoption and required use of common health data standards. The mandated national health data interoperability standards have been established by the DOH and PhilHealth, and compliance with these standards is now required**.**

Compliance to legal standards and documents refers to the adherence to laws, regulations, and other legal requirements that are applicable to an organization's operations. It involves ensuring that the organization's activities and practices are in line with the relevant laws and regulations.

WAH audits the compliance of the LGUs on the adherence on, a three-year Memorandum of Agreement (MOA) that is being implemented with partner LGUs which is signed by the Municipal Health Officer and the Municipal Mayor. The MOA is also a vital requirement in the processing of the Facility's DOH Licensing and PhilHealth Accreditation. Health Facilities that are accredited can facilitate reimbursements to PhilHealth for the services provided. Compliance with these documents is critical for avoiding legal liabilities, penalties, and other negative consequences.

Another indicator that is being assessed by WAH is the LGU's performance on the on the accreditation which are important for healthcare providers to ensure compliance with PhilHealth regulations and requirements. An LGU should always abide on the compliance on PhilHealth accreditation and eClaims transmission. Healthcare providers must be ac credited by PhilHealth to be eligible to receive payments for services provided to PhilHealth members. The accreditation process involves submitting an application form and supporting documents, undergoing an on-site assessment, and meeting certain requirements and standards set by PhilHealth. Healthcare providers must also transmit claims electronically through the WAH platform to receive payments for services provided to PhilHealth members.

**Table 10**
**DOH and PhilHealth Standards Compliance of LGUs for Year 2020-2022**

| LGUs | DOH and PhilHealth Standards | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 2020 | | 2021 | | 2022 | | Weighted Average | Interpret-ation |
| | Score | Interpret-ation | Score | Interpret-ation | Score | Interpret-ation | | |
| Anao | 2 | Partially Compliant | 2.5 | Compliant | 1.5 | Partially Compliant | 2 | Partially Compliant |
| Bamban | 2 | Partially Compliant | 2 | Partially Compliant | 2 | Partially Compliant | 2 | Partially Compliant |
| Capas | 2 | Partially Compliant | 3 | Compliant | 2.5 | Compliant | 2.5 | Compliant |
| Concepcion | 3 | Compliant | 3 | Compliant | 2.5 | Compliant | 2.8 | Compliant |
| Gerona | 2.5 | Compliant | 2.5 | Compliant | 2 | Partially Compliant | 2.3 | Compliant |
| La Paz | 2.5 | Compliant | 2.5 | Compliant | 2 | Partially Compliant | 2.3 | Compliant |
| Mayantoc | 2.5 | Compliant | 3 | Compliant | 2.5 | Compliant | 2.6 | Compliant |
| Moncada | 0 | Non Compliant | 2 | Partially Compliant | 3 | Compliant | 1.6 | Partially Compliant |
| Paniqui | 1 | Non Compliant | 2 | Partially Compliant | 2 | Partially Compliant | 1.6 | Partially Compliant |
| Pura | 2.5 | Compliant | 2.5 | Compliant | 2 | Partially Compliant | 2.3 | Compliant |
| Ramos | 2 | Partially Compliant | 2.5 | Compliant | 1.5 | Partially Compliant | 2 | Partially Compliant |
| San Clemente | 3 | Compliant | 3 | Compliant | 2.5 | Compliant | 2.8 | Compliant |
| San Jose | 0 | Non Compliant | 0 | Non Compliant | 0 | Non Compliant | 0 | Non Compliant |
| San Manuel | 2.5 | Compliant | 2.5 | Compliant | 2 | Partially Compliant | 2.3 | Partially Compliant |
| Santa Ignacia | 2.5 | Compliant | 2.5 | Compliant | 2.5 | Compliant | 2.5 | Compliant |
| Tarlac City | 2 | Partially Compliant | 2.5 | Compliant | 2.5 | Compliant | 2.3 | Partially Compliant |
| Victoria | 3 | Compliant | 3 | Compliant | 2.5 | Compliant | 2.8 | Compliant |
| Total | 2 | Compliant | 2.4 | Compliant | 2 | Compliant | 2.1 | Compliant |

**Table 11**
**Summary on DOH and PhilHealth Standards Compliance of LGUs for 2020-2022**

| EMR Usage | Compliant | Partially Compliant | Non-Compliant |
|---|---|---|---|
| **Year 2020** | 53% | 35% | 17% |
| **Year 2021** | 76% | 17% | 6% |
| **Year 2022** | 47% | 47% | 6% |

The performance of LGUs for three consecutive years on the compliance on DOH and PhilHealth Standards are 53% for 2020, 76% for 2021, and 47% for 2022.

All the MOA of the WAH-managed facilities is set to expire in six months. The MOA will be renewable again for another three years. The Wireless Access for Health was able to send out the MOAs to the facilities and should be able to sign and give it back to until March 30, 2023.

Most of the LGUs have PhilHealth Accreditation and are capable of filing reimbursements but the LGUs of Anao, Bamban, Moncada, Paniqui, Ramos and San Manuel did not maximize the features of the system, especially those on PhilHealth financing. Most of the TB DOTS and 4ANC patients are not recorded in the system and therefore, are also not transmitted for claims reimbursements. The claims for Family Planning are also not being filed despite the presence of a trained health professional and accredited health facility.

The LGUs of Capas, Concepcion, Gerona, La Paz, Mayantoc, San Clemente, Santa Ignacia, Victoria and Tarlac City applied an strategy on how to better increase PhilHealth claims by hiring and appointing a Health Financing Officer who focuses on validating forms, transmitting claims which increased their PhilHealth Claims Reimbursements by at least 30%.

San Jose LGU remains the only facility that has an expired MOA, no PhilHealth Accreditation, and no PhilHealth Reimbursement for three straight years. The LGU decided not to renew the MOA until 2022.

Compliance to these standards and documents are being assessed by WAH through various measures, such as conducting regular audits and assessments, implementing internal controls and processes, providing training to employees, and keeping up-to-date with the latest developments and requirements. Ultimately, compliance to legal standards and documents is essential for the long-term success and sustainability of an organization, as it helps to build trust with stakeholders and maintain a positive reputation in the market.

The WAH platform also allows healthcare providers to submit claims electronically and receive real-time notifications of claim status. Failure to comply with PhilHealth accreditation and eClaims transmission guidelines can result in delayed payments or even penalties and sanctions. Healthcare providers should stay up-to-date with PhilHealth policies and guidelines to ensure compliance and avoid any issues with payments or penalties.

### 1.3 National Privacy Commission Standards

In compliance with RA 10173 or the Data Privacy Act of 2012, Primary Care Benefit Providers shall be required to provide and ask the patients to review and sign an Informed Consent Form and make sure that the patients understand its contents before signing.

Healthcare staff are also due to sign a Non-Disclosure Agreement to protect their patients and other confidential information.

Appointing a Data Protection Officer is also a legal requirement for each Local Government Unit to ensure that the LGU processes and protect the personal data of its patients or any other individuals in compliance with the applicable data protection rules.

**Table 12**
**National Privacy Commission Standards Compliance of LGUS for Years 2020-2022**

| LGUs | National Privacy Commission Standards | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 2020 | | 2021 | | 2022 | | Weighted Aver-age | Interpret-ation |
| | Score | Interpret-ation | Score | Interpret-ation | Score | Interpret-ation | | |
| Anao | 2 | Compliant | 2 | Compliant | 2 | Compliant | 2 | Compliant |
| Bamban | 2 | Compliant | 2 | Compliant | 2 | Compliant | 2 | Compliant |
| Capas | 2 | Compliant | 2 | Compliant | 2 | Compliant | 2 | Compliant |
| Concepcion | 2 | Compliant | 2 | Compliant | 2 | Compliant | 2 | Compliant |
| Gerona | 2 | Compliant | 2 | Compliant | 2 | Compliant | 2 | Compliant |
| La Paz | 2 | Compliant | 2 | Compliant | 2 | Compliant | 2 | Compliant |
| Mayantoc | 2 | Compliant | 2 | Compliant | 2 | Compliant | 2 | Compliant |
| Moncada | 0 | Non Compliant | 2 | Compliant | 2 | Compliant | 2 | Compliant |
| Paniqui | 2 | Compliant | 2 | Compliant | 2 | Compliant | 2 | Compliant |
| Pura | 2 | Compliant | 2 | Compliant | 2 | Compliant | 2 | Compliant |
| Ramos | 2 | Compliant | 2 | Compliant | 2 | Compliant | 2 | Compliant |
| San Clemente | 2 | Compliant | 2 | Compliant | 2 | Compliant | 2 | Compliant |
| San Jose | 0 | Non Compliant | 0 | Non Compliant | 0 | Non Compliant | 0 | Non Compliant |
| San Manuel | 2 | Compliant | 2 | Compliant | 2 | Compliant | 2 | Compliant |
| Santa Ignacia | 2 | Compliant | 2 | Compliant | 2 | Compliant | 2 | Compliant |
| Tarlac City | 2 | Compliant | 2 | Compliant | 2 | Compliant | 2 | Compliant |
| Victoria | 2 | Compliant | 2 | Compliant | 2 | Compliant | 2 | Compliant |
| Total | 1.7 | Compliant | 1.8 | Compliant | 1.8 | Compliant | 1.8 | Compliant |

**Table 13**
**Summary on NPC Standards Compliance of LGUs for 2020-2022**

| EMR Usage | Compliant | Partially Compliant | Non-Compliant |
|---|---|---|---|
| **Year 2020** | 88% | 0% | 12% |
| **Year 2021** | 94% | 0% | 6% |
| **Year 2022** | 94% | 0% | 6% |

The 15 LGUs are diligently complying with the NPC Standards for three consecutive years with an 88% compliance rating. Strict compliance on the implementation and utilization of the Consent Forms for newly registered patients and Non-Disclosure Agreement for newly registered end users are being followed by the LGUs.

The 15 LGUs appointed a Data Protection Officer to ensure that the LGU complies with applicable data protection laws and regulations. This includes ensuring and implementing the utilization of policies and procedures to ensure compliance, monitoring compliance, and providing advice and guidance to the organization on data protection issues.

Moncada did not comply with the NPC Standards in 2020 because they stopped using the system back then but has practiced using it again the year 2021 and 2022.

San Jose remains the only LGU that has not complied with the legal requirements of the National Privacy Commission. Since 2019, the LGU has stopped using the system for recording patient information and consultations, and from then, all these legal requirements are not put into practice anymore.

If a facility does not comply with the NPC standards, there can be various consequences, depending on the specific circumstances and the applicable laws and regulations. Some possible outcomes include Data Breaches, Lawsuits and Loss of Reputation of a facility.

### 1.4 Technical Audit

It is important to identify all hardware and software requirements to implement a full-scale EMR system. Internal control systems are strengthened through technical audit

to reduce risks. It also improves the quality of service, assures error free data and transparent and cost-effective procurement of services and goods.

A hardware audit is an evaluation of every piece of hardware that the facility or organization employs across its computer network. Every computer asset, including personal computers, laptops, mobile phones, and tablets, as well internet connectivity network, and data center equipment, were covered by a hardware audit. The audit's goal is to make sure that every piece of hardware is present, in working order, and performing at its highest level.

By conducting periodic hardware audits, an LGU will be able to spot outdated technology and locations where hardware should be redistributed and put to better use and better prepare the LGUs for replacements or maintenance required, this routine technical audit will help them avoid downtime due to "unexpected" hardware failure.

The computer staff ratio is always considered and can vary depending on the size and complexity of the LGU's IT infrastructure, the level of automation and standardization of IT processes, and the level of IT service required by end-users.

The table below shows the three-year audit on the hardware, internet connection, and software version of the facilities.

The assessment on Technical Audit for 2020 are 0% compliant, 82% partially compliant, and 18% non-compliant for 2020. While for 2021 and 2022 are 65% and 47% compliant, 29% and 47% are partially compliant, and 6% for both years for non-compliant. The result shows that LGUs need to invest in purchasing server and client laptops. The recommended 1:1 computer-personnel ratio is not strictly being implemented while Internet Connectivity is not a challenge in the LGUs.

**Table 14**
**Technical Audit Standards Compliance of LGUs for Years 2020-2022**

| LGUs | Technical Audit Standards | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 2020 | | 2021 | | 2022 | | Weighted Average | Interpret-ation |
| | Score | Interpret-ation | Score | Interpret-ation | Score | Interpret-ation | | |
| **Anao** | 2.5 | Partially Compliant | 2.5 | Partially Compliant | 2.5 | Partially Compliant | 2.5 | Partially Compliant |
| **Bamban** | 2.5 | Partially Compliant | 2.5 | Partially Compliant | 2.5 | Partially Compliant | 2.5 | Partially Compliant |
| **Capas** | 2.5 | Partially Compliant | 3.5 | Compliant | 3.5 | Compliant | 3.1 | Compliant |
| **Concepcion** | 2.5 | Partially Compliant | 2.5 | Partially Compliant | 3.5 | Compliant | 2.8 | Partially Compliant |
| **Gerona** | 2.5 | Partially Compliant | 3.5 | Compliant | 3.5 | Compliant | 3.1 | Compliant |
| **La Paz** | 2.5 | Partially Compliant | 2.5 | Partially Compliant | 2.5 | Partially Compliant | 2.5 | Partially Compliant |
| **Mayantoc** | 2.5 | Partially Compliant | 3 | Partially Compliant | 2.5 | Partially Compliant | 2.6 | Partially Compliant |
| **Moncada** | 1.5 | Non Compliant | 3.5 | Compliant | 3.5 | Compliant | 2.8 | Partially Compliant |
| **Paniqui** | 1.5 | Non Compliant | 3 | Partially Compliant | 3 | Partially Compliant | 2.5 | Partially Compliant |
| **Pura** | 3 | Partially Compliant | 3 | Partially Compliant | 2.5 | Partially Compliant | 2.8 | Partially Compliant |
| **Ramos** | 3 | Partially Compliant | 3 | Partially Compliant | 2.5 | Partially Compliant | 2.8 | Partially Compliant |
| **San Clemente** | 3 | Partially Compliant | 3 | Partially Compliant | 2.5 | Partially Compliant | 2.8 | Partially Compliant |
| **San Jose** | 0 | Non Compliant | 0 | Non Compliant | 0 | Non Compliant | 0 | Non Compliant |
| **San Manuel** | 3 | Partially Compliant | 3 | Partially Compliant | 2.5 | Partially Compliant | 2.8 | Partially Compliant |
| **Santa Ignacia** | 3 | Partially Compliant | 3 | Partially Compliant | 2.5 | Partially Compliant | 2.8 | Partially Compliant |
| **Tarlac City** | 3 | Partially Compliant | 3 | Partially Compliant | 3 | Partially Compliant | 3 | Partially Compliant |
| **Victoria** | 2.5 | Partially Compliant | 3.5 | Compliant | 3.5 | Compliant | 3.1 | Compliant |
| **Total** | 2.4 | Partially Compliant | 2.8 | Partially Compliant | 2.7 | Partially Compliant | 2.6 | Partially Compliant |

**Table 15**
**Summary on Technical Audit Standards Compliance of LGUs for 2020-2022**

| EMR Usage | Compliant | Partially Compliant | Non-Compliant |
|---|---|---|---|
| **Year 2020** | 0% | 83% | 17% |
| **Year 2021** | 23% | 71% | 6% |
| **Year 2022** | 29% | 65% | 6% |

The LGUs of Anao, Bamban, Concepcion, La Paz, Mayantoc, Moncada, Pura, San Clemente, Santa Ignacia and Tarlac City need to replace the Server and should procure for an additional two client laptop that can be use in the registration area.

The LGUs of Capas, Gerona, Paniqui Ramos, San Manuel and Victoria should request for three client laptops to replace the old and non-working hardware.

San Jose remains the only LGU that has not complied on this indicator. The server and client laptops are all obsolete. If in time, San Jose will renew the contract with WAH they have to replace its server, client laptops, and request internet connectivity and upgrade the system to the latest version.

In summary, hardware plays a critical role in the utilization of the WAH platform, affecting performance, reliability, security, scalability, and integration. The LGUs of Tarlac must invest on hardware and make sure that their hardware is maintained and updated regularly to ensure optimal performance and security.

### 1.5 Reports Submission

The indicators for the Report Submission tracks health data quality according to four sets of indicators: Timeliness, Completeness, Reliability, and Accuracy. The 7th day of the current month is the deadline for timely reports that cover the previous month's data. Completeness is determined by if all four major health programs, Family planning, Maternal Care, Child Care, and Morbidity are all submitted. Reliability is the differences between the manual Monthly Program Reports (or M1, an aggregate report based on the Target Client Lists or TCL) produced by the RHU and that produced by the EMR are examined. Data quality checks (DQC) are performed at the clinic where the M1 report is further checked against the TCL and system-generated reports to determine the accuracy.

**Table 16**
**Reports Submission Compliance of LGUs for Years 2020-2022**

| LGUs | Reports Submision | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 2020 | | 2021 | | 2022 | | Weighted Average | Interpret-ation |
| | Score | Interpret-ation | Score | Interpret-ation | Score | Interpret-ation | | |
| Anao | 0 | Non Compliant | 0 | Non Compliant | 0 | Non Compliant | 0 | Non Compliant |
| Bamban | 0 | Non Compliant | 0 | Non Compliant | 0 | Non Compliant | 0 | Non Compliant |
| Capas | 0 | Non Compliant | 0 | Non Compliant | 0 | Non Compliant | 0 | Non Compliant |
| Concepcion | 0 | Non Compliant | 0 | Non Compliant | 0 | Non Compliant | 0 | Non Compliant |
| Gerona | 1 | Compliant | 1 | Compliant | 1 | Compliant | 1 | Compliant |
| La Paz | .5 | Partially Compliant | .5 | Partially Compliant | 0 | Non Compliant | .3 | Partially Compliant |
| Mayantoc | 1 | Compliant | 1 | Compliant | 1 | Compliant | 1 | Compliant |
| Moncada | 0 | Non Compliant | 0 | Non Compliant | 0 | Non Compliant | 0 | Non Compliant |
| Paniqui | 0 | Non Compliant | 0 | Non Compliant | 0 | Non Compliant | 0 | Non Compliant |
| Pura | 0 | Non Compliant | 0 | Non Compliant | 0 | Non Compliant | 0 | Non Compliant |
| Ramos | 0 | Non Compliant | 0 | Non Compliant | 0 | Non Compliant | 0 | Non Compliant |
| San Clemente | 1 | Compliant | 1 | Compliant | 1 | Compliant | 1 | Compliant |
| San Jose | 0 | Non Compliant | 0 | Non Compliant | 0 | Non Compliant | 0 | Non Compliant |
| San Manuel | 0 | Non Compliant | 0 | Non Compliant | .5 | Partially Compliant | .2 | Non Compliant |
| Santa Ignacia | 1 | Compliant | 1 | Compliant | 1 | Compliant | 1 | Compliant |
| Tarlac City | .5 | Partially Compliant | .5 | Partially Compliant | .5 | Partially Compliant | .5 | Partially Compliant |
| Victoria | 1 | Compliant | 1 | Compliant | 1 | Compliant | 1 | Compliant |
| Total | .3 | Non Compliant | .3 | Non Compliant | .3 | Non Compliant | .3 | Non Compliant |

**Table 17**
**Summary on Reports Submission Compliance of LGUs for 2020-2022**

| EMR Usage | Compliant | Partially Compliant | Non-Compliant |
|---|---|---|---|
| Year 2020 | 29% | 12% | 59% |
| Year 2021 | 29% | 12% | 59% |
| Year 2022 | 29% | 18% | 53% |

The monthly submission of reports is strictly monitored by WAH because these data and statistics are necessary to check the performance of each LGU. These reports also served as back up data for each LGU. The table shows that most of the LGUs are non-compliant on this indicator which consists of 59% for the two consecutive years and 53% for year 2022. Some are partially complying which has a percentage of 12% for 2020 and 2021, and 18 % for 2022. Compliance with reports has a percentage of 29% for three consecutive years. The reason behind the non-submission of reports is that the assigned point person is too busy handling other tasks.

Compliance with report submission requirements is essential to ensure that the LGUs meet their legal, regulatory, and contractual obligations.

In summary, Reports Submission is incredibly important in the healthcare industry, enabling healthcare providers to improve patient care, enhance data analysis, drive innovation, ensure patient safety, and meet regulatory requirements. As such, healthcare organizations must prioritize the collection, analysis, and management of data to succeed in today's healthcare landscape.

Noncompliance with monthly report submission can have various consequences depending on the policies and procedure. If the facility fails to submit the monthly report on time or not at all, it can be seen as a breach of the responsibility of the LGU and may result an outdated statistics reflected in the Dashboard. The LGU may not also have an updated backup in the system.

**Table 18**
**Digital Health Scorecard Summary Compliance of LGUs for Years 2020-2022**

| LGUs | Year | EMR Usage | DOH & Phil Health Stand-ards | NPC Standards | Technical Audit | Reports Submis-sion | Over all Score | Interpret-ation |
|---|---|---|---|---|---|---|---|---|
| ANAO | 2020 | 1.5 | 2 | 2 | 2.5 | 0 | 8 | Partially Compliant |
| | 2021 | 1.5 | 2.5 | 2 | 2.5 | 0 | 8.5 | Partially Compliant |
| | 2022 | 1.5 | 1.5 | 2 | 2.5 | 0 | 7.5 | Partially Compliant |
| BAMBAN | 2020 | 1.5 | 2 | 2 | 2.5 | 0 | 8 | Partially Compliant |
| | 2021 | 1.5 | 2 | 2 | 2.5 | 0 | 8 | Partially Compliant |
| | 2022 | 2 | 2 | 2 | 2.5 | 0 | 8.5 | Partially Compliant |
| CAPAS | 2020 | 1.5 | 2 | 2 | 2.5 | 0 | 8 | Partially Compliant |
| | 2021 | 1.5 | 3 | 2 | 3.5 | 0 | 10 | Compliant |
| | 2022 | 2 | 2.5 | 2 | 3.5 | 0 | 10 | Compliant |
| CONCEPCION | 2020 | 1.5 | 3 | 2 | 2.5 | 0 | 9 | Partially Compliant |
| | 2021 | 1.5 | 3 | 2 | 2.5 | 0 | 9 | Partially Compliant |
| | 2022 | 2 | 2.5 | 2 | 3.5 | 0 | 10 | Compliant |
| GERONA | 2020 | .5 | 2.5 | 2 | 2.5 | 1 | 8.5 | Partially Compliant |
| | 2021 | 1.5 | 2.5 | 2 | 3.5 | 1 | 10.5 | Compliant |
| | 2022 | 2 | 2 | 2 | 3.5 | 1 | 10.5 | Compliant |
| LA PAZ | 2020 | 2 | 2.5 | 2 | 2.5 | .5 | 9.5 | Partially Compliant |
| | 2021 | 2 | 2.5 | 2 | 2.5 | .5 | 9.5 | Partially Compliant |
| | 2022 | 2 | 2 | 2 | 2.5 | 0 | 8.5 | Partially Compliant |
| MAYANTOC | 2020 | 2 | 2.5 | 2 | 2.5 | 1 | 10 | Compliant |
| | 2021 | 2 | 3 | 2 | 3 | 1 | 11 | Compliant |
| | 2022 | 2 | 2.5 | 2 | 2.5 | 1 | 10 | Compliant |
| MONCADA | 2020 | 0 | 0 | 0 | 1.5 | 0 | 1.5 | Non Compliant |
| | 2021 | 2 | 2 | 2 | 3.5 | 0 | 9.5 | Partially Compliant |
| | 2022 | 2 | 3 | 2 | 3.5 | 0 | 10.5 | Compliant |

| LGUs | Year | EMR Usage | DOH & Phil Health Stand-ards | NPC Standards | Technical Audit | Reports Submis-sion | Over all Score | Interpret-ation |
|---|---|---|---|---|---|---|---|---|
| PANIQUI | 2020 | 1.5 | 1 | 2 | 1.5 | 0 | 6 | Non Compliant |
| | 2021 | 1.5 | 2 | 2 | 3 | 0 | 8.5 | Partially Compliant |
| | 2022 | 1.5 | 2 | 2 | 3 | 0 | 8.5 | Partially Compliant |
| PURA | 2020 | 1.5 | 2.5 | 2 | 3 | 0 | 9 | Partially Compliant |
| | 2021 | 1.5 | 2.5 | 2 | 3 | 0 | 9 | Partially Compliant |
| | 2022 | 2 | 2 | 2 | 2.5 | 0 | 8.5 | Partially Compliant |
| RAMOS | 2020 | 1.5 | 2 | 2 | 3 | 0 | 8.5 | Partially Compliant |
| | 2021 | 1.5 | 2.5 | 2 | 3 | 0 | 9 | Partially Compliant |
| | 2022 | 2 | 1.5 | 2 | 2.5 | 0 | 8 | Partially Compliant |
| SAN CLEMENTE | 2020 | 2 | 3 | 2 | 3 | 1 | 11 | Compliant |
| | 2021 | 2 | 3 | 2 | 3 | 1 | 11 | Compliant |
| | 2022 | 2 | 2.5 | 2 | 2.5 | 1 | 10 | Compliant |
| SAN JOSE | 2020 | 0 | 0 | 0 | 0 | 0 | 0 | Non Compliant |
| | 2021 | 0 | 0 | 0 | 0 | 0 | 0 | Non Compliant |
| | 2022 | 0 | 0 | 0 | 0 | 0 | 0 | Non Compliant |
| SAN MANUEL | 2020 | 1.5 | 2.5 | 2 | 3 | 0 | 9 | Partially Compliant |
| | 2021 | 1.5 | 2.5 | 2 | 3 | 0 | 9 | Partially Compliant |
| | 2022 | 1.5 | 2 | 2 | 2.5 | .5 | 8.5 | Partially Compliant |
| SANTA IGNACIA | 2020 | 2 | 2.5 | 2 | 3 | 1 | 10.5 | Compliant |
| | 2021 | 2 | 2.5 | 2 | 3 | 1 | 10.5 | Compliant |
| | 2022 | 2 | 2.5 | 2 | 2.5 | 1 | 10 | Compliant |
| TARLAC CITY | 2020 | 1.5 | 2 | 2 | 3 | .5 | 9 | Partially Compliant |
| | 2021 | 2 | 2.5 | 2 | 3 | .5 | 10 | Compliant |
| | 2022 | 2 | 2.5 | 2 | 3 | .5 | 10 | Compliant |
| VICTORIA | 2020 | 1 | 3 | 2 | 2.5 | 1 | 9.5 | Partially Compliant |
| | 2021 | 2 | 3 | 2 | 3.5 | 1 | 11.5 | Compliant |
| | 2022 | 2 | 2.5 | 2 | 3.5 | 1 | 11 | Compliant |

**Table 19**
**Summary on Digital Health Scorecard Summary Compliance of LGUs for Years 2020-2022**

| INDICATORS | 2020 | INTERPRETATION | 2021 | INTERPRETATION | 2022 | INTERPRETATION |
|---|---|---|---|---|---|---|
| EMR Usage | 1.35 | Partially Compliant | 1.6 | Partially Compliant | 1.79 | Partially Compliant |
| DOH &PHIC Standards | 2.0 | Partially Compliant | 2.4 | Partially Compliant | 2.08 | Partially Compliant |
| NPC Standards | 1.76 | Compliant | 1.8 | Compliant | 1.8 | Compliant |
| Technical Audit | 2.4 | Partially Compliant | 2.8 | Partially Compliant | 2.7 | Partially Compliant |
| Reports Submission | .35 | Non-Compliant | .35 | Non-Compliant | .35 | Non-Compliant |
| Overall Score | 7.5 | Partially Compliant | 8.7 | Partially Compliant | 8.4 | Partially Compliant |

The table above summarizes the three-year performance of each LGUS on the different indicators that were set by the Wireless Access for Health.

The LGUs that are consistently compliant for three years are Mayantoc, San Clemente, and Santa Ignacia. The LGUs of Capas, Gerona, Tarlac City, and Victoria have begun to pick up their pace in the year 2022. While most of the LGUs are partially compliant but are striving their best to improve their performance. However, San Jose is non-compliant for three straight years but WAH and the LGU has been regularly conducting meeting to plan for their onboarding for year 2023.

The evaluation of Electronic Medical Record (EMR) utilization over a three-year period can reveal important insights into the effectiveness of the system and the impact it has had on the organization. The following are the findings that could result from such an evaluation. First is improved efficiency, one of the most common benefits of EMR utilization is improved efficiency in clinical workflows. After three years of using an EMR

system, it is possible to see significant improvements in the speed and accuracy of data entry, streamlined workflows, and reduced administrative burden on healthcare providers. Second is improved patient outcomes, EMR utilization can lead to improved patient outcomes, such as reduced medical errors, better coordination of care, and improved patient satisfaction. After three years of using an EMR system, it is possible to see the impact of these improvements on patient outcomes, such as decreased hospital readmission rates and improved health outcomes. Third is increased revenue, EMR utilization can lead to increased revenue for healthcare organizations by improving documentation, streamlining billing processes, and reducing claim denials. After three years of using an EMR system, it is possible to see the impact of these improvements on the organization's revenue. Fourth is improved compliance, EMR utilization can help healthcare organizations stay in compliance with regulatory requirements and industry standards. After three years of using an EMR system, it is possible to see the impact of these improvements on the organization's compliance posture, such as increased accuracy and completeness of documentation.

Despite the benefits of EMR utilization, there may be challenges and areas for improvement that are revealed through a three-year evaluation. For example, healthcare providers may identify usability issues, data quality concerns, or training needs that need to be addressed to further improve the system's effectiveness.

## 2. Problems encountered by Partner Local Government Units in compliance with the utilization of the WAH Health Information System

There are a number of practical challenges that can be found in relation to the creation, application, and upkeep of Health Information System. These challenges have

been documented in several research and are comparable to HIS characteristics. Numerous research have taken into account HISs, but it is still unknown which qualities they offer, what challenges they present, and which stakeholders and healthcare areas they serve.

In this study, the following are the problems encountered by the 17 Partner Local Government Units in compliance with the utilization of the WAH Health Information System.

**Table 20**
**Problems Encountered by the LGUs on the Utilization of WAH**

| **Problems Encountered** | ***f*** | **R** |
|---|---|---|
| Lack of Computer Expertise | 222 | 1 |
| Lack of Equipment such as a laptop | 186 | 2 |
| Lack of Training | 158 | 3 |
| Disturbs workflow | 109 | 4 |
| Lack of Personnel and incentives | 94 | 5 |

The number one barrier or problem to the implementation of the EHRs system, as identified by the study as reflected in the above table with a frequency of two hundred twenty-two (222) is lack of computer expertise.

While the system is not just perceived as, but in practice is actually highly hard for these physicians and other health workers to utilize, because some of them lack the typing skills necessary to record patient medical data, notes, and prescriptions into the EMRs.

The lack of equipment or IT resources was cited as the second problem or barrier to EHR implementation with a frequency of one hundred eighty-six (186). The lack of accessible computers may be the cause of the low level of utilization of electronic medical records systems. However, this would have a uniformly negative impact on the utilization

for all clinical tasks. The LGU should have the necessary technical or IT infrastructure to function properly. Since 2012, all local governments in Tarlac have included the costs of maintaining and enhancing their health information systems (HIS) in their yearly budgets and continue allocating funds for the procurement of hardware, but still, it is still the major problem of LGUs.

Lack of training is also another concern of the LGU with a frequency of one hundred fifty-eight (158), which ranks third out of the ten problems. Most of the healthcare workers complained that one-week training session is not enough because it can take many weeks for them to feel comfortable utilizing a new system after receiving extensive training and practice. EMR training instills confidence in the usage of EMRs among users.

Disturbs workflow process has a frequency of one hundred nine (109) and ranks 4 as one problem encountered by the LGUs. Despite the fact that their colleagues have committed time and seen significant benefits, physicians do not properly familiarize themselves with the technologies that are available, choose an EMR, implement it, and then train to use it. The ability to simultaneously listen to patients' complaints, evaluate their medical relevance, consider interventions, and type notes would require a high level of concentration, typing proficiency, and familiarity with the application's user interface, which is not typically found in even the most experienced computer users. Also, health workers with poor typing skills may be slowed down using EHR.

Significant portion of the respondents answered that lack of personnel and incentive is also a contributor that hampers the utilization of HIS which has a frequency of ninety four (94). The LGUs struggle to finish tasks due to a lack of sufficient staff and incentives.

Through financial incentives for quality improvement and public reporting of numerous quality performance metrics, the use of EMRs could be encouraged.

### 3. Measures to enhance the compliance of the Wireless Access For Health System among Partner Local Government Units in the Province of Tarlac

This section presents the proposed measures recommended by the 17 LGUs to enhance the compliance of WAH HIS in the province of Tarlac.

Table 14 shows the proposed measures recommended by 235 health workers in using Wireless Access for Health Platform.

By implementing these proposed measures, the healthcare facilities can enhance compliance and effective utilization of the WAH Software with Electronics Medical Record usage and ensure that healthcare professionals are equipped with the tools they need to provide high-quality patient care.

**Table 21**
**Proposed Measures for Utilization of WAH Platform**

| Proposed Measure for Utilization of WAH Platform | *F* | % |
|---|---|---|
| Request for Additional Manpower and incentivized personnel | 230 | 1 |
| Request for Additional Equipment (1:1 Computer and Personnel Ratio) | 198 | 2 |
| Mandate all RHU staff to use the system for recording and reporting purposes | 177 | 3 |
| Attend Refresher Training on Basic Computer Skills and the latest version of the WAH System and create a manual on how to use the system | 103 | 4 |
| WAH should conduct annual refresher training and quarterly onsite monitoring | 99 | 5 |

Among the proposed measures to utilize the WAH Platform, the majority of the

respondents (97%) admitted that additional manpower and an incentive could actually improve the usage of the system. As it stands, productivity is inversely correlated with labor force, requesting additional manpower which can be assigned to encoding and which will focus on PhilHealth financing can increase reimbursements and can execute more tasks. There are some staff members that are more comfortable with the system than others. They have noticed that some of the older midwives that have little or no prior experience with computers have little incentive to learn the new system. Encouraging through incentives can improve their computer and EHR literacy skills.

Another measure proposed by the respondents are additional equipment that they can use for encoding, PhilHealth transmission, and reports generation (84%). Every RHU personnel believes that a 1 laptop to 1 personnel will contribute to increasing productivity and will allow them to learn at their own speed and skill level.

Mandating all RHU staff to use the system for recording and reporting purposes (75%) was also proposed by the respondents as a measure for the effective utilization of the WAH platform in the LGU. According to research, outcomes are greatly influenced by the effectiveness of implementation. A policy's objectives are unlikely to be met or its effects will be less significant if it is bad or even modestly implemented. Success is more likely when the implementation is of excellent quality.

Attend refresher training on Basic Computer Skills and the latest version of the WAH System and creating a manual on how to use the system (44%) were highly considered as measures of the utilization of the WAH Platform. Participating in refresher training is useful and efficient to update any outdated or useless knowledge learned during prior training.

Lastly, WAH should conduct annual refresher training and quarterly onsite monitoring (42%). Regular monitoring of performance can assess how well an LGU is carrying out its duties and achieving goals by conducting regular and consistent performance reviews. Only via this continual measurement will the performance be able to determine whether or not objectives are consistently being accomplished.

**4. Implications of the study to Public Administration**

The present study on the utilization of Wireless Access for Health (WAH) System among Partner Local Government Units in the Province of Tarlac has shown that the adoption and effective use of a Health Information System can enhance healthcare quality by boosting productivity, promoting adherence to recommendations, and minimizing medical errors and adverse events. The utilization of the WAH Platform in the province of Tarlac has been effectively accurate, and up-to-date, and has complete information about patients at the point of care. EHR systems have the potential to change the health care system from one that relies primarily on paper to one that makes use of clinical and other types of information to help doctors offer patients greater quality care.

As a crucial instrument for public health, information systems have emerged. Real-time data are now made available via health information systems to inform public health decisions. Three reasons why health information systems (HISs) are becoming more significant are the growing breadth of data from several to a variety of public and private sources, and information technology advancements (IT), and an increased understanding of the value of information in promoting public health and taking decisions.

However, despite the benefits and impact of the WAH System to the partner LGUs, there are still challenges that LGUs need to overcome in order to provide quality public health care. There are problems cited in this study that were encountered by LGU Partners but one of the challenges is that the healthcare industry has not yet embraced digitalization. Health workers are still alarmed in streamlining the process.

It will take a team effort to address the issues afflicting the nation's healthcare system. The medical quality of healthcare will continue to improve with the help of cutting-edge, adaptable information systems, which will also help to lower costs, increase efficiency, decrease errors, and increase patient satisfaction as well as increase health financing status.

In conclusion, the adoption of electronic medical records in public administration may have substantial effects on public healthcare systems, such as increased patient care and efficiency, improved data exchange, higher expenses, and a demand for training.

## Chapter 4

## SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

To address the issues raised in Chapter 1 of the study, the findings are summarized in this chapter. The limits of the study, any conclusions taken from the key findings, and the researchers' recommendations are also included.

### Summary of Findings

The following are the study's key findings:

1. The three-year performance of the 17 Partner LGUs on Electronic Medical Record Usage being compliant is 29% for 2020, 41% for 2021, and 76% for 2022. While 59% for 2020, 53% for 2021, and 18% for 2022 are partially compliant with this indicator. Non-Compliant are 12%,6%, and 6% for three consecutive years.
2. The LGUs which are compliant with the DOH and PhilHealth Standards have a percentage of 53% for 2020, 76% for 2021, and 47% for 2022. Still, there are some LGUs that unyields on this indicator which resulted in 29%, 12%, and 41% partially compliant for years 2020, 2021, and 2022. Non-Compliant consistently has a percentage of 18% for 2020 and 12% both for two straight years.
3. Most of the LGUs are amenable when it comes to the National Privacy Commission Standards. 88% are compliant for the year 2020, and 94% for the years 2021, and 2022. But there are 12% for 2020 and 6% non-Compliant for two straight years.
4. Based on the Technical Audit that is performed annually, it shows that LGUs need to invest in these resources because there are 82%, 29%, and 47% Partially Compliant. 18% for

2020 and 6% Non-Compliant for two years. Compliant are 0%, 65%, and 47% consecutively.

5. Most of the partner LGUs fails to submit Monthly Report. There is a consistent rating of non-compliant for three years, 59% for 2020, 59% for 2021, and 53% for 2022. Partially compliant has a rating of 12% for the years 2020 and 2021, and 18% for 2022. Compliant LGUs remain consistent with a rating of 29% for three consecutive years.
6. The most common problem encountered by the partner LGUs in utilizing the WAH platform is the lack of computer expertise of the health workers with the highest frequency of 222 which ranks number 1. Other problems that need to be addressed are lack of equipment such as a laptop (186), lack of training (158), disturbs workflow (109), and lack of personnel and incentives (94).
7. The proposed measures to address the problems, issues, and concerns that hamper the effective utilization are: Requests for Additional Manpower and Incentivized Personnel (230), Requests for Additional Equipment (198), Mandate all RHU Staff to use the system for Recording and Reporting Purposes (177), Attend Refresher Training on Basic Computer Skills and the latest version of the WAH System and create a Manual on how to use the System (103), and WAH should conduct annual refresher training and quarterly onsite monitoring (99).
8. While there are many areas where WAH is excelling, one of the purposes of this evaluation was to identify challenging areas where WAH and the LGU needs to improve.

**Conclusions**

Since its establishment in 2009, WAH has made great strides in the use of EHR system in the Philippines. It has extended the usage of its EHR system from 4 pilot clinics in four municipalities in 2010 to over 206 clinics in 2022. As a result of the extended reach from partner donors, the WAH EHR system has brought some remarkable changes to RHU operations. The system in general has proven to be relatively easy for health providers with little or no computer skills to learn and use. RHUs reported that WAH EHR system has helped them to be better organized in their daily activities starting with admission and accessing patient records, and consultation, including the easier creation of patient treatment plans. The EHR system has also helped improve patient follow-up appointment turnout, enhanced RHU reporting systems, and led to an overall improvement in RHU operations.

However, there are still ways in which WAH can improve its EHR system effectiveness and reach its full potential. These include consistent capacity building like conducting refresher training for health workers and newly hired providers, the creation of a "how-to" manual for RHUs to reference, improving the system template design, investing in hardware requirements, and providing incentives to end-user that demonstrate mastery of the system and investing on hardware. These practices will maximize the impact of WAH EHR system in RHUs and enable WAH to fulfill its mission of improving governance and access to better quality data by clinicians, health managers, and local governments.

The following conclusions were drawn from the salient findings of the study.

1. Health personnel are using the system intermittently since March 2020 because of the pandemic. But in for the year 2022, EMR usage started to improve. Although some are still exercising back encoding and irregular usage due to the same concerns, they are still experiencing like manpower issues, lack of hardware, and no available connection at the barangay level.
2. Most of the Memorandum of Agreement of LGUs is set to expire in six months. Most of the LGUs are accredited by PhilHealth and are capable of transmitting claims but due to the lack of a point person for Health financing, only a small number of cases were filed for reimbursements. San Jose being an inactive user of WAH for almost three years has not been compliant with the DOH and PHIC standards.
3. Majority of the partner LGUs abide by the standards of the National Privacy Commission. San Jose remains the only LGU not to comply with this standard due to its inactive status.
4. The analysis for the Technical Audit showed a high negative response to the number of client laptops available at the facility. Most of the LGUs have a great need for more computers to effectively utilize the use of the system.
5. Majority of the LGUs have not been submitting electronic data reports as mandated by the Department of Health and PhilHealth.
6. The WAH EHR system has proven to help LGUs be better organized and improve efficient workflow, but challenges continue to arise and still persist in the development of quality public health care system. In this study problems that need to b e addressed are the lack of computer expertise of the health worker, lack of equipment such as a laptop, lack of training, disturbs workflow, and lack of personnel and incentives.

7. Additional manpower and incentivizing health workers are highly sought by the respondents. Likewise, for additional equipment, policies on mandating all RHU staff to use the system for recording and reporting purposes, refresher trainings, onsite monitoring, and providing manuals.
8. The research process for EMR implementation should involve a thorough assessment of the organization's current technology infrastructure, including hardware, software, and network capabilities. It should also develop a detailed implementation plan, including timelines, training and support requirements, and data migration strategies. The LGU should consider the potential impact on workflows and processes and develop a plan to minimize disruption and ensure a smooth transition.

**Recommendations**

After analyzing the findings regarding EMR Usage, compliance with the DOH, PHIC, NPC Standards, Technical Audit, and Reports Submission, Problems Encountered that hamper effective utilization of the system usability and providers' perception of patient satisfaction, several tiered recommendations for how WAH and LGU can improve the EHR system at its facilities. These recommendations are ranked both in order of importance and according to the greatest positive impact on the growth and development of both.

1. WAH should consider making considerable changes to the WAH EHR system template design to achieve a balance between customizability, security, and functionality.
2. WAH should conduct regular refresher training for clinic staff, and newly hired providers that aim to recall and reinforce the knowledge gained during the initial EHR system training as well as to review new features, if applicable.

3. WAH should create a "how-to" manual that will be kept at RHUs for providers' reference. Having a reference handbook for providers to use when facing difficulties pertaining to system use would strengthen the autonomy and EHR literacy skills of RHU staff.
4. WAH should initiate regular onsite monitoring to ensure that the system is functioning properly, and health workers are regularly using the system to better enhance their performance.
5. LGUs should secure hardware by investing in IT equipment, including upgrading, and scaling up computers and gadgets to better address the LGU needs, monitor progress, and implementation of new services.

   The LGUs of Anao, Bamban, Concepcion, La Paz, Mayantoc, Moncada, Pura, San Clemente, Santa Ignacia and Tarlac City need to replace the Server and should procure for an additional two client laptop that can be use in the registration area.

   The LGUs of Capas, Gerona, Paniqui Ramos, San Manuel and Victoria, and San Jose should request for three client laptops to replace the old and non-working hardware.
6. LGUs should hire additional manpower and a dedicated PhilHealth Coordinator whose only responsibility is to screen and file for good claims reimbursement. The 17 WAH managed facilities should hire at least one dedicated staff for this task whose only responsibility is to screen and file for goo claims.
7. The LGU should provide incentives to end-users that demonstrate mastery of the system. Incentives can be phone credits or other small gifts that would encourage and incentivize the staff to improve their computer and EHR literacy skills.
8. The LGU should mandate all health personnel to regularly use the WAH system and use it to generate DOH and PHO-required reports.

9. The Provincial Health Office should invest and push for the interoperability of health information systems at the provincial level.
10. The LGUs should always include health financing in the agenda of Local Health Board Meetings, and they can also invite partners like PhilHealth and DOH
11. The Provincial Government of Tarlac should study the possibility of co-managing health facilities of non-/under-performing LGUs to further increase health revenues by the province.
12. The Provincial DOH can help in regularly monitoring use of HIS by LGUs and compare this with health financing targets set by the Province for UHC compliance.
13. PhilHealth LHIO should always invite WAH for its orientation programs discussing new policies and system updates.
14. As partners in health by Local Government Units and the Province, the Provincial Department of Health Office, PhilHealth Local Health Insurance Office, and the Wireless Access for Health should regularly meet and measure HIS and health financing accomplishments vis-a-vis UHC targets.

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## APPENDIX A

## REQUEST LETTER

**November 17, 2022**

**Hon._____**
**Municipality of _____**
**Province of Tarlac**

**Thru: Dr._____**
**Municipal Health Officer**

**Subject: Request for Collection of Research Data**

Dear Mayor_____:

This letter is a formal request seeking permission from your office to conduct a survey and collect relevant data for my Master's Thesis entitled "**COMPLIANCE WITH THE WIRELESS ACCESS FOR HEALTH (WAH) INFORMATION SYSTEM IN THE PROVINCE OF TARLAC: AN EVALUATION"**. I am a graduating student taking up Masters of Public Administration-Health Management at Tarlac State University. The objective of my study is to evaluate the compliance and utilization of WAH Health Information System in the Province of Tarlac. The data to be requested from your office and among RHU personnel shall include but is not limited to the compliance on WAH HIS, problems encountered by partner Local Government Units , and proposed measures for the effective tilization of WAH.

Due to the sensitivity of the information requested, the researcher shall observe pertinent guidelines on the privacy and confidentiality of data by providing each respondent with a consent letter prior to the conduct of the survey.

Thank you for your kind consideration of this request.

**Respectfully yours,**

**Rose Ann T. Biag, RN**
**Researcher**

**Noted and Approved by:**

**Dr. Edwin T. Caoleng**
**Thesis Adviser**

## APPENDIX B

## LETTER TO RESPONDENTS

Title of Thesis Proposal: **COMPLIANCE WITH THE WIRELESS ACCESS FOR HEALTH (WAH) INFORMATION SYSTEM IN THE PROVINCE OF TARLAC: AN EVALUATION**

Researcher: Rose Ann T. Biag

Dear Respondent:

I am Rose Ann T. Biag, a Master of Public Administration student at Tarlac State University. I am conducting research on the compliance of WAH HIS in the Province of Tarlac. In lieu of this consent letter, I would like to ask your permission to answer the survey questionnaire attached to this letter.

Your participation in this study will not result in any harm, especially to your personal and professional life.

Your participation is purely voluntary and you are allowed to withdraw anytime you feel uncomfortable answering the questions.

Likewise, any information collected from you shall be used for academic purposes only and shall not be divulged to any third party without your consent.

Kindly place your name and signature in the space below to show you agree to participate in this survey of your volition and understood the terms of this consent letter.

Thank you for your kind consideration on this matter.

_____

Name and Signature of Respondents

## APPENDIX C

## WAH SCORECARDS

**Name of LGU :**

| ANNUAL SCORECARD | COLOR | INTERPRETATION |
|---|---|---|
| 12-10 | | Compliant |
| 9-7 | | Partially Compliant |
| 6 below | | Non-Compliant |

| INDICATORS | | YEAR<br>_____<br>STATUS |
|---|---|---|
| **EMR Usage** | Real Time | |
| | Back Encoding | |
| | Both | |
| | Not Using | |
| **DOH and PhilHealth Standards** | MOA | |
| | PHIC Claims Accreditation | |
| | PHIC Claims Submission | |
| **National Privacy Commission Standards** | Non-Disclosure Agreement | |
| | Patient Consent | |
| | Appointment of Data Protection Officer | |
| **Technical Audit** | Server Age | |
| | Number of Client Computers | |
| | Network being used for Reporting and Transactions | |
| | HIS Version | |
| **Reports Submission** | SQL Uploading | |

## APPENDIX D

## SURVEY QUESTIONNAIRE

**Name of Participant (Optional):**

**Name of LGU (Optional):**

### I. Problems Encountered by the Local Government Units on the Utilization of Wireless Access for Health Platform

What are the problems and hindrances you encountered in using your WAH Platform? Check all that applies.

( ) Disturbs Work Flow
( ) Lack of Personnel and Incentives
( ) Lack of Equipment
( ) Lack of Comnputer Expertise
( ) Lack of Training
( ) Others (please specify)

### II. Proposed Measure for Utilization of Social Health Insurance (PhilHealth)

Which among these measures encourages you to utilize your social health insurance (PhilHealth)?

( ) WAH should conduct annual refresher training and quarterly onsite monitoring
( ) Attend Refresher Training on Basic Computer Skills and the latest version of the WAH System and create a manual on how to use the system
( ) Mandate all RHU staff to use the system for recording and reporting purposes
( ) Request for Additional Equipment

( ) Request for Additional Manpower and incentivized personnel
( ) Others (please specify) _____

**Table 1**
**Electronic Medical Record Usage for Year 2020**

| Local Government Units | Electronic Medical Record Usage | | | | | |
|---|---|---|---|---|---|---|
| | Status | | | Encoding Status | | |
| | Active | Irregular | Not Active | Real Time Encoding | Back Encoding | Not Using The Sytem |
| Anao | ✓ | | | | ✓ | |
| Bamban | ✓ | | | | ✓ | |
| Capas | ✓ | | | | ✓ | |
| Concepcion | ✓ | | | | ✓ | |
| Gerona | ✓ | | | | ✓ | |
| La Paz | ✓ | | | ✓ | | |
| Mayantoc | ✓ | | | ✓ | | |
| Moncada | | | ✓ | | | ✓ |
| Paniqui | | ✓ | | | ✓ | |
| Pura | ✓ | | | | ✓ | |
| Ramos | ✓ | | | | ✓ | |
| San Clemente | ✓ | | | ✓ | | |
| San Jose | | | ✓ | | | ✓ |
| San Manuel | ✓ | | | | ✓ | |
| Santa Ignacia | ✓ | | | ✓ | | |
| Tarlac City | ✓ | | | | ✓ | |
| Victoria | ✓ | | | ✓ | | |

**Table 2**
**Electronic Medical Record Usage for Year 2021**

| Local Government Units | Electronic Medical Record Usage | | | | | |
|---|---|---|---|---|---|---|
| | Status | | | Encoding Status | | |
| | Active | Irregular | Not Active | Real Time Encoding | Back Encoding | Not Using the Sytem |
| Anao | ✓ | | | | ✓ | |
| Bamban | ✓ | | | | ✓ | |
| Capas | ✓ | | | | ✓ | |
| Concepcion | ✓ | | | | ✓ | |
| Gerona | ✓ | | | | ✓ | |
| La Paz | ✓ | | | ✓ | | |
| Mayantoc | ✓ | | | ✓ | | |
| Moncada | ✓ | | | ✓ | | |
| Paniqui | ✓ | | | | ✓ | |
| Pura | ✓ | | | | ✓ | |
| Ramos | ✓ | | | | ✓ | |
| San Clemente | ✓ | | | ✓ | | |
| San Jose | | | ✓ | | | ✓ |
| San Manuel | ✓ | | | | ✓ | |
| Santa Ignacia | ✓ | | | ✓ | | |
| Tarlac City | ✓ | | | ✓ | | |
| Victoria | ✓ | | | ✓ | | |

**Table 3**
**Electronic Medical Record Usage for Year 2022**

| Local Government Units | Electronic Medical Record Usage | | | | | |
|---|---|---|---|---|---|---|
| | Status | | | Encoding Status | | |
| | Active | Irregular | Not Active | Real Time Encoding | Back Encoding | Not Using the Sytem |
| Anao | ✓ | | | | ✓ | |
| Bamban | ✓ | | | ✓ | | |
| Capas | ✓ | | | ✓ | | |
| Concepcion | ✓ | | | ✓ | | |
| Gerona | ✓ | | | ✓ | | |
| La Paz | ✓ | | | ✓ | | |
| Mayantoc | ✓ | | | ✓ | | |
| Moncada | ✓ | | | ✓ | | |
| Paniqui | ✓ | | | | ✓ | |
| Pura | ✓ | | | ✓ | | |
| Ramos | ✓ | | | ✓ | | |
| San Clemente | ✓ | | | ✓ | | |
| San Jose | | | ✓ | | | ✓ |
| San Manuel | ✓ | | | ✓ | | |
| Santa Ignacia | ✓ | | | ✓ | | |
| Tarlac City | ✓ | | | ✓ | | |
| Victoria | ✓ | | | ✓ | | |

**Table 4**
**DOH and PhilHealth Standards Compliance for Year 2020**

| Local Government Units | MOA | | | PhilHealth Accreditation | | | PhilHealth Claim Submission | | |
|---|---|---|---|---|---|---|---|---|---|
| | ✓ With Existing MOA | Expiring in 6 Months | Expired or No MOA | Accredited | In Process Application | Non Accreditation | >30% | < 30% | Not Using |
| Anao | ✓ | | | ✓ | | | | | ✓ |
| Bamban | ✓ | | | ✓ | | | | | ✓ |
| Capas | ✓ | | | ✓ | | | | | ✓ |
| Concepcion | ✓ | | | ✓ | | | ✓ | | |
| Gerona | ✓ | | | ✓ | | | | ✓ | |
| La Paz | ✓ | | | ✓ | | | | ✓ | |
| Mayantoc | ✓ | | | ✓ | | | | ✓ | |
| Moncada | | | ✓ | | | ✓ | | | |
| Paniqui | ✓ | | | | | ✓ | | | ✓ |
| Pura | ✓ | | | ✓ | | | | ✓ | |
| Ramos | ✓ | | | ✓ | | | | | ✓ |
| San Clemente | ✓ | | | ✓ | | | ✓ | | |
| San Jose | | | ✓ | | | ✓ | | | ✓ |
| San Manuel | ✓ | | | ✓ | | | | ✓ | |
| Santa Ignacia | ✓ | | | ✓ | | | | ✓ | |
| Tarlac City | ✓ | | | ✓ | | | | | ✓ |
| Victoria | ✓ | | | ✓ | | | ✓ | | |

**Table 5**
**DOH and PhilHealth Standards Compliance for Year 2021**

| Local Government Units | MOA | | | PhilHealth Accreditation | | | PhilHealth Claim Submission | | |
|---|---|---|---|---|---|---|---|---|---|
| | With Existing MOA | Expirimg in 6 Months | Expired or No MOA | Accredited | In Process Application | No Accreditation | >30% | < 30% | Not Using |
| Anao | ✓ | | | ✓ | | | | ✓ | |
| Bamban | ✓ | | | ✓ | | | | | ✓ |
| Capas | ✓ | | | ✓ | | | ✓ | | |
| Concepcion | ✓ | | | ✓ | | | ✓ | | |
| Gerona | ✓ | | | ✓ | | | | ✓ | |
| La Paz | ✓ | | | ✓ | | | | ✓ | |
| Mayantoc | ✓ | | | ✓ | | | ✓ | | |
| Moncada | ✓ | | | ✓ | | | | | ✓ |
| Paniqui | ✓ | | | | | ✓ | | | ✓ |
| Pura | ✓ | | | ✓ | | | | ✓ | |
| Ramos | ✓ | | | ✓ | | | | ✓ | |
| San Clemente | ✓ | | | ✓ | | | ✓ | | |
| San Jose | | | ✓ | | | ✓ | | | |
| San Manuel | ✓ | | | ✓ | | | | ✓ | |
| Santa Ignacia | ✓ | | | ✓ | | | | | |
| Tarlac City | ✓ | | | ✓ | | | | ✓ | |
| Victoria | ✓ | | | ✓ | | | ✓ | | |

**Table 6**
**DOH and PhilHealth Standards Compliance for Year 2022**

| Local Government Units | MOA | | | PhilHealth Accreditation | | | PhilHealth Claim Submission | | |
|---|---|---|---|---|---|---|---|---|---|
| | With Existing MOA | Expirimg in 6 Months | Expired or No MOA | Accredited | In Process Application | No Accreditation | >30% | < 30% | Not Using |
| Anao | | ✓ | | ✓ | | | | | ✓ |
| Bamban | | ✓ | | ✓ | | | | ✓ | |
| Capas | | ✓ | | ✓ | | | ✓ | | |
| Concepcion | | ✓ | | ✓ | | | ✓ | | |
| Gerona | | ✓ | | ✓ | | | | ✓ | |
| La Paz | | ✓ | | ✓ | | | | ✓ | |
| Mayantoc | | ✓ | | ✓ | | | ✓ | | |
| Moncada | ✓ | | | ✓ | | | ✓ | | |
| Paniqui | | ✓ | | ✓ | | | | | ✓ |
| Pura | | ✓ | | ✓ | | | | | |
| Ramos | | ✓ | | ✓ | | | | | ✓ |
| San Clemente | | ✓ | | ✓ | | | ✓ | | |
| San Jose | | | ✓ | | | ✓ | | | ✓ |
| San Manuel | | ✓ | | ✓ | | | | ✓ | |
| Santa Ignacia | | ✓ | | ✓ | | | ✓ | | |
| Tarlac City | | ✓ | | ✓ | | | ✓ | | |
| Victoria | | ✓ | | ✓ | | | ✓ | | |

**Table 7**
**National Privacy Commission Standards Compliance for Year 2020**

| Local Government Units | National Privacy Commission Standards | | | | | |
|---|---|---|---|---|---|---|
| | NDA & Consent Forms | | | Data Protection Officer | | |
| | Using | Partially Used | Not Using | Appointed | Assigned | No DPO |
| Anao | ✓ | | | ✓ | | |
| Bamban | ✓ | | | ✓ | | |
| Capas | ✓ | | | ✓ | | |
| Concepcion | ✓ | | | ✓ | | |
| Gerona | ✓ | | | ✓ | | |
| La Paz | ✓ | | | ✓ | | |
| Mayantoc | ✓ | | | ✓ | | |
| Moncada | | | ✓ | | | ✓ |
| Paniqui | ✓ | | | ✓ | | |
| Pura | ✓ | | | ✓ | | |
| Ramos | ✓ | | | ✓ | | |
| San Clemente | ✓ | | | ✓ | | |
| San Jose | | | ✓ | | | ✓ |
| San Manuel | ✓ | | | ✓ | | |
| Santa Ignacia | ✓ | | | ✓ | | |
| Tarlac City | ✓ | | | ✓ | | |
| Victoria | ✓ | | | ✓ | | |

**Table 8**
**National Privacy Commission Standards Compliance for Year 2021**

| Local Government Units | National Privacy Commission Standards | | | | | |
|---|---|---|---|---|---|---|
| | NDA & Consent Forms | | | Data Protection Officer | | |
| | Using | Partially Used | Not Using | Appointed | Assigned | No DPO |
| Anao | ✓ | | | ✓ | | |
| Bamban | ✓ | | | ✓ | | |
| Capas | ✓ | | | ✓ | | |
| Concepcion | ✓ | | | ✓ | | |
| Gerona | ✓ | | | ✓ | | |
| La Paz | ✓ | | | ✓ | | |
| Mayantoc | ✓ | | | ✓ | | |
| Moncada | ✓ | | | ✓ | | |
| Paniqui | ✓ | | | ✓ | | |
| Pura | ✓ | | | ✓ | | |
| Ramos | ✓ | | | ✓ | | |
| San Clemente | ✓ | | | ✓ | | |
| San Jose | | | ✓ | | | ✓ |
| San Manuel | ✓ | | | ✓ | | |
| Santa Ignacia | ✓ | | | ✓ | | |
| Tarlac City | ✓ | | | ✓ | | |
| Victoria | ✓ | | | ✓ | | |

**Table 9**
**National Privacy Commission Standards Compliance for Year 2022**

| Local Government Units | National Privacy Commission Standards | | | | | |
|---|---|---|---|---|---|---|
| | NDA & Consent Forms | | | Data Protection Officer | | |
| | Using | Partially Used | Not Using | Appointed | Assigned | No DPO |
| Anao | ✓ | | | ✓ | | |
| Bamban | ✓ | | | ✓ | | |
| Capas | ✓ | | | ✓ | | |
| Concepcion | ✓ | | | ✓ | | |
| Gerona | ✓ | | | ✓ | | |
| La Paz | ✓ | | | ✓ | | |
| Mayantoc | ✓ | | | ✓ | | |
| Moncada | ✓ | | | ✓ | | |
| Paniqui | ✓ | | | ✓ | | |
| Pura | ✓ | | | ✓ | | |
| Ramos | ✓ | | | ✓ | | |
| San Clemente | ✓ | | | ✓ | | |
| San Jose | | | ✓ | | | ✓ |
| San Manuel | ✓ | | | ✓ | | |
| Santa Ignacia | ✓ | | | ✓ | | |
| Tarlac City | ✓ | | | ✓ | | |
| Victoria | ✓ | | | ✓ | | |

**Table 10**
**Technical Audit Standards Compliance for Year 2020**

| Local Government Units | Server Age | | | Client Units | | | HIS Version | | | Internet connect-ivity | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1-2 years | 3 Years | 3 Years Above or No Server | 6 or more units | 3-5 Units | 1-2 Units | Version 3.3 | Version 3.2-3.1 | Version 3 and below | 5 MBPS and above | 4.9-2.1 MBPS | Below 2 |
| Anao | | | ✓ | | ✓ | | ✓ | | | ✓ | | |
| Bamban | | | ✓ | | ✓ | | ✓ | | | ✓ | | |
| Capas | | | ✓ | | ✓ | | ✓ | | | ✓ | | |
| Concepcion | | | ✓ | | ✓ | | ✓ | | | ✓ | | |
| Gerona | | | ✓ | | ✓ | | ✓ | | | ✓ | | |
| La Paz | | ✓ | | | ✓ | | ✓ | | | | ✓ | |
| Mayantoc | | ✓ | | | ✓ | | ✓ | | | ✓ | | |
| Moncada | | | ✓ | | ✓ | | | | ✓ | ✓ | | |
| Paniqui | | | ✓ | | ✓ | | | | ✓ | ✓ | | |
| Pura | | ✓ | | | ✓ | | ✓ | | | ✓ | | |
| Ramos | | ✓ | | | ✓ | | ✓ | | | ✓ | | |
| San Clemente | | ✓ | | | ✓ | | ✓ | | | ✓ | | |
| San Jose | | | ✓ | | ✓ | | | | ✓ | ✓ | | |
| San Manuel | | ✓ | | | ✓ | | ✓ | | | ✓ | | |
| Santa Ignacia | | ✓ | | | ✓ | | ✓ | | | ✓ | | |
| Tarlac City | | ✓ | | | ✓ | | ✓ | | | ✓ | | |
| Victoria | | | ✓ | | ✓ | | ✓ | | | ✓ | | |

**Table 11**
**Technical Audit Standards Compliance for Year 2021**

| Local Government Units | Server Age | | | Client Units | | | HIS Version | | | Internet connect-ivity | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1-2 years | 3 Years | 3 Years Above or No Server | 6 or more units | 3-5 Units | 1-2 Units | Version 3.3 | Version 3.2-3.1 | Version 3 and below | 5 MBPS and above | 4.9-2.1 MBPS | Below 2 |
| Anao | | | ✓ | | ✓ | | ✓ | | | ✓ | | |
| Bamban | | | ✓ | | ✓ | | ✓ | | | ✓ | | |
| Capas | ✓ | | | | ✓ | | ✓ | | | ✓ | | |
| Concepcion | | | ✓ | | ✓ | | ✓ | | | ✓ | | |
| Gerona | ✓ | | | | ✓ | | ✓ | | | ✓ | | |
| La Paz | | ✓ | | | ✓ | | ✓ | | | | ✓ | |
| Mayantoc | | ✓ | | | ✓ | | ✓ | | | ✓ | | |
| Moncada | ✓ | | | | ✓ | | ✓ | | | ✓ | | |
| Paniqui | ✓ | | | | ✓ | | ✓ | | | ✓ | | |
| Pura | | ✓ | | | ✓ | | ✓ | | | ✓ | | |
| Ramos | | ✓ | | | ✓ | | ✓ | | | ✓ | | |
| San Clemente | | ✓ | | | ✓ | | ✓ | | | ✓ | | |
| San Jose | | | ✓ | | ✓ | | | | ✓ | ✓ | | |
| San Manuel | | ✓ | | | ✓ | | ✓ | | | ✓ | | |
| Santa Ignacia | | ✓ | | | ✓ | | ✓ | | | ✓ | | |
| Tarlac City | | ✓ | | | ✓ | | ✓ | | | ✓ | | |
| Victoria | ✓ | | | | ✓ | | ✓ | | | ✓ | | |

**Table 12**
**Technical Audit Standards Compliance for Year 2022**

| Local Government Units | Server Age | | | Client Units | | | HIS Version | | | Internet connect-ivity | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1-2 years | 3 Years | 3 Years Above or No Server | 6 or more units | 3-5 Units | 1-2 Units | Version 3.3 | Version 3.2-3.1 | Version 3 and below | 5 MBPS and above | 4.9-2.1 MBPS | Below 2 |
| Anao | | | ✓ | | ✓ | | ✓ | | | ✓ | | |
| Bamban | | | ✓ | | ✓ | | ✓ | | | ✓ | | |
| Capas | ✓ | | | | ✓ | | ✓ | | | ✓ | | |
| Concepcion | ✓ | | | | ✓ | | ✓ | | | ✓ | | |
| Gerona | ✓ | | | | ✓ | | ✓ | | | ✓ | | |
| La Paz | | ✓ | | | ✓ | | ✓ | | | ✓ | | |
| Mayantoc | | ✓ | | | ✓ | | ✓ | | | ✓ | | |
| Moncada | ✓ | | | | ✓ | | ✓ | | | ✓ | | |
| Paniqui | ✓ | | | | ✓ | | ✓ | | | ✓ | | |
| Pura | | ✓ | | | ✓ | | ✓ | | | ✓ | | |
| Ramos | | ✓ | | | ✓ | | ✓ | | | ✓ | | |
| San Clemente | | ✓ | | | ✓ | | ✓ | | | ✓ | | |
| San Jose | | | ✓ | | ✓ | | | | ✓ | ✓ | | |
| San Manuel | | ✓ | | | ✓ | | ✓ | | | ✓ | | |
| Santa Ignacia | | ✓ | | | ✓ | | ✓ | | | ✓ | | |
| Tarlac City | | ✓ | | | ✓ | | ✓ | | | ✓ | | |
| Victoria | ✓ | | | | ✓ | | ✓ | | | ✓ | | |

**Table 13**
**Reports Submission Compliance for Year 2020**

| Local Government Units | Reports Submission | | |
|---|---|---|---|
| | On Time | Late | No Report |
| Anao | | | ✓ |
| Bamban | | | ✓ |
| Capas | | | ✓ |
| Concepcion | | | ✓ |
| Gerona | ✓ | | |
| La Paz | | ✓ | |
| Mayantoc | ✓ | | |
| Moncada | | | ✓ |
| Paniqui | | | ✓ |
| Pura | | | ✓ |
| Ramos | | | ✓ |
| San Clemente | ✓ | | |
| San Jose | | | ✓ |
| San Manuel | | | ✓ |
| Santa Ignacia | ✓ | | |
| Tarlac City | | ✓ | |
| Victoria | ✓ | | |

**Table 14**
**Reports Submission Compliance for Year 2022**

| Local Government Units | Reports Submission | | |
|---|---|---|---|
| | On Time | Late | No Report |
| Anao | | | ✓ |
| Bamban | | | ✓ |
| Capas | | | ✓ |
| Concepcion | | | ✓ |
| Gerona | ✓ | | |
| La Paz | | ✓ | |
| Mayantoc | ✓ | | |
| Moncada | | | ✓ |
| Paniqui | | | ✓ |
| Pura | | | ✓ |
| Ramos | | | ✓ |
| San Clemente | ✓ | | |
| San Jose | | | ✓ |
| San Manuel | | | ✓ |
| Santa Ignacia | ✓ | | |
| Tarlac City | | ✓ | |
| Victoria | ✓ | | |

**Table 15**
**Reports Submission Compliance for Year 2022**

| Local Government Units | Reports Submission | | |
|---|---|---|---|
| | On Time | Late | No Report |
| Anao | | | ✓ |
| Bamban | | | ✓ |
| Capas | | | ✓ |
| Concepcion | | | ✓ |
| Gerona | ✓ | | |
| La Paz | | | ✓ |
| Mayantoc | ✓ | | |
| Moncada | | | ✓ |
| Paniqui | | | ✓ |
| Pura | | | ✓ |
| Ramos | | ✓ | |
| San Clemente | ✓ | | |
| San Jose | | | ✓ |
| San Manuel | | ✓ | |
| Santa Ignacia | ✓ | | |
| Tarlac City | | ✓ | |
| Victoria | ✓ | ✓ | |

## PHOTO DOCUMENTATION

Researcher conducting face to face interview with the RHU personnel with different LGUS.

## CURRICULUM VITAE (CV)

| | |
|---|---|
| **NAME** | ROSE ANN T. BIAG |
| **BIRTH DETAILS** | JANUARY 26, 1983, TARLAC, TARLAC, PHILIPPINES |
| **NATIONALITY** | **:** FILIPINO |
| **ADDRESS** | Blk 7 Lot 41-43 Honesty St., Capitol Villas, Brgy. Carangian, Tarlac City 2300 Philippines |
| **TELEPHONE NO** | +63 917 529 0687 |
| **E-MAIL ADDRESS** | roseann.biag@gmail.com |
| **LANGUAGES AND DIALECTS** | Native Speaker of English and Filipino, Capampangan (Basic) |
| **PROFESSIONAL COMPETENCIES** | Running ten years of professional experience as Supervising Partner for Digital Health Program. Extensive training and exposure to digital health information system management, planning, and implementation and strategic public health policy/ governance; knowledge generation and management, leadership and development. |
| **EDUCATION & CERTIFICATION** | Master in Public Administration-Major In Health Management- Tarlac State University, 2021-Present<br>B.S. Nursing, Central Luzon Doctors' Hospital Educational |

Institution, 2011

BSBA Major in Financial Managerial Accounting, Tarlac State University 2005

Passed the Board of Nursing Eligibility Examination, License Number 0701146, July 2011

**EMPLOYMENT RECORD**

| | |
|---|---|
| **FROM** July 2013 | **TO** Present |
| **EMPLOYER** | **Wireless Access For Health** |
| **POSITION HELD** | Digital Health Program Trainer |
| **AND** | Leading the supervision of the training and capability |
| **DESCRIPTION OF** | activities to the end users; Lead Trainers for Modules 1,2,3 |
| **DUTIES** | and 4 |
| | Assisting in the improvement of documentations and training manuals |
| | Providing assistance in end-user testing and issue documentation of the software |
| | Validating Post-Training Reports and Post-Monitoring Reports of Partners engaged in training/monitoring. |
| | Preparing Post-Training Reports after every training. |
| | Preparing Post-Monitoring Reports after every monitoring. |

Preparing monitoring letters and other correspondence needed before level upgrading.

Preparing Annual Reports for all Partner Facilities

Updating all trackers related in the monitoring of the performance of RHU sites.