ST MARY'S UNIVERSITY

SCHOOL OF GRADUATE STUDIES

MASTERS OF BUSINESS ADMINISTRATION

FACTORS AFFECTING UTILIZATION OF ELECTRONIC MEDICAL RECORD (EMR) SYSTEM: THE CASE OF MENELIK II COMPREHENSIVE SPECIALIZED HOSPITAL

BY

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LIST OF ACRONYMS AND ABBREVIATIONS

AAHB - Addis Ababa Health Bureau

CPR - Computerized patient record

EMR - Electronic medical records

HIT - Health information technology

ICT - Information Communication Technology

ICTA - Information Communication Technology Agency

MDGs - Millennium Development Goals

NGO - Non-governmental organization

PIH - Partners in Health

TAM- Technology Acceptance Model

TOE - Organization and Environment

WHO - World health organization

ABSTRACT

The utilization of information and communication technology (ICT) in the medical field in the form of electronic medical record (EMR) system had been promoted as a way to reduce cost, increase effectiveness and improve the quality of care. In Ethiopia, the EMR is being rapidly implemented in both public and private sector healthcare facilities. However, the utilization of the EMR system has been met with partial success. Therefore, the study sought to find out the factors affecting utilization of electronic medical record (EMR) at Menelik ii comprehensive specialized hospital, focusing on the attitudes of healthcare professionals, the influence of organizational culture, the proficiency in computer skill among health professionals and the extent to which staff training impacts EMR utilization. Using an explanatory research design, this study employs a quantitative approach to gather and analyze data. Surveys were distributed to a diverse group of healthcare professionals at Menelik ii comprehensive specialized hospital, including doctors, nurses, and administrative staff. The survey was designed to capture data on their attitudes towards EMR system, perceptions of the organizational culture, their proficiency in computer skill and the impact of training. Statistical methods were used to analyze the collected data and identify significant predictors of EMR utilization. Findings reveal that negative attitudes towards EMR systems among healthcare professionals can result in reluctance or resistance towards effective utilization. Additionally, inadequate organizational culture, lacking support or encouragement for technology adoption, acts as a barrier to the seamless integration of EMR systems into daily workflows. Deficient training programs contribute to healthcare staff not fully grasping how to utilize EMRs efficiently. Moreover, deficiencies in computer skills among staff further impede their ability to harness EMR systems full potential. Collectively, these findings underscore how these factors negatively impact EMR utilization and subsequently affect the overall efficiency of healthcare delivery. In conclusion, this study highlights the crucial role of positive attitudes towards EMR systems, supportive organizational culture, and enhanced computer skill training for healthcare professionals. Additionally, it recommends tailoring training programs based on the knowledge level of the participants to ensure the content is appropriate and beneficial for all skill levels. Addressing these factors is vital for optimizing EMR utilization, ultimately leading to improved healthcare outcomes and more efficient clinical workflows.

Keywords: *EMR system utilization, attitude, organizational culture, computer skill, training*

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

The emergence of electronic medical records (EMRs) symbolizes a transformational journey in healthcare information management (Walraven et al., 2022). From humble beginnings to sophisticated systems today, the evolution of EMRs has been impacted by technical breakthroughs, changing healthcare demands, and the goal of better patient care.

In today's society, the implementation of electronic medical records have become a crucial component of healthcare systems worldwide, with a focus on designing systems that are more intelligent, interoperable, and patient-centric (Ayaad et al., 2019). Hospitals conduct a thorough examination of a wide range of medical procedures they administer, an in-depth examination of the frequency and types of diseases they encounter and treat, and a meticulous inspection of additional pertinent information extracted from the abundance of data embedded within medical records. This analytical approach is critical in creating healthcare plans, optimizing resource allocation, and improving the overall quality and efficiency of patient care delivery inside a healthcare organization.

Electronic medical records (EMRs) have emerged as transformative tools in healthcare, offering potential improvements in efficiency, accuracy, and patient care. As the global healthcare landscape continues to evolve, the adoption and utilization of EMRs become crucial for achieving better healthcare outcomes (Okolo et al., 2024).

In the African healthcare setting, the development and acceptance of electronic medical record (EMR) systems are critical in tackling the various difficulties faced by healthcare institutions. Africa's healthcare environment is characterised by a wide range of socioeconomic conditions, technical infrastructures, and healthcare delivery techniques. Numerous studies have shown the importance of tailored solutions for effective adoption of electronic medical records in Africa (Chebole, 2015; Jawhari et al., 2016). Addressing issues including limited resources, infrastructural limits, and varied levels of digital literacy among healthcare professionals is critical (Kanjo et al., 2019). Research underscores the significance of user acceptance in the success of EMR systems. Cultural, organizational, and individual factors significantly influence EMR acceptance, emphasizing the need for investigation within the African healthcare context (Modise, 2019). Additionally, the compilation and analysis of data on

service consumption at the hospital level are crucial for informed decision-making and resource optimization. Electronic medical records facilitate this data aggregation, paving the way for evidence-based decision-making and continual improvements in healthcare delivery Uslu and Stausberg (2021).

The limitations of paper-based medical record systems became apparent as healthcare providers grappled with incomplete patient information, hindering well-informed decision-making (Shah & Khan, 2020). Recognizing the need for a paradigm shift in information management within healthcare settings, hospitals in affluent countries have progressively adopted EMRs to address these gaps (Blumenthal & Tavenner, 2010).EMRs provide comprehensive and real-time patient information, including detailed medical histories and treatment records, enabling more effective and personalized treatment approaches (Rao et al., 2011).

Unlike traditional paper records, EMRs offer a digitized format that integrates patient demographics, medical histories, and treatment records in a centralized and accessible manner (Anshari, 2019). This comprehensive view of a patient's health profile enhances decision-making and improves patient outcomes. Numerous developed nations have embraced EMRs to enhance healthcare quality and safety, emphasizing the universal objectives of raising physician partnerships, reducing costs, and enhancing care quality (O'Malley et al., 2010).

Interest in electronic patient-physician communication and patient involvement in their medical records has surged globally, reflecting a shift towards patient-centric healthcare delivery (Wald et al., 2004). In line with global trends, Ethiopia has embarked on integrating EMRs into its healthcare infrastructure to improve healthcare information management and patient care outcomes (Tegegne et al., 2023). Since its beginning in 2007, Electronic medical record (EMR) adoption has marked a significant transformation in Ethiopian healthcare, with implementation projects spreading to five regional hospitals: Addis Ababa, Adama, Bishoftu, Dire Dawa, and Mekelle (Addise, 2013).

Assessing the factors influencing EMR utilization is imperative for ensuring the success and sustainability of digital healthcare systems. Regular evaluations provide insights into the impact of EMR utilization on patient care, operational efficiency, and user satisfaction. Moreover, evaluations facilitate ongoing development by identifying areas for improvement and streamlining workflows. Thus, a strategic review of EMR utilization is essential for informed decision-making, resource allocation, and optimization of healthcare delivery.

Therefore, this research aims to assess the factors affecting EMR utilization at Menelik II comprehensive specialized hospital, focusing on improving EMR usage in inpatient, outpatient, and medication services. By understanding and addressing these factors, this study seeks to enhance the effectiveness and efficiency of EMR utilization, thereby contributing to the advancement of healthcare delivery in Ethiopia.

1.2 Background of the Organization

Menelik II comprehensive specialized hospital was founded and operated by Russian medical personnel in 1909, and it is Ethiopia's first hospital and it is a prominent medical center in Addis Ababa. Established with a commitment to providing high-quality medical services, the hospital is named after Emperor Menelik II, a significant historical figure in Ethiopian history. The hospital plays a pivotal role in the country's healthcare landscape, offering a wide range of specialized medical services to meet the diverse needs of the community and notably recognized for its tertiary eye care services.

Founded on principles of excellence, Menelik II comprehensive specialized hospital prioritizes patient care, medical research, and education. Its dedicated team of healthcare professionals, including skilled doctors, nurses, and support staff, work collaboratively to ensure the well-being of patients and the hospital works under the Addis Ababa Health Bureau (AAHB). The hospital is equipped with state-of-the-art medical facilities and cutting-edge technology to deliver accurate diagnoses and effective treatments.

Beyond clinical services, the institution actively engages in medical research to contribute to advancements in healthcare. It serves as a hub for training and education, nurturing the next generation of medical professionals through various academic programs and hands-on training opportunities.

Menelik II comprehensive specialized hospital remains committed to its mission of promoting health and well-being in the region. With a focus on compassionate care, innovation, and community outreach, the hospital stands as a beacon of medical excellence in Ethiopia, embodying the legacy of Emperor Menelik II (Tola et al., 2017).

1.3 Statement of Problem

The use of electronic medical record (EMR) systems, which are viewed as key instruments to enhance patient care, streamline operations, and increase overall efficiency, has caused a paradigm change in the healthcare sector (Adler-Milstein et al., 2019; Buntin et al., 2011).

Despite the potential benefits, the utilization of electronic medical record (EMR) systems in healthcare centers poses substantial challenges. Literature highlights various challenges, including significant resistance from healthcare professionals, interoperability concerns, and the critical need for comprehensive training programs, as critical factors influencing the seamless integration of EMR systems into existing healthcare infrastructures (DesRoches et al., 2010; Goldzweig et al., 2013). Theoretical frameworks such as the Technology Acceptance Model (TAM) and the Diffusion of Innovations theory also provide vital insights into the factors affecting people's acceptance and adoption of technology, particularly EMR systems (AlQudah et al., 2021).These frameworks emphasize the importance of attitudes, perceived utility, ease of use, and organizational context in affecting people's decisions regarding technology adoption, leading initiatives to encourage optimal EMR use in healthcare settings.

The reluctance of healthcare professionals to embrace electronic medical record (EMR) systems is recognized as a significant impediment to utilization of these technologies, necessitating careful consideration and the implementation of targeted strategies to alleviate concerns about workflow changes and potential effects on the doctor-patient relationship. Several research in the literature support this finding and offer insight on the complexities of healthcare professionals' hesitation (Hwang et al., 2019; Ozair et al., 2015). For instance, DesRoches et al. (2010) performed a comprehensive research that identified healthcare workers' opposition as a key barrier to EMR utilization. The study emphasizes the need of taking a careful approach when addressing concerns about workflow changes, demonstrating that perceived disturbance to established procedures might cause uneasiness among practitioners. Furthermore, Williams (2015) investigated the influence of EMR utilization on the doctor-patient relationship, discovering that healthcare workers were concerned about the possible pressure on their interpersonal dynamics with patients.

Accessibility arises as another critical obstacle in the effective utilization of EMR systems (Rahimi et al., 2018). The existing literature emphasizes the importance of standardized data formats and interfaces to enable smooth communication and data interchange between heterogeneous EMR systems. Accessibility is critical for realizing EMR systems' potential to improve patient care by guaranteeing consistent and integrated information flow across many healthcare institutions.

Scott et al. (2018) highlight the necessity of standardized data formats and interfaces in achieving interoperability among EMR systems. In this context, accessibility is intrinsically

related to distinct systems' capacity to interact successfully, allowing for the interchange of patient information across many healthcare institutions. This interoperability is critical for realizing the potential benefits of EMR systems, since it ensures that patient data is consistently available and correct regardless of the healthcare institution involved.

Despite the fact that the attitude of healthcare professionals to adopt Electronic Medical Records (EMRs) presents a significant challenge in healthcare settings. Numerous studies have investigated the intricate relationship between healthcare professionals' attitudes and the adoption of electronic medical record (EMR) systems, shedding light on crucial factors influencing adoption rates and effective utilization. One of the significant discoveries from empirical research is the negative attitudes towards EMR systems which can hinder the adoption efforts and impede their effective utilization (Boonstra & Broekhuis, 2010). Healthcare professionals who view EMR systems as burdensome, time-consuming, or disruptive to their workflow may exhibit resistance towards their adoption or fail to fully engage with their functionalities. Negative attitudes may also arise from various factors, including concerns regarding system complexity, organization culture, insufficient training, or skepticism about technology's benefits in healthcare delivery. Conversely, a positive association exists between favorable attitudes toward technology integration and heightened EMR Utilization rates (Lakbala & Dindarloo, 2014). Healthcare professionals who perceive EMR systems as advantageous for enhancing patient care, streamlining workflows, and increasing efficiency are more inclined to embrace and utilize these systems effectively in their practice (Bardach et al., 2017). Lack of computer skills among healthcare professionals significantly hampers their ability to effectively use EMR systems, ultimately resulting in an increase in potential errors and a negative impact on overall patient care quality. Having computer skills plays a crucial role in efficiently utilizing electronic medical record (EMR) systems. Research by Essuman et al. (2020) underscores the importance of healthcare professionals possessing computer skills, as they are better equipped to fully utilize the capabilities of EMR systems. These skills encompass various tasks such as data entry, information retrieval, interpretation of electronic medical data, and utilization of features within EMR platforms.

The utilization of electronic medical record (EMR) systems in healthcare settings is also affected by the existing manual paper-based culture and the overall organizational culture's acceptance of new technology. Research by (Jianxun et al., 2021) highlights the pivotal role of organizational culture in the successful adoption and utilization of EMR systems. The existing

culture within healthcare organizations, including management practices and the perception of new technologies, plays a critical role in shaping how healthcare professionals interact with EMR systems. Understanding and addressing these cultural factors are essential for effectively integrating EMR systems into clinical workflows and improving patient care delivery.

Additionally, the successful implementation of EMR hinges on the utilization of the EMR, which stems from the lack of training of healthcare professionals (Samadbeik et al., 2020). Insufficient training leads to numerous challenges like resistance to adoption, increased error rates, and decreased efficiency. Moreover, inadequate training results in ineffective utilization of EMR systems, leading to underutilization of features, resistance to change, and limited data analysis capabilities. Consequently, patient care suffers, with delayed diagnoses, communication breakdowns, and compliance risks. Addressing this issue necessitates comprehensive training programs tailored to healthcare professionals' needs, ensuring proficient EMR system utilization to safeguard patient care quality and safety (Pantaleoni et al., 2015).

In Ethiopia, the adoption and utilization of electronic medical records (EMRs) in specialized hospitals have marked a significant advancement in healthcare services. The government has been actively promoting programs to ensure the widespread adoption and use of EMRs across the country's healthcare infrastructure. This proactive stance by the government underscores a forward-thinking approach aimed at leveraging technology to enhance the efficiency, accessibility, and quality of healthcare services for the Ethiopian population (Keleb et al., 2022).

In this context, Understanding how various factors influence the utilization of Electronic Medical Records (EMR) is crucial for improving healthcare delivery and patient outcomes at Menelik II comprehensive specialized hospital, especially considering the challenges they face in effectively using the system after its implementation. This study focuses specifically on this hospital in Ethiopia, examining factors such as healthcare professionals' perspectives, organizational culture, training adequacy, and other relevant aspects.

Therefore, this research aims to provide valuable insights for both Menelik II comprehensive specialized hospital and its management regarding the factors influencing the system's utilization. Through comprehensive analysis, this study intends to offer recommendations aimed at optimizing the utilization of the EMR system, thereby enhancing overall operational efficiency and patient care delivery.

1.4 Research Question

Research questions play a crucial role in directing the focus, extent, and depth of research endeavors. The following questions framed the investigation, facilitate focused inquiry, and ultimately lead to meaningful outcomes.

1) How do healthcare professionals' attitudes toward EMR system affect their utilization within clinical workflows at Menelik II comprehensive specialized hospital?

2) How does the organizational culture at Menelik II comprehensive specialized hospital affect the utilization of electronic medical record (EMR) system?

3) How does the proficiency of health professionals in computer skill affect their utilization of electronic medical record (EMR) system?

4) To what extent does staff training affect the utilization of EMR system at Menelik II comprehensive specialized hospital?

1.5 Objective

1.5.1 General Objective

The general objective of the study was to address the factors affecting utilization of electronic medical record (EMR) system in the case of Menelik II comprehensive specialized hospital.

1.5.2 Specific Objective

- To assess the effect of healthcare professionals' attitudes towards EMR system on their utilization within clinical workflows at Menelik II comprehensive specialized hospital.
- To assess the effect of the organizational culture at Menelik II comprehensive specialized hospital on the utilization of electronic medical record (EMR) system.
- To examine the effect of health professionals' proficiency in computer skill on their utilization of electronic medical record (EMR) at Menelik II comprehensive specialized hospital.
- To determine the extent to which staff training impacts the utilization of EMR system at Menelik II comprehensive specialized hospital.

1.6 Significance of the Study

The need to transition from conventional paper-based medical data systems to current electronic medical record (EMR) system in healthcare institutions derives from the understanding of inherent inefficiencies and issues associated with paper record keeping. The

difficulty associated in maintaining and updating extensive paper material, together with the restrictions in accessibility and mobility, have encouraged proactive migrations to digitized solutions (Westmoreland, 2019).

The utilization of an electronic medical record (EMR) system in Menelik II comprehensive specialized hospital was essential owing to its ability to revolutionizes and improve healthcare delivery across several dimensions. For instance, using an EMR system allows for more efficient organization and retrieval of patient information, which improves clinical decision-making and treatment. The digitalization of medical records improves healthcare workflow efficiency by eliminating manual paperwork, reducing mistakes, and improving communication between healthcare providers. This study adds to our understanding of the importance of addressing the factors affecting utilization of EMR by shining light on the various contextual complexities, problems, and prevails that come with utilizing such system.

Furthermore, the findings were to provide useful insights for healthcare practitioners, policymakers, and administrators, allowing them to make informed decisions about the factors that affect utilization of EMR system to enhance healthcare efficiency, resource allocation, and patient outcomes. Finally, the study tackles by identifying the factors that influence the adoption and utilization of EMR system in a specialized healthcare setting like Menelik II comprehensive specialized hospital, this research can inform targeted strategies to streamline processes, enhance data-driven decision-making, improve patient care quality, and contribute to the broader discourse on healthcare management and technology utilization.

1.7 Scope of the Study

This research intends to look at the whole depth of factor affecting utilization of electronic medical record (EMR) at Menelik II comprehensive specialized hospital. It explored the various factors of EMR utilization, such as attitude, computer proficiency, user training and organizational culture. The methodological scope of this study encompassed the application of quantitative research methods, which were meticulously selected to ensure the precision and reliability of the data collected. These methods included structured surveys and statistical analyses, aimed at generating objective and measurable data. By employing these techniques, the study aimed to produce findings that are both replicable and generalizable across similar contexts. The geographical scope of this study is limited to Menelik II comprehensive specialized hospital located in Addis Ababa, Ethiopia. The findings from this study, while specific to this hospital, may provide insights that are applicable to other hospitals in Ethiopia

and other similar contexts. However, caution should be exercised when generalizing the findings to other settings due to differences in healthcare systems, technological infrastructure, and cultural contexts. In terms of time frame, the study covered a period from 13, December 2023 up to June 2024.

1.8 Limitations of the Study

While this study attempts to give useful insights on the factors affecting utilization of electronic medical record (EMR) at Menelik II comprehensive specialized hospital, it is crucial to acknowledge the limitations that may restrict the scope and applicability of the findings. The study was limited to Menelik II comprehensive specialized hospital. This means the result generalizability may not necessarily be applicable to other healthcare facilities. Since, some participates were unfamiliar with EMR, a lack of prior knowledge may have affected their responses. The respondents may also withhold some information for fear of exposing institution policies on research participation. This, however, was mitigated by assuring the respondents of confidentiality and explaining the purpose of the study. Furthermore, the study runs within certain temporal limits, which may limit the capacity to capture the long-term consequences and durability of the EMR system.

1.9 Organization of the Study

The study's organization is intended to give an organized and consistent framework for exploring and analyzing the research topic. This study is broken into different major areas to help in an in-depth understanding of the subject. The first section, the introduction, offers an outline of the research topic, including its importance, scope, and study objectives. Following the introduction, the literature review critically reviews existing research and theoretical viewpoints relevant to the issue, laying the groundwork for the current study. The research methodology section describes the research strategy, data gathering techniques, and analytical procedures used in this study. Subsequently, the findings and results are presented, providing insights into the empirical consequences of the investigation. The discussion section examines these findings in light of the current literature, emphasizing its implications and contributions to the discipline. Finally, the conclusion summaries the important findings, examines their larger implications, and makes recommendations for further research.

CHAPTER TWO

LITERATURE REVIEW

2. Introduction

This chapter provides a thorough examination of relevant literature and empirical data, diving into the conceptual understanding of Electronic Medical Records (EMR) and the factors that affect its Utilization. It includes an analysis of the historical evolution of EMR systems, outlining significant evolutionary stages. The literature review section delves further into the features of EMR from technological, organizational, and information perspectives, offering insight on crucial success and failure aspects in Utilization.

Simultaneously, the chapter conducts an imperial review, reviewing the factors behind Menelik II comprehensive specialized hospital that affect utilization of electronic medical record (EMR). This chapter seeks to give a comprehensive knowledge of EMR systems by combining conceptual insights with practical issues, setting the way for a nuanced examination of their importance and challenges within the healthcare sector.

In order to appreciate the theoretical foundations of Electronic Medical Records (EMR) utilization, the researcher conducted a thorough search for relevant literature. Table 1 describes the search parameters and synonyms that are deliberately used to help search engines find relevant content. The researcher used well-known search engines such as Google, Google Scholar, and IEEE to systematically identify material related to the utilization of Electronic Medical Records (EMRs). The keywords listed below aided in a concentrated search of scholarly materials in this field.

Table 1: Keywords Used for Searching Literatures

Keywords Used for Searching Related works
EMR
EMR Utilization
Evolution of EMR
EMR Function
Utilization of EMR
Factors for EMR Utilization

2.1 What is Electro Medical Records (EMR)?

Electro medical records (EMR) systems, defined as "an electronic repository of health-related information pertaining to an individual, capable of being generated, collected, managed, and accessed by authorized clinicians and staff within a healthcare organization" (Melton et al., 2021), have the potential to provide significant benefits to physicians, clinic practices, and healthcare organizations.

Typically, an electronic medical record (EMR) contains full information of the patient's medical problems, prescribed medications, and known allergies. In addition to these basic facts, EMRs provide complete progress notes, which provide a historical record of the patient's medical journey. Furthermore, they provide critical information such as test results, allowing healthcare practitioners to easily access and analyses diagnostic data. EMRs sometimes have ordering capabilities, allowing for smooth communication and coordination among healthcare practitioners for diagnostic tests, treatments, or referrals. Furthermore, they provide vital insights into health maintenance by providing a comprehensive picture of preventative care practices (Zahabi et al., 2015).

Electronic Medical Records (EMR) facilitate communication not just between users, but also between healthcare practitioners and their patients. This digital platform is critical for promoting seamless communication among healthcare workers, allowing for effective cooperation and information exchange to improve patient care (Sheikh et al., 2021). Furthermore, EMRs have applications outside of clinical settings and are widely used in commercial healthcare settings, with hospitals serving as a notable example. In these expanding healthcare environments, EMRs play an important role in treating a wide range of medical conditions, hence boosting workflow efficiency and overall healthcare service delivery (Zahabi et al., 2015).

EMRs' dynamic capabilities go beyond standard data storage by providing access to patient information at any time and from any location. This accessibility promotes flexibility and responsiveness in healthcare delivery by allowing practitioners to effortlessly retrieve and update patient records across many places and times. In summary, an electronic medical record system (EMRs), is a powerful tool that gives healthcare professionals the flexibility and efficiency they need to offer best patient care in today's healthcare context.

2.2 Evolution of Electronic Medical Records

Electronic medical records (EMR) were first introduced and developed in the 1960s by National Space and Aeronautics Administration's development of computerized patient record (CPR), bringing in a breakthrough era in healthcare information administration (Malhotra & Lassiter, 2014). During this time, advances in computing technology and a rising awareness of the potential benefits of digitizing health information drove early attempts to develop electronic systems for storing and organizing patient data. These pioneering initiatives lay the framework for the growth of EMRs, paving the way for decades of innovation and refinement in the field of electronic health data management. EMRs have evolved continuously since the 1960s, demonstrating a continual commitment to using technology to improve healthcare delivery, efficiency, and patient outcomes.

Between 1971 and 1992, a key era saw the creation and integration of numerous electronic medical record (EMR) systems, including well-known platforms such as COSTAR, PROMIS, TMR, and HELP (Meade et al., 2009). This decade saw substantial progress in the advancement of EMRs, which were inextricably integrated with billing, scheduling, and clinical systems. Notably, in 1972, The Registries Institute established a ground breaking EMR system, which was originally utilized by government hospitals and forward-thinking organizations (Evans, 2016). Concurrently, this era saw the advent of web-based Electronic Medical Records (EMRs), driven by the Internet's expanding capabilities. These anniversaries combined mark a watershed moment in the history of health information management, with the development of sophisticated EMR systems and the introduction of web-based EMRs demonstrating the growing integration of technology in healthcare.

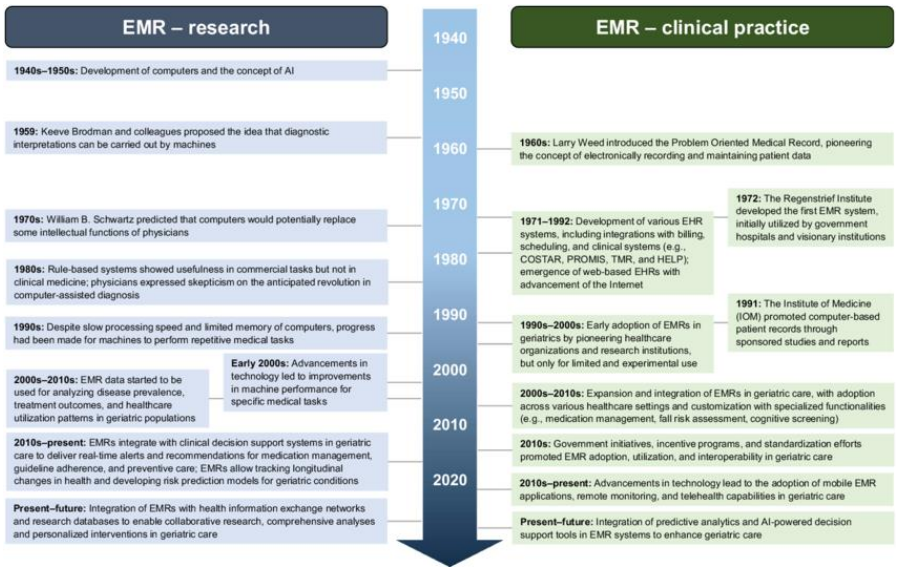
By the early 2000s, the notion of integrating Electronic Medical Records (EMRs) was widely recognized and accepted. During this time, healthcare organizations began to use computer systems to efficiently handle essential components like test results and patient demographics, laying the way for the eventual adoption of full EMR systems (Boonstra et al., 2014). The change to using technology for healthcare data management in the early 2000s was a breakthrough moment, indicating a widespread recognition of the potential benefits and efficiency provided by EMRs in improving patient care and healthcare administration.

During the 2010s, there was a significant increase in the use and integration of Electronic Medical Records (EMRs) in the field of elderly care. This decade saw the broad implementation of EMRs in a variety of healthcare environments, as well as the customization

of these systems with specialized functionality intended for elderly patients, such as medication administration, fall risk assessment, and cognitive screening (Stypińska & Franke, 2023). Government initiatives, incentive programs, and standardization efforts all contributed to the acceptance, use, and interoperability of EMRs in geriatric care. Furthermore, technical improvements during this era drove the use of mobile EMR software, remote monitoring solutions, and telehealth capabilities, contributing to an upgraded and more accessible

Electronic medical record (EMR) systems now represent a dynamic environment driven by continuing technical improvements and changes in the healthcare business. EMRs have become essential components of modern hospital infrastructure, providing full digital solutions for managing, storing, and retrieving patient information (Bednorz et al., 2023). EMR implementation has made significant progress, with widespread use across a variety of healthcare settings, including hospitals and clinics as well as smaller healthcare practices. The emphasis on interoperability and standardization has grown, facilitating smooth data sharing and collaboration across various healthcare organizations. Additionally, recent trends indicate a growing integration of advanced features within EMR systems, such as artificial intelligence, predictive analytics, and patient engagement tools, further enhancing the capabilities and functionalities of these digital platforms (Dinh-Le et al., 2019). The continuous evolution of EMRs underscores their pivotal role in facilitating efficient healthcare delivery, improving patient outcomes, and contributing to the broader transformation of the healthcare ecosystem.

Figure 1: Evolution of Electronic Medical Records in Research and Clinical Practice



Source: - Bednorz et al. (2023)

2.3 Core Functions of an Electronic Medical Records (EMR)

The function pf Electronic Medical Records (EMR) might be unclear due to various perspective among experts in the field. Different authors have identified eight core functionalities of EMR systems. These core functionalities will be stated below:

2.3.1 Health Information and Data

As the name implies, the major administrative purpose of electronic medical record (EMR) systems is to act as a repository for an individual's electronic medical records, which include health-related information and relevant data. This includes test findings, prescription information, previous diagnoses, and clinician notes. The availability of such extensive information allows medical, mental health, and other healthcare practitioners to make educated decisions for their patients. It also plays an important role in avoiding potential patient-related concerns, such as inadvertently prescribing medication that causes an allergic response or repeating a costly laboratory test that has already been performed (Häyrinen et al., 2008).

2.3.2 Order Management

Computerized physician order input is a key element of Electronic Medical Records (EMRs). This feature allows healthcare practitioners to easily make orders for laboratory testing, prescription medicines, radiological services, and consultations using the EMR system. Extensive research demonstrates that using computerized service order input improves workflow efficiency and reduces the likelihood of mistakes (Niazkhani et al., 2009). EMRs will identify possible duplicate orders and produce related orders automatically, expediting the process and lowering order fulfilment time. This efficiency leads to increased patient satisfaction and a higher level of service. Furthermore, the switch to electronic orders not only increases operational efficiency, but also leads in cost savings by removing the expenditures involved with manufacturing and handling paper forms for orders and results.

2.3.3 Results Management

Managing patient results, such as lab results, radiology findings, or x-ray results, is another critical feature of Electronic Medical Records (EMRs). The digital preservation of these outcomes allows healthcare providers to have real-time access and retrieve information quickly. This accessibility applies to findings gathered from various sources, including other healthcare offices, hospitals, imaging centers, and providers. The capacity to obtain and integrate results from many sources improves the overall efficiency and effectiveness of

healthcare delivery, encouraging a thorough and up-to-date picture of the patient's health (Jha, DesRoches, et al., 2009).

2.3.4 Clinical Decision Support

The EMR system incorporates evidence-based tools designed to assist healthcare providers in formulating effective treatment plans for patients. The decision support feature within the EMR aids healthcare providers in adhering to optimal clinical practices by offering timely reminders to follow established treatment plans and procedures. Furthermore, numerous EMRs have the capability to send notifications, either through SMS or email updates, directly to patients. These notifications serve as reminders for patients to stay proactive in adhering to their treatment plans and maintaining preventive measures (Romano & Stafford, 2011).

2.3.5 Electronic Communication and Connectivity

EMR also has integrated electronic messaging, patient portal, and email connectivity functions to facilitate rapid collaboration within the healthcare ecosystem. This continuous communication happens not just among healthcare personnel, but also between them and their patients. Providers can rapidly communicate lab findings, seek recommendations, participate in direct chat, and respond to inquiries via email. This expedited communication promotes better care coordination, resulting in less duplicate testing (Akinyemi et al., 2022).

2.3.6 Patient Support

Patient support provides patients with access to their health information, offers patient education materials, and assists clinicians in home-monitoring for patients with chronic diseases, as well as allowing patients to undertake self-testing to better chronic condition management (Shachak et al., 2013).

2.3.7 Administrative Processes

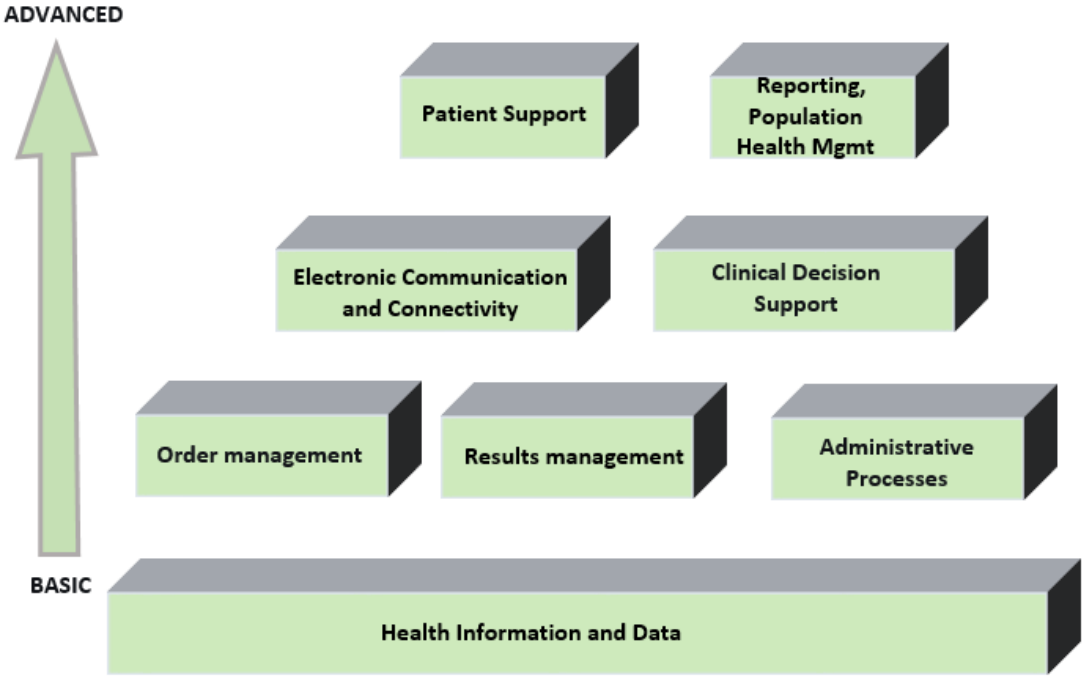
Electronic medical record (EMR) platforms can streamline and automate a variety of administrative activities, freeing up healthcare personnel time and effort for patient care (Desai et al., 2020). Automated procedures include scheduling, billing, patient outreach, and time management systems. Centralizing all administrative data on a consistent electronic platform improves accuracy and encourages more effective healthcare delivery, reducing the chance of errors.

2.3.8 Reporting and Population Health Management

Electronic Medical Records (EMR) are critical in modern healthcare because they not only facilitate efficient patient care inside healthcare facilities, but also allow healthcare

practitioners to effortlessly transfer relevant clinical information to public health organizations. This expedited data interchange helps to improve the overall effectiveness of public health activities by allowing health authorities to monitor and respond to emerging trends, epidemics, and other epidemiologic variables. EMRs, act as a bridge between healthcare providers and public health organizations, improve the collective ability to track, analyze, and manage health risks on a larger scale, resulting in a more integrated and responsive healthcare ecosystem.

Figure 2: Core Functional Blocks of an Electronic Medical Record (EMR)



Source:- Atreja et al. (2008)

2.4 EMR Utilization in Developed Countries

The utilization of Electronic Medical Records (EMR) in developed countries constitutes a turning point in healthcare systems, drastically altering how medical information is stored and healthcare services are given (Detmer, 2000). In these sophisticated settings, EMRs have become essential components of the healthcare infrastructure, providing a complete digital solution for patient data collection, storage, and retrieval. The use of EMRs has expedited clinical workflows, lowering administrative loads, eliminating mistakes, and improving overall healthcare efficiency.

Furthermore, enhanced coordination among medical personnel has been made possible by the integration of EMRs in developed nations, encouraging smooth communication and cooperation across various departments and specializations. Real-time patient information accessibility provides doctors with fast and precise data, enabling them to make better decisions and provide better treatment for their patients.

The robust functioning of healthcare systems in developed nations like the United States, Canada, United Kingdom, and Australia is largely attributed to the substantial financial and non-financial support provided by their respective governments (Marchildon & Organization, 2013). Encouragement for improving the standard and availability of healthcare services goes beyond budgetary allocations; it also includes policy frameworks, joint ventures, and legislative efforts. The importance of technology in healthcare is acknowledged in many countries, and resources are actively directed towards the thoughtful development and improvement of effective medical information technology systems (Li et al., 2021). Utilizing technology is committed to improving patient outcomes, streamlining healthcare procedures, and optimize resource allocation

In addition to enhancing healthcare, the adoption of EMRs in developed countries has resulted in substantial advances in medical research and public health management. The capacity to analyze huge datasets and draw relevant insights from aggregated patient data promotes evidence-based practices, epidemiological research, and the discovery of patterns that can drive public health policy.

Despite the widespread use of electronic medical records (EMRs) in industrialized countries, the implementation of this IT-based healthcare solution continues to face several hurdles. According to (Jha et al., 2008), the transition to EMRs is frequently hampered by difficulties such as interoperability across multiple systems, opposition from healthcare personnel, and worries about data security and privacy. Furthermore, the complexity of integrating EMRs into established healthcare workflows, as well as the high costs of system adoption and maintenance, add to the challenges that healthcare organizations confront (Lustria et al., 2011). Furthermore, legal compliance restrictions and the necessity for standardized data formats provide substantial challenges to the smooth interchange of patient information across various healthcare settings (Mello et al., 2018).

In general, as developed nations continue to invest in healthcare technology, utilization of electronic medical records is expected to evolve and integrate with future technologies such as

artificial intelligence, telemedicine, and interoperable health information exchanges. This constant progress demonstrates a commitment to using technology to continuously enhance healthcare services and outcomes in these advanced healthcare systems.

2.5 EMR Utilization in Developing Countries and Sub Saharan Africa

Every year, a startling number of lives are lost in Africa, particularly in Sub-Saharan Africa, where progress towards five of the six health-related Millennium Development Goals (MDGs) has been frustratingly poor. The bleak reality is shown by results from the World Health Organization (WHO) in 2021, which demonstrate systemic difficulties such as the region's limited and poorly maintained health information systems (Koumamba et al., 2021). This lack of adequate health information infrastructure complicates dealing with healthcare concerns, emphasizing the vital need for focused interventions and long-term initiatives to transform the health landscape.

In the majority of African countries, the current dependence on paper-based health information systems is severely insufficient, failing to satisfy the critical demands of patient care and thorough reporting. This finding is reflected in a thorough research by (Agyepong et al., 2017), which emphasizes the limits of traditional, paper-centric methods to health information administration in African healthcare settings. Paper-based systems have issues such as inefficient data retrieval, higher mistake probability, and a lack of real-time accessibility, all of which hamper the timely and correct interchange of essential health information (Agyepong et al., 2017).

As a result, there is an urgent need for a paradigm change to current electronic health information systems. By carefully investing in digital health infrastructure and embracing electronic health records (EHR), African countries may bring a new era of more efficient and effective health information management. This transformation not only solves the limitations identified in present paper-based systems, but also has the potential to improve overall healthcare quality and promote a more vibrant healthcare ecosystem.

In Africa, the use of electronic medical records (EMRs) was at most experimental. Fewer organizations have developed such systems, and even fewer thought their usage was practicable. The few projects that did employ an EMR system were primarily divided into two categories: those that constructed the software internally, usually to manage a specific disease, and those that used expensive commercial software in specialized projects and private institutions. Since then, a number of functional EMRs and medical information systems have

been deployed in developing countries, and access to information technology has grown dramatically in places with little resources. The use of health information technology systems (HIT) in the treatment of illnesses like HIV and drug-resistant tuberculosis (TB) has attracted considerable interest due to these concerns and the realization that EMRs can enhance the quality of care in developing nations (McGrath et al., 2004).

While major cities may more easily meet infrastructural and personnel needs, they also have more advanced electronic medical records (EMRs). However, Partners in Health (PIH) was the first to use web-based EMRs for HIV and TB treatment in rural areas. Beginning in August 2005, the HIV-EMR, which was created in Haiti, was implemented in two health districts in Rwanda. The EMR followed more than 800 individuals receiving ARV medication in fewer than six months, from August 2005 to January 2006. The rapid scale-up and growth of the medical program itself occurred at the same time as new features and adaptations to local demands were added. Research, program monitoring, and patient monitoring are all supported by Rwanda's EMR. Information for individual care, such as past medical summaries and alerts, is included in patient monitoring. Considering the considerable distances between the clinics, this is really helpful. Additionally, Rwanda's EMR has a tool to forecast medication needs and help pharmacists pack (Allen et al., 2006).

PIH in Rwanda discovered that proficient data entry workers are necessary to maintain an EMR system; additionally, the team discovered that adequate training of data entry workers requires at least four months of on-the-job training. IT support personnel must be on hand, and data entry personnel must be problem-solvers who can follow up on unclear or dubious data. Additionally, care providers need to be well trained in reporting therapy modifications(Allen et al., 2006).

2.6 EMR Utilization in Ethiopia

Over the past many years, Ethiopia has worked hard to incorporate Electronic Medical Records (EMR) into its public health institutions. Unfortunately, just a few facilities have successfully implemented EMR systems. Key factors contributing to these setbacks include the lack of a national EMR implementation roadmap to provide comprehensive guidance, the absence of an electronic medical record (EMR) standard governing tools and the selection of EMR-compliant sites, and health facility management's negative attitude towards EMR implementation. Additional challenges include the significant financial commitment required and a lack of prioritization by the Ministry of Health. Despite these challenges, a breakthrough came in 2008

when the first EMR deployment, termed as "smart care," was launched by Tulane International and the Ministry of Health. Notably, hospitals within five regional offices, namely Addis Ababa, Adama, Bishoftu, Dire Dawa and Mekelle began implementing Electronic Medical Records (EMR) into their operational frameworks around the year 2010 (Tegegne et al., 2023).

Despite the potential benefits of the electronic medical record (EMR) system, its utilization in Ethiopia have been hindered by various challenges, leading to underuse and sustainability issues (Biruk et al., 2014). A comprehensive evaluation conducted in five Ethiopian hospitals highlighted a mere 31.7% utilization rate among participants, shedding light on the systemic hurdles that impede widespread implementation (Tilahun & Fritz, 2015). Concurrent studies conducted in eastern Ethiopia revealed a more optimal utilization of EMRs, indicating regional variations in the effectiveness of the system's integration. However, the situation in the north-western part of Ethiopia painted a less favorable picture, with only 46.5% of participants utilizing hospital EMR systems (Mengesha, 2011). The low utilizing rates were attributed to a multitude of factors, including utilization challenges and a lack of utilization measures. Critical aspects such as EMR readiness, knowledge, and attitude toward EMRs were identified as key contributors to the observed underutilization. Additionally, the absence of adequate reimplementation training emerged as a significant barrier, highlighting the need for comprehensive strategies to address these issues and enhance the overall efficacy of EMR systems in the Ethiopian healthcare landscape (Oumer et al., 2021).

In response to the aforementioned challenges, Ethiopia is actively engaged in the utilizing and implementing a range of initiatives aimed at fortifying its national e-health systems. These endeavors are specifically designed to enhance the availability, accessibility, quality, and utilization of health data in decision-making processes (Tilahun et al., 2021). A pivotal component of the country's strategic plan involves the establishment of an electronic medical record (EMR) system, a sophisticated solution poised to revolutionize data management within the healthcare sector. By integrating an EMR system, Ethiopia aims to streamline data systems, thereby facilitating a more efficient and organized approach to healthcare delivery. However, despite the strategic importance of this initiative, the existing body of knowledge on the level of EMR utilization in Ethiopia remains limited. Only a sparse number of comprehensive systematic reviews and meta-analyses are currently available, further emphasizing the need for more extensive research to comprehensively understand the factors influencing the success of EMR Utilization in the Ethiopian healthcare landscape. This gap in knowledge underscores the

importance of further exploration and evaluation to inform evidence-based decisions and optimize the impact of e-health initiatives in the country (MOH, 2016).

2.7 Factors Affecting EMR Utilization

2.7.1 Health Professional and/or Staff lack Computer Skills

According to a number of studies, health professional are reluctant to adopt electronic medical records (EMRs) because they lack the technological know-how to handle them. point out that most of the present medical generation in Ireland earned their degrees before IT programs were introduced (Isemeck et al., 2019; Meade et al., 2009). Even though doctors perceive the EMR system to be very complicated to operate in practice, EMR manufacturers appear to underestimate the level of computer expertise required from health professional. Furthermore, some doctors lack the dexterity required to type well enough to insert prescriptions, notes, and medical information about their patients into electronic medical records. According to Shachak et al. (2009) Using an EMR can result in typos, a new category of medical errors. Furthermore, inadequate computer skills are not limited to medical practice workers; they also affect physicians (Shachak et al., 2009). The widespread use of EMRs is hampered by this overall lack of expertise. Only over 0.5% of doctors in a 2002 Ozumba survey of a sample of Nigerian doctors accessed the internet for information relevant to their clinical practice or research, despite the fact that 72% of respondents thought the internet should be used in medical practice (Jain et al., 2020).

In a study of medical professionals and students in Lagos, Nigeria, Bello et al. discovered that only 27% of respondents were computer literate and that only 26% of respondents had a computer (Bello et al., 2004).A 2002 study found that 94.3% of Malaysian student doctors who took part in the research knew how to use a computer (Asangansi et al., 2008). 99% of practices use specifically designed patient management system software to assist with patient and clinical consultation data recording and to support daily business operations, according to a 2002 New Zealand survey (Didham et al., 2004).

2.7.2 Lack of Technical Training and Support

Many medical professionals express dissatisfaction with the vendor's performance, citing things like inadequate technical issue follow-up and a general lack of assistance and training for EMR-related difficulties (Randeree, 2007). In a similar vein, Ludwick et al. observe that doctors find it difficult to obtain from the vendor the necessary technical training and support for the systems. Physicians view the necessity for appropriate technical training and assistance

and are reluctant to use EMRs without it because they are not technical specialists and the systems are intrinsically complex. According to Ludwick et al. and Simon et al two-thirds of doctors said that they were unable to obtain vendor technical assistance, which prevented them from implementing electronic medical records(Ludwick & Doucette, 2009; Simon et al., 2007).

Some doctors might not have the fundamental information and experience required to utilize computers efficiently, or they might not have adequate computer abilities. Some people might not be familiar with the many kinds of information technology or its potential advantages. Due to poor user training, a number of systems have failed. Physician leadership's strong support for training participation is crucial since training needs to be tailored to the needs of physicians(Morton, 2008).

2.7.3 Complexity of the System

Many physicians encounter challenges in navigating Electronic Medical Records (EMRs) primarily because of the multitude of displays, choices, and navigational aids within the system. The complexity inherent in EMRs demands a significant investment of time and effort from clinicians to master their functionality. The learning curve associated with successfully and efficiently utilizing the EMR system can be perceived as a hardship by physicians. Additionally, a perceived lack of expertise may contribute to the view that the EMR system is overly complex. This intricacy further compounds difficulties, particularly in managing time effectively within the system, as highlighted in various studies and sources (Miller & Sim, 2004).

2.7.4 Healthcare Professionals' Attitudes

Electronic Medical Records (EMRs) are crucial for enhancing productivity in health institutions by improving information access, processing speed, and competitiveness (Richards et al., 2012). Despite these benefits, healthcare professionals' attitudes toward EMRs continue to be a major concern. Research by Adeyeye (2015) identified several key challenges, including skepticism and resistance among professionals. This resistance stems from perceived disruptions in workflow, concerns about data privacy and security, interoperability issues, and the complex learning curve associated with EMRs. These factors not only impede the widespread adoption of EMRs but also hinder their optimal utilization, ultimately impacting patient outcomes and provider satisfaction. A study conducted by Alanazi (2020) identified varying levels of acceptance and resistance to EMRs among different healthcare professionals, influenced by factors such as age, prior experience with technology, specialty-specific

workflows, and organizational support for training and technical assistance. A survey conducted by Secginli et al. (2014) found that user experience design significantly influenced healthcare professionals' attitudes toward EMRs. Participants who rated the EMR interface as intuitive, user-friendly, and efficient in supporting their clinical workflows reported more positive attitudes toward EMRs overall. Conversely, those who perceived the EMR system as cumbersome, time-consuming, or lacking in decision support features expressed more negative attitudes and frustrations.

2.7.5 Lack of Belief in EMRs

More than half (58.1%) of health professionals who do not use an EMR are skeptical about its ability to enhance clinical results or patient care. According to findings from other study, those who are hesitant to adopt an EMR system are dubious about assertions that they will successfully raise the standard of care provided by physicians. Personal opposition to the use of EMRs is resulting from this. But this is largely a perceived barrier to EMRs; non-users are not provided with reliable statistical evidence or success stories concerning EMRs. Physicians' working habits will undoubtedly alter as a result of the implementation of EMRs, and initially, people are typically resistant to change and question its necessity (Jha, Bates, et al., 2009).

2.7.6 Lack of Computers/Hardware

In order to effectively integrate electronic medical record (EMR) systems into their workflows, healthcare practices must ensure the availability of adequate hardware, encompassing essential components such as personal computers (PCs), phone lines, and reliable internet connections. The seamless functioning of EMRs relies heavily on the accessibility and reliability of these fundamental hardware resources. Researchers, including Lærum et al. (2001), argue that a notable impediment to the widespread adoption of EMRs lies in the deficiency of these "basic" hardware and facilities required for the successful implementation of EMR systems in specific healthcare practices. This perspective underscores the significance of addressing infrastructure concerns as a critical step in promoting the broader acceptance and utilization of EMRs across the healthcare landscape. The absence of these foundational resources may act as a hindrance, limiting the potential benefits that EMRs can offer to healthcare providers and, consequently, impeding progress toward more integrated and efficient healthcare systems (Nurjahan et al., 2002).

2.7.7 Time to Learn the System

In addition to the difficulties highlighted within the technical in nature category, such as the challenges associated with a lack of computer skills and the complex nature of electronic medical record (EMR) systems. Another significant hindrance faced by physicians is the considerable time and effort required to familiarize themselves with these systems. Despite the undeniable benefits that mastering an EMR system can offer, the demanding nature and high-pressure environment of providing office-based care often leave physicians with insufficient time to dedicate to the learning process. This conundrum creates a paradox where the very professionals who stand to gain the most from efficient EMR utilization find themselves caught in a bind. A study conducted by Smith et al. (Hollister-Meadows et al., 2021) elucidates this dilemma, revealing that physicians frequently express concerns about the time investment needed for EMR proficiency, arguing that it would impede their workflow and exacerbate their already demanding workloads. On the contrary, proponents of EMR system mastery, as advocated by (Bazile, 2016), argue that the initial time investment pays off in the long run, enhancing overall efficiency and improving patient care outcomes. This debate underscores the complex interplay between the perceived time constraints and the potential benefits associated with physicians' adoption and mastery of EMR systems.

2.7.8 Organizational Culture

Organizational culture plays a significant role in the utilization of Electronic Medical Records in healthcare settings by shaping attitudes, behaviors, and practices surrounding technology adoption and use (Nowinski et al., 2007).The interaction of sociological and technological factors during the adoption of an EMR system can shape the system and influence its utilization and acceptance. A study by Nasi et al. (2015) highlights the importance of planning innovative and complex information systems with reference to the expressed needs and involvement of different actors, promoting commitment to the system, adopting a participative approach, defining and resourcing new roles within the organization capable of supporting and sustaining the change, and assessing system impacts to mobilize the network around a common goal. Furthermore, the lived experiences of clinicians reveal mixed views about the effectiveness of EMR. While some clinicians find EMR improves efficiency, others regard it as time-consuming. The usage and impact of EMR on healthcare quality and safety can be considered as a complex system as it involves organization culture, technical design features, personal practices, and the interaction of these factors. A positive organizational culture that encourages innovation, cooperation, and continuous learning promotes greater levels of electronic medical

record utilization among healthcare professionals (Cresswell & Sheikh, 2013). Employees in such workplaces are more likely to adopt new technology, participate in training programs, and exchange best practices, resulting in increased efficiency, accuracy, and care quality (Gagnon et al., 2012). A negative or resistive organizational culture, characterized by fear of change, lack of trust, and inflexible hierarchies, on the other hand, might impede EMR utilization (Adeyemi, 2017).

2.7.9 Lack of Reliability

Reliability in the context of Electronic Medical Records (EMRs) refers to the dependability of the technology. The smooth operation of a system holding essential medical data is critical, and physicians are concerned about potential disruptions such as computer failures, virus attacks, or power outages, which may temporarily limit access to patient information (Meinert, 2005). Healthcare practitioners are also concerned about undetected systemic weaknesses that might result in the irreversible loss of records. Aside from the implications for patient treatment, dependability concerns might have serious financial consequences, leading in higher recurring costs (Kemper et al., 2006). The reliability of EMRs is thus an important factor that must be carefully considered in order to preserve the integrity of patient data and the financial sustainability of healthcare systems.

2.8 Empirical Literature

The study undertaken by Walle et al. (2023) intended to determine the readiness of Ethiopian healthcare professionals to use electronic medical record systems (EMRs) and identify related factors. The PRISMA procedure was used by the researchers to perform a systematic review and meta-analysis of several datasets. The study found that 51.31% of Ethiopian healthcare workers were ready to adopt EMRs. Positive attitudes, computer literacy, and knowledge were all shown to be strongly linked with EMR preparedness. The study revealed that healthcare professionals in Ethiopia were generally unprepared for EMR utilization and advised extensive capacity-building packages to increase preparation.

Based on the findings of the systematic review and meta-analysis on the readiness of healthcare professionals in Ethiopia to use electronic medical record (EMR) systems, it is recommended that policymakers and healthcare stakeholders prioritize comprehensive capacity-building programs aimed at enhancing computer literacy, knowledge, and fostering positive attitudes towards EMR adoption among healthcare professionals. By investing in training initiatives and educational interventions, the healthcare sector in Ethiopia can improve the overall readiness

of its workforce to effectively implement and utilize EMR systems, ultimately leading to enhanced healthcare delivery and patient care quality.

The study Conducted by (Keleb et al., 2022) on electronic medical record (EMR) Utilization, Determinant Factors, and Barriers among healthcare providers in Addis Ababa, Ethiopia, provides valuable insights into the adoption and challenges of EMR systems in healthcare facilities, the study employed a cross-sectional design with both quantitative and qualitative approaches to gather comprehensive data on EMR utilization.

One of the key findings of the study was the varying levels of EMR utilization among healthcare professionals in Addis Ababa. The research revealed that 68.5% of healthcare professionals utilized EMR systems in the selected health facilities. A comparison with previous studies indicated that this utilization rate was higher than in some regions of Ethiopia but lower than in other specific healthcare settings.

The study identified several determinant factors that influence the adoption of EMR systems. Factors such as user-friendly EMR interfaces, favorable attitudes towards EMR, and access to basic EMR training were significantly associated with higher EMR utilization rates among healthcare providers. The presence of a user-friendly interface, positive attitudes towards EMR, and adequate training were found to positively impact the likelihood of healthcare professionals utilizing EMR systems effectively.

To enhance electronic medical record (EMR) utilization among healthcare providers in Addis Ababa, Ethiopia, the study recommends implementing comprehensive and tailored EMR training programs, improving the usability of EMR interfaces, promoting positive attitudes towards EMR systems, ensuring system interoperability, providing organizational support, and establishing mechanisms for continuous monitoring and evaluation. By addressing these critical areas, healthcare institutions may increase EMR adoption, improve system utilization, and maximize the benefits of electronic health records for more efficient healthcare delivery and better patient outcomes.

Akanbi et al. (2012) researched about the Use of Electronic Health Records in Sub-Saharan Africa: Progress and Challenges, which gives an overview of the utilization of Electronic Medical Records (EMRs) in the region. This research examines the availability, development, and problems of integrating EMR technologies into healthcare practices in Sub-Saharan Africa. The study's approach involves a systematic search strategy, tight inclusion criteria, and extensive data analysis to examine the status of EMR use in Sub-Saharan Africa and highlight

major trends and issues in using electronic medical records in the region. Key findings include the increasing utilization of Open Source Software, particularly OpenMRS, in EMR implementations, with a focus on HIV-related health centers. The study highlights barriers such as high procurement and maintenance costs, inadequate network infrastructure, and limited comfort among healthcare workers with electronic medical records. Despite the challenges, collaborations between local and international partners have driven the growth of EMR systems in the region, particularly in HIV/AIDS treatment programs. The review recommends the need for improved internet access, capacity-building initiatives, and sustainable funding models to enhance EMR adoption and maximize the benefits of electronic records in sub-Saharan Africa.

Kalayou et al. (2021) conducted research on the study aimed to investigate physicians' attitudes towards electronic medical record (EMR) systems and identify factors influencing their attitudes. It employed a cross-sectional study design supplemented with qualitative methods, involving 403 physicians and 11 key informants. The quantitative data were collected using a self-administered questionnaire, and the qualitative data were obtained through in-depth interviews. The study found that physicians' computer literacy and computer access at work were favorable predictors of their attitude towards EMR system adoption. Additionally, a negative correlation was observed between physicians' prior EMR experience and their attitude towards the system. Overall, the study concluded that physicians' attitudes towards EMR were moderate in the studied region, and improving factors such as computer ownership, computer literacy, lack of EMR experience, and participation in EMR training is crucial for enhancing physicians' attitudes regarding EMR.

Adler-Milstein et al. (2019) investigates the knowledge and usage levels of Electronic Medical Records (EMRs) among healthcare providers in Saudi Arabia. The study involved 521 participants from different hospitals and provinces in Saudi Arabia. The findings indicate an increase in both knowledge and usage levels of EMRs in recent years, with a growing utilization of EMRs for patient services such as laboratory reports, medication prescription, follow-up, and hospitalization. However, there is a need for more training programs to enhance participants' skills in using EMRs. The study recommends further research to explore the availability and quality of EMRs in Saudi Arabian hospitals and the services offered to patients and healthcare providers. The article also emphasizes the importance of EMRs in improving patient care, reducing medical errors, and managing workflow in healthcare organizations. Additionally, it highlights the preference for activating EMRs among Saudi participants and the need for more training programs to avoid skill gaps among healthcare providers. The study's

results have implications for the future of healthcare technology and informatics in Saudi Arabia, emphasizing the importance of continuous development and attention to serving patients through EMRs.

The study conducted by Msiska et al. (2017) at Queen Elizabeth Central Hospital (QECH) and Kamuzu Central Hospital (KCH) in Malawi provides valuable insights into the factors influencing the utilization of electronic medical records (EMRs) in healthcare settings, offers a comprehensive analysis of the challenges and opportunities associated with transitioning from paper-based record-keeping systems to electronic platforms.

The study found no significant gender difference in EMR preference between males and females, indicating equal exposure to technology. It also noted that health workers with tertiary education use EMRs and paper records equally, while those with secondary education prefer EMRs more. Training was highlighted as crucial for effective EMR use, especially among data clerks. The study used a cross-sectional design with quantitative and qualitative methods to assess EMR usage in Malawian central hospitals, capturing diverse perspectives on factors like technical, managerial, and infrastructural aspects.

Based on the findings of this study recommended that healthcare institutions prioritize comprehensive training programs for health workers at all educational levels to enhance their proficiency in using EMRs effectively. Additionally, there is a need for ongoing managerial support and investment in infrastructure to address technical challenges and promote a positive attitude towards EMR adoption. By addressing these key factors, hospitals can optimize the benefits of EMRs, improve data quality, enhance patient care delivery, and ultimately contribute to the advancement of healthcare services in Malawi.

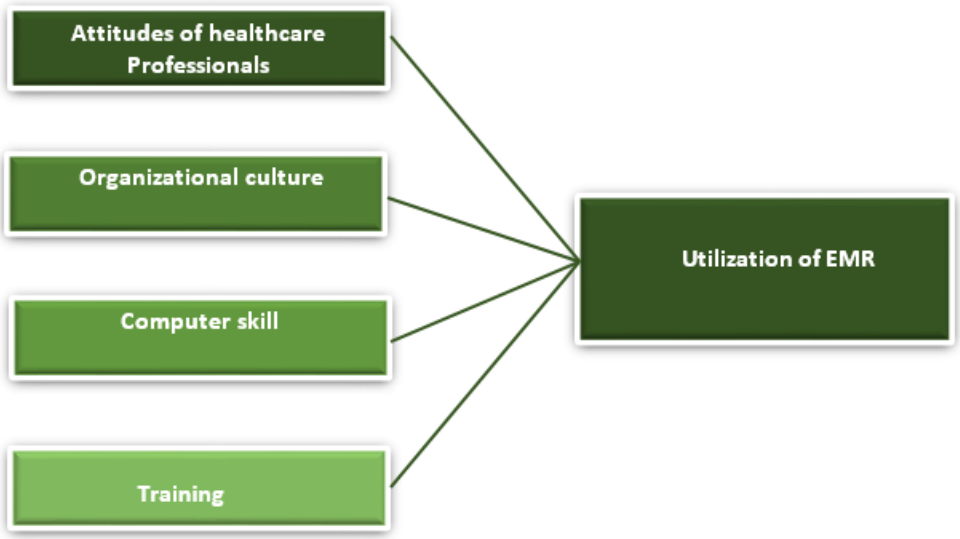
2.9 Conceptual Framework

A conceptual framework is a versatile analytical tool that may be applied in a variety of circumstances (Shikalepo, 2020). Its major goal is to help people make conceptual distinctions and organize thoughts by using graphical representations like diagrams or charts. This organized technique helps to explain relationships and connections among complicated notions, giving researchers and academics a systematic way to understand, discuss, and analyze theoretical frameworks (Perry & Tor, 2008).

The literature review above has led to developing a comprehensive conceptual framework that highlights key factors affecting health workers' use of electronic medical records (EMRs). This framework assesses EMR utilization factors, focusing on employees and integrating key

components to evaluate effectiveness and integration within healthcare settings. It considers factors such as healthcare professionals' attitudes, computer skills, organizational culture, and training. The framework offers a holistic approach to evaluating the impact on healthcare professionals and their use of the EMR system.

Figure 3: Conceptual Framework Developed for the research



Source: Research model proposed by Abdekhoda et al. (2019), Adegbore and Omowumi (2021) and Msiska et al. (2017)

CHAPTER THREE

RESEARCH METHODOLOGY

3. Introduction

Research Methodology serves as a systematic and structured approach to issue resolution that essentially studies how research is performed in a rigorous and scientific manner. In the context of this study, which focuses on assessing the factors affecting the utilization of electronic medical record (EMR) system, the methodology chapter serves as a critical framework for comprehending the intricate details of the research process. This section will go over key components like research approach, research design, sampling design, data collection methods, and, data analysis methods along with reliability and validity, all of which are deeply designed to align with the overall goal of finding of the factors that affect the utilization of electronic medical record (EMR) system.

3.1 Research Approach

Given the specific nature of the study and the underlying research problem, the study used a quantitative method. This method is used to systematically evaluate ideas by examining the correlations between variables that can be measured using equipment, resulting in numerical data that can be submitted to rigorous statistical analysis. The use of a quantitative technique corresponds with the goal of identifying empirical patterns, trends, and correlations while reviewing the factors that affect the utilization of electronic medical record (EMR) system and also it allows the researcher to collect data from a large and representative sample of physicians and other healthcare professionals who are the main users of EMR in the hospital and enables measurement levels of EMR utilization among the respondents using standardized and validated instruments .

The research entailed the collecting of numerical data via organized surveys, which allows a thorough examination of the indicated factors such as demographic characteristics, attitudes, organizational culture, computer skills, and staff training on the current status of EMR utilization in the hospital. This technique enables the use of statistical processes to extract relevant insights, quantify correlations, and make generalizable conclusions from gathered data (Creswell & Creswell, 2017).

Furthermore, the study design incorporates a deductive approach for evaluating assumptions and evaluations. This entails a systematic development from broad concepts to particular assumptions, which allows for generalization and possible replication of findings in comparable circumstances (Borgstede & Scholz, 2021).The research attempts to lay a solid basis for understanding the intricate interactions between factors associated with EMR utilization by deductively evaluating assumptions. This methodological choice improves the study's capacity to give evidence-based insights into the dynamics of EMR Utilization, by contributing to the larger body of knowledge in healthcare informatics and implementation science.

3.2 Research Design

This study used explanatory research approach to delve into the factors affecting utilization of electronic medical records (EMR) systems. This methodological approach is well-suited for conducting a thorough investigation and gaining insights into the multifaceted aspects affecting the utilization of EMR technologies in medical settings. The explanatory study methodology was utilized to delve deeper into the underlying factors affecting EMR utilization, aiming to uncover causal links and investigate the root causes behind observed patterns. This approach is intended to reveal the complex dynamics contributing to EMR utilization outcomes (Weber-Jahnke & Mason-Blakley, 2011).

By employing this approach, the study aims to get significant insights into the key factors affecting EMR utilization. In conclusion, the purposeful and strategic use of explanatory research methodologies in this study is intended to produce comprehensive insights about the variables affecting utilization of electronic medical record (EMR) system at Menelik II comprehensive specialized hospital. This analytical approach were expected to produce a rich and complete dataset, which will enhance our understanding of the challenges and essential variables associated in EMR utilization.

3.3 Sampling Design

3.3.1 Target Population

In research, the notion of target population refers to a specified group of people or objects that serve as the focus for inquiries or observations, with the goal of creating the necessary data structures and information to fulfil the study objectives (Rahi, 2017). In this study, the target population consists of every employee working at Menelik II comprehensive specialized hospital, a total of 1439 employee (N=1439).

3.3.2 Sample Size Determination

The Menelik II comprehensive specialized hospital currently employs 999 health personnel 212 administrative staff and 228 support staff, for a total of 1439 employees. This inclusive count covers all hierarchical levels, including the senior leadership team, middle-level leadership, junior leadership, and staff categories. These figures are derived from the hospital human resources report as of January 2024.

For the purposes of this study, the population sample size was computed using Toro Yamane's 1973 technique, which is a generally accepted method for calculating sample size. This algorithm uses a 5% variance factor to assure 95% reliability in the predicted sample size. Toro Yamane's method has been proven to be reliable in delivering representative sample sizes for research investigations, contributing to its acceptance.

The use of Toro Yamane's algorithm adheres to accepted norms in research methodology and sample size determination, guaranteeing that the study's sample size is scientifically and statistically sound. This projected sample size allowed for a thorough and informative examination of the viewpoints and experiences of the heterogeneous personnel at Menelik II comprehensive specialized hospital regarding the factor that affect electronic medical record (EMR) system utilization.

$$\boldsymbol{n = \frac{N}{1 + N(e)^2}}$$

Where, **N**=target population

n= required sample size

e = the level of precision

Source: Yamane's (1973)

Hence, the sample size for the given population (1,439) at e = ±5%, confidence level = 95%,

$$\boldsymbol{n = \frac{1,439}{1 + 1,439(0.05)^2} = 313}$$

Accordingly, the number of sample items from the target population of 1439 employees is 313. Thus in order to determine the number of sample items from each stratum the questionnaires with sample size 313 were distributed.

3.3.3 Sampling Technique

In the field of research methods, population units are normally located within a sampling frame. This sampling frame serves as a systematic inventory or list of the whole population from which the sample will be drawn. Sampling techniques, which are critical components of the

research process, give numerous approaches to streamlining data gathering by focusing on a subset rather than the complete population or prospective instances.

A large body of literature supports the rationale for using sampling techniques as useful instruments for study design and data collecting. Blumberg et al. (2014) emphasizes the importance of sampling in survey research, stating that it is essential for obtaining cost-effective and practical data gathering. Sampling techniques are especially useful when dealing with large or diverse populations because they allow researchers to gain relevant insights from a representative sample without having to analyses every single unit in the population.

In this Study, the researcher employed a stratified random selection process to choose participants from different categories within the population. This strategy divides the whole population into smaller, homogenous groups or strata, each with its own set of demographic features. Following that, a random selection of people will be made from each of these strata to provide a full and representative sample for the study. Accordingly, the following numbers have been computed to each stratum using the proportionality formula adopted by Kothari (2004) , which is a methodical approach ensuring equitable distribution based on proportional representation within each stratum.

The formula for determining the sample size (***nh***) in a stratified random sampling process for each stratum (***h***) is given by:

$$n_{\mathrm{h}} = \left(\frac{Nh}{N}\right) * n$$

Where, ***nh*** **=** is the sample size for stratum **(*h*)**

Nh = is the population size of stratum **(h)**

N = is the total population size.

n = is the overall sample size

Source: Singh et al. (1996)

Table 2: Sample Distribution

Sample Distribution			
Stratum by Staff Category	Population Size (N)	Proportion of Population (%)	Sample Size (n)
Administrative Staff	212	15	46
Medical Staff	999	69	217
Support Staff	228	16	50
Total	**1439**	**100**	**313**

Source: - Designed by the researcher based on study population information data, 2024

3.4 Data Sources and Collection Procedure

3.4.1 Data Sources and Types

In order to paint a picture of the current situations surrounding the electronic medical record (EMR) System Utilization, the researcher employed both primary and secondary data. In light of this, primary data were gathered from the organization employees using structured questionnaires which contained closed ended questions related to the subject matter. The secondary data was collected from the organization work processes, policies, procedures, forms and other documents which are related to EMR Utilization and also different literatures on the area.

3.4.2 Data Collection Procedure

Prior the actual data collection, the data collection instruments are prepared in English, and then translated into local language so called "Amharic" by experts who are fluent by both language and back translated to English to see its consistency and internal validity. The questionnaires have been designed on an internet survey form called Google Forms, and the link was distributed to the target respondents via email and telegram channel as well as reminder and a follow-up email was sent frequently. For those who do not have access to fill out the questionnaires, hard copies were prepared and distributed by data collators. The primary investigator conducted two days of training for data collectors on the overall goal of the study and data collection procedures which used to enhance the reliability of the data collection instrument. The data gathering process were then be carried out by qualified data collectors under the supervision of the principal investigator.

3.5 Method of Data Analysis

Following data collection, the data was examined using a quantitative inferential analytic approach. The study approach includes both descriptive and inferential statistics, which allows the researcher to organize and display data using descriptive statistics. As a consequence, the study includes statistical approaches such as mean, frequency, and standard deviation, with the results being thoroughly interpreted.

Moreover, inferential statistics plays a crucial role in aiding the researcher to discern meaningful patterns, identify potential associations between variables factors affecting the utilization of electronic medical record (EMR), and enhance the overall meaningfulness of the data analysis. The researcher encodes the data and employ SPSS (Statistical Package for Social Scientists) Version 26 for the analysis.

The multiple regression model assumed the following equation;

$Y = \beta 0 + \beta 1X1 + \beta 2X2 + \beta 3X3 + \beta 4X4 + \varepsilon$

Where: - Y= Utilization of EMR

β0=Constant

β1, β2, β3, and β4= Regression coefficients

X1= Attitude of healthcare professionals

X2= Organizational culture

X3= Computer skill

X4= Training

ε=Error Term

3.6 Reliability and Validity

Any research study's ultimate purpose is to provide high-quality, trustworthy, valid, and reliable results (Rose & Johnson, 2020). As a result, researchers must guarantee that the study technique used fits the established standards and criteria. Validity and reliability are two common factors employed in research technique to accomplish these requirements.

3.6.1 Reliability

The reliability of the survey data is critical for assessing the internal consistency of the survey questions. Cronbach's Alpha is the most often used metric of reliability. (Norman et al., 2005) defines the coefficient as ranging from 0 to 1, with higher values suggesting better consistency among the components. However, having a large number of items might result in a high alpha value, which does not always imply that the scale is accurate. To achieve more valid dependability, this study used Cronbach's Alpha on both the total data and each item category. As indicated in table 3, the dependability of the whole data is 0.985, suggesting that the information acquired through the questionnaire is more reliable.

Table 3: Cronbach's Alpha Reliability Test

Reliability Statistics		
Item Category	Cronbach's Alpha Based on Standardized Items	N of Items
Attitudes of healthcare professionals	0.931	10
Organizational culture	0.945	10
Computer skill	0.947	10
Training	0.959	10
Utilization of EMR	0.879	6
Total	**0.985**	**46**

Source: Own survey (2024)

3.6.2 Validity

According to Kothari (2004), the most important criterion for evaluating the quality of an instrument is validity, which indicates how well the tool measures its intended purpose. Essentially, validity refers to the degree to which distinctions discovered by a measuring instrument effectively represent genuine differences between the persons being evaluated. This study dives into the examination of validity, with a particular emphasis on content and construct validity.

Content validity

The extent to which the instrument's content is representational of the full domain of interest is referred to as content validity (Almanasreh et al., 2019). A comprehensive analysis of the items or questions to ensure they cover all essential features of the construct is required to achieve content validity. Experts in the area often contributes to the validation process by checking and assessing the content's completeness and relevancy.

Construct validity

Construct validity is defined as the construction of the right operational measures of the research issue under study (Sürücü & Maslakci, 2020). According to Hayashi et al. (2019), this sort of validation is mostly reliant on evaluating appropriate equipment throughout the data gathering phase. This ensures that the most accurate and rich information is gathered following a rigorous review of previous documents and academic literature reviews; however, accuracy can be achieved through the focused use of various techniques/tactics, such as referring to multiple sources of evidence and establishing a chain of selections. The construction of a rich chain will be invaluable in the production of a comprehensive draft of evidence for future validity assessments. In order to ensure the instrument's validity, the researcher also asked specialists in the field to assess the questionnaire, which was then confirmed by the adviser.

3.7 Ethical Consideration

The research proposal was thoroughly reviewed and approved by St. Mary's university's institutional review board. After receiving ethical approval, an official authorization letter was sent to Menelik II comprehensive specialized hospital. All research participants were asked to provide express verbal and written consent before data collection begins. Participants have the right to stop, withdraw, or refrain from answering any questions if they are uncomfortable throughout the procedure. It is critical to emphasize that all information acquired were kept strictly confidential during the whole data gathering and analysis process.

CHAPTER FOUR

DATA PRESENTATION, ANALYSIS AND DISCUSSION

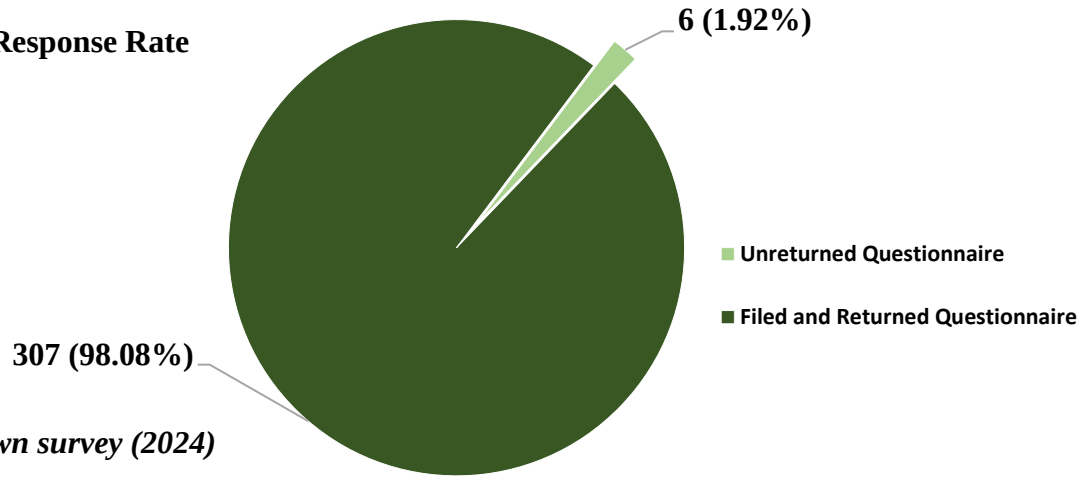
4. Introduction

In this chapter, the data collected has been analyzed and interpreted. The data is supported by a thorough questionnaire completed by the respondents on various items under the model. The first part of the questionnaire consists of demographic information, which is presented in tables and charts, including frequency and percentage. The second part involves obtaining the average score of a rating scale with a maximum of 5 points for each dimension. The third section of the chapter deals with bivariate correlation and multiple linear regression analysis. Additionally, this chapter provides a clear and complete overview of discussion of result, and hypothesis testing outcomes. The statistical program used for the analyses and presentation of data in this study is the statistical package for the social sciences (SPSS) version 26.

4.1 Questionnaire Response Rate

The target sample size was, in this case, which was a population, made up of 313 respondents and from which a total of 307 of them filled and returned the given questionnaires. This response rate represented 98.08% of the total target sample size. This is shown in figure 4 below. This response rate was representative and satisfactory enough to draw conclusions for the study. According to (Mugenda & Mugenda, 2003), a response rate of 50% is adequate for analysis and reporting, a rate of 60% is generally good while a response rate of above 70% is excellent. This is also the same position taken by (Babbie, 2020) who also asserts that a response rate of above 70% is deemed to be excellent thus the response rate for this study was adequate for analysis.

Figure 4: Response Rate



Source: Own survey (2024)

4.2 Demographic Profile of Respondents

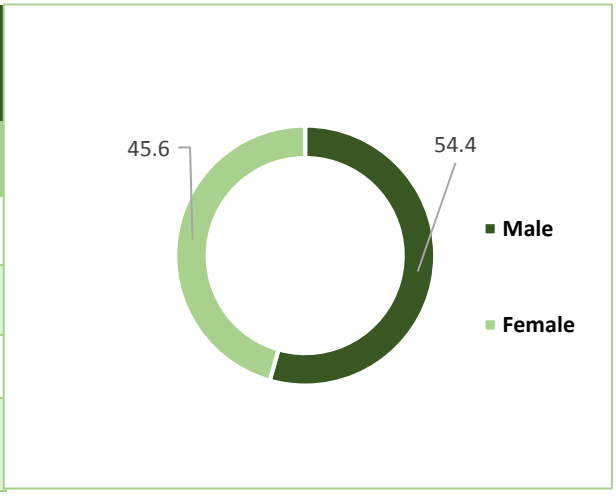
Understanding respondents' demographic profiles is an important part of research since it adds context and depth to the study's results. Demographic data includes a number of factors such as the respondent's age, gender, education level, occupation, and service year. This information not only benefits in spotting patterns and trends in the data, but it also assures that the sample is representative of the population under study (Glaser, 2012). In this research, a detailed analysis of the demographic characteristics of the respondents has been undertaken to offer insights into the diversity and composition of the study sample. This section aims to present a comprehensive overview of these characteristics, highlighting the key attributes that define the respondents. By doing so, we can better understand the background and context of the participants, which is essential for interpreting the results and drawing meaningful conclusions.

4.2.1 Gender of Respondent

Based on the findings, the majority of the respondents were male (54.4%), while 45.6% of the respondents were female. This indicates that the study involves more males. However, since both genders are represented in the sample, the study should not suffer from gender bias.

Table 4: Gender of Respondent

Gender of Respondent			
	Valid		
	Male	Female	**Total**
Frequency	167	140	**307**
Percent	54.4	45.6	**100**
Valid Percent	54.4	45.6	**100**



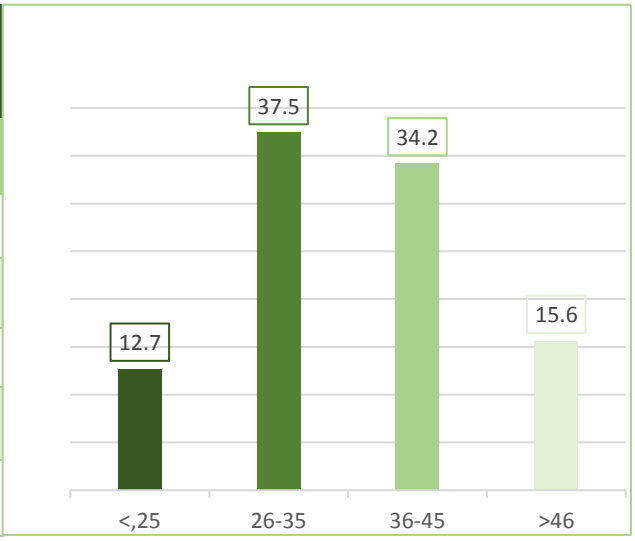
Source: Own survey (2024)

4.2.2 Age of Respondent

According to the responses, 37.5% were between the ages of 26 and 35, 34.2% were between the ages of 36 and 45, 15.6% were above the age of 46, and 12.7% were under the age of 25. This means that respondents of all ages participated in this survey, with the majority of respondents falling between the ages of 26 to 35 and 36 to 45, indicating that adult respondents who utilize electronic medical record (EMR) system were targeted for the study.

Table 5: Age of the Respondents

Age of Respondent			
		Frequency	Percent
Valid	<,25	39	12.7
	26-35	115	37.5
	36-45	105	34.2
	>46	48	15.6
	Total	**307**	**100.0**



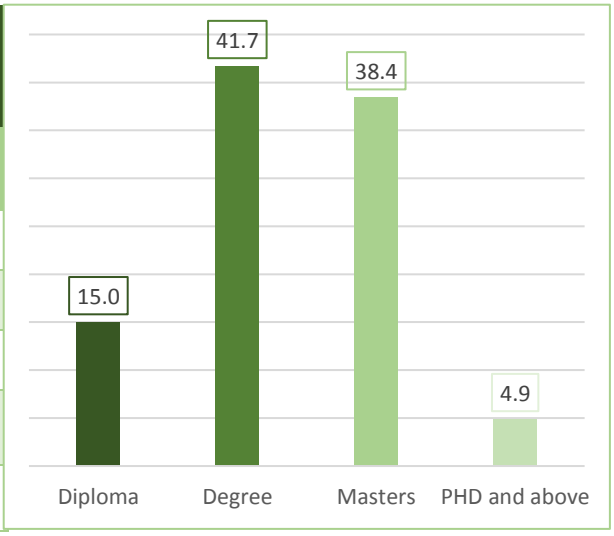
Source: Own survey (2024)

4.2.3 Education level of respondent

According to the research findings shown in table 6, the majority of respondents (41.7% and 38.2%) hold bachelor's degree and master's degree, respectively, while 15% hold diplomas and 4.9% have a PHD or above level of education. This shows that the respondents were well-educated enough to fully understand the questions and hence produce acceptable findings.

Table 6: Education Level of Respondent

Education level of respondent			
		Frequency	**Percent**
Valid	Diploma	46	15.0
	Degree	128	41.7
	Masters	118	38.4
	PHD and above	15	4.9
	Total	**307**	**100.0**



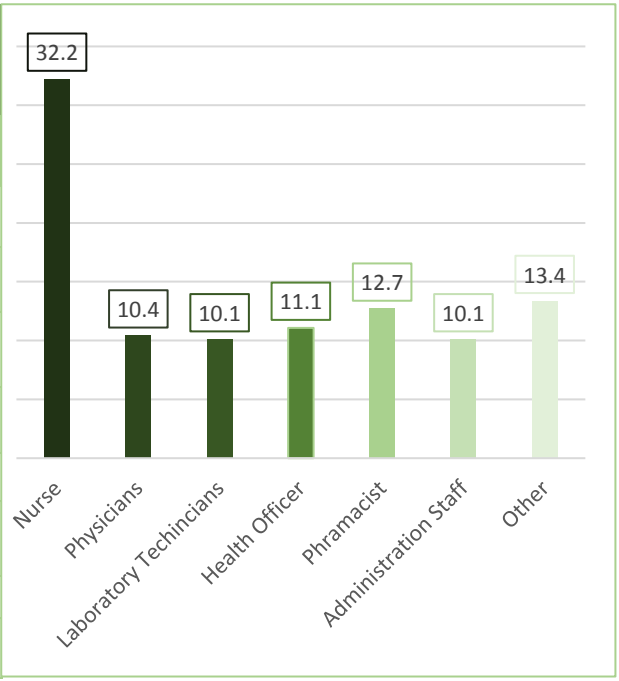
Source: Own survey (2024)

4.2.4 Profession of Respondent

As it can be seen from the table below, majority of the respondents (32.2%) are nurses 12.7 % of the respondents are pharmacists, 11.1 % of the respondents are health officers, and 10.4 are physicians, 10.1% are laboratory technicians, 10.1 % are administration staffs which utilizes EMR system and the remaining13.4% are staffs from different profession. This indicates that the survey incorporates employees with different levels of profession to ensure the representation of the sample and also to investigate the impact of the profession of an employee on EMR utilization.

Table 7: Profession of Respondent

Profession of Respondent			
		Frequency	Percent
Valid	Nurse	99	32.2
	Physicians	32	10.4
	Laboratory Technician	31	10.1
	Health Officer	34	11.1
	Pharmacist	39	12.7
	Administration Staff	31	10.1
	Other	41	13.4
	Total	**307**	**100.0**



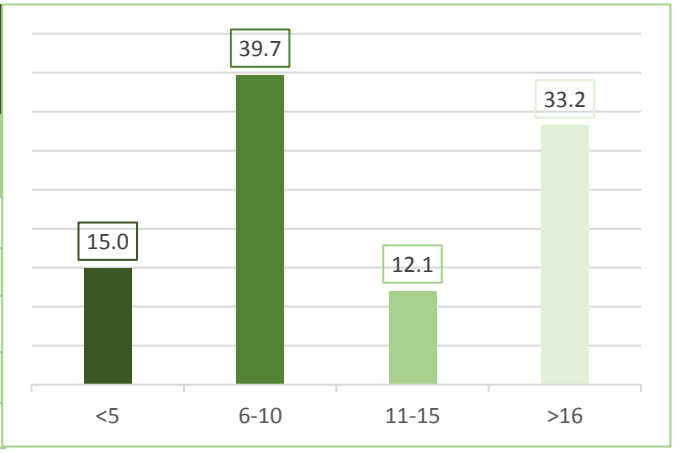
Source: Own survey (2024)

4.2.5 Service Year of Respondent

As shown by table 8, 39.7 % of the respondent have served the organization for 6 to 10 years, 33.2 % of the respondents indicated that they have served the company over 16 years, 15 % indicated have served the organization for less than 5 years, 12.1% indicated to have served in the organization for eleven to fifteen years. This implies that the majority of the respondents in Menelik II comprehensive specialized hospital, had worked for a considerable period of time and therefore they were in a position to give credible information relating to this study.

Table 8: Service Year of Respondent

Service year in the organization			
		Frequency	Percent
Valid	<5	46	15.0
	6-10	122	39.7
	11-15	37	12.1
	>16	102	33.2
	Total	**307**	**100.0**



Source: Own survey (2024)

4.3 Descriptive Analysis

Descriptive statistics explore and present an overview of all variables used in the analysis by producing the mean and standard deviation for each variable in the study. The mean and standard deviation are commonly used in research studies and are regarded as highly satisfactory measures of variation. In order to see the general perception of the respondents regarding the selected dimensions in Menelik II comprehensive specialized hospital, the researcher was summarized the measures with the respective means and standard deviations. Thus, the mean indicates to what extent the sample group averagely agrees or disagrees with the different statements. The lower the mean, the more the respondents disagree with the statements. The higher the mean, the more the respondents agree with the statement. On the other hand, standard deviation shows the variability of an observed response from a single sample (Mishra et al., 2019).The mean values are presented in table 9, together with standard deviation values for each variable.

Table 9: Descriptive Statistics

Descriptive Statistics					
Variables	N	Minimum	Maximum	Mean	Std. Deviation
Attitudes of healthcare professionals	307	1.00	5.00	4.2238	0.83274
Organizational culture	307	1.00	5.00	3.7472	0.94924
Computer skill	307	1.00	5.00	3.8423	1.02372
Training	307	1.00	5.00	3.6752	1.05733
Utilization of EMR	307	1.00	5.00	3.8985	0.85681
Valid N (listwise)	307				

Source: Own survey (2024)

The analysis of table 9 indicates that the attitudes of healthcare professionals, organizational culture, computer skills, and training are all influential factors in the utilization of electronic medical record (EMR) system. The high mean values for these variables suggest a consensus among respondents, aligning with established theories and practical observations in healthcare management and technology adoption. The high mean value of 4.2238 (SD = 0.83274) for the attitudes of healthcare professionals suggests a strong effect towards the utilization of Electronic Medical Records (EMR). This implies that their perspectives and experiences with EMR systems demonstrate in the statements from the questioner notable impact the effective utilization of EMR system in Menelik II comprehensive specialized hospital. This finding aligns with the Technology Acceptance Model (TAM), which posits that users' attitudes significantly influence the acceptance and effective use of new technologies (Wallace & Sheetz, 2014). The agreement among respondents, as indicated by a mean score of 3.7472 (SD = 0.94924), underscores the significant impact of organizational culture on the utilization of EMR systems, which implies that the underlying values, beliefs, and norms within a healthcare organization profoundly influence how EMR system is utilized by staff members in Menelik II comprehensive specialized hospital. This finding is consistent with an organizational culture-based theory of clinical information systems utilization in hospitals, which emphasize the role of organizational and social factors in information system utilization (Rivard et al., 2011). The data indicating a mean computer skills score of 3.8423 (SD = 1.02372) underscores the critical role of computer literacy in the effective utilization of Electronic Medical Records (EMR). This aligns with theories of technology acceptance and diffusion of innovations, which emphasize that proficiency and comfort with technology are essential for its successful adoption and integration into professional practice (Aizstrauta et al., 2015). Training, with a mean of 3.6752 (SD = 1.05733), indicates a tendency towards agreement with the idea that insufficient training hampers EMR utilization. This finding also aligns with theoretical frameworks in educational psychology, where the absence of adequate training often leads to suboptimal performance of such systems (McInerney, 2005).

Finally, the descriptive statistics with a mean of 3.8985 (SD = 0.85681), shows us the utilization of EMR system in Menelik II comprehensive specialized hospital. This was the dependent variable that was used to measure the factors that affect the utilization of EMR system and also served to correlate with the independent variables. The status of this variable was determined by posing several statements to the respondents regarding EMR utilization in their hospitals.

Overall the mean value of this dependent variable indicates that the majority of health professionals were not actively utilize EMR system in their day to day activity.

4.4 Correlation Analysis

For the purpose of this study the researcher used Pearson correlation analysis to find out the relationship of independent variable (attitudes of healthcare professionals, organizational culture, computer skill, and training) with the dependent variable (utilization of EMR). Since, the study selected this appropriate correlation method to investigate their relationships, the analysis result about strength of relationship between those dependent and independent variable is clearly shown in the next section's Pearson correlation analysis table result. The value of Pearson correlation coefficient (r) normally varies between -1 to +1. The sign indicates whether there is a positive correlation (as one variable increase, other also increase) or negative correlation (as one variable increase, other decrease). The strength of relationship is indicated by the size of the absolute value. +1 or -1 shows a perfect correlation, it also indicates that the value of one variable can be determined exactly by knowing the value on the other variable. Similarly a correlation of 0 shows that there is no relationship between two variables, it also indicates that knowing the value of one variable provides no assistance in predicting the value of other variable (Pallant, 2020). According to (Schober et al., 2018) an interpretation of the range of the coefficient of correlation has been described in table 10.

Table 10: Correlation Coefficient Interpretation

Correlation Coefficient	
Correlation coefficient value	Interpretation
± 1	Perfect Positive (negative) correlation
± 0.9 to 0.99	Very Strong Positive (negative) correlation
± 0.70 to 0.90	Strong Positive (negative) correlation
± 0.50 to 0.70	Moderate Positive (negative) correlation
± 0.30 to 0.50	Weak Positive (negative) correlation
± 0.00 to o.30	Negligible correlation

Source: Schober, (2018) a conventional approach to interpreting a correlation coefficient

Based on the aforementioned range reference, the correlation results between the dependent and independent variables are presented and analyzed in the table below.

Table 11: Correlation Coefficient

Correlations						
		Attitudes of healthcare professionals	Organizational culture	Computer skill	Training	Utilization of EMR
Attitudes of healthcare professionals	Pearson Correlation	1				
	Sig. (2-tailed)					
	N	307				
Organizational culture	Pearson Correlation	.778**	1			
	Sig. (2-tailed)	0.000				
	N	307	307			
Computer skill	Pearson Correlation	.739**	.900**	1		
	Sig. (2-tailed)	0.000	0.000			
	N	307	307	307		
Training	Pearson Correlation	.653**	.831**	.875**	1	
	Sig. (2-tailed)	0.000	0.000	0.000		
	N	307	307	307	307	
Utilization of EMR	Pearson Correlation	.659**	.744**	.806**	.878**	1
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	
	N	307	307	307	307	307
****. Correlation is significant at the 0.01 level (2-tailed).**						

Source: Own survey (2024)

The above Pearson product correlation result confirms that the independent variable attitudes of healthcare professionals have a significant positive relationship with dependent variable utilization of EMR at (r=0.659) and significance level of p=0.000 (p<0.01) with moderate significance relationship. The correlation value which is between organizational culture and utilization of EMR is (r=0.744 at a significance level of p=0.000 (p<0.01) with strong and confirm that has a positive significance relationship. Computer skill and utilization of EMR have a significant positive correlation at (r=0.806) significance level of p=0.000 (p<0.01) with strong significance relationship. Training and utilization of EMR were found to have a significant positive relationship at (r=0.878) and significance level of p=0.000 (p<0.01) with strong significance relationship, and confirm that all independent variables have a positive significance relationship with the dependent variable utilization of EMR system.

4.5 Multiple Regression Analysis

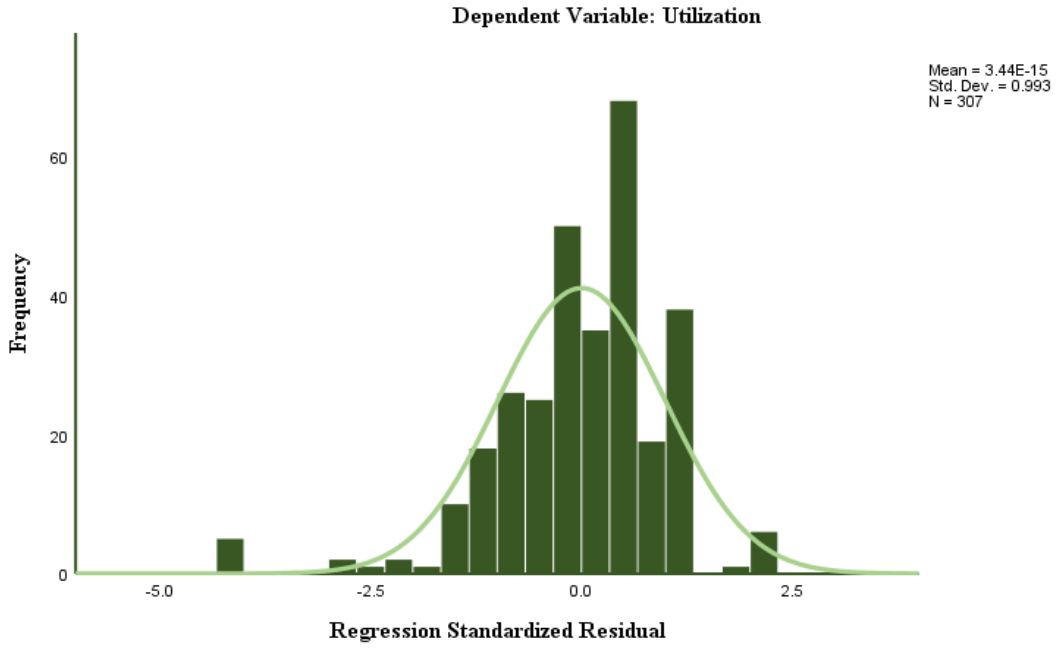
4.5.1 Regression Assumptions

Before running multiple regression analysis, the researcher has conducted basic assumption tests for the model. These are normality of the distribution, linearity of the relationship between the independent and dependent variables, multicollinearity and homoscedasticity tests. Each test is explained as follow.

4.5.1.1 Normality Distribution Test

The purpose of the normality test was to determine whether the data was well-modeled by a normal distribution and to assess the likelihood that the underlying random variable is normally distributed. According to (Paul & Zhang, 2010), if the residuals are normally distributed, the histogram should have a bell-shaped curve. Additionally, the linear regression assumption states that the error term should be normally distributed, meaning the expected value of the error terms should be zero. As illustrated in figure 5 below, the researcher conducted a normality test. The results show that the histogram, with the normal curve overlaid, was examined to check the normality of the dependent variable utilization of EMR system, and it was found to be normally distributed. This indicates that the normality assumption is satisfied.

Figure 5: Normality Test Histogram

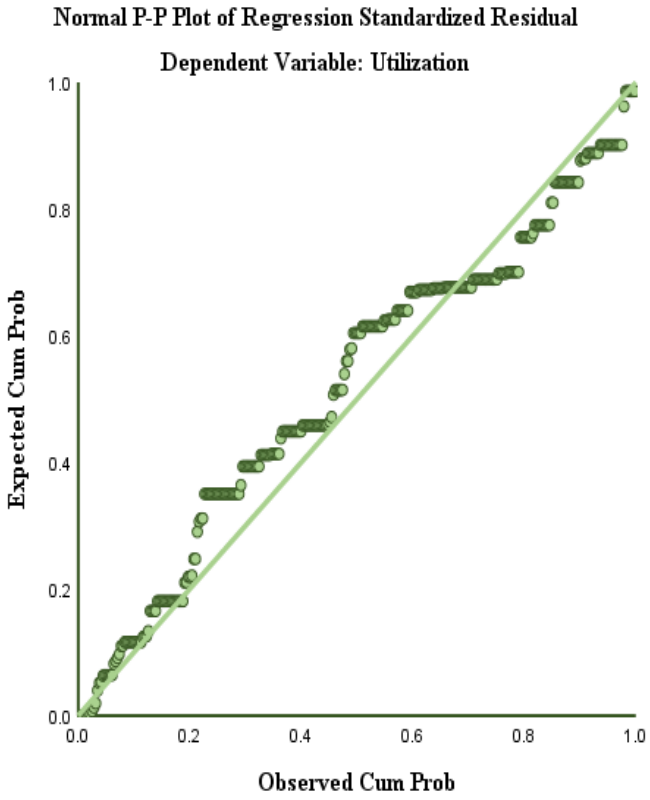


Source: Own survey (2024)

4.5.1.2 Linearity of the Relationship Test

The linearity of relationships test is a statistical method used to determine whether a relationship between two or more variables is linear. A linear relationship is one where the mean values of the outcome variable (dependent variable) for each increment of the predictors (independent variables) lie along a straight line. In other words, a linear relationship means that as one variable increases or decreases, the other variable changes in a consistent and predictable manner, with no sudden changes or bends in the relationship. There are several tests that can be used to assess the linearity of relationships, but in this study, a normal P-P plot test was used to test linearity, and it was found that there is a linear relationship between the independent and dependent variables, as shown in figure 6.

Figure 6: Linearity Graph



Source: Own survey (2024)

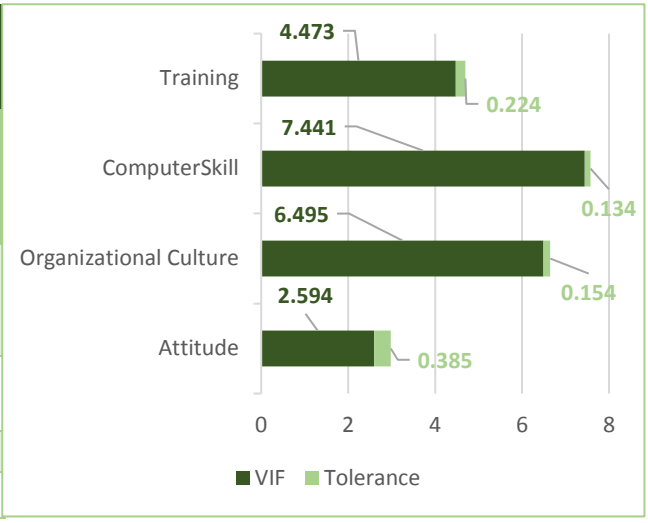
4.5.1.3 Multicollinearity Test

Multicollinearity refers to the situation in which the independent/predictor variables are highly correlated. When independent variables are multicollinear, there is "overlap" or sharing of predictive power. This may lead to the paradoxical effect, whereby the regression model fits the data well, but none of the predictor variables has a significant impact in predicting the

dependent variable. This is because when the predictor variables are highly correlated, they share essentially the same information. Thus, together, they may explain a great deal of the dependent variable, but may not individually contribute significantly to the model. Existence of multicollinearity can be checked using "Tolerance" and "VIF" values for each predictor variables. Tolerance values less than 0.10 and VIF (variance inflation factor) greater than 10 indicates existence of multicollinearity (Daoud, 2017). For the current data, as can be seen in table 13 the VIF value is less than 10 and the tolerance value is greater than 0.10 thus this implies that multicollinearity is not an issue for this particular study.

Table 12: Multicollinearity Test

Coefficients[a]			
Model		Collinearity Statistics	
		Tolerance	VIF
1	Attitudes of healthcare professionals	0.385	2.594
	Organizational culture	0.154	6.495
	Computer skill	0.134	7.441
	Training	0.224	4.473

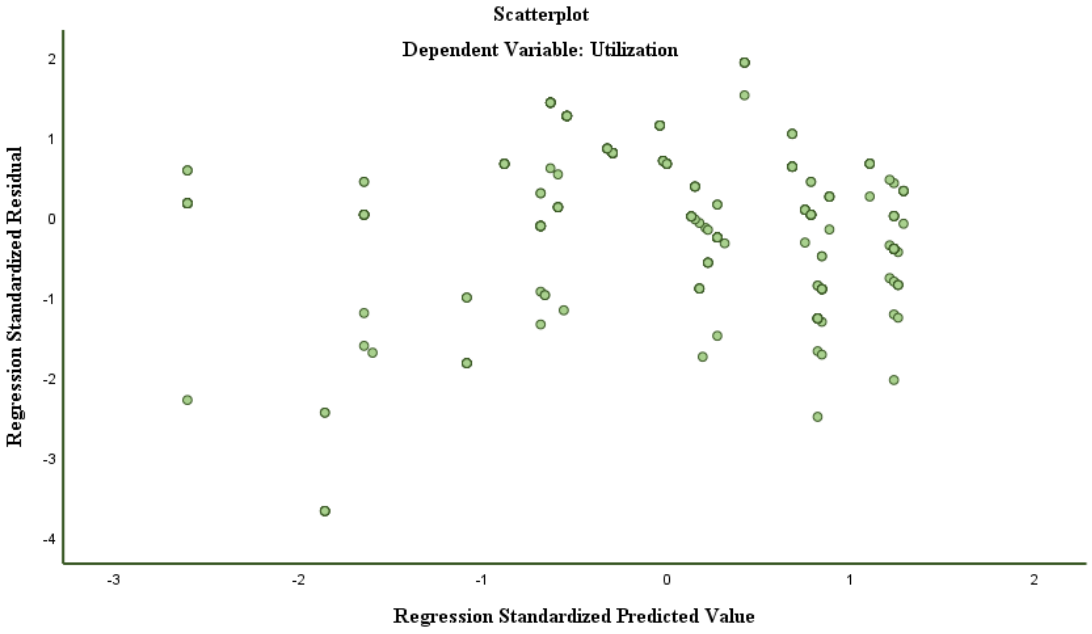


Source: Own survey (2024)

4.5.1.4 Homoscedasticity Test

The assumption of homoscedasticity is that the residuals are approximately equal for all predicted dependent variable scores. Another way of thinking of this is that the variability in scores for independent variables is the same at all values of the dependent variable. Data are homoscedastic if the residuals plot is the same width for all values of the predicted dependent variable. For a basic analysis it is worth plotting the standardized residuals (*ZRESID) on Y-axis against standardized predicted values (*ZPRED) on X-axis, because this plot is useful to determine whether the assumptions of random errors and homoscedasticity have been met (Osborne & Waters, 2019). So the study result on figure 7 the scattered dots are between -4 and 2 in the Y-axis and from -3 to 2 in the X-axis which indicates the homoscedasticity assumption in the model has been met.

Figure 7: Scatter Plot



Source: Own survey (2024)

4.5.2 Regression Analysis

Regression technique is used to assess the strength of a relationship between one dependent and independent variable(s). It helps in predicting value of a dependent variable from one or more independent variable and how much variance in being accounted in single response (dependent variable) by set of independent variables.

4.5.2.1 Model Summary

R is the multiple correlation coefficient between the observed values and the values predicted by the multiple regression model. Therefore, large values of R represent a strong correlation between the predicted and observed values of the outcome. Thus, R is a measure of how well the model predicts the observed data. Based on the model summary in table 13 below, the multiple correlation coefficient R is 0.888. This implies that there is a positive and strong relationship between the dependent variable (utilization of EMR) and the four independent variables (training, organizational culture, attitudes of healthcare professionals, computer skill). The R^2 (the coefficient of determination), which is the proportion of the variance in the dependent variable explained by the predictor variables, is 0.789 in this model. This reveals that the model accounts for 78.9% of the variance in the utilization of the EMR system and is explained by the linear combination of all the independent variables of EMR utilization factors. However, the remaining 21.1% could be due to other variables that were not considered in this

study. Adjusted R squared is the coefficient of determination which tells us the variation in the dependent variable due to changes in the independent variables. From the findings in the table 13 since adjusted R-square of all the four variables is 0.786, we can say that 78.6% of the variability of EMR utilization is accounted for by factors of EMR utilization (training, organizational culture, skill, attitudes of healthcare professionals).

Table 13: Regression Model Summary

Model Summary[b]				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.888[a]	0.789	0.786	0.39627
a. Predictors: (Constant),training, attitudes of healthcare professionals, organizational culture, computer skill b. Dependent Variable: utilization				

Source: Own survey (2024)

4.5.2.2 ANOVA Model Fit

To assess the statistical significance of the results, it is necessary to look at the table labeled ANOVA (Analysis of Variance). This table consists of calculations that provide information about the level of variability within a regression model and form the basis for tests of significance. From this (table 14) the total sum of squares is 224.642 of which 177.217 accounted by the model and the remaining 47.424 left for unexplained because the regression included a constant, the total sum reflects the sum after removal of means, as does the sum of squares due to the model. The table also reveals that there are 306 total degrees of freedom (counted as 307 observations less 1 for the mean removal), of which 4 are consumed by the model, leaving 302 for the residual. A correlation exists between the response and predictor variables if the p-value is less than 0.05. As illustrated in table 14 below, the p-value is 0.000, which is less than 0.05. This indicates that there is enough evidence to suggest that the independent variables training, attitudes of healthcare professionals, organizational culture and computer skill are suitable predictors for the dependent variable, and the model is significant.

Table 14: Anova Model

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	177.217	4	44.304	282.133	.000[b]
	Residual	47.424	302	0.157		
	Total	224.642	306			
a. Dependent Variable: utilization b. Predictors: (Constant), training, attitudes of healthcare professionals, organizational culture, computer skill						

Source: Own survey (2024)

4.5.2.3 Beta Coefficient

The attitudes of healthcare professionals, organizational culture, computer skill and training explanatory variables included in this study significantly explain the variation in the dependent variable signed, as seen in the table 15 below. The unstandardized beta coefficient column displays the level of influence each independent variable makes on utilization of EMR system in the model and also the unstandardized coefficients Beta column gives as the coefficients of the independent variable in the regression equation, including the predictor variables as indicated below.

$Y= \beta0+ \beta1\ X1+ \beta2\ X2+ \beta3\ X3+ \beta4\ X4+Ɛ$

$Y= 0.930+0.177X1 + 0.164X2 + 0.146X3 + 0.618X4$

Y = Utilization of EMR,

X1 = Attitude, $\beta1= 0.177$

X2 = Organizational culture, $\beta2= 0.164$

X3 = Computer skill, $\beta3= 0.146$

X4 = Training, $\beta4 = 0.618$

$\beta0=$ constant

$\beta1$, $\beta2$, $\beta3$ and $\beta4$ = coefficients of variables

Ɛ = Error term

Utilization of EMR = 0.930 + 0.177Attitudes + 0.164 Organizational culture +0.146 Computer skill +0.618 Training + Ɛ

Table 15: Beta Coefficient

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	0.930	0.117		7.922	0.000
	Attitudes of healthcare professionals	0.177	0.044	0.172	4.038	0.000
	Organizational culture	0.164	0.061	0.181	2.689	0.008
	Computer skill	0.146	0.060	0.175	2.420	0.016
	Training	0.618	0.045	0.763	13.648	0.000
a. Dependent Variable: Utilization						

Source: Own survey (2024)

From the above coefficients table it revealed that with other factors held constant, the independent variables (attitudes of healthcare professionals, organizational culture, computer skill and training) results in a substantial change in the utilization of EMR system of Menelik II comprehensive specialized hospital. Accordingly, an increase in one percent of training dimension in 61.8% (sig 0.00) change shows the effect on the utilization of EMR system, while the increase in one percent of attitudes of healthcare professionals results in a 17.7% (sig, 0.00) changes shows the effect on the utilization of EMR system. Similarly, as one percent of computer skill increases, it can result in a 14.6% change shows the effect on utilization of EMR system and as one percent of organizational culture increases, it can result increases by 16.4 % on utilization of EMR system. When examining the Beta values under standardized coefficients, which are used to compare different variables, the results indicate that training has the highest Beta coefficient of 0.763 at a significance level of 0.000 ($p < 0.05$). This finding suggests that training has the biggest influence on the utilization of the EMR system compared to the attitudes of healthcare professionals, organizational culture, and computer skill. Furthermore, the standardized Beta coefficients reveal that organizational culture, computer skills, and the attitudes of healthcare professionals also make significant unique contributions to explaining the dependent variable, with coefficient values of 0.181, 0.175, and 0.172, respectively, at significance levels of 0.008 ($p < 0.05$), 0.016 ($p < 0.05$), and 0.000 ($p < 0.05$).

4.6 Discussion of Results

This discussion is very important to provide more clarification on the above results. The main objective of this study was to study the factors affecting the utilization of electronic medical record (EMR) system in Menelik II comprehensive specialized hospital by analyzing the relationship of every construct in the conceptual framework. Demographic factors such as gender, age, educational level, profession, department and service year of research participants have been assessed so as to know the general characteristics of the respondents. Based on the results of this research, 54.4% were male and 45.6% were female respondents. In terms of age, the majority of respondents were aged between 26-35 years old, which accounted for 37.5%. With regard to the educational level of respondents, the majority of the respondents were degree holders, which accounted for 41.7%. With regard to the department of respondents, the majority of the respondents were from internal medicine, which accounted for 33.6%. With regard to the profession of respondents, the majority of the respondents were nurses, which accounted for 32.2%, and finally, in terms of service year, the majority of respondents had between 6-10 years of experience, which was accounted for by 39.7%. As justified in the part of the descriptive statistics of this study, the mean score response of the participants responded to all independent variable items of five-point Likert-scales was above 3.67. This showed that attitudes of healthcare professionals, organizational culture, computer skill and training dimension have a strong effect on utilization of EMR system, having a mean value of 4.22, 3.75, 3.84 and 3.68 respectively. On the other hand, the mean value of the utilization of EMR was 3.89. This implies that the utilization of electronic medical record (EMR) in Menelik II comprehensive specialized hospital have been affected because of the existence of the four dimensions.

Based on the Pearson correlation test results, the four dimensions were positively correlated with EMR utilization. There were moderate and significant correlations between healthcare professionals' attitudes and EMR utilization ($r = 0.659$, $p < 0.01$). The correlation between organizational culture and EMR utilization was strong and significant ($r = 0.744$, $p < 0.01$). Similarly, a strong and significant correlation existed between computer skills and EMR utilization ($r = 0.806$, $p < 0.01$). The correlation between training and EMR utilization was also strong and significant ($r = 0.878$, $p < 0.01$).

Before conducting any statistical tests, a normality test was performed by visualizing the shape of the histogram. The linearity of the relationships among variables was checked using a P-P plot. Additionally, a multicollinearity test was conducted using the correlation coefficient,

variance inflation factor (VIF), and tolerance value. Homoscedasticity was assessed using a scatter plot. After verifying regression assumptions, a regression model analysis was conducted. The results show that the four independent variables (attitudes of healthcare professionals', organizational culture, computer skill, and training) accounted for 78.9% of the variance in EMR system utilization ($R^2 = 0.789$). The remaining 21.1% variance is explained by other variables not included in this study.

4.6.1 Dimensions of Attitudes of Healthcare Professionals and Utilization of EMR

The finding that the attitudes of healthcare professionals significantly influence the utilization of electronic medical record (EMR) system is consistent with several studies in the field of health informatics. A research by Wubante et al. (2023) identified a positive correlation between healthcare professionals' attitudes and the utilization of EMR systems, emphasizing the importance of fostering a supportive organizational culture to enhance system utilization. Similarly, Kim et al. (2015) demonstrated that the perception of ease of use and perceived usefulness of EMR systems by healthcare providers directly impacts their acceptance and consistent use of these technologies. This aligns with the result showing a beta coefficient of 0.177, suggesting that positive attitudes among staff lead to a proportional increase in EMR usage. These findings collectively underscore the critical role of healthcare professional's attitude in the successful utilization of electronic medical record (EMR) system.

4.6.2 Dimensions of Organizational Culture and Utilization of EMR

The finding that organizational culture has a positive and significant effect on the utilization of EMR system (Beta = 0.164, $p < 0.01$) suggests that a stronger or more supportive organizational culture is associated with higher usage of electronic medical record (EMR) systems. This result aligns with other studies exploring the relationship between organizational culture and technology adoption in healthcare. A research by Adeyemi (2017) found that transformational leadership positively impacts EMR Utilization, while Vest et al. (2011) highlighted the importance of organizational support in mitigating resistance and enhancing user satisfaction. Cucciniello et al. (2015) observed that a culture of continuous learning is crucial for effective EMR use, and Faida et al. (2023) found that employee engagement and empowerment lead to better utilization. The beta coefficient of 0.164 indicates a measurable, though moderate, impact of organizational culture on EMR utilization, suggesting that even small improvements can significantly increase EMR use. The high significance level ($p < 0.01$) reinforces the reliability of this finding, emphasizing the need for a holistic approach that includes leadership

development, continuous training, and an inclusive environment for successful EMR utilization.

4.6.3 Dimensions of Computer Skill and Utilization of EMR

The finding that computer skill have a positive and significant effect on the utilization of electronic medical record (EMR) system ($\beta = 0.146$, $p < 0.01$) aligns with other research in the field. A study by Oo et al. (2021) reported that higher levels of computer literacy among healthcare professionals are significantly associated with increased EMR adoption and effective utilization. Similarly, (Boonstra & Broekhuis, 2010) found inadequate computer skills to be a barrier to EMR adoption, emphasizing the need for improved computer literacy. Supported by the technology acceptance model (TAM), which highlights perceived ease of use as a key determinant of technology acceptance (Deharja et al., 2022), these findings suggest that enhancing computer skills not only improves EMR utilization but also positively impacts attitudes towards EMR systems.

4.6.4 Dimensions of Training and Utilization of EMR

The finding that the training dimension significantly affects the utilization of electronic medical record (EMR) system (Beta = 0.618, $p < 0.01$) aligns with other studies in the field, underscoring the critical role of training in EMR adoption and effective use. Gagnon et al. (2012) found that comprehensive training programs were positively correlated with higher EMR adoption rates among healthcare professionals, enhancing both familiarity with the system and user confidence. Similarly, a meta-analysis by Poon et al. (2004) revealed that training interventions are significant predictors of successful EMR utilization, with facilities investing in extensive training seeing marked improvements in system usability and functionality. These findings suggest that healthcare organizations should prioritize and allocate resources to comprehensive training programs, including initial sessions, ongoing professional development, and refresher courses, to ensure continuous competence in using EMR system. Emphasizing training as a key component of EMR utilization strategies can lead to a more proficient workforce, better patient outcomes, and more efficient healthcare delivery.

4.6.5 Utilization of EMR

Based on the results of the research, it became evident that the electronic medical system in Menelik II comprehensive specialized hospital was not fully utilized. According to the responses obtained from the sample respondents, the researcher observed a range of attitudes among healthcare professionals towards the system. Some expressed enthusiasm and

willingness to learn and adapt, while others exhibited hesitance or resistance, citing concerns about their computer skills and the adequacy of training provided. Furthermore, the organizational culture within the hospital played a significant role in shaping attitudes towards the electronic medical system. Departments or teams with a culture of innovation and openness to technological advancements showed higher levels of utilization and positive attitudes. Conversely, units with a more traditional or hierarchical culture struggled more with adoption and utilization.

In general, from the findings of this study, the researcher found out that all of the four factors have positive effects on utilization of electronic medical record (EMR) system. The result of this study also indicates that the standardized beta coefficients, a unit change in the independent variables (attitudes of healthcare professionals, organizational culture, computer skill and training), would produce an effect on the dependent variable (utilization of EMR). From the result, attitudes of healthcare professionals ($\beta=0.172$, $p<0.05$), organizational culture ($\beta=0.181$, $p<0.05$), computer skill ($\beta=0.175$, $p<0.05$), Training ($\beta=0.763$, $p<0.05$). This finding suggests that training has the biggest effect on the utilization of the EMR system compared to the attitudes of healthcare professionals, organizational culture, and computer skills.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATION

This chapter presents the summary and conclusions derived from the study on factors affecting utilization of the EMR system at Menelik II comprehensive specialized hospital. It also provides appropriate recommendations to address the existing conditions and encountered problems.

5.1 Summary

This study aimed to look at the factors (attitudes of healthcare professionals, organizational culture, computer skill, and training) affecting the utilization of EMR system in Menelik II comprehensive specialized hospital.

This research study used the quantitative research approach and explanatory design, in particular, the sampling method used to represent the study area population was stratified, and next random sampling methods and based on this sampling method a sample of 313 samples were taken. The predictor variables of the model construct were attitudes of healthcare professionals, organizational culture, computer skill, and training. The data were collected from the respondents by developing structured questionnaires of 46 items and the rating of the response is valued by using a five-point Likert scale for the independent and dependent variables and a total of 313 questionnaires were distributed from those of 313 questionnaires 307 questionnaires were returned, therefore the analysis of this study is undertakes using 307(98.08%) response rates.

The demographic profiles of the respondents were analyzed using percentages and frequencies, the study found that gender of the respondents was 54.4 % males and 45.6 % females respectively. This means that both genders were involved within the study and thus the finding of the study didn't suffer from gender bias. In terms of respondent age, the findings revealed that 37.5% of the respondents were aged between 26 to 35 years, 34.2 % of the respondent were aged between 36 to 45 years, and 15.6% of the respondents were aged above 46, whereas 12.7 % of the respondents indicated that they were aged under 25 years. The age implies that the respondents were comprised of heterogeneous groups; which successively enabled the researcher to urge varied responses across the sample units. Concerning the educational level of respondents, the majorities of the respondents were degree holders accounted for (41.7%) and second-degree holders (38.4%),the remaining 15% and 4.9 % holds diploma and PHD or above respectively. Based on profession of respondent majority of the respondents (32.2%)

were nurses, 12.7 % of the respondents were pharmacists, 11.1 % of the respondents were health officers, and 10.4% were physicians, 10.1% were laboratory technicians, 10.1 % were administration staff which utilizes EMR System and the remaining13.4% were staffs from different profession, department wise 33.6% of the respondents were from internal medicine, 15.3% of the respondents were from orthopedics, 10.4% of the respondents were from ophthalmology, 8.8% were from ENT, 7.5% were from pathology, 6.8 % were from dermatology, 4.6 % were from gynecology, 3.3 % were from pediatrics and 9.8% of the respondents were from other different departments. Finally, the respondents year of service in Menelik II comprehensive specialized hospital revealed that 39.7 % of the respondent have served the organization for 6 to 10 years, 33.2 % of the respondents indicated that they have served the organization over 16 years, 15 % of the respondents have served the organization for less than 5 years and 12.1% have served the organization for 11 to 15 years.

Descriptive statistics were employed to show the overall central tendency and variations of the data to judge the responses whether consistent with the assumed idea or not in each variable case, from data analysis the Cronbach's Alpha of this study is 0.985 which implies it as consistence and the results of the descriptive statistics showed among the four independent variables; attitudes of healthcare professionals, organizational culture, computer skill, and training have mean values of 4.22, 3.75, 3.84, and 3.67 respectively. It indicates that all the predictor variables met the validity of the assumption idea on the nature of the relationship with the dependent variable.

According to the Pearson correlation test findings, there were positive correlations between the four dimensions and EMR utilization. Healthcare professionals' attitudes showed a moderate significant correlation with EMR utilization ($r = 0.659$, $p < 0.01$). The link between organizational culture and EMR utilization was notably strong and significant ($r = 0.744$, $p < 0.01$). Likewise, a robust and significant correlation was observed between computer skills and EMR utilization ($r = 0.806$, $p < 0.01$). Training also exhibited a strong and significant correlation with EMR utilization ($r = 0.878$, $p < 0.01$).

In addition, multiple regression analysis was conducted and the results show that the four independent variables (attitudes of healthcare professionals, organizational culture, computer skill and training) contributed or explained 78.9% ($R^2 = 0.789$) of the utilization of EMR. The remaining 21.1% variance is explained by other variables not included in this study. Subsequently, the attitudes of healthcare professionals dimension has positive beta coefficients

and a p-value less than 0.01 (Beta = 0.177, $p < 0.01$). Thus, the attitudes of healthcare professionals has a positive significant relationship with utilization of EMR. The organizational culture dimension has positive beta coefficients and a p-value less than 0.01 (Beta = 0.164 $p < 0.01$). Thus, the organizational culture dimension has a positive and significant relationship with utilization of EMR. The computer skill dimension has positive beta coefficients and a p-value less than 0.01 (Beta = 0.146, $p < 0.01$). Thus, the computer skill dimension has a positive and significant relationship with utilization of EMR. The training dimension has positive beta coefficients and a p-value less than 0.01 (Beta = 0.618, $p < 0.01$). Thus, the training dimension has a positive and significant relationship with utilization of EMR. From the study result the researcher concluded that training and attitudes of healthcare professionals were the first and second most factors affecting utilization of EMR system while computer skill was one of the weakest predictors of utilization of EMR system in the study area as compared to those predictors.

5.2 Conclusion

The main purpose of this study was to address the factors affecting the utilization of the electronic medical record (EMR) system at Menelik II comprehensive specialized hospital. Based on the findings presented in the previous section, the following conclusions are drawn.

According to this study, the attitudes of healthcare professionals regarding the utilization of EMR in Menelik II Comprehensive Specialized Hospital were found to be unfavorable. The findings indicated that most healthcare professionals held negative views, with many expressing frustration over the system's usability issues and perceiving it as a hindrance to delivering efficient patient care. As a result, they are unwilling to integrate the system into their daily routines. Therefore, the study concludes that attitudes of healthcare professionals had a significant effect on the EMR system utilization systems within the healthcare setting.

Regarding the impact of organizational culture on the effective utilization of electronic medical records (EMR) within Menelik II comprehensive specialized hospital, the study revealed the presence of a notably limited supportive culture that values innovation and technology adoption. Therefore, the study concludes that organizational culture significantly affects the utilization of EMR at Menelik II comprehensive specialized hospital.

Furthermore, the study found that most of the healthcare professionals lack basic computer skill. This deficiency significantly affected the utilization of the electronic medical record (EMR) system at Menelik II comprehensive specialized hospital. Therefore, the study

concludes that the low level of staff computer skill had a significant effect on the EMR system utilization at the hospital.

In conclusion, the study found that healthcare professionals at Menelik II comprehensive specialized hospital receive insufficient training regarding the electronic medical record (EMR) system. This lack of training significantly impacts the utilization of EMR, making it the most influential variable in the model of EMR utilization in Menelik II comprehensive specialized hospital. Therefore, the study concludes that training is a crucial factor in utilization of EMR in clinical workflows.

5.3 Recommendation

Based on the conclusions drawn from the study on the factors affecting the utilization of the electronic medical record (EMR) system at Menelik II comprehensive specialized hospital, here are four recommendations:

1. Address Attitudinal Barriers: Implement initiatives to improve the attitudes of healthcare professionals towards EMR utilization. This could involve fostering a culture of appreciation for technology's role in healthcare delivery, highlighting success stories from other institutions, and involving staff in decision-making processes related to EMR utilization and improvement. Additionally, addressing usability issues and actively seeking feedback from users can help mitigate frustration and resistance.
2. Cultivate a Supportive Organizational Culture: Foster a supportive organizational culture that values innovation and technology adoption. This may involve leadership initiatives to promote a culture of continuous learning and improvement, incentivizing staff involvement in technology initiatives, and creating opportunities for interdisciplinary collaboration to develop best practices for EMR utilization.
3. Invest in Basic Computer Skills Training: Recognize the importance of basic computer skills in EMR utilization and invest in training programs to bridge the gap for healthcare professionals lacking in this area. These programs should be tailored to the specific needs of healthcare staff, providing hands-on training and support to build confidence and proficiency in utilizing computer technology for clinical purposes. Additionally, integrating computer literacy training into broader professional development initiatives can ensure ongoing skill development and support organizational readiness for technological advancements.

4. Enhance Training Programs: Develop comprehensive training programs to educate healthcare professionals on the effective utilization of the EMR system. These programs should focus not only on system navigation but also on optimizing workflow integration and addressing usability issues. Providing ongoing support and refresher courses can ensure that staff feel confident and competent in utilizing the EMR in their daily routines.

By implementing these recommendations, Menelik II Comprehensive Specialized Hospital can enhance the utilization of EMR systems, ultimately improving clinical workflows and patient care outcomes.

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APPENDICES

Appendix A: Questionnaire

ST. MARY'S UNIVERSITY

SCHOOL OF GRADUATE STUDIES

SCHOOL OF BUSINESS

Dear Participants,

I am currently conducting research as part of the requirements for my master of business administration (MBA) degree. The focus of my study is the "Factors affecting utilization of electronic medical record (EMR) system "at Menelik II comprehensive specialized hospital.

The electronic medical record (EMR) system is designed to manage patient demographics, medical histories, and treatment records in a computerized format. Your participation in this study as a key informant is crucial, and to facilitate this, I have prepared a survey questionnaire specifically addressing the factors affecting utilization of electronic medical records (EMRs).

Your candid responses to the questionnaire's questions and statements are integral to the success of this research. The survey is anticipated to take approximately 45 minutes to complete, and rest assured, all gathered information will be used solely for academic research purposes. Your responses will be treated with utmost confidentiality, and no individual will be affected in any way.

I genuinely appreciate your dedication and commitment to this research. I would like to express my gratitude in advance for your timely and sincere participation in completing the questionnaire.

Thank you once again for your valuable contribution.

Best regards,

Yonas Abi

Part I: Demographical Information

Direction: Please put a thick mark (√) in the box that corresponds to your response

1.1 Gender

Male ☐ Female ☐

1.2 Age Group

≤ 25 ☐ 26 – 35 ☐

36 – 40 ☐ 41 and above ☐

1.3 Educational Status

Diploma ☐ Degree ☐

Masters ☐ PhD and above ☐

1.4 Profession

Nurse ☐ Laboratory Technicians ☐

Physicians ☐ Health officers ☐

Pharmacist ☐ Administration Staff ☐

1.5 Your service year

≤ 5 ☐ 6 – 10 ☐ 11 – 15 ☐

16 – 20 ☐ 21 and above ☐

Part II: Attitudes of healthcare professionals' towards EMR Systems

Direction: Please put a thick mark (√) in the box that corresponds to your response

No.	Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
2.1	I am resistant to change or adopting new technologies.					
2.2	It takes me time to adapt to new technology due to my background.					
2.3	You would prefer to use hand held devices in clinical data recording.					
2.4	Due to the system performance and my existing working experience, I assume that using EMR is complicated and time-consuming.					

2.5	I still rely on paperwork nowadays to record patient clinical information.					
2.6	Most of my colleagues find information sharing quite difficult when we use EMR due to inaccurate entry of data.					
2.7	The accessibility of patient information through traditional paper-based records compared to EMR systems is more effective.					
2.8	EMR systems a bit complicated for communication and collaboration among healthcare team members.					
2.9	I believe EMR systems streamline administrative tasks and workflow processes but it is not easy to use.					
2.10	The EMR system is important for healthcare facilities like Menelik II comprehensive specialized hospital and it should be customize based on the hospital work flow.					
Part III: The influence of the organizational culture						
Direction: Please put a thick mark (√) in the box that corresponds to your response						
No.	**Statement**	**Strongly Agree**	**Agree**	**Neutral**	**Disagree**	**Strongly Disagree**
3.1	The existing culture surrounding file archiving and document recording affects employees' ability to adapt to the EMR system.					
3.2	You perceive the organizational culture at Menelik II comprehensive specialized hospital as not conducive to learning and adapting to new technologies such as EMR systems.					
3.3	The leadership within the organization does not sets a positive example by actively endorsing and utilizing EMR systems.					

3.4	Manual methods are a long-standing cultural practice to replace with system-based solutions like EMR in your organization.					
3.5	Staff members do not feel empowered to provide feedback and suggestions for improving the utilization of EMR systems.					
3.6	The alignment between the organizational culture and the goals of EMR implementation negatively affect the successful utilization of EMR systems.					
3.7	Attitudes, beliefs, and norms within the organizational culture influence healthcare professionals' views of EMR systems and their readiness to use them.					
3.8	The lack of clear change management strategies within the organizational culture affects the smooth transition from manual to EMR processes.					
3.9	The organization does not force employees to use the EMR system and does not penalize those who do not use it.					
3.10	I believe the culture of the organization is a significant issue for the ineffective utilization of the EMR system.					
Part IV: Computer Skill Proficiency						
Direction: Please put a thick mark (√) in the box that corresponds to your response						
No.	**Statement**	**Strongly Agree**	**Agree**	**Neutral**	**Disagree**	**Strongly Disagree**
4.1	You have at least one computer in your ward.					
4.2	Due to my educational background and limited experience or knowledge about computers, I find it challenging to use EMR systems.					

4.3	Improving my computer skills would enhance my utilization of EMR systems.					
4.4	My computer skills do not enable me to efficiently input and retrieve data in EMR systems.					
4.5	I am not able to effectively communicate and collaborate with colleagues using EMR systems due to my computer skills.					
4.6	I believe that improving the proficiency of my computer skills would positively impact patient care through better EMR utilization.					
4.7	My computer skills limits me to effectively analyze and interpret data within EMR systems.					
4.8	I feel not comfortable troubleshooting minor technical issues encountered while using EMR systems.					
4.9	My computer skills shorten me to customize EMR settings to suit my workflow preferences.					
4.10	The lack of computers in our hospital is a challenge to improving my computer skills and using EMR systems.					

Part V: Staff Training

Direction: Please put a thick mark (√) in the box that corresponds to your response

No.	Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5.1	I did not received any training on EMR System					
5.2	I have already received training on EMR, but it's not sufficient.					
5.3	The EMR training is provided to all employees who have access to computers.					
5.4	The training provided was not enough to adequately prepare me for utilizing EMR systems					

5.5	The training materials provided were not easy to understand.					
5.6	The training sessions ineffectively addressed the specific needs and roles of different staff members.					
5.7	The training sessions did not included practical hands-on exercises and simulations for using EMR systems.					
5.8	Where the training sessions inadequate in addressing any concerns or challenges encountered during EMR system utilization.					
5.9	The training sessions did not aligned well with the day-to-day tasks and workflows of staff members regarding EMR systems.					
5.10	Despite the training I gained, I do not feel confident in my ability to use EMR system.					
Part VI : Utilization of EMR						
Direction: Please put a thick mark (√) in the box that corresponds to your response						
No.	**Statement**	**Strongly Agree**	**Agree**	**Neutral**	**Disagree**	**Strongly Disagree**
6.1	Your daily workflow does not involve active utilization of EMR systems					
6.2	Utilizing EMR systems enhances the efficiency of clinical documentation.					
6.3	Do you find the interface of the EMR system challenging to navigate and lacking user friendliness?					
6.4	The effectiveness of EMR systems in managing your workload and time is not acknowledged.					
6.5	Do you struggle to integrate EMR systems smoothly into your daily clinical tasks?					