

Implementation of Outpatient Consultation Digitalization for Healthcare Services: Basis for Development Plan

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ABSTRACT

The integration of Electronic Health Records (EHRs) streamlines healthcare operations, enhancing access to patient data, reducing administrative workload, and improving care coordination. Automated online scheduling and invoicing minimize errors, saving time and money, and allowing resources to be allocated more efficiently. This study addresses the benefits and challenges of digitalizing outpatient consultation, proposing a healthcare service development plan based on its findings. Results indicate that digital consultation effectively improves healthcare access, reduces hospital maintenance and patient expenses, and enhances patient care. However, challenges such as security protocols, digital literacy, and infrastructure limitations persist. Recommendations include enhancing online consultation systems, improving patient digital literacy, bolstering security measures, and providing advanced training for medical staff to optimize outpatient care in the post-pandemic digital era.

Moreover, the research highlights the significant role of digital technology in preserving patient records, monitoring conditions, and facilitating access to medical information. Despite benefits, a gap exists between perceived advantages and actual challenges. Medical staff acknowledge benefits firsthand, while patients show less concern. Addressing technical challenges and providing adequate training are crucial for successful implementation. This study offers insights for healthcare institutions aiming to enhance digital infrastructure and improve patient care delivery.

Keywords: Electronic Health Records (EHRs), digitalization, outpatient consultation

THE PROBLEMS AND ITS BACKGROUND

This chapter presents an overview of the topic being studied and its background which served as justification for the necessity to conduct this research. Also, the theoretical framework, conceptual framework statement of the problem, hypothesis, significance of the study, scope, delimitation, and definition of terms are included in this chapter.

Introduction

Healthcare delivery is transformed by digital innovation, which also reduces costs and broadens access to treatment. Wearable technology, telemedicine, health information exchanges, artificial intelligence, electronic health records, and other technologies are some of the ones driving digital innovation. The efficiency, quality, and accessibility of healthcare services have all improved as a result of these technology developments (Scott, 2023).

Digitized medical records, or scanned paper data, have been used by several hospitals as a way to reduce administrative costs and enhance information access. As more technologies continue to develop, the way people engage with medical specialists is changing. People may now more easily reach healthcare providers by booking an appointment to show up (Chang, 2023). Virtual appointments and remote patient monitoring are two instances

of this. Individuals' access to healthcare is being improved by virtual appointments. Now poor individuals have options to see doctors virtually in rural or isolated areas where access to healthcare has traditionally been limited.

In addition, digital health is the application of technology and medical knowledge to enhance patient outcomes and treatment. Thus, a smartphone may now be used to continually check if a patient has taken their prescribed medications, keep an eye on their vital signs, and even watch their body temperature and movement patterns to determine whether or not they have fallen in their home.

Improving patient outcomes is one of the key advantages of using digital technologies. This takes the shape of more patient involvement, tailored treatment plans, and improved care coordination. This includes telemedicine and wellness-focused smartphone apps that enable users to get medical care from a distance. Healthcare practitioners can promptly diagnose patients and monitor their compliance with recommended medication (Schneider, 2023).

Moreover, digital technology aids in improving productivity and simplifying medical procedures. Using Electronic Health Records (EHRs) makes it easier for medical professionals to access patient data, which reduces the amount of administrative labor needed and improves care coordination. Online appointment scheduling and invoicing are automated and available to patients. This reduces the possibility of human mistakes while saving time and money. As a consequence, resources may be used more wisely, and hospital staff can concentrate on delivering patient care. Digitalizing manual operations can save money and eventually preserve resources. The need for paper records and the associated expenses of keeping and managing them declined with the advent of Electronic Health Records, or EHRs.

On the other hand, if patients can view their medical records, they might engage in a more active role in their care. This can allow them to manage persistent illnesses more skillfully and enhance their health, they can also change the way they live. The use of technology can aid in accomplishing this objective.

Background of the Study

San Lorenzo Ruiz General Hospital (SLRGH) uses technology in its provision of outpatient consultations. It started during the pandemic since physical visits in the hospitals are impossible due to the high risks and high levels of threat of contracting the virus. Online consultation or telemedicine was introduced to the public to continue the provision of service, provide medical advice to each patient, and monitor their condition based on their medical records during this time. This continues even after the pandemic is lifted, especially with their obstetric patients. In addition, all information about the patients is electronically recorded. With the use of computer technology, the search for the patients' records is easier and faster, with just a click of a button compared to the traditional search in the filing cabinet to view the printed records.

The health care service delivery becomes more effective and more efficient since the processing of reviewing and updating patient's records based on the diagnosis of the physician, laboratory and testing results, and other information are done expressly compared to individual face-to-face consultation with the printed records. On the part of the patients, the digitalization of outpatient consultation provides convenience and accessibility to all of them. The patients no longer needed to travel and wait in a very long line for the OPD section. They can make use of their time efficiently at home while waiting for their names to be called during the virtual appointment schedules.

The effectiveness and benefits of the digitalization of outpatient consultation are very evident, particularly during the pandemic. However, some challenges are being faced by both healthcare providers and their patients in the utilization of new technology in communicating their health concerns. The common challenges include privacy, data security, adoption of technology, infrastructure, and resources. Despite the benefits brought by this technological advancement, reality-based, the patients and health care providers in government hospitals experience difficulty.

The use of digital technology is more beneficial for safekeeping, monitoring, and access to patients' medical records and less beneficial in conducting physical examinations of patients. Hence, the gap between the benefits and challenges in the digitalization of outpatient consultation will be addressed in this study. The output of the

study is the proposed healthcare service development plan which is based on the findings of the study. This targeted output would serve as the basis of the SLRGH in the continuous implementation of digitalization in outpatient consultation under the post-pandemic era. Hence, there is a reason to conduct this study.

Theoretical Framework

The assessment of the effectiveness, benefits, and challenges of the digitalization of outpatient consultation is based on the digital transformation theory of Ines Mergel (2018) which is discussed in the study of Angelo Stoumpos (2023) in his work entitled Digital Transformation in Healthcare: Technology Acceptance and Its Applications.

According to Mergel, digital transformation is a process that aims to improve an entity by triggering significant changes to its properties through combinations of information, computing, communication, and connectivity technologies. Digital transformation consulting services analyze the organizations' requirements, existing resources, and their ability to scale to recommend the right digital processes and the experience transformation guideposts that help them to effectively use the digital technology, tools, and platforms Moreover, a digital transformation strategy is the approach to remodeling the enterprise to incorporate digital technology across appropriate facets to achieve everything from greater efficiencies and collaboration to improving delivery speed and customer satisfaction.

Furthermore, according to Stoumpos "digital transformation" describes technological advancements in digital media that improve society and the healthcare sector. Digital technology must be used by healthcare systems to find creative ways to solve medical issues and enhance the delivery of healthcare. The internet and digital technology, as well as how they connect to new treatments and best practices for improved health management techniques, are all part of the digital revolution of healthcare. Ensuring the quality control of vast amounts of data may both save healthcare costs and enhance patient outcomes. Medical education would be impacted by digital technology as well, and specialists would invent new methods of training individuals.

The Internet of Things, wearable technology, virtual reality, and information technology have all contributed to the transformation of healthcare operations and business practices. These technological innovations have become a necessary part of our everyday lives. Patients would now be able to select from a broader range of healthcare options with greater consideration, ushering in a new era of patient-centric healthcare. Health care, both personal and institutional, has been molded by the technological revolution.

The digital transformation in the tertiary hospital, particularly in the outpatient department enables the hospital administrators to create a strategy to accommodate as much as possible all patients who undergo consultation services. The organization would benefit from those digital transformations since the system of its daily operation would become systematic and organized. This digital transformation influences the culture of society which encourages them to adopt modern methods of medical consultation services even in remote areas. The use of modern technology enables medical staff to reach out to the people. It also increases customer satisfaction due to convenience and cost-effectiveness. Moreover, this digital transformation brings people to the next level of current trends.



Figure 1. Digital Transformation Theory of Ines Mergel (2018)

(own illustration of Bumann and Peter, 2019)

Conceptual Framework

The study embraced the transformation theory within the healthcare sector, employing the Input-Process-Output (IPO) Model to elucidate the actual execution of the research. This decision was rooted in the descriptive narrative approach adopted for evaluating the digitalization of patient consultation outputs within a public hospital setting. The shift from conventional manual record-keeping and face-to-face interactions between physicians and patients to the integration of digital technologies for electronic data recording was meticulously mapped out using this model, complemented by the administration of survey questionnaires.

The input of the study would be the assessment of the level of effectiveness, level of benefits, and seriousness of the challenges encountered by the respondents in the digitalization of the outpatient consultation at San Lorenzo Ruiz General Hospital (SLRGH).

The study will employ a survey questionnaire validated by a panel of experts. Additionally, documentary analysis and cross-referencing of gathered data will be utilized to reinforce the findings of the assessment. Furthermore, Focused Group Discussions (FGDs) will also be conducted to enrich the research process.

The output of the study would be the proposed health care service development plan which is based on the findings of the study. The target output would be used as the basis of the hospital in the adoption of the hybrid system in the actual conduct of the outpatient consultation activities.

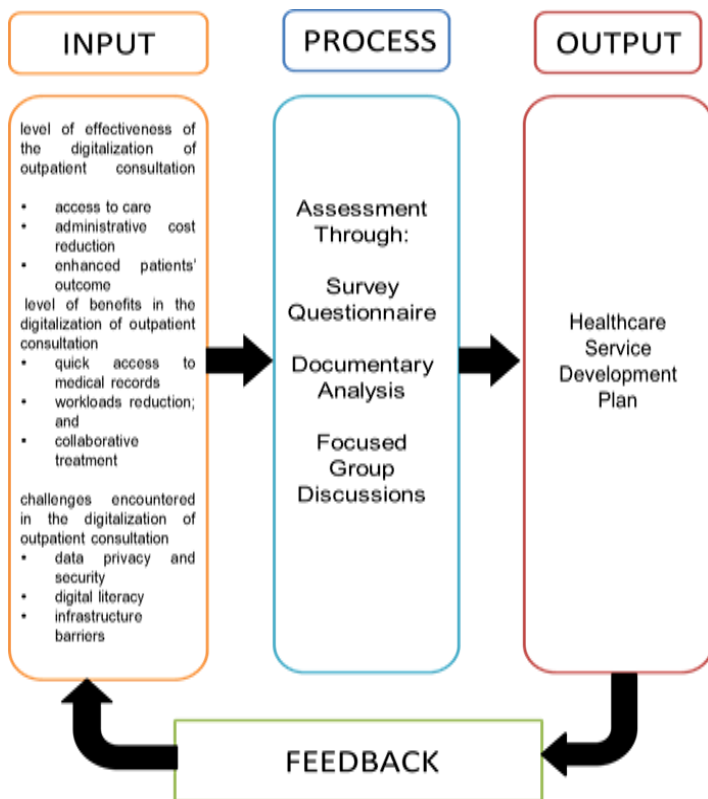


Figure 2. Conceptual Paradigm of the Study

Statement of the Problem

The study's main objective is to produce the basis for the adoption of the digitalization of outpatient consultation at the San Lorenzo Ruiz General Hospital through the assessment of its effectiveness, benefits, and challenges in actual utilization.

Specifically, the study sought answers to the following research questions:

1. What is the level of effectiveness of the digitalization of outpatient consultation at SLRGH in terms of:

- a. access to care.
 - b. cost reduction; and
 - c. patients' outcome enhancement?
2. Is there a significant difference in the assessment of the medical, nursing, and admin services on the level of effectiveness of the digitalization of outpatient consultation at SLRGH based on the above-mentioned variables?
 3. Is there a significant difference in the assessment of the hospital staff and patients on the level of effectiveness of the digitalization of outpatient consultation at SLRGH?
 4. How do the respondents assess the level of benefits in the digitalization of outpatient consultation in terms of:
 - a. quick access to medical records.
 - b. workloads reduction; and
 - c. collaborative treatment?
 5. Is there a significant difference in the assessment of the three groups of respondents on the level of benefits in the digitalization of outpatient consultation?
 6. How do the respondents assess the challenges encountered in the digitalization of outpatient consultation about:
 - a. data privacy and security.
 - b. digital literacy; and
 - c. infrastructure barriers?
 7. Is there a significant difference in the assessment of the challenges encountered in the digitalization of outpatient consultation?
 8. What healthcare service development plan may be formulated based on the results of the study?

Hypotheses

The following hypotheses were tested.

HO1. There is no significant difference in the assessment of the medical, nursing, and admin services on the level of effectiveness of the digitalization of outpatient consultation at SLRGH.

HO2. There is no significant difference in the assessment of the hospital staff and patients on the level of effectiveness of the digitalization of outpatient consultation at SLRGH.

HO3. There is no significant difference in the assessment of the three groups of respondents on the level of benefits of the digitalization of outpatient consultation.

HO4. There is no significant difference in the assessment of the three groups of respondents on the challenges encountered in the digitalization of outpatient consultation.

Significance of the Study

This study would be significant to the following:

Patients. The use of digital technology in online outpatient consultation enables them to save their money, time, and effort to visit the hospital for face-to-face or actual consultation. Doctors can visit them remotely using virtual platforms. In addition, they can access their records so that they can increase the level of their engagement in medical treatment. They can involve their family members and relatives in the decision-making process in undergoing medical treatment.

Relatives of Patient. The digital platforms ease their burden in bringing or accompanying their patients to the hospital for outpatient consultation. Their access to a virtual platform enables the hospital to reach their patient at home and give proper diagnoses. It also enables them to communicate with the health care providers on their role in taking care of their sick patients.

Medical Staff. The adoption and utilization of digital technology ease their burden in the manual recording of patient records. They become efficient in searching and accessing the individual patient's information which is needed in the diagnosis and decision-making process in giving proper treatment to the patients. The development plan which is the outcome of the study may be used as the basis for the continuous utilization of digital platforms even in the post-pandemic era wherein limited face-to-face consultations are being allowed.

Health Care Providers. The digitalization of outpatient consultation particularly in the medical records section would ease the burden of healthcare providers in accessing the patient's record and giving necessary medical intervention. The system may help the health care providers to control and systematize their workloads and schedules of their appointments with their respective patients.

Human Resource Management Section. The digitalization of the medical system and procedures in the hospital would enable the Human Resource Management Section to equalize the workload of the medical staff. In addition, the Human Resource Management Section, through the Learning Development Committee would facilitate continuous training and education to all medical practitioners and staff on digital technology. The needed skills and knowledge in the adoption of new technology allow the human resource to provide a career development plan and skills enhancement program as a requirement in the utilization of digital technology in the delivery of health care services to the public.

San Lorenzo Ruiz General Hospital. The continuous application of digitalization of outpatient consultation, particularly the recording of patients' information and results of laboratory and medical examinations, would maximize the available human resources of the hospital. Also, the processing of the individual transaction of the patient or their relative would be efficiently done. The system of accommodating the outpatient is done properly and it would avoid unnecessary disruption on the part of the medical experts.

Government Hospitals. Public health institutions may improve their healthcare services through the adoption of digital technology in giving medical consultations and means to monitor the conditions of their patients. The virtual facility may help to decongest the actual visit to the hospital for outpatient consultation. In addition, actual physical contact with patients with minor illnesses would be prevented with the help of online platforms.

Public. The modern system of providing outpatient consultation encourages the public to visit government hospitals using virtual platforms and to avail the medical services instead of visiting private hospitals. The use of digital technology allows them to save money and time since the salary of medical doctors in public hospitals comes from the taxes of the public.

Researcher. The output of the study, which is the health care service development plan would be the contribution of the researcher in the field of study. Also, the adoption of the plan for the target hospital where the researcher is currently working would help him to reduce his current workload in the Health Information Management Section. The digitalization of outpatient consultation and patient information helps him to become more efficient and productive in his current position.

Future researchers may use this research as a future reference to a much larger scale of study and provide a wealth of information on the digitalization of health care services such as the utilization of digital platforms to provide online or virtual consultation and monitor the condition of the patients. The outcome of future research may serve as support for the current study.

Scope and Delimitations of the Study

The study covers the assessment of the digitalization of outpatient consultation in terms of its effectiveness, benefits, and challenges. The perception of the medical staff and patients concerning the actual implementation of digitalization or the utilization of digital technology in the delivery of health care services to the public at the

San Lorenzo Ruiz General Hospital which is in Malabon City was considered in the study. The medical staff, including the medical practitioners, is part of the respondents of the study. The medical staff includes personnel of the medical, nursing, and admin services. Also, the patients based on hospital records who underwent outpatient consultation in a virtual platform, particularly during the pandemic were included as part of the group of respondents aside from the regular patients of the Outpatient Section who experienced SLRGH's queuing system, electronic order of payment, and paperless OPD chart or electronic medical record.

The limitation of the study was the perception of medical staff and patients only on the level of effectiveness, benefits, and challenges in the digitalization of outpatient consultation at the OPD section of San Lorenzo Ruiz General Hospital. The level of implementation of the digitalization of outpatient consultation in SLRGH was considered as part of the study. In addition, the relatives of the patients were no longer considered as part of the study. The level of effectiveness of the digitalization of outpatient consultation at SLRGH was limited only to access to care, cost reduction, and patient outcome enhancement. The level of benefits in the digitalization of outpatient consultation was limited in terms of quick access to medical records, workload reduction, and collaborative treatment. Concerning the challenges encountered in the digitalization of outpatient consultation, the topic was limited to data privacy and security, digital literacy, and infrastructure barriers. Other challenges which do not belong to these criteria were not included in the study.

Moreover, the study was conducted during the second quarter of the fiscal year 2024 covering the digitalization period of outpatient consultation from 2020 to 2024. This research was conducted at Malabon City.

Definition of Terms

The following terms are defined operationally and conceptually to facilitate a better understanding of the study.

Access to Care. The digitalization of outpatient consultation allows patients in remote areas to access medical or healthcare services through virtual facilities wherein the patients and doctors have constant communication throughout the medical treatment process.

Administrative Cost Reduction. The cost-effectiveness of the digital transformation of the patients in the maintenance of the OPD section is one way of measuring the impact or effectiveness of the adoption or integration of digital technology in health care services.

Benefits. This is the contribution of the transformation of outpatient consultation from traditional to modern medical consultation using virtual reality. The good effect of online consultation and digital records of patient information on the medical process and procedures which are both advantageous to patients and health care providers were the subject of the assessment of this study.

Challenges. This refers to the constraints encountered by both patients and medical staff of San Lorenzo Ruiz General Hospital during the actual transformation of the system of outpatient consultation. The problems with data privacy, availability of facilities, and level of digital knowledge of the respondents are the challenges.

Collaborative Treatment. The collaboration and consultation between the physicians and patients and among doctors as well as concerning the medical strategies that can be applied in a certain situation are being done using digital consultation. This is one of the benefits of the digitalization of medical treatment in the government hospitals such as SLRGH.

Data Privacy and Security. This is the concern of the use of digital technology wherein data privacy law and security of information cannot be guaranteed since computer experts and hackers can breach the cyber security and access the information stored in it.

Digital Literacy. The level of skills and knowledge on the utilization of digital technology is one of the main concerns of the digital transformation of outpatient consultation. The patients and physicians have limited skills in the utilization of online platforms and have difficulty conducting basic troubleshooting of technical errors or problems in the virtual platform.

Digitalization. This is the transformation of outpatient consultation from physical consultation and manual recording of patient information into digitization or application of digital technology such as telemedicine, health information exchanges, artificial intelligence, and electronic health records.

Effectiveness. The real impact of the digitalization or transformation of outpatient consultation from paper source with physical consultation to digital form with virtual platform was assessed by the patients and medical staff.

Enhanced Patients' Outcome. The good results of the patient's online consultation are brought by the digitalization of outpatient consultation. This transformation takes the shape of more patient involvement, tailored treatment plans, and improved care coordination.

Health Care Service Development Plan. This development plan is the target output of the study wherein healthcare services with the adoption of a hybrid system that still utilizes digital technology for the recording of patient information and the status of medication based on medical records.

Infrastructure Barriers. These are the problems with the availability of the computer system which is compatible with the latest internet connectivity or system. Also, limited access online in remote areas is another major concern of digitalization.

Medical Staff. Healthcare workers such as doctors, nurses, medical technologists, and hospital staff would serve as one group of respondents who would assess the digitalization process in conducting outpatient consultations.

Outpatient Consultation. This is the medical consultation service for the patients who are not confined in the hospital or the patients who make follow-up check-ups upon discharge or after their confinement period.

Patients. The outpatients of San Lorenzo Ruiz General Hospital during the pandemic and post-pandemic who experienced telemedicine or online consultation, as well as innovations made in the Outpatient Section, would be the target respondents of

the study. These are the patients who undergo outpatient medical consultation using virtual or online platforms and experience digital transformations.

Quick Access to Medical Records. The utilization of digital technology in hospital settings, particularly in digital records of the patient can provide prompt search to patient's records which would be used as the basis for the diagnosis and prognosis.

Workloads Reduction. The workload or burden in the workplace due to the high volume of patients in the government hospital is decreased with the utilization of digital technology. The difficult and time-consuming job of manually searching patient records and including test results is addressed by the digitalization process wherein electronic search and preparation of hospital records and reports become easy and convenient on the part of medical staff.

REVIEW OF RELATED LITERATURE AND STUDIES

This chapter highlights the salient features of the topic concerning the application of digital technology in the field of health care services. The results of the review of related literature from foreign and local sources are summarized and presented thematically.

Effectiveness of the Digitalization of Outpatient Consultation

Marja (2023) examined how health and social care professionals and managers perceive the effects of digitalization on the work of professionals. Professionals' workload and pace, the field and nature of work, communication, and engagement within the work community, and information flow and security were all seen to have altered as a result of digitalization. Effects including quicker work, decreased workload, ongoing technical skill acquisition, complex work because of weak information systems, and fewer in-person interactions

were noted by professionals and managers alike. Managers, however, failed to mention several consequences that experts deemed significant, such as the addition of new duties, an increase in and duplication of labor, or inadequate time for system familiarization. The results imply that managers may be under or unaware of some of the consequences of digitalization on professionals' work and changes in the workplace.

According to Huter (2023), there is a vast range of digital technologies being created or used to assist in nursing care. This scoping study aims to present a general overview of technologies with accessible data about their beneficial or bad impacts on individuals in need of care, caregivers, or care facilities, as well as to evaluate the validity of these findings. Nursing and health information technologies, including robots, sensors, information and communication technology, and assistive devices, are covered. The findings indicate that a large number of research have shown beneficial outcomes; however, the majority of these studies had small sample sizes and a poor level of evidence.

As stated by Paul (2023) because of the digital revolution and technological advancements, business sectors have reached new heights. To enable the transition from mechanical and analog electrical equipment to modern digital technology, the healthcare industry has likewise embraced digital technology. Digital technology is frequently used in the healthcare industry for patient care quality monitoring, clinical support improvement, and exploring medical information resources. The effect of technology on healthcare as well as privacy and security issues associated with its use are discussed in the article. Digitalization necessitates changes to healthcare procedures, policies, and activities to modernize job expectations and processes. Given the concerns over patient safety and the integration of digitalization into healthcare practices, an evaluation of healthcare workers' digitalization competencies is important.

In addition, Schneider (2023) emphasized in the article that the global healthcare systems are thriving by quickly adjusting to advances, including digitization. This study's main goal is to map healthcare professionals' perceptions and characterize their experiences, as well as look at the challenges and obstacles they face in changing their organizations. It also aims to investigate the effects of adapting to rapid changes, including embracing digitalization, on the services offered by healthcare organizations. Systemic planning is necessary for these procedures to be implemented successfully, and this includes allocating funds for staff training, organizational modifications, and technology purchases. To further avoid burnout, it is essential to address personal-level factors including appropriate training and establishing boundaries for caregivers. Optimizing assimilation and improving system efficiency may be achieved via efficient planning and management of these changes.

According to Carbonaro (2021) in recent years, the digitization of healthcare services is progressing more quickly. This research intends to investigate how physicians and other healthcare professionals see digitization in the industry. the thesis aims to compare the various degrees of digitization in Egypt, Turkey, Italy, and Sweden. It carried out an investigation utilizing both qualitative and quantifiable information to examine the viewpoints of physicians and patients. Based on the findings, Sweden may be regarded as the most digitalized, although least advanced digital nation. Numerous initiatives were done in the direction of digitization for Turkey and Italy. Nonetheless, there is still room for improvement in the digitization process.

As emphasized by Schneider (2023) global healthcare systems are thriving by quickly adjusting to advances, including digitization. This study's main goal is to map healthcare professionals' perceptions and characterize their experiences, as well as look at the challenges and obstacles they face in changing their organizations. It also aims to investigate the effects of adapting to rapid changes, including embracing digitalization, on the services offered by healthcare organizations. Based on 38 healthcare professionals' semi-structured in-depth interviews, this qualitative study looks at how they see services and the effects of adopting digitalization in clinical care and services. Three layers of categorical deductive and inductive interview analysis were conducted. The research revealed eight key topics, including the following: the necessity of change, its significance, communication, training, competitive leverage, and challenges.

Amal (2023) explained how the COVID-19 pandemic has brought attention to how critical it is that digital health services (DHS) be used widely. Despite proof of DHS's advantages, several obstacles are preventing its widespread use. The purpose of this study was to evaluate DHS's efficacy from the viewpoint of the patient. In

the Saudi Arabian area of Jazan, a cross-sectional survey was carried out between December 2022 and March 2023. Digital healthcare has the potential to greatly improve patient outcomes and efficiency in Saudi Arabia (KSA). It was thought advantageous to employ a DHS to keep an eye on things and offer care. However, due to problems like time constraints or hectic schedules, patients in Saudi Arabia are unable to use telemedicine. To raise awareness and boost the rate of telemedicine use among various health professionals, several enduring challenges need to be addressed.

Digital services, according to Härkönen (2023), can be economical and successful treatments for non-communicable illnesses; but, because treatment outcomes vary, generalizability is constrained. This comprehensive evaluation seeks to determine the positive and negative aspects of utilizing digital services in social welfare and healthcare, as well as the effects of these services on population health, expenses, and patient and healthcare professional satisfaction. Digital services had a mixed effect on population health and costs when compared to traditional care, although patient satisfaction was high. There was little research on the relationship between healthcare workers' satisfaction levels and their usage of digital services. It is imperative that obstacles be addressed and facilitators at all levels are supported to guarantee the effective deployment and long-term viability of digital services. Pär (2022) investigates the experiences of medical personnel involved in the development and use of a digital platform for patient-provider consultation about the quality aspects of patient safety, efficiency, and access. The study looks at the opinions and experiences of healthcare workers using a qualitative design. Semi-structured individual and focus group interviews were used in the data-collecting process. Consequently, medical personnel found that the platform provided an open line of communication with patients who needed regular check-ins. As a result, there was less worry and fewer follow-up appointments. Healthcare professionals also saw that individuals with mental health issues benefited from the platform's interaction flexibility. When issues were more severe or pressing after closing hours, it was discovered that these individuals communicated using the platform.

Bhaskar (2020) highlighted the importance of digital technology during a pandemic. The technology has greatly aided patient continuity through remote consultation, continuous monitoring, and patient education via phone and videoconferencing. Beyond its present dominance, COVID-19's destructive effects undoubtedly persist. A pandemic like COVID-19 imposes a comparatively greater cost on the most vulnerable members of our society: the elderly, those from poorer socioeconomic backgrounds, people with numerous comorbidities, and patients with impaired immune systems. The necessity to maintain medical treatment in the age of social distance has accelerated the use of various technologies across national borders, which has fueled the growth of telemedicine. Reducing exposure for patients, medical staff, and systems is essential to stopping the virus's spread. Telemedicine presents a chance to enhance medical care services.

Benefits of the Digitalization of Outpatient Consultation

Digital technology has altered the way healthcare is provided and accessible claims Madanian (2023). However, the majority of the attention is on clinical and technological factors. The objective of this study was to identify barriers and facilitators to the uptake of digital health tools by critically analyzing and integrating the existing research on patients' opinions on these technologies. The primary drivers of patient adoption of digital health solutions were found to be patient empowerment, self-management, and personalization. The use of digital health technologies is hampered by issues with digital literacy, health literacy, and privacy. Patients now have a different experience with healthcare because of digital health technology. Studies reveal the gap that exists between the people for whom digital health products are developed and deployed, and those who use them.

According to Greenhalgh, Trisha (2018) when participating doctors deem video outpatient consultations clinically suitable, patients seem to find them safe, useful, and convenient. However, these scenarios only make up a small portion of the clinic's overall workload. Like previous technological advancements, some professionals may embrace them right away, while others would require encouragement and assistance. Integrating video consulting services into standard operating procedures in firms that are resistant to change, particularly during lean times, presents several difficult problems.

Camargo (2021) covered an analysis of the financial advantages of using technological advancements to manage an outpatient appointment system was conducted. This study assesses the advantages considering the benefit-

cost ratio, a commonly used metric that assesses the financial results of, particularly, public endeavors that frequently have to deal with resource allocation decisions due to resource constraints. Cost-benefit analysis is a common tool used by economists and public administrators to calculate the economic worth of the benefits that result from implementing a project relative to the expenditures and expenses that are associated with it. The findings indicate that the state of São Paulo's outpatient regulation system generates yearly economic advantages of about R\$250 million (in Brazilian currency) while its annual expenses come to R\$8.15 million.

According to Cheng (2023), there are challenges facing healthcare services due to a growing patient population and scarce resources. Therefore, it is necessary to do a study on ways to lower expenses and boost efficacy. Digital outpatient services can help patients identify unfavorable disease courses, increase patient health literacy, and offer flexible and customized follow-up. Yet, the majority of earlier studies concentrated on conditions and results unique to individual diseases. Thus, there is a need for a study on digital services that looks at general outcomes like health literacy. The present research aims to assess an intervention that utilizes a digital multicomponent solution that has previously received certification. The intervention's content is determined by patient-reported outcomes, health literacy, and self-monitoring. Using patient journey maps, the intervention is specially designed to meet the requirements of each participating center's patients.

Iyanna (2022) stated that the digital transformation of firms particularly hospitals is common; and the results are evident across all industries. It's debatable, though, why the shift hasn't been smooth—especially in light of all the advantages of digitalization. In the healthcare industry, where several publications have noted end users' reluctance to adopt and ongoing use of technology-driven breakthroughs (e-health innovations), we want to answer this subject. However, the majority of these reports are anecdotal, and the amount of scholarly study in this field has stayed very small.

To further our understanding of how healthcare professionals see digital health competence, Jarva (2022) researched to shed light on the lived experiences of digital health competence. To deliver morally and ethically sound treatment, healthcare practitioners must adapt to the digital age. Despite their critical role in the design and implementation of innovative care practices, healthcare professionals' perspectives on digital health competence have seldom been considered in previous studies. Perceptions of digital health competency among healthcare professionals center on the capacity to deliver patient-centered care by assessing the necessity and opportunities for integrating digital health services with more conventional approaches.

Hege (2024) clarified that during the COVID-19 epidemic, telemedicine in outpatient services for patients living with HIV increased as care shifted to rural locations. Numerous research has discussed the benefits and drawbacks of using telemedicine for pandemic treatment. Research on the delivery of telemedicine-assisted HIV care, which includes several telemedicine components and concentrates on strategies to enhance the telemedicine experience for patients, is, however, scarce after the COVID-19 pandemic. The purpose of this study was to investigate how PLHIV perceived the usage, requirements, and preferences of a telemedicine solution for HIV treatment in an outpatient clinic located in Norway. A pre-consultation questionnaire, asynchronous digital messaging, and video consultation were all part of the telemedicine system. The investigation found several distinct requirements and preferences.

Sutton (2020) asserts that computerized clinical decision support systems, or CDSS, constitute a paradigm change in the current state of healthcare. Clinicians can utilize CDSS to support them in making complicated decisions. Rapid advancements have been made in CDSS since they were initially used in the 1980s. Due to the growing worldwide usage of sophisticated electronic medical records, they are now frequently administered using computerized clinical processes and electronic medical records. Despite these developments, there are still questions about how CDSS affects patients' results, expenses, and the clinicians who employ them. Over the past ten or so years, several CDSS success stories have been published. However, significant setbacks have also demonstrated that CDSS is not without hazards.

Challenges of the Digitalization of Outpatient Consultation

Austin (2023) emphasized that the patients with mental disorders, treatment delivered via video consultation (VC) may be comparable to in-person (IP) consultation, according to several effectiveness studies. Nevertheless,

VC has not been extensively used in psychiatric outpatient care, despite its enormous potential. This study looked at several issues related to the use of VC as a therapy modality in psychiatric outpatient settings, as well as the viability of the approach in therapeutic settings. Techniques. In this pragmatic design trial, participants with anxiety, personality, or depressive disorders who were referred 40 consecutive times were offered the option to attend eight weekly treatment sessions in an outpatient psychiatric environment using either the VC or IP modality. Details on the need for, acceptance of, involvement in, use of, and possible drawbacks of therapy carried out.

Dal Mas's (2023) research indicates that digital transformation in healthcare is an important area of study for academics and professionals. To understand how the COVID-19 pandemic caused all the systems to disruptively embrace new digital technologies, which affected both management and business sides, we sought to assess the state of the art regarding the widespread role of digital technologies in healthcare in this study. Researchers conducted a systematic literature analysis of the state of the art of digital transformation in healthcare to determine how the pandemic is causing the healthcare sector to experience a renaissance and to clarify the role of digital technologies in healthcare.

According to Bohara (2022), Nepal has just come to appreciate the value of digital technology in healthcare. It is critical to recognize the aspects of the digital health ecosystem that require development and what is already functioning properly. The purpose of this quick analysis was to give a general overview of Nepal's digital health intervention prospects and difficulties. The analysis found that putting digital health initiatives into practice in Nepal would present several possibilities, difficulties, and advantages. The most often mentioned challenges were the unfavorable geographic distribution, which makes transportation difficult in steep and hilly places, and the insufficient technological infrastructure (lack of internet and electricity). The identified problems also included a shortage of skilled labor and policies that were favorable. Major opportunities found in the interim were health professionals' and students' education and training.

Human health data is essential to the rapidly expanding field of digital health, according to Manteghinejad (2021). Traditionally, official diagnostic equipment used by medical practitioners in clinical settings and subject to stringent regulatory requirements is used to facilitate the collection of health data. The future options for gathering patient data include telemedicine, mobile health, and other smart devices with Internet connectivity. The advancement of technology has made wearables, cellphones, and smaller healthcare equipment possible. With the use of these gadgets, medical records may be collected at the patient's residence. These gadgets would provide vast amounts of data, which artificial intelligence can integrate to enable more realistic tailored therapy and more precise illness phenotyping. The medical field will become increasingly computerized in the future.

According to Kazimova (2023), the COVID-19 pandemic's start has made it necessary for the healthcare industry to undergo a digital transition. This research delves into the rapid transition to a digitally enhanced healthcare delivery system, promoting the broad implementation of telemedicine and the loosening of regulatory restrictions. The rapidly expanding usage of wearable technology, artificial intelligence, machine learning, and electronic health records is also examined in detail in this study, along with the potential benefits these technologies have for enhancing patient care and health outcomes. Even with the improvements, there are still serious privacy and security issues due to the quick digital integration. Digital healthcare technologies have the potential to worsen significant difficulties, such as the stigma attached to specific conditions and potential discrimination.

Research on the popular techniques for designing digital health interventions that mediate the digital health space was carried out by Duffy (2021). In doing so, we aimed to investigate each methodology's history, alleged advantages, contrasting subtleties, difficulties, and common use-case scenarios. The fast growth of digital health is causing growing pains.

Many design strategies are now being used to balance the demands of a diverse set of stakeholders. The problem lies in combining the affordances and restrictions of digital design and health care, with equal emphasis on clinical efficacy and user happiness, regardless of the end user's identity—that is, person, patient, or user. It could be possible to reduce friction in the field of digital health by conducting more research that moves toward transdisciplinarity.

Synthesis of the Study

The results of the review of related literature and studies are very significant in the present study. It provides direction and clarity on the topic being investigated. Most studies covered the topic of the impact of digitization or the utilization of digital technology in health care services in different institutions and organizations. The studies revealed the digital transformation of medical consultation services has a great impact on the performance of health workers in the delivery of health care to their patients, particularly those people who live in remote areas. In addition, the benefits, and challenges in the utilization of online platforms are well discussed. The common benefits include better health care through proper monitoring of patient's conditions, and time-saving to provide necessary diagnosis and application of proper treatment in due time.

Moreover, the challenges encountered in the utilization of digitization or digitalization of medical consultation include familiarity with the features of technology to access the needed electronic information which is a requirement in health care service delivery. Other challenges include the cost of the operations compared to the traditional in-person consultation. Prevailing internet connections require modern computer systems to get access to online applications. Similarly, on the part of the patients they need to have good connectivity and an appropriate venue at home which is conducive for virtual consultation.

However, despite the presence of the previous studies conducted which are related to the effectiveness, benefits, and challenges in the utilization of digital consultation, the identified research gap was not fully addressed in the conducted study since most studies focused only on the impact to the services of the hospital and not on the effectiveness in the delivery of medical services during the consultation period.

In a comparison of the present study with the previous studies conducted abroad and in the local setting, the topics are very similar since it covered the impact and effectiveness of digital health care to the accessibility of medical records and information, reaching out the patients, monitoring their conditions, and provide the necessary treatment which is applicable in the remote areas. Similarly, the present study dealt with the effectiveness of digitalization of outpatient consultation about access to health care and patients' outcomes.

On the other hand, the present study is different from previous studies about the methodology and coverage of the study. Most conducted studies utilize the qualitative method and cover only a specific topic, while the present study utilized the quantitative method and covered all topics presented in reviews

METHODOLOGY

This chapter highlights the research design, sources of data, respondents and sampling techniques, research instruments, data gathering procedures, data processing, and statistical analysis of the present study.

Research Design

The quantitative type of research under the descriptive method was used by the researcher in this particular study since the validated self-formulated questionnaire was used as the main gathering instrument. The descriptive quantitative method described the basic features of the data in the study. Quantitative methods emphasize objective measurements and the statistical, mathematical, or numerical analysis of data collected through polls, questionnaires, and surveys, or by manipulating pre-existing statistical data using computational techniques (Muijs, 2023). In addition, quantitative research focuses on gathering numerical data and generalizing it across groups of people or to explain a particular phenomenon (Babbie, 2020).

The specific design used in this study was the survey design. The survey-based evaluation aims to determine the level of effectiveness of digitalization of outpatient consultation as well as to obtain statistical information on the benefits and challenges of the adoption of digital technology. In survey design, a sample is valid if the population is of interest to conclude evidence from the sample statistics and the range of values in the broader population. A survey was used to ascertain and measure changes in either objective or subjective indicators for the implementation of policies (Scarpa, 2022).

Participants of the Study

The researcher used the five-percent margin of error formula for sample strata in the medical staff and selected patients of the San Lorenzo Ruiz General Hospital at Malabon City. The researcher used probabilistic sampling technique, specifically the stratified random sampling technique where the population is divided into two groups the medical staff and patients then draw a sample from each group to ensure that the target sample is the representativeness of the sample for each stratum. The researcher sent a letter requesting to conduct the study at the public hospital in Malabon City. Since stratified sampling was used, the simple random sampling scheme through the lottery technique in the selection of respondents was applied. Using the Cochran formula to compute for the desired sample, the total number of respondents was composed of 162. The distribution of respondents was fifty percent in each group of respondents. The total target sample size for the medical staff is 90 respondents which were selected from the entire population of hospital staff and health care practitioners. 28 respondents are from the medical service, 35 from the nursing service, and 27 from the admin service. Additionally, 72 respondents were selected from patients who underwent digitalized outpatient consultations during and after the pandemic period.

Research Locale

In this particular study, the research locale would be Malabon City, particularly the San Lorenzo Ruiz General Hospital (SLRGH). The Republic Act no. 6864 is an act establishing a ten-bed Municipal Hospital in the Municipality of Malabon, Metro Manila. To be known as the Saint Lorenzo Ruiz Municipal Hospital and appropriating funds, therefore. The San Lorenzo Ruiz General Hospital started as San Lorenzo Ruiz Women's Hospital, a 10-bed Level 1 hospital under the Department of Health, National Capital Regional Office. Presently located at O. Reyes St., Santulan, Malabon City, the hospital has been in operation for two decades now (since 1999), on a two-story building with a total floor area of 1,764 square meters.

In 2019, SLRWH was granted Twenty Million Pesos (20 M) for the site development works of the purchased parcel of land. Another Two Hundred Million (200 M) was also granted through the Hospital Facilities Enhancement Program (HFEP) for the commencement of the phase 1 hospital construction. While preparing for the physical transfer of the hospital into its new location along Panghulo Road, Malabon City, departmentalization, and upgrade of service capabilities in the specialties of Medicine, Pediatrics, Obstetrics and Gynecology, Surgery, and Anesthesiology. The research locale is selected on the basis that the hospital transformed its outpatient consultation activities which started during the height of the pandemic in the country. Also, the experience and knowledge of the researcher in the chosen hospital are considered as the basis for the selection of the target research locale.

Instrumentation

This study made use of a researcher's-made instrument. The instrument consisted of three parts. Part 1 covered the level of effectiveness of the digitalization of outpatient consultation as the basis for determining the importance and its effect in the improvement of health care services particularly during national emergencies with the use of a Likert Scale between 4 as highly effective and 1 as ineffective. Part 2 measured the level of benefits of the digitalization of outpatient consultation using a Likert Scale tool of measurement scaled from 1 to 4. Part 3 covered the challenges encountered in the digitalization of outpatient consultation with the use of the Likert Scale from 1 as the lowest and 4 as the highest.

The data collected were used to gauge the digitalization of outpatient consultation in the target research locale as the basis for the formulation of a healthcare service development plan towards the continuous adoption of a hybrid system.

Validation process.

The researcher-made instrument underwent the process of validation to ensure that the survey questionnaire for the research respondents is reliable, valid, and aligned with the research objective as stated in the statement of the problem. The researcher used two types of the validation process.

First, instrument review by the panel of experts to make sure that the content of the instruments relates to the research objectives and can be used to answer the research problem. Three considered experts were asked to validate the researcher-made survey questionnaire: revered staff from the outpatient section, prominent personnel of the IT department or IHOMP, and the leading member of the Research and Ethics Committee of the hospital. Suggestions and recommendations from the panel of experts strengthen the content validity of the instrument. Moreover, the grammarian, content editor, and statisticians were also considered in the validation of the formulated instrument.

The next validation process is the conduct of pilot testing on respondents from each group at the government hospital in Malabon City that utilized digital technology in outpatient consultation. Instrument content or questions which are not appropriately answered during the pilot testing were checked accordingly to determine the relevance and degree of confidentiality of the respondents. In any case, the researcher observed and ensured confidentiality at all times and refrained from disclosing any information that would identify the origin of the information included in the study. Determining validity was viewed as constructing an evidence-based argument on how well a tool measures what is supposed to measure. In pilot testing of the self-made instruments based on the contents of a review of related literature and studies, the survey questionnaire was distributed to 21 respondents of both categories. Fourteen respondents were selected from the group of medical staff of the chosen hospital, and seven representatives from the group of patients. The result of the reliability test is 0.965 which is equivalent to excellent. The statistical result is presented in the Appendices section.

Data Gathering Procedure

In gathering the data for this particular study, the following steps or procedures were used by the researcher as a guide. The researcher sought guidance from the adviser before the actual conduct of the study. The researcher gathered necessary data in this particular research with the use of the approved validated survey questionnaire.

Before the actual administration of the approved survey instrument, a letter of request to conduct the study was sent to the office of the Medical Center Chief of the San Lorenzo Ruiz General Hospital. Upon the receipt of approval to conduct the study, the letter of approval was attached to the letter request to conduct the study to the target respondents.

The letter of request to conduct the study which is addressed to the target respondents included the instructions to access the questionnaire through the link stated in the letter. The final questionnaire was administered to the respondents who assessed the effectiveness, benefits, and challenges in the digitalization of outpatient consultation. In addition, the researcher assured the respondents of the confidentiality of their responses, and the data was only used for this research. The researcher also utilized electronic survey questionnaires through Google Forms, for those respondents who preferred digital surveys instead of paper-based.

The results of the assessment were used as a basis for the formulation of the proposed healthcare service development plan towards the continuous utilization of online platforms as an option for the conduct of medical consultation. Furthermore, the researcher applied all possible ethical considerations to protect the welfare of the respondents and the reputation of their institutions as well. Informed consent and voluntary participation were prime considerations in the application of ethical considerations in this particular study.

After the administration and retrieval of the accomplished questionnaires, the gathered data were collated electronically, and tabulated with the use of Microsoft Excel program for the application of statistical treatments with the use of the SPSS program. After the statistical treatment of the assessment results, the data were interpreted with the assistance of the statisticians and the guidance of the research adviser to present properly the interpreted results.

Moreover, documentary analysis was included to fully substantiate the collection of relevant information, and focused group discussions were conducted with the selected representative of the target respondents to verify some questionable items.

Statistical Treatment

The researcher used the following statistical tool to analyze the gathered data:

1. Weighted Mean – is the most common method used in describing central tendency. This was used in the statistical analysis of the respondent's perception of the effectiveness, benefits, and challenges of the digitalization of outpatient consultation.

2. f-test or ANOVA – was used to determine if there was a significant difference in the assessment of three groups of respondents on the level of effectiveness, benefits, and challenges of the digitalization of the outpatient consultation.

3. t-test – was used to determine whether or not discrepancies between observed theoretical counts are significant. T-test was used to determine the significant difference in the assessment of the two groups of respondents on the level of effectiveness, benefits, and challenges of the digitalization of outpatient consultation.

Ethical Considerations

The following ethical considerations were applied during the actual conduct of the study:

Voluntary Participation. The consent form explains the research study that the respondents are being asked to participate in. The instructions included the reminder to read carefully, understand the form, and ask the researcher for questions or clarifications before acceptance of participation. Participants have the right to withdraw from the study at any stage if they wish to do so if they feel uncomfortable with the process.

Possible Harm. The use of offensive, discriminatory, or other unacceptable terms is strictly prohibited in the survey questionnaire. All questions used in the survey are validated by the adviser, statistician, and grammarian to make sure that all terms used in the study are appropriate to the target respondents.

Privacy and Anonymity. The respondent is of paramount importance. All information was protected as mandated by RA 10173 or the Data Privacy Act of 2012.

Proper Citation. Acknowledgment of works of other authors used in any part of the research paper with the use of APA referencing system according to the latest edition of Pamantasan ng Lungsod ng Valenzuela research guide / Thesis primer.

Potential Risk. The researcher does not foresee any harm or risk in participating in the research while participating in the study as their data and the privacy of the results were ensured. It is stated in the questionnaire “You may decline to answer any of the questions and withdraw of your participation if you feel discomfort.”

Benefit. There is no direct/instant benefit for the participants, but this research is designed for the enhancement or improvement of the current system.

Confidentiality. Any data or information collected on this research would be protected, anonymous, and with utmost confidentiality. No individual identities were disclosed in any reports on this research. Only the researcher would never reveal the identity of the respondents and their responses as well to anyone. Results were used in this study and recommendations were forwarded directly to the concerned agency.

Informed consent. The researcher obtained consent from the respondents of the study to provide sufficient relevant information within the level of their knowledge.

Communication. The researcher also communicated the results of the study and informed the respondents on the proper disposal of data upon its utilization.

RESULTS AND DISCUSSION

This chapter presents and discusses the relevant results of the study vis-à-vis the statement of the problem and hypothesis. The discussion is divided by the sub-problems of the study.

1. Level of Effectiveness of the Digitalization of Outpatient Consultation at SLRGH Access to Care

Table 1.1 Level of Effectiveness of the Digitalization of Outpatient Consultation at SLRGH Access to Care in terms of Access to Care

Statements	Medical service		Nursing service		Admin Service		AWM	
	WM	VI	WM	VI	WM	VI	WM	VI
1. Utilization of remote medical consultation through telemedicine	3.25	E	3.14	E	3.30	HE	3.23	E
2. Exchanging of health information about the current condition of the patient	3.32	HE	3.49	HE	3.33	HE	3.38	HE
3. Updating the medical records of patient after consultation	3.68	HE	3.66	HE	3.26	HE	3.53	HE
4. Enabling the patients to directly consult various medical experts	3.64	HE	2.80	E	3.22	E	3.22	E
5. Allowing less privileged patients in remote areas to see doctors virtually	3.11	E	3.31	HE	3.04	E	3.15	E
GWM	3.40	HE	3.28	HE	3.23	E	3.30	HE

Legend:

abbreviation	Meaning
WM	Weighted Mean
AWM	Average Weighted Mean
GWM	Grand Weighted Mean
VI	Verbal Interpretation
Weighted Mean Range	Verbal Interpretation (VI)
3.26 – 4.00	Highly Effective (HE)
2.51 – 3.25	Effective (E)
1.76 – 2.50	Less Effective (LE)
1.00 – 1.75	Ineffective (IE)

Table 1.1 demonstrates the respondents’ assessments of the level of effectiveness of the digitalization of outpatient consultation at SLRGH in terms of access to care. For the medical service respondent group, it was found that three indicators were rated as “highly effective.” These mentioned statements were updating the medical records of patients after consultation (3.68); enabling the patients to directly consult various medical experts (3.64); and exchanging health information about the current condition of the patient (3.32). The premise of updating the medical records of patients after the consultation was rated as “highly effective,” with the highest weighted mean of 3.68. The overall assessment in the given indicators is “highly effective,” with a grand weighted mean of 3.40.

Moreover, in the response of the nursing service respondent group, three indicators had obtained “highly effective” adjectival ratings. These statements were updating the medical records of the patient after consultation; exchanging health information about the current condition of the patient; and allowing less privileged patients in remote areas to see the doctors virtually obtained weighted mean values of 3.66, 3.49, and 3.31, respectively.

The updating of the medical records of patients after consultation indicator was assessed by respondents as “highly effective,” with the highest weighted mean of 3.66. The indicators were assessed as “highly effective,” with a grand weighted mean of 3.28.

Furthermore, in the assessment of the admin staff respondents, three indicators were rated as “highly effective.” These statements were exchanging of health information about the current condition of the patient; utilization of remote medical consultation through telemedicine; and updating the medical records of the patient after consultation obtained weighted means of 3.33, 3.30, and 3.26, respectively. The indicator exchanging of health information about the current condition of the patient was rated as “highly effective,” with the highest weighted mean of 3.33. The given indicators were rated as “effective,” with a grand weighted mean of 3.23.

Considering the overall assessments of the indicators in the access to care aspect of the level of effectiveness of the digitalization of outpatient consultation at SLRGH results showed that three indicators had received similar “effective” verbal interpretations. These indicators were utilization of remote medical consultation through telemedicine; enabling the patients to directly consult various medical experts; and allowing less privileged patients in the remote areas to see the doctors virtually obtained equivalent average weighted means of 3.23, 3.22, and 3.15, respectively. On the other hand, the indicator on updating the medical records of patients after the consultation was rated as “highly effective,” with the highest average weighted mean of 3.53. The three groups of respondents assessed the access to care as “highly effective,” with a grand mean of 3.30.

The outcome of the study indicates that the digitization of the system of recording the patients’ information is effective in providing medical treatment to each patient promptly. The updated records after each consultation would be used as the reference of the doctors in providing medical treatment.

The respondents’ overall assessments on the indicators in access to care aspect of the level of effectiveness of the digitalization of outpatient consultation at SLRGH stressed that digital technology should be given priority by the hospital administrator. The said indicator was rated as “highly effective” and had the highest average weighted mean, indicating the urgency of effecting improvement on the digitization of medical records of each patient to provide quick access to the needed information as the basis in the monitoring of the condition of the patient and the progress in their medical conditions.

According to Huter (2023), there is a vast range of digital technologies being created or used to assist in nursing care. It also indicates that a large number of research have shown beneficial outcomes; however, the majority of these studies had small sample sizes and a poor level of evidence. The use of digital technology covers the vast access to healthcare services.

In addition, Marja (2023) stated that the effect of digitization includes quicker work, decreased workload, ongoing technical skill acquisition, complex work because of weak information systems, and fewer in-person interactions were noted by professionals and managers alike. It implies that managers may be under or unaware of some of the consequences of digitalization on professionals' work and changes in the workplace.

Table 1.2 Level Of Effectiveness Of The Digitalization Of Outpatient Consultation At SLRGH Access To Care In Terms Of Cost Reduction

Statements	Medical Service		Nursing service		Admin service		AWM	
	WM	VI	WM	VI	WM	VI	WM	VI
1. Minimizing the cost of reproducing printed medical records and documents	3.50	HE	3.63	HE	4.00	HE	3.71	HE
2. Saving resources in the maintenance of the outpatient waiting area	3.46	HE	3.66	HE	3.48	HE	3.53	HE
3. Maximizing time to accommodate a large number of patients on a daily basis	3.54	HE	3.31	HE	3.22	E	3.36	HE

4. Lessening the needed manpower for daily operations of the hospital	3.32	HE	2.89	E	3.00	E	3.07	E
5. Saving time and operational expenses of the hospital for the outpatient department	3.25	E	3.03	E	3.74	HE	3.34	HE
GWM	3.41	HE	3.30	HE	3.49	HE	3.40	HE

Legend:

Abbreviation	Meaning
WM	Weighted Mean
AWM	Average Weighted Mean
GWM	Grand Weighted Mean
VI	Verbal Interpretation

Weighted Mean Range (WM)	Verbal Interpretation (VI)	Code
3.26 – 4.00	Highly Effective	HE
2.51 – 3.25	Effective	E
1.76 – 2.50	Less Effective	LE
1.00 – 1.75	Ineffective	IE

Table 1.2 shows the respondents’ assessments of the level of effectiveness of the digitalization of outpatient consultation at SLRGH in terms of cost reduction. For the medical service respondent group, it was found that four statements were rated as “highly effective.” These premises were maximizing time to accommodate a large number of patients daily; minimizing cost for reproducing printed medical records and documents; saving resources in the maintenance of outpatient waiting areas; and lessening the needed workforce for daily operations of hospital-obtained weighted means of 3.54, 3.50, 3.46, and 3.32, respectively. The indicator maximizing time to accommodate a large number of patients daily was rated as “highly effective,” with the highest weighted mean of 3.54. The overall assessment in the given indicators is “highly effective,” with a grand weighted mean of 3.41.

Moreover, in the response of the nursing service respondent group, three premises had obtained “highly effective” adjectival ratings. These were saving resources in the maintenance of outpatient waiting area; minimizing cost for reproducing printed medical records and documents; and maximizing time to accommodate a large number of patients daily obtained weighted mean values of 3.66, 3.63, and 3.31, respectively. The saving resources in the maintenance of outpatient waiting area indicator were assessed by respondents as “highly effective,” with the highest weighted mean of 3.66. The indicators were assessed as “highly effective,” with a grand weighted mean of 3.30.

Furthermore, in the assessment of the admin staff respondents, three indicators were rated as “highly effective.” These mentioned indicators were minimizing the cost of reproducing printed medical records and documents; saving resources in the maintenance of outpatient waiting areas; and saving time and operational expenses of the hospital for the outpatient department obtained weighted means of 4.00, 3.48, and 3.74, respectively. The indicator minimizing cost for reproducing printed medical records and documents was rated as “highly effective,” with the highest weighted mean of 4.00. The given indicators were rated as “highly effective,” with a grand weighted mean of 3.49.

Considering the overall assessments of the statements in the cost reduction aspect of the level of effectiveness of the digitalization of outpatient consultation at SLRGH results showed that four indicators had received similar

“highly effective” verbal interpretations. These indicators were minimizing cost for reproducing printed medical records and documents; saving resources in the maintenance of outpatient waiting areas; maximizing time to accommodate a large number of patients daily; and saving time and operational expenses of the hospital for outpatient department obtained equivalent average weighted means of 3.71, 3.53, 3.36, and 3.34, respectively. On the other hand, the indicator on minimizing cost for reproducing printed medical records and documents was rated as “highly effective,” with the highest average weighted mean of 3.71. The three groups of respondents assessed the cost reduction as “highly effective,” with a grand mean of 3.40.

The respondents’ overall assessments on the indicators in cost reduction aspect of the level of effectiveness of the digitalization of outpatient consultation at SLRGH pointed out the effectiveness of the digital transformation of medical service to reduce the cost of medical consultation on the part of the hospital and the patients as well since the hospital reduce the cost for the utilization of outpatients’ facilities and transportation expenses of the patients to reach the hospital. The said indicator was rated as “highly effective” and had the highest average weighted mean, indicating the need for the adoption of digital technology for long-term savings on the part of the medical institution and the outpatient as well.

About the findings of the study, Schneider (2023) emphasized that global healthcare systems are thriving by quickly adjusting to advances, including digitization. Systemic planning is necessary for these procedures to be implemented successfully, and this includes allocating funds for staff training, organizational modifications, and technology purchases. To further avoid burnout, it is essential to address personal-level factors including appropriate training and establishing boundaries for caregivers.

According to Carbonaro (2021), the digitization of healthcare services is progressing more quickly. It is found out that Sweden may be regarded as the most digitalized, although least advanced digital nation. Numerous initiatives were done in the direction of digitization for Turkey and Italy. Nonetheless, there is still room for improvement in the digitization process.

Table 1.3 Level of Effectiveness of the Digitalization of Outpatient Consultation at SLRGH Access to Care in terms of Patients’ Outcome Enhancement

Statements	Medical service		Nursing Service		Admin Service		AWM	
	WM	VI	WM	VI	WM	VI	WM	VI
1. Monitoring the condition of the patient remotely	3.29	HE	3.14	E	3.33	HE	3.25	HE
2. Tracking their body temperature and movement patterns	3.43	HE	2.97	E	3.11	E	3.17	E
3. Monitoring of vital signs of each patient	3.57	HE	3.03	E	3.07	E	3.22	E
4. Tailoring a person’s treatment to fit their specific needs	3.50	HE	3.14	E	3.30	HE	3.31	HE
5. Employing personalized healthcare to treatment, particularly in special cases	3.75	HE	3.31	HE	3.26	HE	3.44	HE
GWM	3.51	HE	3.12	E	3.21	E	3.28	HE

Legend:

Abbreviation	Meaning
WM	Weighted Mean

AWM	Average Weighted Mean	
GWM	Grand Weighted Mean	
VI	Verbal Interpretation	
Weighted Mean (WM) Range	Verbal Interpretation (VI)	Code
3.26 – 4.00	Highly Effective	HE
2.51 – 3.25	Effective	E
1.76 – 2.50	Less Effective	LE
1.00 – 1.75	Ineffective	IE

Table 1.3 reveals the respondents’ assessments of the level of effectiveness of the digitalization of outpatient consultation at SLRGH in terms of patients’ outcome enhancement. For the medical service respondent group, it was found that five indicators were rated as “highly effective.” These premises were employing personalized healthcare to treatment, particularly in special cases (3.75) monitoring of vital signs of each patient (3.57); tailoring a person’s treatment to fit their specific needs (3.50); tracking their body temperature and movement patterns; (3.43); and monitoring remotely the condition of the patient; (3.29). The indicator employing personalized healthcare to treatment, particularly in special cases was rated as “highly effective,” with the highest weighted mean of 3.75. The overall assessment in the given indicators is “highly effective,” with a grand weighted mean of 3.51.

Moreover, in the response of the nursing service respondent group, four indicators had obtained “effective” adjectival ratings. These indicators were monitoring remotely the condition of the patient; tailoring a person’s treatment to fit their specific needs; monitoring of vital signs of each patient; and tracking their body temperature and movement patterns; obtained weighted mean values of 3.14, 3.14, 3.03, and 2.97, respectively. Employing personalized healthcare to treatment, particularly in special cases indicator was assessed by respondents as “highly effective,” with the highest weighted mean of 3.31. The indicators were assessed as “effective,” with a grand weighted mean of 3.12.

Furthermore, in the assessment of the admin staff respondents, three premises were rated as “highly effective.” These mentioned statements were monitoring remotely the condition of the patient; tailoring a person’s treatment to fit their specific needs; and employing personalized healthcare to treatment, particularly in special cases obtained weighted means of 3.33, 3.30, and 3.26, respectively. The indicator monitoring remotely the condition of the patient was rated as “highly effective,” with the highest weighted mean of 3.33. The given indicators were rated as “effective,” with a grand weighted mean of 3.21.

Considering the overall assessments of the indicators in the patient’s outcome enhancement aspect of the level of effectiveness of the digitalization of outpatient consultation at SLRGH results showed that three indicators had received similar “highly effective” verbal interpretations. These statements were employing personalized healthcare to treatment, particularly in special cases; tailoring a person’s treatment to fit their specific needs; and monitoring remotely the condition of the patient obtained equivalent average weighted means of 3.44, 3.31, and 3.25, respectively. On the other hand, the indicator of employing personalized healthcare to treatment, particularly in special cases was rated as “highly effective,” with the highest average weighted mean of 3.44. The three groups of respondents assessed the patients’ outcome enhancement as “highly effective,” with a grand mean of 3.28.

The respondents’ overall assessments of the indicators in patients’ outcome enhancement aspect of the level of effectiveness of the digitalization of outpatient consultation at SLRGH emphasized the effectiveness of digital technology to improve medical care series for patients through optimizing medical treatment with the assistance of various specialists. The said indicator was rated as “highly effective” and had the highest average weighted mean, indicating the importance of improving healthcare services through the application of the best treatment

in medical services.

The result of the study indicates the contribution of the digitization of outpatient consultation in making personal treatment in particular or isolated cases. The adoption of modern technology enables doctors to provide appropriate care. As emphasized by Schneider (2023) global healthcare systems are thriving by quickly adjusting to advances, including digitization. It is found that the necessity of change, its significance, communication, training, competitive leverage, and challenges are brought by digitization.

Similarly, Amal (2023) explained how the COVID-19 pandemic has brought attention to how critical it is that digital health. But, due to problems like time constraints or hectic schedules, patients in Saudi Arabia are unable to use telemedicine. To raise awareness and boost the rate of telemedicine use among various health professionals, several enduring challenges need to be addressed.

2. Test of Significant Difference in the Assessment of Three Groups of Respondents on the Level of Effectiveness of the Digitalization of Outpatient Consultation at SLRGH

Table 2 Results of the Test of Significant Difference in the Assessment of Three Groups of Respondents on the Level of Effectiveness of the Digitalization of Outpatient Consultation at SLRGH

Variable	Computed	CriticalF @0.05	Interpretation	Decision on Null Hypothesis
1. Access to Care	1.05	3.10	Not Significant	Accept HO
2. Cost Reduction	1.10	3.10	Not Significant	Accept HO
3. Patients’ Outcome Enhancement	3.68	3.10	Significant	Reject HO

Level of significance – 0.05

The result of the test of significant difference in the assessment of three groups of respondents on the level of effectiveness of the digitalization of outpatient consultation at SLRGH is shown in Table 4. The statistical test using the f-test showed that the computed f-values of 1.05 and 1.10 are less than the tabular f-values of 3.10 at a 0.05 level of significance indicating the acceptance of the null hypothesis. Thus, the statistics revealed that there is no significant difference in the evaluation of the three groups of respondents concerning the level of effectiveness of the digitalization of outpatient consultation at SLRGH. This means that the medical, nursing, and admin service respondents had shown consistency in their assessment of the areas under the access to care; and cost reduction. The similarities in the respondents’ assessment could be attributed to their exposure to the impact of the utilization of digital technology to access health care services since the online consultation can reach people in remote areas and it would reduce the cost of consultation since there is no need or to transport the patients to the hospital.

On the other hand, different statistical results were obtained in the analysis of patients’ outcome enhancement variables. The statistical test using the f-test showed that the computed f-value of 3.68 is greater than the tabular f-value of 3.10 at a 0.05 level of significance, indicating the rejection of the null hypothesis. Thus, the statistical data revealed that there is a significant difference in the evaluation of the three groups of respondents concerning the patients’ outcome enhancement aspect of the level of effectiveness of the digitalization of outpatient consultation at SLRGH. This means that the medical, nursing, and admin respondents had shown differences in their assessment of the areas under the patients’ outcome enhancement. The differences in the respondents’ assessment could be attributed to the impact of digital technology in providing medical treatment to the patient. Similarly, Härkönen (2023) determined the positive and negative aspects of utilizing digital services in social welfare and healthcare, as well as the effects of these services on population health, expenses, and patient and healthcare professional satisfaction. It revealed that different groups of respondents have different perceptions of the effect of healthcare services.

3. Test of Significant Difference in the Assessment of Two Groups of Respondents on the Level of Effectiveness of the Digitalization of Outpatient Consultation at SLRGH

Table 3 Results of the Test of Significant Difference in the Assessment of Two Groups of Respondents on the Level of Effectiveness of the Digitalization of Outpatient Consultation At SLRGH

Variable	Computed	Critical 0.05	Interpretation	Decision on Null Hypothesis
1. Access to Care	4.49	1.97	Significant	Reject HO
2. Cost Reduction	3.38	1.97	Significant	Reject HO
3. Patients' Outcome Enhancement	4.92	1.97	Significant	Reject HO

Level of significance – 0.05

The result of the test of significant difference in the assessment of two groups of respondents on the level of effectiveness of the digitalization of outpatient consultation at SLRGH is shown in Table 3. The statistical test using t-test showed that the computed t-values of 4.49, 3.38, and 4.92 are greater than the tabular t-value of 1.97 at 0.05 level of significance indicating the acceptance of the null hypothesis. Thus, the statistics revealed that there is a significant difference in the evaluation of the two groups of respondents to the level of effectiveness of the digitalization of outpatient consultation at SLRGH. This means that the medical, nursing, and admin services respondents had shown differences in their assessment of the areas under access to care; cost reduction; and patients' outcome enhancement

4. Level of Benefits in the Digitalization of Outpatient Consultation

Table 4.1 Level of Benefits in the Digitalization of Outpatient Consultation in terms of Quick

Access to Medical Records

Statements	Medical Service		Nursing Service		Admin Service		AWM	
	WM	VI	WM	VI	WM	VI	WM	VI
1. Encoding and editing the basic information about the patient	3.71	HB	3.66	HB	4.00	HB	3.79	HB
2. Recording of laboratory and other test results	3.25	B	3.66	HB	3.74	HB	3.55	HB
3. Facilitating decision-making with the use of real-time data and healthcare analytics	3.50	HB	3.49	HB	3.74	HB	3.58	HB
4. Producing accurate information through data collection, storage, and analysis	3.57	HB	3.49	HB	3.74	HB	3.60	HB
5. Encouraging patient engagement through their access to their own medical records	3.54	HB	3.31	HB	3.22	B	3.36	HB
GWM	3.51	HB	3.52	HB	3.69	HB	3.57	HB

Legend:

Abbreviation	Meaning	
WM	Weighted Mean	
AWM	Average Weighted Mean	
GWM	Grand Weighted Mean	
VI	Verbal Interpretation	
Weighted Mean (WM) Range	Verbal Interpretation (VI)	Code
3.26 – 4.00	Highly Beneficial	HB
2.51 – 3.25	Beneficial	B
1.76 – 2.50	Less Beneficial	LB
1.00 – 1.75	Not Beneficial	NB

Table 4.1 indicates the respondents’ assessments of the level of benefits in the digitalization of outpatient consultation in terms of quick access to medical records. For the medical service respondent group, it was found that four premises were rated as “highly beneficial.” These mentioned statements were encoding and editing the basic information about the patient; producing accurate information through data collection, storage, and analysis; and encouraging patient’s engagement through their access to their medical records; facilitating decision-making with the use of real-time data and health care analytics obtained weighted means of 3.71, 3.54, 3.57, and 3.50, respectively. The indicator encoding and editing the basic information about the patient was rated as “highly beneficial,” with the highest weighted mean of 3.71. The overall assessment in the given indicators is “highly beneficial,” with a grand weighted mean of 3.51.

Moreover, in the response of the nursing service respondent group, five statements had obtained “highly beneficial” adjectival ratings. These premises were encoding and editing the basic information about the patient; recording laboratory and other test results; facilitating decision-making with the use of real-time data and health care analytics; producing accurate information through data collection, storage, and analysis; and encouraging patient engagement through their access to their medical records obtained weighted mean values of 3.66, 3.66, 3.49, 3.49, and 3.31, respectively. The encoding and editing of the basic information about the patient; and recording of laboratory and other test results indicators were assessed by respondents as “highly beneficial,” with the highest weighted mean of 3.66. The indicators were assessed as “highly beneficial,” with a grand weighted mean of 3.52.

Furthermore, in the assessment of the admin staff respondents, four statements were rated as “highly beneficial.” These premises were encoding and editing the basic information about the patient; recording laboratory and other test results; facilitating decision-making with the use of real-time data and health care analytics; and producing accurate information through data collection, storage, and analysis obtained weighted means of 4.00, 3.74, 3.74, and 3.74, respectively. The indicator encoding and editing the basic information about the patient was rated as “highly beneficial,” with the highest weighted mean of 4.00. The given indicators were rated as “highly beneficial,” with a grand weighted mean of 3.69.

Considering the overall assessments of the indicators in the quick access to medical records aspect of the level of benefits in the digitalization of outpatient consultation results showed that five indicators had received similar “highly beneficial” verbal interpretations.

These indicators were encoding and editing the basic information about the patient; recording laboratory and

other test results; facilitating decision-making with the use of real-time data and health care analytics; producing accurate information through data collection, storage, and analysis; and encouraging patient engagement through their access to their medical records obtained equivalent average weighted means of 3.79, 3.60, 3.555, 3.58, and 3.36, respectively.

On the other hand, the indicator for encoding and editing the basic information about the patient was rated as “highly beneficial,” with the highest average weighted mean of 3.79. The three groups of respondents assessed the quick access to medical records as “highly beneficial,” with a grand mean of 3.57.

The respondents’ overall assessments on the indicators of quick access to medical records aspect of the level of benefits in the digitalization of outpatient consultation, had stressed that upgrading the computer system should be given priority by the hospital administrators. The said indicator was rated as “highly beneficial” and had the highest average weighted mean, indicating the urgency of effecting improvement on the computer system of the hospital to speed up medical care. The outcome of the study indicates that modern technology enables the consultation process to be done as quickly as possible since the patient’s data is readily available.

In support of the findings of the study, Pär (2022) investigates the experiences of medical personnel involved in the development and use of a digital platform for patient-provider consultation with the quality aspects of patient safety, efficiency, and access. The medical personnel found that the platform provided an open line of communication with patients who needed regular check-ins. As a result, there was less worry and fewer follow-up appointments. Healthcare professionals also saw that individuals with mental health issues benefited from the platform's interaction flexibility

Table 4.2 Level of Benefits in the Digitalization of Outpatient Consultation in terms of Workload Reduction

Statements	Medical service		Nursing Service		Admin Service		AWM	
	WM	VI	WM	VI	WM	VI	WM	VI
1. Facilitating health care providers workflow and ease the burden of their tasks	3.43	HB	3.31	HB	3.52	HB	3.42	HB
2. Enabling the provider for a better connection with their patients	3.36	HB	3.29	HB	3.52	HB	3.39	HB
3. Allowing the health workers to deliver medical care remotely	3.11	B	3.09	B	3.00	B	3.06	B
4. Helping the providers to automate much of their workloads	3.25	B	3.14	B	3.78	HB	3.39	HB
5. Improving communication between healthcare providers	3.50	HB	3.23	B	3.74	HB	3.49	HB
GWM	3.33	HB	3.21	B	3.51	HB	3.35	HB

Legend:

Abbreviation	Meaning
WM	Weighted Mean
AWM	Average Weighted Mean
GWM	Grand Weighted Mean
VI	Verbal Interpretation

Weighted Mean (WM) Range	Verbal Interpretation (VI)	Code
3.26 – 4.00	Highly Beneficial	HB
2.51 – 3.25	Beneficial	B
1.76 – 2.50	Less Beneficial	LB
1.00 – 1.75	Not Beneficial	NB

Table 4.2 reveals the respondents’ assessments of the level of benefits of the digitalization of outpatient consultation in terms of workload reduction. For the medical service respondent group, it was found that three premises were rated as “Highly beneficial.” These mentioned indicators were improving communication between health care providers facilitating health care providers' workflow easing the burden of their tasks and enabling the provider for a better connection with their patients obtaining weighted means of 3.50, 3.43, 3.36, respectively. The indicator of improving communication between health care providers was rated as “highly beneficial,” with the highest weighted mean of 3.50. The overall assessment in the given indicators is “highly beneficial,” with a grand weighted mean of 3.33.

Moreover, in the response of the nursing service respondent group, three statements had obtained “beneficial” adjectival ratings. These premises were improving communication between health care providers; helping the providers to automate much of their workloads; and allowing the health workers to deliver medical care remotely obtained weighted mean values of 3.23, 3.14, and 3.09, respectively. Facilitating health care providers' workflow eases the burden of their tasks; and enables the provider to better connection with their patients’ indicators were assessed by respondents as “highly beneficial,” with the highest weighted mean of 3.52. The indicators were assessed as “beneficial,” with a grand weighted mean of 3.21.

Furthermore, in the assessment of the admin staff respondents, four indicators were rated as “highly beneficial.” These mentioned indicators were helping the providers to automate much of their workloads; improving communication between health care providers; facilitating health care providers' workflow and easing the burden of their tasks; enabling the provider to better connect with their patients obtained weighted means of 3.78, 3.74, 3.52, and 3.52, respectively. The indicator helping the providers to automate much of their workloads was rated as “highly beneficial,” with the highest weighted mean of 3.78. The given indicators were rated as “highly beneficial,” with a grand weighted mean of 3.51.

Considering the overall assessments of the indicators in the workloads reduction aspect of the level of benefits in the digitalization of outpatient consultation results showed that four indicators had received similar “highly beneficial” verbal interpretations. These indicators were improving communication between health care providers; facilitating health care providers' workflow and easing the burden of their tasks; enabling the provider for a better connection with their patients; and helping the providers to automate much of their workloads obtained equivalent average weighted means of 3.49, 3.42, 3.39, and 3.39, respectively. On the other hand, the indicator on improving communication between health care providers was rated as “highly beneficial,” with the highest average weighted mean of 3.49. The three groups of respondents assessed the workload reduction as “highly beneficial,” with a grand mean of 3.35.

The outcome of the study indicates that the burden of the medical staff in conducting physical outpatient consultations is being reduced through fast and effective communication among medical practitioners. It helps to improve the communication through availability of various communication channels.

The respondents’ overall assessments on the indicators in workload reduction aspect of the level of benefits in the digitalization of outpatient consultation, had stressed that digitization program should be given priority by the hospital administrators to augment the needed workforce. The said indicator was rated as “highly beneficial” and had the highest average weighted mean, indicating the necessity of the adoption of online communication platforms to lessen the burden and workloads in physical medical consultation compared to online modalities.

With the results of the study, digital technology has altered the way healthcare is provided and accessible claims Madanian (2023). The use of digital health technologies is hampered by issues with digital literacy, health literacy, and privacy. Patients now have a different experience with healthcare because of digital health technology. Studies reveal the gap that exists between the people for whom digital health products are developed and deployed, and those who use them. Moreover, according to Greenhalgh (2018) when participating doctors deem video outpatient consultations clinically suitable, patients seem to find them safe, useful, and convenient. However, these scenarios only make up a small portion of the clinic's overall workload. Integrating video consulting services into standard operating procedures in firms that are resistant to change, particularly during lean times, presents several difficult problems.

Table 4.3 Level of Benefits in the Digitalization of Outpatient Consultation in terms of Collaborative Treatment

Statements	Medical Service		Nursing Service		Admin Service		AWM	
	WM	VI	WM	VI	WM	VI	WM	VI
1. Enabling the health care providers to reach out to other medical experts for advice	3.36	HB	3.29	HB	3.52	HB	3.39	HB
2. Creating the best medical plan for each patient with critical conditions	3.46	HB	3.23	B	3.00	B	3.23	B
3. Exchanging health information and working together to create treatment strategies.	3.50	HB	3.11	B	3.52	HB	3.38	HB
4. Allowing the doctors to take proactive measures because of real-time data monitoring	3.64	HB	3.09	B	3.26	HB	3.33	HB
5. Increasing communication between physicians and patients about the execution of treatment plan	3.54	HB	3.09	B	3.48	HB	3.37	HB
GWM	3.50	HB	3.16	B	3.36	HB	3.34	HB

Legend:

Abbreviation	Full Meaning		
WM	Weighted Mean		
AWM	Average Weighted Mean		
GWM	Grand Weighted Mean		
VI	Verbal Interpretation		
Weighted Mean (WM) Range	Verbal Interpretation (VI)	Code	
3.26 – 4.00	Highly Beneficial	HB	
2.51 – 3.25	Beneficial	B	
1.76 – 2.50	Less Beneficial	LB	
1.00 – 1.75	Not Beneficial	NB	

Table 4.3 presents the respondents' assessments of the level of benefits in the digitalization of outpatient consultation in terms of collaborative treatment. For the medical service respondent group, it was found that five indicators were rated as "highly beneficial." These mentioned statements allow the doctors to take proactive measures because of real-time data monitoring (3.64) increasing communication between physicians and patients about the execution of treatment plans (3.54); exchanging health information and working together to create treatment strategies (3.50); creating the best medical plan for each patient with critical conditions (3.46); enabling the health care providers to reach out other medical experts for advice (3.36). The statements allowing the doctors to take proactive measures because of real-time data monitoring were rated as "highly beneficial," with the highest weighted mean of 3.64. The overall assessment in the given indicators is "highly beneficial," with a grand weighted mean of 3.50.

Moreover, in the response of the nursing respondent group, four indicators had obtained "beneficial" adjectival ratings. These premises were creating the best medical plan for each patient with critical conditions; exchanging health information and working together to create treatment strategies; allowing the doctors to take proactive measures because of real-time data monitoring; and increasing communication between physicians and patients about the execution of treatment plan obtained weighted mean values of 3.23, 3.11, 3.09, and 3.09, respectively. Enabling the health care providers to reach out to other medical experts for advice indicator was assessed by respondents as "highly beneficial," with the highest weighted mean of 3.29. The indicators were assessed as "beneficial," with a grand weighted mean of 3.16

Furthermore, in the assessment of the admin staff respondents, four statements were rated as "highly beneficial." These premises enabled the health care providers to reach out to other medical experts for advice; exchange health information and work together to create treatment strategies; allow the doctors to take proactive measures because of real-time data monitoring; and increase communication between physicians and patients about the execution of treatment plan obtained weighted means of 3.52, 3.52, 3.48, and 3.26, respectively. The indicators enabling the health care providers to reach out to other medical experts for advice; and creating the best medical plan for each patient with critical conditions were rated as "highly beneficial," with the highest weighted mean of 3.52. The given indicators were rated as "highly beneficial," with a grand weighted mean of 3.36.

Considering the overall assessments of the indicators in the collaborative treatment aspect of the level of benefits in the digitalization of outpatient consultation results showed that four indicators had received similar "highly beneficial" verbal interpretations. These indicators enabled the health care providers to reach out to other medical experts for advice; exchange health information and work together to create treatment strategies; increase communication between physicians and patients about the execution of treatment plans; and allow the doctors to take proactive measures because of real-time data monitoring obtained equivalent average weighted means of 3.39, 3.38, 3.37, and 3.33, respectively. On the other hand, the indicator of enabling the healthcare providers to reach out to other medical experts for advice was rated as "highly beneficial," with the highest average weighted mean of 3.39. The three," groups of respondents assessed the collaborative treatment as "highly beneficial," with a grand mean of 3.34.

The respondents' overall assessments on the indicators in collaborative treatment aspect of the level of benefits in the digitalization of outpatient consultation, had pointed out the benefits and advantages of the digital technology to reach out to specialists from the remote areas to ask for advice on the medical treatment. The said indicator was rated as "highly beneficial" and had the highest average weighted mean, indicating the urgency of effecting improvement on the capacity of the computer system to access the online platform to communicate regularly with medical experts in the remote setting.

Similarly, Sutton (2020) asserts that computerized clinical decision support systems, or CDSS, constitute a paradigm change in the current state of healthcare. Clinicians can utilize CDSS to support them in making complicated decisions. Moreover, Hege (2024) stated that telemedicine in outpatient services for patients living with HIV increased as care shifted to rural locations. Research on the delivery of telemedicine-assisted HIV care, which includes several telemedicine components and concentrates on strategies to enhance the telemedicine experience for patients, is, however, scarce after the COVID-19 pandemic.

5. Test of Significant Difference in the Assessment of Three Groups of Respondents on the Level of Benefits in the Digitalization of Outpatient Consultation

Table 5 Results of the Test of Significant Difference in the Assessment of Three Groups of Respondents on the Level of Benefits in the Digitalization of Outpatient Consultation

Variable	Computed	Critical 0.05	Interpretation	Decision on Null Hypothesis
1. Quick Access to Medical Records	1.66	3.10	Not Significant	Accept HO
2. Workloads Reduction	2.56	3.10	Not Significant	Accept HO
3. Collaborative Treatment	3.51	3.10	Significant	Reject HO

Level of significance – 0.05

The result of the test of significant difference in the assessment of three groups of respondents on the level of benefits in the digitalization of outpatient consultation is shown in Table 5. The statistical test using the f-test showed that the computed f-value of 1.66 is less than the tabular f-value of 3.10 at a 0.05 level of significance indicating the acceptance of the null hypothesis. Thus, the statistics revealed that there is no significant difference in the evaluation of the three groups of respondents to the level of benefits in the digitalization of outpatient consultation. This means that the medical, nursing, and admin services respondents had shown consistency in their assessment of the areas under the quick access to medical records. The similarities in the respondents' assessment could be attributed to their exposure to the advantage of digital records compared the printed records in accessing patients' information.

On the other hand, different statistical results were obtained in the analysis of workload reduction, and collaborative treatment variables. The statistical test using the f-test showed that the computed f-values of 2.56 and 3.51 are greater than the tabular f-values of 3.10 at a 0.05 level of significance, indicating the rejection of the null hypothesis. Thus, the statistical data revealed that there is a significant difference in the evaluation of the three groups of respondents to the workload reduction; and collaborative treatment variables aspect of the level of benefits in the digitalization of outpatient consultation. This means that the medical, nursing, and admin services respondents had shown differences in their assessment of the areas under the workload reduction and collaborative treatment variables. The differences in the respondents' assessment could be attributed to the different perceptions of the patients regarding the advantage of digital platforms compared to face-to-face consultation with the reduction of burden and communication of the needed information for the medical treatment. In support of this finding, Iyanna (2022) stated that the digital transformation of firms particularly the hospitals is common; and the results are evident across all industries. It's debatable, though, why the shift hasn't been smooth - especially in light of all the advantages of digitalization. In addition, according to Greenhalgh (2018) when participating doctors deem video outpatient consultations clinically suitable, patients seem to find them safe, useful, and convenient. However, these scenarios only make up a small portion of the clinic's overall workload.

6. Challenges Encountered in the Digitalization of Outpatient Consultation

Table 6.1 Challenges Encountered in the Digitalization of Outpatient Consultation in terms of Data Privacy and Security

Statements	Medical service		Nursing Service		Admin Service		AWM	
	WM	VI	WM	VI	WM	VI	WM	VI
1. Keeping the patient's data secure and private	3.39	VS	3.66	VS	3.93	VS	3.66	VS

2. Possibility of data breaches and cyber attacks	3.29	VS	3.83	VS	3.89	VS	3.67	VS
3. Restriction of access of data to the authorized hospital personnel	3.32	VS	3.40	VS	3.74	VS	3.49	VS
4. Accessibility of the patients relative to virtual consultation	2.75	S	3.34	VS	3.85	VS	3.31	VS
5. Exposure of digital information of the patients saved in their personal electronic devices	3.36	VS	3.31	VS	3.81	VS	3.50	VS
GWM	3.22	S	3.51	VS	3.84	VS	3.52	VS

Legend:

Abbreviation	Full Meaning	
WM	Weighted Mean	
AWM	Average Weighted Mean	
GWM	Grand Weighted Mean	
VI	Verbal Interpretation	
Weighted Mean (WM) Range	Verbal Interpretation (VI)	Code
3.26 – 4.00	Very Serious	VS
2.51 – 3.25	Serious	S
1.76 – 2.50	Less Serious	LS
1.00 – 1.75	Not Serious	NS

Table 6.1 shows the respondents’ assessments of challenges encountered in the digitalization of outpatient consultation in terms of data privacy and security. For the medical service respondent group, it was found that four indicators were rated as “very serious.” These premises were keeping the patient’s data secure and private; exposure of digital information of the patients saved in their electronic devices; restriction of access of data to the authorized hospital personnel; the possibility of data breaches and cyber-attacks; and obtained weighted means of 3.39, 3.36, 3.32, 3.29, and 2.75, respectively. The indicator exposure of digital information of the patients saved in their electronic devices was rated as “very serious,” with the highest weighted mean of 3.36. The overall assessment in the given indicators is “serious,” with a grand weighted mean of 3.22.

Moreover, in the response of the nursing service respondent group, five indicators had obtained “very serious” adjectival ratings. These statements were restriction of access of data to the authorized hospital personnel; keeping the patient’s data secure and private; the possibility of data breaches and cyber-attacks; accessibility of the patients relative to virtual consultation; and exposure of digital information of the patients saved in their electronic devices obtained weighted mean values of 3.83, 3.66, 3.40, 3.34, and 3.31, respectively. The possibility of data breaches and cyber-attacks indicator was assessed by respondents as “very serious,” with the highest weighted mean of 3.83. The indicators were assessed as “very serious,” with a grand weighted mean of 3.51.

Furthermore, in the assessment of the admin staff respondents, five indicators were rated as “very serious.” These mentioned premises were keeping the patient’s data secure and private; the possibility of data breaches and cyber-attacks; accessibility of the patients relative to virtual consultation; exposure of digital information of

the patients saved in their electronic devices; and restriction of access of data to the authorized hospital personnel obtained weighted means of 3.93, 3.89, 3.85, 3.81, 3.74, respectively. The indicator of keeping the patient’s data secure and private was rated as “very serious,” with the highest weighted mean of 3.93. The given indicators were rated as “very serious,” with a grand weighted mean of 3.84.

Considering the overall assessments on the indicators in the data privacy and security aspect of challenges encountered in the digitalization of outpatient consultation results showed that five indicators had received similar “very serious” verbal interpretations. These indicators were restriction of access of data to the authorized hospital personnel; keeping the patient’s data secure and private; exposure of digital information of the patients saved in their electronic devices; the possibility of data breaches and cyber-attacks; and accessibility of the patients relative to virtual consultation obtained equivalent average weighted means of 3.67, 3.66, 3.50, 3.49, and 3.31, respectively. On the other hand, the indicator on the possibility of data breaches and cyber-attacks was rated as “very serious,” with the highest average weighted mean of 3.67. The three groups of respondents assessed the data privacy and security as “very serious,” with a grand mean of 3.52.

The respondents’ overall assessments on the indicators in data privacy and security aspect of challenges encountered in the digitalization of outpatient consultation stressed that security features of the computer system of the hospital should be given priority by the hospital administrators to enable the Information Technology department to upgrade the system. The said indicator was rated as “very serious” and had the highest average weighted mean, indicating the urgency of effecting improvement on the security feature of the computer system for the patient’s digital records.

The result implies that the security breach challenge can be resolved through upgrading the security system which may cost the hospital to spend budget for the upgrade of the computer system. In connection with this study, an analysis of the financial advantages of using technological advancements to manage an outpatient appointment system was conducted according to Camargo (2021) considering the benefit-cost ratio, a commonly used metric that assesses the financial results of, particularly, public endeavors that frequently have to deal with resource allocation decisions due to resource constraint. Cost-benefit analysis is a common tool used by economists and public administrators to calculate the economic worth of the benefits that result from implementing a project relative to the expenditures and expenses that are associated with it

Hence, investing in the security system enables the medical staff to enjoy the benefit of digital technology in accessing patients’ records and making necessary updates.

Table 6.2 Challenges Encountered in the Digitalization of Outpatient Consultation in terms of Digital Literacy

Statements	Medical Service		Nursing Service		Admin Service		AWM	
	WM	VI	WM	VI	WM	VI	WM	VI
1. Need to educate the patients about digital technology	3.25	S	3.83	VS	3.78	VS	3.62	VS
2. Continuous training for healthcare professionals with the latest online platforms	3.75	VS	3.66	VS	3.67	VS	3.69	VS
3. Difficulty to troubleshoot basic technical problems during online consultation	3.50	VS	3.49	VS	3.26	VS	3.41	VS
4. Limited knowledge of medical staff in security settings and data sharing	3.29	VS	3.31	VS	3.48	VS	3.36	VS
5. Data interoperability problem due to ambiguous standards for data storage and coding	3.32	VS	3.49	VS	3.33	VS	3.38	VS
GWM	3.42	VS	3.55	VS	3.50	VS	3.49	VS

Legend:

Abbreviation	Full Meaning	
WM	Weighted Mean	
AWM	Average Weighted Mean	
GWM	Grand Weighted Mean	
VI	Verbal Interpretation	
Weighted Mean (WM) Range	Verbal Interpretation (VI)	Code
3.26 – 4.00	Very Serious	VS
2.51 – 3.25	Serious	S
1.76 – 2.50	Less Serious	LS
1.00 – 1.75	Not Serious	NS

Table 6.2 shows the respondents’ assessments of challenges encountered in the digitalization of outpatient consultation in terms of digital literacy. For the medical service respondent group, it was found that four premises were rated as “very serious.” These mentioned statements were continuous training for health care professionals with the latest online platforms; difficulty troubleshooting basic technical problems during online consultation; data interoperability problems due to ambiguous standards for data storage and coding; and limited knowledge of medical staff in security settings and data sharing obtained weighted means of 3.75, 3.50, 3.32, and 3.29, respectively. The indicator continuous training for health care professionals with the latest online platforms was rated as “very serious,” with the highest weighted mean of 3.75. The overall assessment in the given indicators is “very serious,” with a grand weighted mean of 3.42.

Moreover, in the response of the nursing respondent group, five indicators had obtained “very serious” adjectival ratings. These premises were needed to educate the patients about digital technology; continuous training for health care professionals with the latest online platforms; difficulty troubleshooting basic technical problems during online consultation; data interoperability problems due to ambiguous standards for data storage and coding; and limited knowledge of medical staff in security setting and data sharing obtained weighted mean values of 3.83, 3.66, 3.49, 3.49, and 3.31, respectively. The need to educate the patients about digital technology indicators was assessed by respondents as “very serious,” with the highest weighted mean of 3.83. The indicators were assessed as “very serious,” with a grand weighted mean of 3.55.

Furthermore, in the assessment of the admin staff respondents, five indicators were rated as “very serious.” These mentioned indicators were needed to educate the patients about digital technology; continuous training for health care professionals with the latest online platforms; limited knowledge of medical staff in security setting and data sharing; data interoperability problems due to ambiguous standards for data storage and coding; and difficulty to troubleshoot basic technical problems during online consultation obtained weighted means of 3.78, 3.67, 3.48, 3.33, and 3.26, respectively. The statement needs to educate the patients with digital technology was rated as “very serious,” with the highest weighted mean of 3.78. The given indicators were rated as “very serious,” with a grand weighted mean of 3.50.

Considering the overall assessments of the indicators in the digital literacy aspect of challenges encountered in the digitalization of outpatient consultation results showed that five indicators had received similar “very serious” verbal interpretations. These indicators needed to difficulty troubleshooting basic technical problems during online consultation; educate the patients with digital technology; continuous training for health care professionals with the latest online platforms; data interoperability problems due to ambiguous standards for data storage and coding; and limited knowledge of medical staff in security setting and data sharing obtained equivalent average weighted means of 3.69, 3.62, 3.41, 3.38, and 3.36, respectively.

On the other hand, the indicator of the need to educate the patients with digital technology was rated as “very serious,” with the highest average weighted mean of 3.62. The three groups of respondents assessed digital literacy as “very serious,” with a grand mean of 3.49.

The respondents’ overall assessments on the indicators of digital literacy aspect of challenges encountered in the digitalization of outpatient consultation stressed that digital literacy of the medical staff should be given priority by the hospital administrators for them to utilize the modern technology appropriately and secure the patients’ data privacy. The said indicator was rated as “very serious” and had the highest average weighted mean, indicating the need to provide continuous digital literacy training to all medical staff to increase their familiarity with the utilization of the system for the effective delivery of health care service to the public.

In connection with the given results, Kazimova (2023) delves into the rapid transition to a digitally enhanced healthcare delivery system, promoting the broad implementation of telemedicine and the loosening of regulatory restrictions. The rapidly expanding usage of wearable technology, artificial intelligence, machine learning, and electronic health records is also examined in detail in this study, along with the potential benefits these technologies have for enhancing patient care and health outcomes. Even with the improvements, there are still serious privacy and security issues due to the quick digital integration.

Table 6.3 Challenges Encountered in the Digitalization of Outpatient Consultation in terms of Infrastructure Barriers

Statements	Medical service		Nursing service		Admin Service		AWM	
	WM	VI	WM	VI	WM	VI	WM	VI
1. Some patients have limited internet accessibility at home to use digital healthcare solutions	3.29	VS	3.77	VS	2.63	S	3.23	S
2. Lack of the needed infrastructure to establish a digital healthcare system	3.54	VS	3.83	VS	3.11	S	3.49	VS
3. Updating regularly the computer system is expensive and resource-intensive	3.18	S	3.66	VS	2.56	S	3.13	S
4. Limited number of high-end digital devices that are compatible with the latest internet connectivity	3.36	VS	3.80	VS	3.11	S	3.42	VS
5. Necessity for hiring technician in charge of maintenance of hospital computer system	3.50	VS	3.63	VS	3.52	VS	3.55	VS
GWM	3.37	VS	3.74	VS	2.99	S	3.36	VS

Legend:

Abbreviation	Full Meaning
WM	Weighted Mean
AWM	Average Weighted Mean
GWM	Grand Weighted Mean
VI	Verbal Interpretation

Weighted Mean (WM) Range	Verbal Interpretation (VI)	Code
3.26 – 4.00	Very Serious	VS
2.51 – 3.25	Serious	S
1.76 – 2.50	Less Serious	LS
1.00 – 1.75	Not Serious	NS

Table 6.3 reveals the respondents’ assessments of challenges encountered in the digitalization of outpatient consultation in terms of infrastructure barriers. For the medical service respondent group, it was found that four statements were rated as “very serious.” These mentioned premises lacked the needed infrastructure to establish a digital healthcare system; the necessity to hire technicians in charge for maintenance of the hospital computer system; a limited number of high-end digital devices that are compatible with the latest internet connectivity; and some patients have limited internet accessibility at home to use digital healthcare solutions obtained weighted means of 3.54, 3.50, 3.36, and 3.29, respectively. The indicator lacking the needed infrastructure to establish a digital healthcare system was rated as “very serious,” with the highest weighted mean of 3.54. The overall assessment in the given indicators is “very serious,” with a grand weighted mean of 3.37.

Moreover, in the response of the nursing respondent group, five indicators had obtained “very serious” adjectival ratings. These statements were lack of the needed infrastructure to establish a digital healthcare system; a limited number of high-end digital devices that are compatible with the latest internet connectivity; some patients have limited internet accessibility at home to use digital healthcare solutions; updating regularly the computer system is expensive and resource-intensive; and the necessity for hiring technician in-charge for maintenance of hospital computer system obtained weighted mean values of 3.83, 3.80, 3.77, 3.66, and 3.63, respectively. The lack of the needed infrastructure to establish a digital healthcare system statement was assessed by respondents as “very serious,” with the highest weighted mean of 3.83. The indicators were assessed as “very serious,” with a grand weighted mean of 3.74.

Furthermore, in the assessment of the admin staff respondents, four indicators were rated as “very serious.” These mentioned statements lack the needed infrastructure to establish a digital healthcare system; a limited number of high-end digital devices that are compatible with the latest internet connectivity; some patients have limited internet accessibility at home to use digital healthcare solutions, and updating regularly the computer system is expensive and resource-intensive obtained weighted means of 3.11, 3.11, 2.63, and 2.56, respectively. The indicator necessity for hiring a technician in charge of maintenance of the hospital computer system was rated as “very serious,” with the highest weighted mean of 3.52. The given indicators were rated as “serious,” with a grand weighted mean of 2.99.

Considering the overall assessments of the indicators in the infrastructure barriers aspect of challenges encountered in the digitalization of outpatient consultation results showed that three indicators had received similar “very serious” verbal interpretations. These statements were a necessity for hiring a technician in charge of maintenance of the hospital computer system; lacking the needed infrastructure to establish a digital healthcare system; and a limited number of high-end digital devices that are compatible with the latest internet connectivity obtained equivalent to average weighted means of 3.55, 3.49, and 3.42, respectively. On the other hand, the indicator of the necessity for hiring a technician in charge of maintenance of the hospital computer system was rated as “very serious,” with the highest average weighted mean of 3.55. The three groups of respondents assessed the infrastructure barriers as “very serious,” with a grand mean of 3.36.

The findings of the study indicate the importance of the infrastructure and facilities for digitalized outpatient consultation services. The better infrastructure is tantamount to better healthcare service delivery through online or remote outpatient consultation. The respondents’ overall assessments on the indicators in infrastructure barriers aspect of challenges encountered in the digitalization of outpatient consultation pointed out the importance of addressing the challenges with regards to the infrastructure barrier such as regular maintenance of the available computer system and networks to conduct online consultation. The said indicator was rated as “very

serious” and had the highest average weighted mean, indicating the need for hiring technicians who are responsible for the troubleshooting and maintenance of the computer system of the hospital.

Moreover, research on the popular techniques for designing digital health interventions that mediate the digital health space was carried out by Duffy (2021). According to him, the fast growth of digital health is causing growing pains. Many design strategies are now being used to balance the demands of a diverse set of stakeholders. According to Bohara (2022), in the experience of Nepal, appreciates the value of digital technology in healthcare. It is critical to recognize the aspects of the digital health ecosystem that require development and what is already functioning properly.

The most often mentioned challenges were the unfavorable geographic distribution, which makes transportation difficult in steep and hilly places, and the insufficient technological infrastructure (lack of internet and electricity). The identified problems also included a shortage of skilled labor and policies that were favorable. In addition, according to Dal Mas (2023), research indicates that digital transformation in healthcare is an important area of study for academics and professionals. Researchers conducted a systematic literature analysis on the state of the art of digital transformation in healthcare to determine how the pandemic is causing the healthcare sector to experience a renaissance.

7. Test of Significant Difference in the Assessment of Three Groups of Respondents on the Challenges Encountered in the Digitalization of Outpatient Consultation

Table 7 Results of the Test of Significant Difference in the Assessment of Three Groups of Respondents on the Challenges Encountered in the Digitalization of Outpatient Consultation

Variable	Computed	Critical 0.05	Interpretation	Decision on Null Hypothesis
1. Data Privacy and Security	21.62	3.10	Significant	Reject HO
2. Digital Literacy	1.36	3.10	Not Significant	Accept HO
3. Infrastructure Barriers	17.27	3.10	Significant	Reject HO

Level of significance – 0.05

The result of the test of significant difference in the assessment of three groups of respondents on the challenges encountered in the digitalization of outpatient consultation is shown in Table 7. The statistical test using the f-test showed that the computed f-value of 1.36 is less than the tabular f-value of 3.10 at a 0.05 level of significance indicating the acceptance of the null hypothesis. Thus, the statistics revealed that there is no significant difference in the evaluation of the three groups of respondents to the challenges encountered in the digitalization of outpatient consultation. This means that the medical, nursing, and admin services respondents had shown consistency in their assessment of the areas under digital literacy. The similarities in the respondents’ assessment could be attributed to their exposure to the level of knowledge of the medical staff about the utilization of modern technology to provide remote online care services.

On the other hand, different statistical results were obtained in the analysis of data privacy and security, and infrastructure barriers variables. The statistical test using the f-test showed that the computed f-values of 21.62 and 17.27 are greater than the tabular f-values of 3.10 at a 0.05 level of significance, indicating the rejection of the null hypothesis. Thus, the statistical data revealed that there is a significant difference in the evaluation of the three groups of respondents to the data privacy and security; and infrastructure barriers aspect of the challenges encountered in the digitalization of outpatient consultation. This means that the medical, nursing, and admin respondents had shown a difference in their perception of other challenges.

SUMMARY OF FINDINGS, CONCLUSION, AND RECOMMENDATIONS

This chapter presents the summary of the findings, conclusions, and recommendations on the assessment of the

digitalization of outpatient consultation at SLRGH.

Summary of Findings

The result of the study revealed the following findings:

1. Assessment Level of Effectiveness of the Digitalization of Outpatient Consultation at SLRGH

The medical staff and patient respondents assessed the level of effectiveness of the digitalization of outpatient consultation at SLRGH in terms of access to care as highly effective. The indicator allowing less privileged patients in remote areas to see the doctors virtually obtained the lowest weighted of 3.15 which corresponds to the verbal interpretation of effectiveness. However, the indicator exchanging of health information about the current condition of the patient obtained the highest weighted mean of 3.53 which is equivalent to highly effective.

The medical staff and patient respondents assessed the level of effectiveness of the digitalization of outpatient consultation at SLRGH in terms of cost reduction as highly effective. The indicator lessening the needed workforce for daily operations of the hospital obtained the lowest weighted of 3.07 which corresponds to the verbal interpretation of effective. However, the indicator maximizing time to accommodate a large number of patients daily obtained the highest weighted mean 3.71 which is equivalent to highly effective.

The medical staff and patient respondents assessed the level of effectiveness of the digitalization of outpatient consultation at SLRGH in terms of patients' outcome enhancement as effective. The indicator tracking their body temperature and movement patterns obtained the lowest weight of 3.17 which corresponds to the verbal interpretation of highly effective. However, the indicator employing personalized healthcare to treatment, particularly in special cases obtained the highest weighted mean of 3.44 which is equivalent to highly effective.

2. Test of Significant Difference in the Assessment of Three Groups of Respondents on the Level of Effectiveness of the Digitalization of Outpatient Consultation at SLRGH

There is no significant difference in the assessment of the three groups of respondents on the level of effectiveness of the digitalization of outpatient consultation at SLRGH in terms of access to care; and cost reduction. On the other hand, there is a significant difference in terms of patients' outcome enhancement.

3. Test of Significant Difference in the Assessment of Two Groups of Respondents on the Level of Effectiveness of the Digitalization of Outpatient Consultation at SLRGH

There is a significant difference in the assessment of the two groups of respondents on the level of effectiveness of the digitalization of outpatient consultation at SLRGH in terms of access to care, cost reduction; and patients outcome enhancement.

4. Assessment of Level of Benefits in the Digitalization of Outpatient Consultation

The medical staff and patient respondents assessed the level of benefits in the digitalization of outpatient consultation in terms of quick access to medical records as highly beneficial. The indicator encouraging patient engagement through their access to their medical records obtained the lowest weighted of 3.36 which corresponds to the verbal interpretation of highly beneficial. However, the indicator encoding and editing the basic information about the patient obtained the highest weighted mean of 3.79 which is equivalent to highly beneficial.

The medical staff and patient respondents assessed the level of benefits in the digitalization of outpatient consultation in terms of workload reduction as highly beneficial. The indicator allowing the health workers to deliver medical care remotely obtained the lowest weighted mean of 3.06 which corresponds to the verbal interpretation of benefit. However, the indicator improving communication between health care providers obtained the highest weighted mean of 3.49 which is equivalent to highly beneficial.

The medical staff and patient respondents assessed the level of benefits in the digitalization of outpatient consultation in terms of collaborative treatment as highly beneficial. The indicator of exchanging health information and working together to create treatment strategies obtained the lowest weighted mean of 3.23 which corresponds to the verbal interpretation of benefit. However, the indicator creating the best medical plan for each patient with critical conditions obtained the highest weighted mean of 3.39 which is equivalent to highly beneficial.

5. Test of Significant Difference in the Assessment of Three Groups of Respondents on the Level of Benefits in the Digitalization of Outpatient Consultation

There is no significant difference in the assessment of three groups of respondents on the level of benefits of the digitalization of outpatient consultation in terms of quick access to medical records; and collaborative treatment. However, there is a significant difference in terms of workload reduction.

6. Assessment of Challenges Encountered in the Digitalization of Outpatient Consultation

The medical staff and patient respondents assessed the challenges encountered in the digitalization of outpatient consultation in terms of data privacy and security as very serious. The indicator accessibility of the patients relative to virtual consultation obtained the lowest weighted mean of 3.31 which corresponds to the verbal interpretation of very serious. However, the indicator possibility of data breaches and cyber-attacks obtained the highest weighted mean of 3.67 which is equivalent to very serious.

The medical staff and patient respondents assessed the challenges encountered in the digitalization of outpatient consultation in terms of digital literacy as very serious. The indicator of limited knowledge of medical staff in security settings and data sharing obtained the lowest weighted mean of 3.36 which corresponds to the verbal interpretation of very serious. However, the indicator continuous training for health care professionals with the latest online platforms obtained the highest weighted mean of 3.69 which is equivalent to very serious.

The medical staff and patient respondents assessed the challenges encountered in the digitalization of outpatient consultation in terms of infrastructure barriers as very serious. The indicator necessity for hiring a technician in charge of maintenance of the hospital computer system obtained the lowest weighted of 3.13 which corresponds to the verbal interpretation of serious. However, the indicator that regularly updating the computer system is expensive and resource-intensive obtained the highest weighted mean of 3.59 which is equivalent to very serious.

7. Test of Significant Difference in the Assessment of Three Groups of Respondents on the Challenges Encountered in the Digitalization of Outpatient Consultation

There is no significant difference in the assessment of three groups of respondents on the challenges encountered in the digitalization of outpatient consultation in terms of data privacy and security; and infrastructure barriers. On the other hand, there is a significant difference in terms of digital literacy.

8. General findings as a basis for the formulation of the output of the study.

Digitalization is highly effective in access to health care services, reduction of maintenance expenses, and accommodating large volume of clients; the highly beneficial statements include access to individual patient records, workload reduction, and collaboration in making diagnoses. But the serious challenges are security protocols, digital literacy, and infrastructure capacity for consultation of high volume of walk-in patients.

Conclusions

findings, the following conclusions are drawn:

1. The utilization of digital consultation at a government hospital particularly in SLRGH is very effective in access to health care services in monitoring the patient's condition; reducing the maintenance expenses

of the hospital facilities; time; and transportation expenses of the patient since it accommodates the high volume of patients; and enhance patients' care through need-based treatment.

2. The medical staff directly observes the impact of digitization of outpatient consultation to access care and cost reduction for both the hospital and its patients. However, they have an indirect observation of its effect on patients' outcomes.
3. The patients have less concern about the effectiveness of the digitization of outpatient consultation compared to the view of medical staff who have directly seen its impact on accessibility, savings, and enhancement of patient care.
4. The medical staff have seen the high benefits of digitization of outpatient consultation such as easy access to individual patient records for updating; reduced workloads in catering the walk-in outpatients; and collaborative treatment among specialists to come up best medical plans for the patients.
5. The medical staff perceives the benefits of digitization of outpatient consultation in the accessibility of information of the patients as reference for medical collaborative plans and ease their burden of controlling and supervising a high volume of patients.
6. The challenges in the digitization of outpatient consultation are considered very serious, particularly the security protocols; digital literacy; and limited infrastructure capacity to conduct consultation and update patient records.
7. The most serious challenges in the digitization of health care service in outpatient is the technical aspect such as data security and infrastructure capability. However, some medical staff considered the needed training on the utilization of technology a serious challenge.
8. The formulation of a healthcare service development plan based on the findings of the study should focus on the enhancement of existing online outpatient consultation system; patients' basic digital literacy; computer security system enhancement; advanced training for medical staff on hybrid consultation modality and electronic record management.

Recommendations

Based on the findings and conclusions, the following are recommended:

1. SLRGH should continue the utilization of digital platforms to conduct online outpatient consultations for those patients who have access to it and consider it as more convenient and accessible to them.
2. The hospital administrator should adopt the hybrid outpatient consultation during the post-pandemic period to increase the flexibility of the medical staff in catering to patients.
3. The SLRGH outpatient department should conduct monthly orientation to the patients concerning the procedures and advantages of digitization of outpatient consultation including access to their medical records.
4. The hospital administrator should maximize the advantages of the digitization of outpatient consultation and medical records by providing the necessary equipment and needed venue for the delivery of health care services.
5. The outpatient department should collaborate with the Information Technology department for technical assistance and upgrading of the existing gadgets and computer system.
6. The hospital administrator should increase the annual budget allocation for updating the computer system and increase security protocols to limit its access to authorized personnel only.

7. The IT department of the hospital should conduct orientation seminars on the utilization of modern equipment for online medical consultation and records management to mitigate the impact of challenges.
8. The hospital administrators should adopt the proposed healthcare development plan to improve the system in the delivery of medical services to outpatients through the digitalized system as an alternative to physical consultation.

Healthcare Service Development Plan

COMPONENT PROGRAM	SPECIFIC OBJECTIVES	IMPLEMENTING STRATEGIES	RESPONSIBLE PERSON	TIME FRAME	BUDGET	SOURCE	EXPECTED OUTCOME
Hybrid Outpatient Consultation Program	<ol style="list-style-type: none"> 1. To provide health care service delivery to the outpatients remotely 2. To enable the medical staff to become flexible in providing medical consultation services based on the preference of the outpatients 3. To provide access to medical records and update the outpatient after the medical consultation 	<ol style="list-style-type: none"> 1. Conduct online outpatient consultation based on the given schedule of the specialist or physician 2. Posting of schedule of online medical consultation together with other details including the links to be used in the suggested online platform 3. Send individually to the outpatient's email the requested medical records to inform them of the status of their health conditions 	Head of the Outpatient Section (OPS)	Weekly	Php 100,000	GAA/ MOOE	Increasing Online Medical Consultation
Record Management Program	<ol style="list-style-type: none"> 1. To create medical records for the patients electronically 2. To update the patient's record based on the medical procedures conducted by the medical staff 3. To provide the patients with data concerning their health conditions based on their medical records 	<ol style="list-style-type: none"> 1. Gather vital information from the patients needed for the creation of their electronic records 2. Access the individual records of the patients and include the laboratory test results and other procedures advised by the physician 3. Provide the patients with hard or soft copies of their medical certificates upon their request 	Head of the Health Information Management Section (HIMS) / Medical Records	Weekly	Php 25,000.00	GAA/ MOOE	Systematic Data Recording and Updating

COMPONENT PROGRAM	SPECIFIC OBJECTIVES	IMPLEMENTING STRATEGIES	RESPONSIBLE PERSON	TIME FRAME	BUDGET	SOURCE	EXPECTED OUTCOME
System and Infrastructure Development Program	<ol style="list-style-type: none"> 1. To enhance the existing computer system used to access the electronic medical records of the patients 2. To upgrade the capacity of the computer storage of the hospital to store large volumes of patient records 	<ol style="list-style-type: none"> 1. Update the computer system with the latest version of the software being used based on the requirements of the online application 2. Purchase the necessary hardware to increase the capacity of the computer to hold the electronic data of the patient's updated medical information 	Integrated Hospital Operations and Management Program Section (IHOMP) / Information Technology Department	Annually	Php 300,000	GAA/ MOOE	Upgraded Computer System
Outpatient Digital Literacy Program	<ol style="list-style-type: none"> 1. To enable the patients to access the online medical consultation 2. To encourage the outpatients to utilize the online platform which is convenient to them 	<ol style="list-style-type: none"> 1. Provide orientation to the outpatients concerning the utilization of common modern gadgets available to them to access the online platforms 2. Disseminate information and instruction on the proper utilization of online platforms and the protocols during the actual medical consultation 	IHOMP and OPS Staff	Monthly	Php 15,000	GAA/ MOOE	Computer Literate Outpatients
Data Security and Privacy Development Program	<ol style="list-style-type: none"> 1. To maintain the observance of Data Privacy of the patient's medical records 2. To ensure safety and increase security of the patient's records against possible security breach 	<ol style="list-style-type: none"> 1. Provide restriction code to the utilization and access of patients' medical records to ensure the proper observance of data privacy 2. Set a security code that can be accessed only by authorized personnel and monitor the logs of the personnel who accessed the individual records of the patients 	Integrated Hospital Operations and Management Program Section (IHOMP) / Information Technology Department	Weekly	Php 100,000	GAA/ MOOE	Observed Privacy and Security Protocol

COMPONENT PROGRAM	SPECIFIC OBJECTIVES	IMPLEMENTING STRATEGIES	RESPONSIBLE PERSON	TIME FRAME	BUDGET	SOURCE	EXPECTED OUTCOME
Medical Staff Digital Literacy Advance Program	<p>1. To increase the knowledge and skills of the medical staff in the utilization of the online platforms for online consultation and software used to access patient's individual records</p> <p>2. To enable the medical staff to familiarize themselves with the standard protocols on the utilization of computer systems in accessing patient records and conducting online consultation</p>	<p>1. Conduct group training on the utilization of modern software used to access patients' medical records and provide orientation on how to update the records after each consultation activities</p> <p>2. Provide orientation on the standard procedures and protocols for accessing patients' records during the online and onsite consultation</p>	Integrated Hospital Operations and Management Program Section (IHOMP) / Information Technology Department	Quarterly	Php 30,000	GAA/MOOE	Digital Literate and Skilled Staff

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