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EHR Implementation Success Strategies by Hospital Leaders.

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In partial fulfillment of the requirements

For the award of the degree of

DOCTOR IN BUSINESS ADMINISTRATION

(Healthcare Management Specialization)

BY

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Under The Guidance of

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ATLANTIC INTERNATIONAL UNIVERSITY

HONOLULU, HAWAII

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By Victor Omosule

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Abstract

The central research question for this study is: What strategies do some hospital leaders use to implement electronic health record(EHR)systemssuccessfully?Today's health sector faces numerous challenges and opportunities that influence patient outcomes. Healthcare systems are struggling to offer cost-effective and quality care services, and technology allows caregivers to devise innovative approaches to attend to the needs of the patients. Technological advances present healthcare management teams with the opportunity to address most prevailing challenges. Effective information management using new technologies facilitates efficiency and quality of services. The problem at the core of this research was the lack of effective strategies for implementing EHR systems in hospitals.Despite the quality-of-care benefits associated with EHR usage, some healthcare leaders were reluctant to implement EHR systems even with $30 billion in U.S. government incentives in the 2016 financial year.Aqualitative single case study was utilized in this research to explore the strategies hospital leaders used to successfully implement EHR systems in their hospitals through this study. Four leaders were assessed via semi-structured interviews. These participants provided in-depth responses regarding the strategies they used to successfully implement EHR systems in their hospitals. After examining the research questions of the four participants, hospital leaders at Pennsylvania concerning the most effective strategies used in the implementation of EHR systems, five themes emerged (a) communication, (b) usability testing, (c) training of stakeholders via super users, (d) strong EHR leadership, and (e) stakeholder engagement which helped to address the problem of the research. This study also created awareness of the benefits of EHR systems in improving the quality of patient care in hospitals, such as effective patient monitoring and prompt response to patients' needs through an EHR system.

Chapter 1: General Introduction

In contemporary society, institutions are prompted to operate in a global market driven by technology and where new entrants join continuously. Technological knowledge and progression are significant in such a global setting for an institution to attain and maintain a competitive superiority (Upadhyay& Kumar, 2020). Technology is particularly important in the healthcare sector since it benefits both providers and patients. Some of the benefits of technology in healthcare are enhancing patients' safety by minimizing medication faults, improving compliance to practice guidelines, and reducing adverse drug reactions (Brous et al., 2020). The transition from traditional approaches to technology use in hospitals nevertheless necessitates many changes, which many hospitalleaders are unable to control.Titzer and Swenty (2014) indicate that approximately 70% of hospital leaders have challenges implementing and supporting organizational transformation. However, according to Tortorella et al. (2020), hospital leaders play major rolesin successfully implementing changes because of their influence in decision-making, support, guidance, and leading. The current study focused on the strategies hospital leaders use to successfully implement EHR systems in their hospitals,using a single case study.

Scope of the Study

This qualitative single case study explored the strategies hospital leaders used to successfully implement EHR systems in their hospitals. The research problem addressed through this study was that despite the quality-of-care benefits associated with HER usage, some healthcare leaders are reluctant to implement EHR systems (Frenkel, 2016). The target population comprised hospital leaders who successfully implemented anEHR system in one hospital in Pennsylvania. Four leaders were assessed via semi-structured interviews. These

participants provided in-depth responses regarding their strategies for successfully implementingan EHR system in their hospital.

Background Information

The modern health sector faces numerous challenges and opportunities that influence patient outcomes. Providing quality care necessitates the availability of correct data (Valeriano et al., 2021). New technologies allow service providers improve their implementation of organizational projects and goals (Brous et al., 2020). Electronic health records form an integral part of increasing efficiency in communication and coordination of care services (Agha, 2014). These records enable caregivers to assess, treat, and diagnose patients using new technologies irrespective of time and distance. The use of electronics is beneficial in allowing timely access to cost-effective health services. The system will allow the coordination of specific assignments, including documentation, ordering, discharge information, and admissions (Agha, 2014). The concept allows for better management of medication, chronic ailments, and specialist consultations. The provider ensures that patients and the general public have access to vital information when considering the usage of electronic records.

The EHR has exciting and beneficial features that make it attractive to users. The application is automated; hence, making it easier for users to access information in real-time. The EHR has intelligent features that can easily detect anomalies in a particular patient's data. Also, it is easy to schedule patients based on their historical data at a facility. This helps improve workflow and information management. With task management capabilities, the application reduces workload and promotes efficiency (Davis &LaCour, 2017). The digital platform greatly improves the movement of goods and services within a facility. This reduces the incidences of errors that arise in the manual process. Besides, EHR has order sets and templates that can quickly be followed and adjusted to suit the needs. The safety and integrity are greatly improved

as the application operates using tools that cannot be easily manipulated. Only authorized individuals with the necessary passwords and keys will have access to the system.

The primary step is to identify the leadership needs and challenges within an organization. The rationale helps the executives to identify and assess the loopholes in the current approaches used within the organization. The leadership and managerial needs persuade the setting up of structures, resources, and models to facilitate training and development. The approach leads to better and more informed decisions based on the existing dynamics. Baird and Boak (2016) observed that clinical leaders should have the right competencies to handle health sector challenges. The executives should also identify measures to eliminate confusion in assigning and discharging duties (Tortorella et al., 2020). The preparation of the leaders and managers presents an opportunity for learning new skills in line with the changing dynamics. Understanding the organizational framework is not only helpful to workers but also reduces the managerial problems that undermine decision-making and success.

Nonetheless, healthcare systems struggle to offer cost-effective and quality-care services (Frenkel, 2016). Technology allows caregivers to develop innovative approaches to attend to the patients' needs. Technological advances give healthcare management teams and committees the opportunity to address most of the prevailing challenges (Brous et al., 2020). Effective information management using new technologies facilitates efficiency and service quality. The proposal and planned change management initiatives must consider costs, risks, and ethical guidelines to enhance success (Davis &LaCour, 2017). Technology comes in different forms depending on the needs and opportunities within a particular facility. With this in mind, the management should createa certificate of need approach. While many facilities have identified the need for new technologies to improve care, there is no clear approach and organizational

preparedness to ensure the project's success. Hospital leaders play an important role in implementing and adopting EHRs within their facilities.

Context of Subject

The subject of interest in this study was healthcare and leadership. The study focused on strategies employed to effectively implement EHR systems. The goal of this study was to enhance healthcare provision via the adoption of technology. Focusing on this topic helped create awareness about the benefits of EHR systems in improving the quality of patient care in hospitals, such as effective patient monitoring and prompt response to patients' needs through an EHR system. The current study also focused on the issue of leadership in the healthcare sector. This study uncovered hospital leaders' roles in implementing and maintaining technological changes in hospitals.

Purpose of the Study

The purpose of this qualitative single case study was to explore strategies that hospital leaders use to successfully implement EHR systems in their hospitals. The target population comprised hospital leaders who have successfully implemented an EHR system in one hospital in Pennsylvania. Theresearcher focused on four upper-level managers from one hospital in Pennsylvania who have successfully implemented more than one EHR system. The practical significance of this study was creating awareness about the benefits of EHR systems in improving the quality of patient care in hospitals, such as effective patient monitoring and prompt responses to patients' needs through an EHR system. The current study further had some social significance as an enhanced EHR system can contribute to a healthier and reproductive society by improving the quality of healthcare and better patient outcomes.

Chapter 2: The Research Focus

Statement of the Issue Researched

The problem at the core of this research was the lack of effective strategies for implementing EHR systems in hospitals. Despite the quality-of-care benefits associated with EHR usage, some healthcare leaders are reluctant to implement EHR systems (Frenkel, 2016). Even with $30 billion in U.S. government incentives in the 2016 financial year, healthcare leaders only increased the EHR adoption rate by 14.2% (Adler-Milstein &Jha, 2017). Thus, many hospitals in the country are still using manual systems to keep their records. The general business problem addressed by this study was the inability of hospital leaders to implement EHR systems in their facilities. As a result, productivity was negatively impacted, which affected patient care and profits. The specific business problem was that some hospital leaders lack effective strategies to successfully implement EHR systems in their facilities to gain from improving quality of care and better patient outcomes.

Research Question

The current study strived to answer this central research question:

RQ1. What strategies do some hospital leaders use to implement an EHR system successfully?

Description of the Specific Research

The specific research addressed by this study is that despite the quality-of-care benefits associated with EHR usage, some healthcare leaders are reluctant to implement EHR systems (Frenkel, 2016). Existing literature sources have focused on the benefits of EHR implementation (De Benedictis et al., 2020; Rudin et al., 2020; Zhang et al., 2019), factors affecting EHR implementation (Holmgren et al., 2021; Laukka et al., 2020), and some of the strategies adapted to effectively implement EHR systems (Aguirre et al., 2019; Loerch, 2020). Only a few studies have precisely explored the strategies used by healthcare leaders to successfully implement EHR systems (Miller, 2017; Vassell-Webb, 2019). Nevertheless, Miller's (2017) and Vassell-Webb's (2019) studies are limited as they both utilized case study research designs. The limitation of employing a case study research design is that it lacks scientific rigor and provides little basis for generalizing findings to the broader population (Fusch et al., 2017). Therefore, further research is needed to explore the strategies that hospital leaders utilize to successfully implement EHR systems in a different case study. The current study strived to fill this research gap by exploring the strategies healthcare leaders employed to effectively implement and adopt EHR in a hospital that has already implemented and adopted this system.

Importance of this Research

The current study had various practice/organizational and social benefits. The organizational benefit of this study was creating awareness of the benefits of EHR systems for improving the quality of patient care in hospitals, such as effective patient monitoring and prompt response to patients' needs through an EHR system. With electronic records, users can easily document and review health information with greater ease. Secure connections also help in enhancing the privacy of patient information. Further, improved organizational performance and reduced cost of healthcare were other social benefits of the

study outcomes to communities and patient families. The findings of this study can have a positive impact on social change through efficient EHR systems used to improve access to patient records. An enhanced EHR system can contribute to a healthier and reproductive society by improving healthcare quality and patient outcomes. Patient families and local communities may also benefit from a low cost of healthcare through system efficiency. Successful implementation of EHR strategies in hospitals would require leaders to adopt changes to integrate relevant and effective organizational strategies and leadership practices.

Further, the incorporation of EHRs is a game-changer in customer service, relationships, supply, clinical functions, and partnerships. The application allows efficient data management to suit the clients' needs (Davis &LaCour, 2017). Quality and personalized services through the systems are essential in stimulating patient satisfaction. The user-friendly strategy at the right time and context will invoke positive feelings about a facility. Moreover, fast and effective customer service will aid in humanizing interactions between healthcare providers and stakeholders. The improved relationship will reflect data management, increased revenue, and patient satisfaction.

Definitions of Terms

Electronic health record (EHR). An EHR is an electronic version of a patient's clinical history, which the healthcare provider maintains over time and might comprise all primary, administrative, and medical information pertinent to that patient's care under a certain provider, encompassing demographics, medical history, problems, medications, laboratory data, progress notes, radiology reports, and immunization (Shickel et al., 2017).

EHR Implementation.EHR Implementation refers to transferring paper-centered information into an electronic catalog within a healthcare facility's wider organization (Shickel et al., 2017).

Hospital leader. A hospital leader is an individual who is responsible for the operation of the whole healthcare facility or a chain of healthcare facilities (Hejjaji et al., 2021).

Kotter`s eight-step process. Kotter's eight-step processtransformsa particular organizational system based on eight steps, namely, building, creating, enlisting, enabling, producing, sustaining, and instituting the required changes (Kotter, 1996).

Transformational leadership. Transformational leadership is a leadership style that leads to change in individuals and social systems (Nugroho et al., 2020).

Conceptual Framework

The conceptual framework of this study comprised Kotter's change model and transformational leadership theory. The two models were combined as the theoretical foundation of this study to fully address the explored phenomenon. Kotter's change model is a broadly recognized and proven framework for guiding the process of change in organizations (Kotter, 1996). In 1996, Kotter revealed his eight-step change management theory. The model, therefore, comprises eightsteps intended to manage change initiatives effectively. The first step of the model entails establishing a sense of urgency to develop awareness regarding the necessity for a change. The second step concerns establishing a guiding coalition to undertake a change project. This guiding coalition should be composed of the most

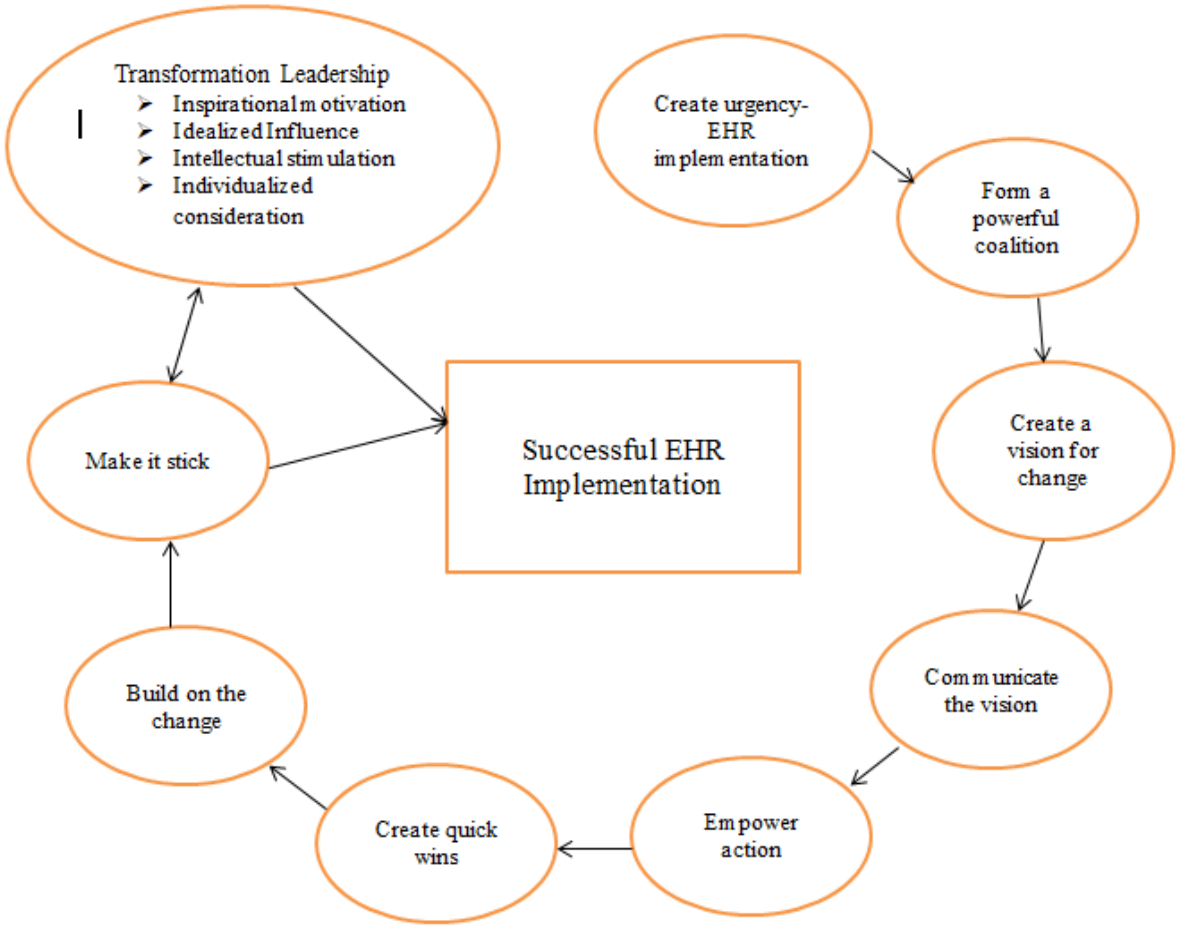
suitable team members to achieve the desired objectives. The third step involves formulating a vision that persuades the implementers of change about why that change is required (Kotter, 1996). The fourth step entails enlisting a volunteer army for the change process. In the fifth step, any barriers that deter the project's success should be eliminated. At this point, lack of skills and resistance are viewed as blocking aspects that should be eradicated. In the sixth step, there should be awareness creation among the engaged individuals for the established short-term wins to keep their morale high and motivate them for the ongoing change process. The seventh step entails consolidating gains and generating more change. The focus of this step is to inspire stakeholders to continue working toward transformation, without losing their attention. The final step involves including changes in the organizational culture to make the team members interpret the new situation as normal (Kotter, 1996).

For the current study, Kotter's eight-step framework guided change management processes by providing insights into barriers and approaches to address the challenges. These barriers included bureaucracy, politics, lack of teamwork, lack of trust, poor leadership and fear of the unknown, negative attitudes, and lack of supportive culture (Kotter, 2007). Kotter's model not only provides steps to achieve changes but also ways to overcome potential barriers to the change process. This capacity made the model fit the context of this study because it provided insights into designing, deploying, initiating, and integrating change strategies and processes needed to institutionalize changes such as EHR systems (Mbamalu& Whiteman, 2014). The model was a suitable conceptual framework to study approaches hospital leaders can adopt to introduce and implement EHR systems in healthcare organizations.

Kotter's (1996) model was also consistent with the transformational leadership style adopted in the management of most hospitals. Transformation leadership model is one where a leader works with followers or teams beyond their self-interests to recognize the change required, establishing a vision to guide the change via inspiration, influence, and implementing the change in tandem with dedicated members of the team (Nugroho et al., 2020). Accordingly, Kotter's (1996) model and transformation leadership theory focus on change. The two models were applied in this study to explain the strategic changes hospital leaders made to implement an EHR system successfully. Figure 1 shows a graphic depiction of the conceptual framework that guided the current study.

Figure 1

Conceptual Framework



Source: Created by the author

Chapter 3: Review of Other Work Done

The aim of this qualitative single case study was to explore the strategies hospital leaders used to successfully implement an EHR system in their hospitals. Achieving this goal helped address the research problem, which was that despite the quality-of-care benefits associated with EHR use, some healthcare leaders are reluctant to implement EHR systems (Frenkel, 2016). The objective of the literature review was to understand the intricacy associated with the implementation of EHR systems and the validated strategies for the effective implementation and adoption of these strategies. The literature review further encompassed previous scholarly work on the EHR implementation topic and the factors affecting

this implementation. The review was organized into sub-sections based on the current study's key concepts and research question. The key scholarly sources supporting this literature review were peer-reviewed journal articles, interview sources, and government publications. The primary academic databases utilized to search for relevant sources were Science Direct, Google Scholar, ProQuest, Medline, Sage Premier, Emerald Management, CINAHL Plus, Business Source Complete, JStor, and PubMed. The keywords comprised *healthcare technology*, *electronic healthcare*, *electronic health records*, *EHR*, *transformational leadership*, and *healthcare leadership*.

A Review of the Literature

Significance of EHR Implementation

TheEHR is an electronic version of a patient's clinical history maintained by healthcare providers over time, comprising all the primary administrative medical information pertinent to that patient's care under a certain provider. The information includes demographics, medical history, problems, medications, laboratory data, progress notes, radiology reports, and immunization (Davis &LaCour, 2017; Shickel et al., 2017).The EHR systems form an integral part of increasing efficiency in communication and coordination of care services (Agha, 2014). These records enable caregivers assess, treat, and diagnose patients using new technologies irrespective of time and distance (Baird &Boak, 2016). Scholars have demonstrated the various benefits of implementing EHR in a healthcare institution. For instance, De Benedictis et al. (2020) examined the significance of EHR implementation and adoption in a hospital environment. DeBenedictis et al. further integrated individual and institutional factors to explain the determinants that can facilitate or inhibit the implementation of EHR systems in hospitals. The research data were gathered via a survey administered to 114 doctors and nurses in one university hospital. The survey findings revealed that both doctors and nurses expect numerous benefits for implementing and adoptingEHR systems. Particularly, the findings showed that the assessed doctors and nurses considered that EHR systems positively influence the effectiveness, efficacy, and quality of healthcare, greater control of an organization, research, tutoring, and teaching activities, and handover communication between medical practitioners. The primary determinants of the intent to implement and adopt EHR were found to be peer influence and perceived usefulness. Perceived usefulness is a mediator between the intention to utilize EHR and normative factors of EHR systems (De Benedictis et al., 2020). From these findings, De Benedictis et al. determined that hospital leaders can leverage power users to inspire, generate, and control organizational changes, such as introducing an EHR system.

Rudin et al. (2020) explored and described four broad benefits of EHR implementation: increasing productivity through automation of activities, enabling collaboration among the care team, supporting triage, and enhancing healthcare decisions.Rudin et al.'s (2020) study is based on systematic literature reviews. Through these reviews, Rudin et al. emphasized that the potential for EHR systems to impact healthcare decisions has developed tremendously since seminal studies, which showed the value of medication safety alerts. The scholars determined that EHR implementation and use can enhance healthcare decisions by facilitating the establishment and deployment of new medical guidelines using a progressing volume of information, facilitating shared decision making, and nudging healthcare practitioners to follow recommended guidelines and practices. Rudin et al.'s study is not reliable because it is based on secondary data, and cannot be generalized to the entire population of clinicians.

Scholars have further illustrated the effectiveness of EHR in enhancing healthcare quality. Using a systematic appraisal and meta-analysis of published studies, Campanella et al. (2016) explored the influence of EHR on healthcare quality. Cochrane, Scopus, Web of Knowledge, and PubMed databases were searched to find articles assessing the relationship between EHR implementation and outcomes or process indicators. Meta-analysis was undertaken via the random effects framework for every indicator. Publication bias was examined using Egger's test, and heterogeneity was measured using the I2 statistics and Cochran test. The findings revealed a significant link between EHR adoption and decreased documentation time. Further, EHR was connected to a reduced number of medication faults, minimized adverse drug effects, and higher guideline adherence (Campanella et al., 2016). Based on these outcomes, Campanella et al. (2016) concluded that the EHR system, when appropriately implemented, can enhance healthcare quality by reducing medication faults and adverse drug effects and increasing guideline adherence and time efficiency.

Studies suggest that communication improvement among healthcare practitioners and clinicians are among the key benefits of EHR implementation. Zhang et al. (2019) explored how suitably an EHR-incorporated PRO program fits the medical workflow and individual necessities of diverse provider groups in two clinics. Research data were gathered from 11 providers who had interacted with an EHR-incorporated PRO program using the interviewing approach. Using thematic analysis, the researchers combined subjects concerning provider insights on medical workflow, system features, and individual needs. The outcomes indicated that EHR-incorporated PRO systems facilitate targeted communication with patients and automated triage for psychosocial healthcare. Nonetheless, doctors, medical assistants, and psychosocial providers encountered diverse problems in adopting the PRO program. The obstacles experienced were primarily a lack of incentives, technical concerns, workflow disruption, and a lack of actionable data. Based on these results, Zhang et al. (2019) concluded that EHR-incorporated PRO in routine care can be essential but needs efficient technology design and workflow configuration to realize full potential adoption.

Vos et al. (2020) similarly explored how an EHR system facilitates and constrains collaboration among healthcare practitioners. The researchers undertook an embedded case study at five outpatient clinics that had adopted an institution-wide EHR. The research data were gathered by interviews with representatives of clinical specialties, nursing, management, and administration. The findings indicated that EHR aids medical practitioners in coordinating patient care on an informed basis at any location and time. The wide-ranging patient database provides medical decision-making based on shared information. The constraints of EHR implementation were a lack of face-to-face communication, information overload, and the presence of data that cannot be shared easily across specialties and outside the healthcare facility (Vos et al., 2020).Vos et al. nevertheless failed to indicate their position on the significance of EHR implementation based on the identified benefits and constraints.

ImplementingEHR further proved to be vital during the COVID-19 pandemic. Reeves et al. (2020) explored the implementation, significance, and challenges of onboarding campus-centered medical services into a clinical system's EHR. The scholars targeted students at a major academic medical center in San Diego. In this study, nine electronic interfaces, systems or modules, and 20 work-streams were transformed into new electronic systems. Further, 36,023 student-patient medical records were developed. The outcomes showed that EHR incorporation increased security while establishing visibility to 19,700 shared patient records and visits from 236 medical systems across the United States for over

six months. The benefits of implementing EHR for the COVID-19 responses comprised increased testing capacities and access to the COVID-19 dashboard, reporting and analytics, patient alerting system, telehealth, decision support, and screening tools (Reeves et al., 2020).Based on these outcomes, Reeves et al. concluded that incorporating an interoperable EHR between neighboring campus-centered clinical services and allied medical centers can rationalize case management, enhance safety and quality, and increase access to significant medical resources in times of need. As indicated by Reeves et al., relevant examples in the COVID-19 crisis comprised increased testing capability and safe and uninterrupted provision of healthcare services via access to existing telehealth platforms.

Esmaeilzadeh and Mirzaei (2021) similarly focused on how EHR was implemented and leveraged to address clinical challenges during the COVID-19 pandemic. Specifically, Esmaeilzadeh and Mirzaeiexplored how the implementation and adoption of EHR features impact the burnout of healthcare professionals working in hospitals with unique wards for confirmed COVID-19 cases. The study data was gathered from 368 nurses, doctors, and assistant doctors working in six hospitals that implemented EHR systems. The gathered data were analyzed statistically using the logistic regression model to evaluate the link between burnout and professional effectiveness, hospital readiness, hospital technology interventions, technology solutions, issues regarding COVID-19, awareness of HER features, and EHR system usability.Positive insights on EHR's ease of use were linked to lower odds of burnout. Further, more interventions like the transparency of policies, clear communication of controls, anticipations, objectives concerning the use of technology in the medical workflow, and hospital readiness to cope with the problems of the COVID-19 crisis were connected to reduced odds of burnout. Based on these results,Esmaeilzadeh and Mirzaei concluded that implementingEHR features, transparent technology-linked processes and policies, and hospital pandemic preparation initiatives can be significant mitigators of technology-centered stress and practitioner burnout.

Factors Affecting Successful EHR Implementation

Most studies in the extant literature have explored the factorsthatimpact the successful implementation of EHR systems and related programs. For instance, Holmgren et al. (2021) examined the organizational strategies and factors that facilitate the successful adoption and usage of EHRs in American hospitals. The study identified critical organizational strategies that ensure the advanced usage of digital health records. The use of primary and secondary data from American hospitals helped generate credible findings to inform the study. The cross-sectional study identified unique organizational strategies to ensure the adoption and successful use of EHRs. Most US hospitals have adopted EHR functions to foster the delivery of quality care services. The authors observed varied organizational designs and practices in adopting new technologies in the studied hospitals. The critical variables under study included human capital, leadership, and systems integration (Holmgren et al., 2021). The findings indicated that leadership engagement was crucial to patient engagement. However, human resources did not show any significance in adopting EHRs functions. Patient engagement was strongly linked to systems integration. The researcherssuggested the need for unique and specific organizational strategies to enhance the usage of advanced EHRs. Therefore, hospital leaders should invest in EHRs to improve value in providing quality services.

Similarly, Laukka et al. (2020) explored the input of healthcare leaders in adopting and executing HealthInformation Technologies (HITs). The researchersasserted thatimplementing HIT often fails to achieve the expected goals despite the commitment of the necessary resources. Poor leadership has

been identified as a major influence on failure. Health organizations need to explore research findings on the success factors in HIT implementation. In particular, a study on leaders' roles is a critical area of concern. The researchers used a five-step framework approach to review materials touching on a leadership role in HIT implementation. The findings indicated that leaders' roles such as support, change management, supervision, advocacy, and facilitation enhance the project's success (Laukka et al., 2020). Identifying roles is a critical step toward ensuring success in HIT execution in healthcare organizations. Leaders should not only offer support but participate actively in the implementation process.

Another study by Fennelly et al. (2020) focused on summarizing the results from literature reviews to determine and evaluate the primary factors that influence the success of EHR implementation across diverse clinical settings. The literature search was performed in Cochrane, ProQuest, ACM Digital Library, IEEE Xplore, Web of Science, Embase, Scopus, CINAHL, and PubMed. The findings showed that workflows, resourcing, support, training, end-user involvement, leadership and culture, and governance were key factors for the effective implementation of EHR systems. Other key success factors for EHR implementation were usability, infrastructure, standards and policies, testing, adaptability, interoperability, perceived changes to the clinical ecosystem, supposed benefits and incentives, and skills and features (Fennelly et al., 2020).Nonetheless, Fennelly et al.'s study relied on literature reviews as data sources, limiting its generalizability.

Likewise, Sidek and Martins (2017) assessed the key success factors in implementing and adopting an EHR system within a dental clinical environment. The researchers employed grounded theory to appraise data gathered, which they analyzed using the phases of open, axial, and selective coding. The findings revealed six critical success factors of EHR implementation, encompassing project organization, change management, training, requirements appraisal, emergent behaviors, and usability of the EHR system. The study uncovered a discrepancy between EHR vendor/owner and end-users' views. Workflow transformations were critical obstacles to healthcare practitioners' confident use of EHR, mainly as the system provided limited configurability and modularity (Sidek& Martins, 2017).Sidek and Martins recommended that all stakeholders for medical information systems adoption regulate the change procedure by agreeing on system functionalities and objectives via broader consensual debate and participating in support approaches achieved through mutual commitment.

Some scholars have focused on the barriers that deter the successful implementation of EHR while determining the success factors for adopting this system. Elharish et al. (2021), for instance, explored the key barriers linked to the adoption of EHR in polyclinics and the insights of clinical professionals about this system. Research data were gathered using a self-reported modified questionnaire from 100 respondents. The findings demonstrated that resistance to change and adoption of new technology, lack of experience with the use of computers, and a high cost of implementing EHR are the critical barriers to the adoption and implementation of EHR systems.However, the researchers failed to indicate whether the adapted self-report was viable and reliable. Using a modified data collection instrument further limited the researchers from including their contribution in the data collection process. Nonetheless, the findings by Elharish et al. are congruent with thestudyby Gesulga et al. (2017) to identify key barriers to EHR implementation based on literature reviews.Gesulga et al. found that user resistance and lack of skills, lack of administrative and policy support, andconcern for return on investment are the major barriers toEHR adoption and implementation.

Strategies Used for Successful EHR Implementation

Scholars have explored various strategies that lead to effective or successful implementation of EHR.A study by Aguirre et al. (2019) focused on the selection and implementation approach, which mainly encompassed examining existing institutional workflows for every department in a hospital and outlining the requirements and inclinations of the organization to include the EHR system to function appropriately. A qualitative case study approach was employed to accomplish this objective. Specifically, the selection and implementation approach of a 260-bed hospital was examined. The findings indicated that the implementation process is a significant phase to consider when executing an EHR in healthcare institutions (Aguirre et al., 2019). In addition, selecting and including the proper strategy can facilitate success and reduce delays in the system rollout (Aguirre et al., 2019). Based on these findings, Aguirre et al. concluded that utilizing the appropriate strategy, training, approach, and backup system enhances healthcare personnel's satisfaction and exponentially minimizes usability compromise.

Using a qualitative multiple case study approach, Loerch (2020) assessed the strategies employed by IT system engineers to implement healthcare information management systems (HIMS), which control EHR. The researcher examined 10IT systems engineers at three autonomously owned and operated healthcare facilities via interviews. The study data were further gathered from document collection and appraisal. Thematic analysis was utilized to analyze document trends and formulate developing subjects in the composed data. The findings revealed that EHR implementation strategies include communication, stakeholder buy-in, and system development lifecycle practices. Technology acceptance was also determined as a key strategy of EHR implementation, including the significance of health information management, stakeholder buy-in, perceived usefulness and ease of use of the system, and future adoption strategy patterns (Loerch, 2020). Loerchsuggested that IT system engineers should establish and follow system development lifecycle practices, which facilitate improved technology implementation rates via uniform structured adoption procedures.

Studies further indicated that strategies for the successful implementation of EHR systems are developed based on challenges faced by the implementers. Gui et al. (2020) explored the physician champions' views and practices on EHR implementation and adoption. The researchers employed a qualitative research methodology and performed email interviews with 45 physician champions from different medical fields 5 months after implementing a new EHR system. The assessed physician champion respondents reported many challenges of EHR implementation, including inadequate training, defective system design, limited at-the-elbow support,andundependable communication with leaders and the EHR seller. To address these obstacles, physician champions established their distinct personalized training programs in a simulated or live context, adapted their departmental socio-technical setting to make the system work more efficiently, and sought and acquired more at-the-elbow support both externally and internally (Gui et al., 2020). Guided by these outcomes, Gui et al. concluded that the presence of challenges triggers healthcare practitioners to be more creative in implementing and adoptingEHR systems.

Strategies Used by Hospital Leaders for Successful EHR Implementation

Only a few studies have specifically explored the strategies used by healthcare leaders to successfully implement EHR systems. Vassell-Webb (2019) employed a qualitative single case study research design to assess strategies healthcare leaders employed to effectively implement an EHR system. The research data was gathered from six healthcare leaders from an island in the Caribbean using a semi-structured

interview method. The collected qualitative data was analyzed usingBengtsson'sfour-step data analysis approach that encompasses decontextualization, recontextualization, categorization, and compilation. The findings from this approach generated five key themes: time, identifying organizational gaps, monitoring, increased staffing, and training (Vassell-Webb, 2019). The implications of Vassell-Webb's study for positive social change were the possibility ofenhancing the standards of care offered to promote upgraded patient outcomes using strategies identified to effectively implement EHR systems.

Correspondingly, Miller (2017) utilized a qualitative single case study approach to explore successful strategies hospital leaders employed in implementing EHR systems. The population of interest in this study comprised hospital leaders who succeeded in adopting EHR systems in a hospital situated in Los Angeles, California. The research data was gathered from five hospital leaders using face-to-face recorded interviews. The gathered qualitative data were analyzed using methodological triangulation of data types and exploring codes portraying high frequencies to determine major themes and subjects. The findings disclosed three principal themes. The first was linked to strategies addressing technology, catalyzing team effort, and training (Miller, 2017). The second theme was associated with strategies on workers' concerns, and the third was linked to strategies for formulating, developing, and disseminating workflow (Miller, 2017). The researcher concluded that these results could impact social change by enhancing the quality of medical services offered to patients, which can benefit patients' families and communities by minimizing healthcare costs.

The main limitation of both Vassell-Webb's (2019) and Miller's (2017) studies is that both employed case study research designs. The limitation of employing a case study research design is that it lacks scientific rigor and provides a minimal basis for generalizing findings to the broader population (Fusch et al., 2017). Therefore, further research was needed to explore strategies that hospital leaders employ to successfully implement EHR systems in a different case study. Particularly, further research was required to determine strategies for successful implementation of EHR systems based on insights and perceptions of hospital leaders who have experienced effective implementation and adoption of these systems.

Chapter 4: Research Methods

Goal(s) and Objective(s) of the Research

The objective of this qualitative single case study was to evaluate the strategies hospital leaders used to successfully implement an EHR system in their hospitals. The research problem addressed through this study was that despite the quality-of-care benefits associated with EHR use, some healthcare leaders are reluctant to implement EHR systems (Frenkel, 2016). The goal of this study was to create awareness on the benefits of EHR systems in improving the quality of patient care in hospitals, such as effective patient monitoring and prompt response to patients' needs through an EHR system. Another goal was to contribute to a healthier and productive society by improving healthcare quality and patient outcomes via the acceptance and adoption of technological advancements such as EHR.

Research Strategy and Techniques

A researcher decides whether to use qualitative, quantitative, or mixed-methods to achieve study objectives (Saunders et al., 2016). There are three key research methodologies available for the researcher to choose from—qualitative, quantitative, and mixed-methods (Kumfor& McDonald, 2021). A qualitative research methodology is an approach a researcher uses to assess and comprehend complex aspects and processes of a phenomenon from the viewpoint of study respondents (Saunders et al., 2016). The qualitative method is relevant for collecting and analyzing non-numerical data (Kumfor& McDonald, 2021). Mixed-methods research includes both a qualitative and quantitative arm (Saunders et al., 2016). The qualitative research methodology was relevant because this study involved a comprehensive evaluation of the strategies that hospital leaders use to implement EHR systems. This methodology was relevant to the current study because it is utilized to gain deeper and more insightful data and information on effective strategies for implementing EHR systems in hospitals. Quantitative researchers use closed-ended questions to gain numerical data for testing research hypotheses for objective results. In exploring successful EHR implementation strategies, the researcher will neither collect numerical data nor test the hypotheses. The absence of numeric data ruled out quantitative and mixed methods as inappropriate choices for this study. The quantitative portion of the mixed methods made it an inappropriate choice for this study. The qualitative research methodology was best suited for this study.

There are five commonly used qualitative research designs: mini-ethnography, phenomenology, narrative, grounded theory, and case study (Edwards, 2020). The researcher tested the nature and application of these designs to determine the most suitable one for this study. Mini-ethnography is a written account of an ethnic group or people used to study the group's culture (Saunders et al., 2016), but the researcher did not study group cultures. Phenomenologists study the lived experiences of individuals or groups, which was not the researcher's intent (Zahavi&Martiny, 2019). The current study did not seek to explore the lived experiences and accounts of hospital leaders with EHR; hence, a phenomenological research design was irrelevant for guiding this study. Narrative researchers engage participants in storytelling which is meant to preserve chronological connections and sequence events as told by the narrator to support understanding and rich analysis (Saunders et al., 2016), which was not the researcher's intent.

The researcher applied a single case study design to explore theEHR implementation strategies used by hospital leaders as this research design is effective in exploring a contemporary phenomenon within the real-life context even when there is no clarity between the phenomenon and the context while using multiple sources of evidence (Yin, 2018). A case study approach was the most suitable design because the focus of this study was on the methods and strategies hospital leaders employ in implementing EHR systems. A single case study design was also a suitable approach to exploring the processes and strategies developed and deployed by hospital leaders to implement the EHR system. A single case is a case connected to one organization, while multiple cases are connected to multiple cases usefulto replicate findings (Saunders et al., 2016). The researcher selected the single case study design instead of a multiple case study design to gain thorough and deep insights from a single group of hospital leaders regarding the strategies they utilized to successfully implement the EHR system in their organization.

Data Sources

The target population comprised hospital leaders who successfully implemented an EHR system in one hospital in Pennsylvania. Qualitative studies entail the researcher creating a set of operational conditions like the inclusion or exclusion criteria to establish a boundary around the sample size to assess (White et al., 2021). The researcher employed a purposive sampling approach to determine the respondents who were well-informed aboutadopting EHR systems and had effectively implemented one in the past. Purposive sampling is a form of non-probability sampling in which investigators rely on their judgment when selecting population members to participate in their data collection processes (Campbell et al., 2020). Accordingly, this sampling technique enabled the researcher to select only hospital leaders knowledgeable about the strategies of effectively implementing an EHR system and those who have previously implemented this system. Due to the nature of this study, hospital leaders were selected as data sources. The research problem addressed through this study was that despite the quality-of-care benefits associated with EHR use, some healthcare leaders are reluctant to implement EHR systems (Frenkel, 2016). It was, therefore, pertinent to target hospital leaders who have successfully adopted an EHR system in their hospitals. Data were collected from four individuals who met these criteria.

Method of Data Collection

Four hospital leaders were assessed via semi-structured face-to-face interviews. These participants provided in-depth responses regarding their strategies for successfully implementing an EHR system in their hospital. Each of the four participants consented to audio-recording of the interview sessions. The researcher selected semi-structured interviews as the data collection method for this study because they comprised questions that facilitated open-ended conversations as opposed to yes or no answers (Brown & Danaher, 2019). This enabled the researcher to acquire subjective reactions specific to the subject of inquiry and be more flexible to ask probing questions. The researcher chose to gather the data using the face-to-face interview technique as they were able to gather additional data via social cues like body language and voice. They interviewed the four respondents separately, and each of the interview sessions lasted between 30 and 45 minutes.

Method of Data Analysis

Data analysis started during the data collection phase. The researcher first applied the member-checking validation mechanisms to reduce bias and maximize the data precision. Member-checking is a validation method that entails the researcher verifying, with the respondents, the correctness of the gathered data (Schwartz-Shea, 2020). Then, they transcribed the gathered data by listening to the audio recordings of every participant and recording the data in a word file.

Braun and Clarke (2006) guided a thematic analysis approach applied to the four interviews. The analysis approach aimed to search for and gather the most meaningful themes or patterns across the data. It consisted of six steps described below.

Step 1was familiarization. The researcher read and re-read each transcript to gain familiarity. Familiarity with data was valuable later in the analysis to identify patterns of meaning across respondents. The researcher utilized handwritten notes to indicate potential data patterns and guide the initial coding in Step 2.

Step 2was the creation of initial coding aligned to the research questions and purpose. The researcher used deductive coding to identify the initial codes. They then organized excerpts with similar meanings into emergent codes. See a list of all emergent codes in Appendix A.

Step 3was the finding of themes across the data. The researcher accomplished this by grouping related initial codes when their assigned meaning converged as diverse parts of the same overarching idea. As an example of this process, the code “identification of super users” was combined with another code on the identification and training of EHR champions. The two codes were combined because of a similar description of EHR champions and super users as individuals who knew the health system, were tech-savvy, and were assigned the role of training their peers.

Step 4 was the review of established themes against the original raw data. This step was to confirm that themes accurately represented patterns of meaning in respondents' responses. To appraise the themes for coherence, the researcher reviewed the codes and data under each theme to ensure they displayed one overarching idea rather than many ideas. Finally, the researcher checked for completeness of themes, and compared them to ensure that each represented a standalone idea. Where overlaps were noted, themes or sections of themes were combined to present a complete idea.

Step 5 was the description and naming of themes. In this step, the researcher identified the themes that responded to the research question. Each theme was then named to clarify its significance as an answer addressing a research question.

Step 6 was performing a thematic analysis as suggested by Braun and Clarke (2006). The researcher uploaded data to the NVivo 12 software for systematic coding following the five steps described above.NVivo is an electronic tool thatfacilitatedthe sorting, organizing, and categorization data.

Ethical Considerations

Every research inquiry has its distinct set of ethical considerations. The researcher followed the required ethical requirements while conducting this study as stipulated in the Atlantic International University *Doctorate Program Student Handbook*. The first consideration was to seek approval from the Atlantic International University IRB. After the approval, the researcher requested permission from the target hospital to gather the study data. The institution’s top management team granted the permission. The current study was voluntary;hence, theresearcher served each participant with an informed consent form before they could participate. The informed consent form comprised details regarding the purpose, nature, benefits, risks, expectations for participation, and the procedure for undertaking the study to guarantee respondents’ privacy and confidentiality. The researcher proceeded with the interview after each participant had signed the informed consent form. The researcher further informed the participants that they were free to withdraw from the study at any point. To guarantee the privacy and confidentiality of the respondents, the researcher did not collect any identifying information. The researcher is the only one who has access to the study materials, including the audio-recorded interview responses. To conform to Atlantic International University’s requirements, the researcher will permanently destroy the collected data after 5 years.

Challenges Encountered in Conducting this Research

The researcher encountered a few challenges while conducting this study. The first challenge was the difficulty in finding an appropriate appointment and schedule for the interviews. It was time-consuming to interview the four top management personnel because they had tight schedule. Theresearcher had targeted to interview six hospital leaders, but interviewed four who met the inclusion criteria. Meeting the leaders for face-to-face interviews wasalsochallengingdue to the ongoing COVID-19 restrictions. The researcher had to wait a long time to meet and interview these respondents.

Chapter 5: Results of Research Analysis

Interpretation of Results

RQ1: What Strategies do Some Hospital Leaders Use to Implement an EHR System Successfully?

Five themes or strategies were found to address RQ1. In the sections below, each theme is discussed and supported with quotes. Where necessary, otherresearch findings in the field of EHR are referenced in interpreting the strategies.

Theme 1: Communication

The first theme discussed communication, identified as an essential strategy by Participants 1 and 2. Participant 2 argued that communication between leaders and stakeholders was essential, prior to implementation, to inform stakeholders about the importance of an EHR system, discuss what the implementation process entailed, and address stakeholders' concerns with the process. "Communication sets the stage for the project. Communicates the "why" and "how" progress updates, requirements (meetings, training), creates excitement as it goes live. (Informs stakeholders) of approaches, and addresses concerns and fears around change."

The study findings on communication are similar to those of Barrett (2018). They argued that the quality of communication relating to the EHR system implementation and use played a critical role in successfully implementing the EHR. Studies on organizational change have indicated that the mode of communication impacts employees' resistance to change and assimilation of formal change into mainstream activities (Graetz, 2000). This implies that the simple frequency with which EHR is presented within the health facility may create energy around the change as its objectives are clarified, and stakeholders are supported to adopt the change. Scholars have argued that communication is key in aiding the outlining of organizational change endeavors, motives, and justification. It reduces the resistance to change and enhances theperceptions of organizational success.

Barrett (2018) further argued about the relationship between perceived EHR relative advantage and communication. Relative advantage is defined as "the degree to which an

innovation is perceived as being better than the idea it supersedes" (Rogers, 2003). In this case, EHR is contrasted withthe use of paper records. Perceptions of EHR's relative advantage will improve when employees see theeffectivenessor cost-effectiveness of EHR over paper records. Perceptions of EHR's relative advantage may also increase if stakeholders believe that it can easily be implemented (Barrett, 2018). Nevertheless, for employees to comprehend EHR's advantages, accurate and efficient communication about EHR must be relayed to them.

Theme 2: Usability Testing

The second theme discusses usability testing. Barnum (2020) indicated that defining usability encompasses a collection of evaluation methods to comprehend user experiences to generate more desirable, usable, and useful products. The International Organization for Standardization (ISO, 1998) defines usability as, "an extent to which a product can be used by specified users to achieve specified goals with effectiveness, efficiency, and satisfaction in a specified context of use."

In the current study, Participant 2 defined *usability testing* as a strategy where end-users provided input by testing the system or workflows before going live. The participant argued that usability testing was essential to identify areas that required improvement, stating: "Usability testing refers to getting input from end-users by having them try out the systems or workflows before (they) go live to identify problems or areas for improvement."

EHR usability has received much attention from researchers who have argued that poor EHR usability leads to physician burnout, where physicians are overwhelmed with the type and click tasks (Gardner et al., 2019). Burdensome EHRs can become impediments to physicians providing first-rate medical care to their patients. Therefore, strategies to enhance EHR usability are critical for the well-being of physicians and their clients. Baxter et al. (2015) proposed the User-Centered Design (UCD) as an important approach to solving usability problems. The UCD

is driven by the philosophy that “the final product should suit the users, rather than making the users suit the product. “Therefore, EHR should be tailored to the needs of the users (healthcare providers); to aid them in providing the best medical care to their patients.

Theme 3: Identifying Super Users as a Training Strategy

The third theme discusses the identification of super users. The strategy was discussed by Participants 3 and 4. Participant 4 reported that super users were referred to as EHR champions at their health facilities, and were selected from individuals who understood the health system. Participant 3 defined super users as individuals with a decent technology background in EHR system implementation. They further argued that such individuals also had a better understanding of the system or workflow: "There were also Superusers identified who expressed a decent technology background with an understanding of the organization’s workflows." Aguirre et al. (2019) argued that the selection of super users is a training strategy that should be carried out before EHR implementation to ensure they become familiar with the system and teach their colleagues in the department they represent. Theyargued that it is essential to have more than one super user per health information system so that where one is unavailable, the other can support staff.

Participant 2 did not provide details of the length of the training. However, Aguirre et al. (2019) stipulated that training should be offered throughout the implementation period and the following go-live to ensure end-users feel comfortable and competent about EHR. Superusers can utilize various training approaches such as classroom-based training, e-learning modules, hands-on learning methods, and one-on-one sessions. In addition, another approach is to train staff only on the EHR areas they were going to use to avoid confusion and expedite the training and implementation(McAlearney et al., 2012).

Theme 4: Strong EHR Leadership

The fourth theme discussed the strategy of strong EHR leadership. For instance, Participant 2 reported that a committee was established to oversee the implementation. The committee's role was to make decisions, ensure stakeholders' engagement, and ensure continual improvement. Participant 2 described the role of governance or leadership: "(We) established committees to oversee progress, provide decision-making input, and ensure stakeholder participation. (Also, to) plan for ongoing governance after the system was live, and to drive continual improvement."

Like Participant 2, Participant 4 gave an account that committees were formed at their health facility before EHR implementation. The committees included staff representatives from various clinical areas, and they were tasked with determining the system's possible effects on the workflow. In addition, they were to identify the potential benefits to the health system. In the following quote, they discuss the role of the committees:

> There were meetings and committees formed in all the clinical areas to examine how EHR will affect workflows. Also, and how to have a medical record that will help our daily lives and help our work run smoother and be better for patient care.

Participant 3 also indicated that a multi-disciplinary team was constituted at their health facility. Participants 2 and 4 reported that the team was responsible for reviewing available EHRs and selecting the most appropriate for their organization. Participant 3 described the role of the multi-disciplinary team that selected Epic as their desired EHR:

> We led off with a multi-disciplinary team to review some competing EHRs and select the most appropriate one for our organization, which led us to select Epic. Once we selected a vendor, we comprised teams to look at various angles of the launch.

In summary, a successful EHR relies on strong leadership to provide a vision forEHR and coordinate the process. The size of the leadership team depends on the health system's

size.Multi-disciplinary leadership teams are essential because anEHR system impacts every health practice.

Theme 5: Stakeholder Engagement

The fifth theme discusses the strategy of stakeholder engagement and was mentioned by all four participants. Participant 2 identified that EHR stakeholders included end-users, managers, subject matter experts, and leadership. They argued that engagement is an essential element because EHR involves change, and stakeholders should be allowed to shape the process:

> Engagement is an essential element because the people being required to experience a significant change to how they do their jobs, with some aspects becoming more complex, need to understand the reason for the change and feel that they have some influence or input to the process.

Participants 3 and 4 discussed the importance of engaging experts as EHR stakeholders. Participant 3 argued that the role of experts was to guide the transition into EHR. Participant 4 explained that experts from EPIC were instrumental in ensuring that the health providers did not change their patient care in adopting the EHR. They discussed how experts guided the implementation process to ensure their workflow was not affected:

> People came from EPIC and shadowed us daily to see what our workflows looked like, and then they tried to help match the medical records to our workflows. That positive approach helped our workflows instead of forcing us to change our patient care to adopt the medical records.

Participants 1 and 4 discussed the engagement of health workers, residents, and other frontline workers. Participant 4 argued that engaging health workers resulted in buy-in to EHR. Another benefit of engaging stakeholders isthat it reduces the anxiety associated with change. Participant 4 describes the benefits gained from engaging residents at their health facility:

> The residents were excited about it (EHR); at the same time, they knew this was a new direction they needed to adopt. Some of them had worked in the medical record system in their prior hospitals. Thus, they were excited about it, but at the same time, whenever there is change, you must manage change, expectations, etc... Thus, I think the residents had adapted to the new medical record system better than some attending residents.

Researchers have argued that involving those affected by changes is critical for successfully implementing systems and processes (Hartzler et al., 2013). Carman et al. (2013) has stipulated that stakeholder engagement occurs both along a continuum—from consultation and involvement to partnership and shared leadership—and at different levels within a healthcare organization.

In summary, participants identified various critical strategies for health leaders to implement EHR successfully. The strategies included communication, usability testing, identification of super users as a training strategy, strong leadership in EHR implementation, and stakeholder engagement. Although participants mentioned end-users as critical stakeholders, approaches to engaging clients in implementing EHR were not discussed.

Explanation of Results

The purpose of this case study was to explore strategies that hospital leaders used to successfully implement EHR systems in hospitals. The researcher identified one research question to address the research purpose: What strategies do some hospital leaders use to implement an EHR system successfully? Four hospital leaders participated in semi-structured interviews to explore the research purpose.

Five themes addressed the research questions. Theme one discussed communication between leaders and health facility stakeholders. This strategy emphasizes communicating the objectives, motives, and justification of adopting EHR to stakeholders. Clear communication has been shown to reduce resistance to change and enhance stakeholders' perception of organizational success associated with changing, such as the change EHR is anticipated to bring. In addition, accurate and efficient communication about EHR's relative advantage over the manual recording system may increase stakeholders' belief that EHR can be easily implemented.

Theme two discussed usability testing, defined as checking to ensure that end-users can utilize EHR to achieve specified goals with effectiveness, efficiency, and satisfaction. Usability is critical to ensure that

the system is tailored to meet the needs of the end-users; in this case, to ensure that health practitioners find it suitable so they can focus on the needs of their patients. Study participants indicated that end-users tested the system or workflows and gave input before the system was in full use. This approach aimed to ensure that the identified bottlenecks were resolved.

Theme three was the training of stakeholders via super users. The super users represented the various sections of the health facility and had an excellent technical background. They were responsible for teaching their colleagues about the system. Scholars proposed that a health facility should have more than one super user per section. Training should be offered to stakeholders focusing on areas of EHR relevant to the end-user to avoid confusion and waste of time.

Theme four discussed strong EHR leadership within the health system. All the participants indicated that multi-disciplinary and multi-departmental teams had been formed to oversee EHR implementation and promote stakeholder engagement. The leadership team was responsible for selecting the EHR vendor and coordinating the implementation process.

Theme five discussed stakeholder engagement. This theme is closely linked to strong EHR leadership because leaders must facilitate stakeholders' engagement. The participants identified that stakeholders' engagement was critical for stakeholders to buy into and support the new concept of EHR. Successful implementation of EHR could not be achieved without the participation of all stakeholders.

Questions About Alternative Approach

Health leaders' perceptions are essential for successful EHR implementation. The findings of this study could be helpful to other health leaders who desire to implement EHR in their health facilities. However, the perceptions of end-users are also important. Past research has focused more on the physicians' perceptions of EHR and overlooked other clinical staff (McGinn et al., 2011). Further research can examine specific healthcare provider groups' work roles and culture and how EHR distinctly and variably impacts them.

In addition, this study had a small sample of four health leaders. Therefore, it was not possible to examine any variations in EHR implementation strategies based on the type or size of the health facility. A small sample size could limit the generalizability of the research findings. To address this limitation, the researcher explored the topic through literature which allowed them learn from healthcare leaders from other organizations and promote generalizability of the data.

The case study relied on the self-reports of health leaders. Therefore, findings could have potentially been affected by self-report bias. The researcher emphasized anonymity; however, some participants may have experienced discomfort communicating areas of struggle with complete honesty and accuracy. The health leaders may have refrained from portraying themselves or the health facilities they represent unfavourably.

Strengths and Weaknesses of Thematic Analysis

All data analysis approaches have strengths and limitations. This study utilized a qualitative case study approach. Case study designs are appropriate for examining the current social phenomenon and, thus, appropriate to achieve the study purpose (Yin, 2018). The qualitative research method is practical to identify strategies that health leaders can use to implement EHR successfully. The open-ended questions permitted the researcher to have improved flexibility and seek an in-depth understanding of the study topic.

The researcher is an instrument for analysis in qualitative data analysis, deciding on coding, theming, decontextualizing, and recontextualizing data (Nowell et al., 2017). A qualitative researcher has the duty of ensuring rigor and trustworthiness. In this study, the researcher recorded how data analysis was conducted and disclosed that data was analysed using a thematic approach as guided by Braun and Clarke (2006). The researcher hopes that these details will aid the reader in determining the credibility of the process.

Thematic analysis is a flexible approach that can be changed to suit the needs of many studies. It offers a rich and detailed account of data (Braun & Clarke, 2006). It does not necessitate technical knowledge of other qualitative approaches, making it easily accessible (Braun & Clarke, 2006).Braun and Clarke posited that thematic analysis helps explore differences and similarities in perspectives of research participants and generates surprising insights.

Thematic analysis also has demerits when considered with other qualitative research methods. There is little literature on the method than on grounded theory, ethnography, and phenomenology. A simple thematic analysis is viewed as less beneficial than other methods as it does not allow a researcher to make claims about language use (Braun & Clarke, 2006). The flexibility of the analysis method can lead to inconsistency and a lack of coherence when developing themes from the research data (Nowell et al., 2017).

Chapter 6: Conclusion

Upon examining the research question using semi-structured interviews of four participants (hospital leaders at Pennsylvania) concerning the most effective strategies that can be used in implementing EHR systems, five themes emerged (a) communication, (b) usability testing, (c) training of stakeholders via super users, (d) strong EHR leadership, and (e) stakeholder engagement. Regarding communication, which has been recommended by Participants 1 & 2 as one of the most successful strategies for implementing EHR systems, Barrett's (2018) assertion concerning resistance to change and relative advantage are used as

supporting points. A well-structured communication strategy is essential for any business implementing an EHR, regardless of whether it has a comprehensive and clearly defined contract, executive support, or a dedicated and skilled team. According to Barrett (2018), to expect a successful meeting from the leadership of an organization, participants must be given appropriate notice of the meeting's location, date, time, and the meeting agenda. Going forward with an EHR implementation without fully educating the entire business on the process's main components is a recipe for disaster, with a possibility of complete failure.

An EHR communication plan must consider the massive change about to take place in the entire organization. Because an EHR installation is more than just a technological activity, it must consider the significant impact on individuals (Barrett, 2018). Thus, the project is elevated to the point where front-line staff are sufficiently invested in the process. Therefore, the communication's objectives include establishing the necessity and logic for the EHR implementation, alleviating anxieties and encouraging involvement, establishing and maintaining enthusiasm for the project, and preparing for or dealing with problems. An EHR deployment presents many problems, and this analysis will establish a communication plan that is recommended as a framework for healthcare organizations (Barrett, 2018). One of the popular ways to lessen resistance to change is to educate and raise awareness about the advantages of a planned change through good communication, as stated by Graetz (2000). To ensure smoother execution of the change, the management must first explain why the change is necessary and what its goals are. Employee concerns and resistance to various parts of change can be rapidly handled with a two-way communication, minimizing any objections or inconveniences that may be encountered along the route of change implementation. According to Nair (2020), large-scale planned changes can only be successful if they entail two-way communication. As a result of this, only top-down or one-way communication will fail to get the appropriate commitment from

the employees. Face-to-face communication from immediate managers is preferred by employees when learning of a change.

The second theme identified by this study was usability testing which was also the factor Participant 2 stated as being an effective element for the successful implementation of EHR systems. To put it another way, Barnum (2020) in the study identifies usability testing as a means of determining how well staff or end-users, in general, can use some human-made objects (such as an online page or an interactive computer interface) for their primary purpose (i.e., usability testing quantifies the object's usefulness to people). For example, a hospital's Employee Health Record software tested to see how successfully staff can use it. Human-computer interaction (HCI) studies aim to define universal principles, whereas usability testing concentrates on a specific object or a small collection of things. Developers should revise their designs and retest them if usability testing reveals problems, such as people or staff having difficulty comprehending instructions, managing components, or interpreting feedback (Barnum, 2020). People are observed using the product in as realistic an environment as possible during usability testing to find mistakes and areas of improvement.

Designers often emphasize making their ideas seem feasible at the expense of functionality and usability (Barnum, 2020). The people in control often exert pressure on the designers, causing them to construct systems founded on organizational expectations rather than on the people's needs. The core of a designer's job description should be more than just aesthetics (Barnum, 2020). Market research, not usability testing, is the act of gathering public opinion on a product or document. Controlled experimentation is typically used in usability testing to examine how well a product can be used by its intended audience. In relation to this study,Gardner et al. (2019) also explainedthat complicated EHRs can hinder to doctors' ability to provide their patients with high-quality medical care. Thus, improving the usability of EHRs is crucial for the

health of physicians and the patients they serve. The UCD methodology proposed by Baxter et al. (2015) is an important method for solving usability issues. The guiding principle of the UCD is that, "The end product must suit users instead of making the user suit the product." Consequently, EHR should meet users' (healthcare professionals') specific requirements to help them give the best possible care to their patients.

The third theme identified following the structured interview with the four participants was identifying super users as a training strategy. This is a strategy mentioned by Participants 3 and 4, with the main aim being to underpin the need for staff training on the use of EHR systems before they can be officially allowed to use them service delivery. This training should be ideally be entrusted tosuperusers, which this study describes as the organizational staff that have a better understanding of the newly implemented system, in this case, the EHR system. Aguirre et al. (2019) stated that without a proper understanding of any new system in an organization, staff might, with time, feel demoralized and end up being ineffective, affecting the overall organizational productivity negatively. The duration of the training was not specified by Participant 2. According to Aguirre et al. (2019), training should be delivered throughout the implementation time and the ensuing go-live to guarantee that end-users feel confident and knowledgeable regarding EHR. To learn how to become a superuser,one can choose from various options such as classroom training or online courses. To reduce confusion and expedite the training and installation of the EHR system, another way is to train personnel solely on the specific EHR sections to be used. Aguirre et al. (2019) affirmed that to keep up with the ever-changing workplace, businesses and employees must keep up with the pace of technological advancements and workplace practices. Training is a great way to improve one's knowledge and abilities.

Providing staff with appropriate and regular training can help organizations improve their performance and productivity. To be successful in the workplace, people must be allowed to learn new skills and expand their knowledge base through training.

Employee training may be expensive, but the payoff is enormous if the practice is maintained over time. Additionally, training programs in the workplace will make employees feel like the organization is involved in them. Employees will become better workers and alsofeel more a part of the team if a company keeps teaching them new abilities and skills (Aguirre et al., 2019). These employees will feel better about themselves and be more effective at work due to this.

The fourth theme that came up from this study's interview of the four hospital leaders is that strong EHR leadership is necessary for the effective implementation of the system (as reported by Participant 3). The study found that charismatic leadership and confidence in top management are necessary for a successful transition. Change implementation behavior, supervision of anticipators, management level, and departmental link are substantially correlated (positively) with these factors. According to Malhotra (2013), the most crucial tool for transformation is the leader as a person. Several aspects of a leader's character are critical in a person's ability to inspire others to accept change and redesign. Those who lead a company through a transition period are frequently subjected to skewed perceptions of their abilities. Change scenarios are made more effective by the leadership's actions. The leader's work does not end with the implementation of the modification. Change is the only constant that can be predicted with certainty. Businesses must have a change management strategy they can rely on to minimize both expected and unforeseen changes. This is critical in the business world. As a result, they will be able to take on any obstacles and not be slowed down by unexpected changes. Change management, according to Malhotra (2013), can be broken down into four categories.

From the transition perspective, it is clear why Participants 2 and 4 both stated that their healthcare facility had committees in place before implementing an EHR. Representatives from various clinical departments were on the committees entrusted with assessing the system's potential impact on workflow. Participant 4 disclosed that they were tasked with determining the health system's potential gains from this initiative. "There were seminars and committees formed in all therapeutic areas to assess how EHR will affect processes. Additionally, we'll discuss how to create a medical record that makes our professional and personal lives easier while also improving patient care." Participant 3 also mentioned that their healthcare facility had assembled a multidisciplinary team. People in Groups 2 and 4 said they were tasked with analyzing and selecting an EHR most suited to their organization.

Participant 3 explained the multi-disciplinary team's role in selecting Epic as their EHR in the following remark. According to his statement, this EHR deployment began with a multi-discipline team evaluating various EHRs and selecting the best fit for their organization, which led to Epic's selection. Each committee was assembled to evaluate the launch from multiple perspectives after they had chosen a vendor (Participant 3). As a general conclusion, a good EHR requires strong leadership to establish a vision for the EHR and organize the process. The need for multi-disciplinary leadership teams is critical because an EHR system directly impacts all healthcare providers. As the health system grows, so does the size of the leadership team.

The last factor identified based on the study was that stakeholder engagement also directly correlates with the levels of success in EHR implementation. According to Mease et al. (2018), system and process implementations are more likely to succeed if individuals affected by them are involved in the process. Stakeholder involvement occurs at several levels and along a continuum within a healthcare organization, from participation and engagement to partnership and shared leadership (Stocker et al., 2020). Regarding stakeholder engagement, Nair (2020)

stipulated that regardless of the size of the project, there will always be a group of people who will be affected by it. The larger the project, the greater the number of people affected. Despite this, many companies are not taking the time to consider how to best engage with these groups. One thing all successful projects have in common is that they involve stakeholders and community groups and handle these relationships proactively instead of reactively (Mease et al., 2018).

A well-executed stakeholder engagement strategy improves communication channels between stakeholders, increases support for the project, enables the organization to obtain valuable information, eliminates conflict or other project-damaging difficulties, and promotes the project's overall reputation (Silvius &Schipper, 2019). According toMease et al. (2018), stakeholders' requirements can be translated into organizational goals and the basis for effective strategy formulation through effective participation. Assuring a stakeholder group's investment in a meaningful outcome is made easier by discovering the point of agreement or shared motivation.

It is true that without internal alignment, it is impossible to establish a strategy or effect real change. The types of stakeholders a company or organization has might vary widely. Customers, suppliers, shareholders, boards of directors, and entrepreneurs might all be included in this group. For an organization to succeed, each person has a unique perspective. Internal stakeholders, such as the company's employees, have firsthand knowledge of its strengths and limitations and what it takes to deliver (Nair, 2020). The organization and its operations will have a different but equally valuable perspective for external stakeholders. To create a unified future vision, everyone must have a common grasp of the issues at hand because to add value to the strategic and promotion planning process, a company or project team must establish an active consultation and engagement process and an open forum for debate and

discussion (Stocker et al., 2020). By doing this, the project or company provides unbiased and objective guidance on achieving a company's long-term goals by helping to bring people together around a single vision.

Chapter 7: Recommendations

Improving Communication During Implementation of EHR

Among the factors that the participants identified as important in the successful implementation of an EHR system is good communication amongst the involved stakeholders. Therefore, a recommendation related to this would be the establishment of an effective communication platform to allow those implementing the EHR system to discuss all the matters pertaining to the execution of the EHR plan and its use. Zulch (2014) affirms that for effective communication to be established during project management, three strategic considerations are important: making use of the best technological platform for communication, reducing communication barriers, and the establishing a proper communication plan. Regarding leveraging on technology, if a project manager is working with a remote team, for example, Zulch (2014) underpins that it does not mean all of the team's conversations have to be written. Face-to-face meetings are important, and using technology to make them possible can significantly impact how quickly a project moves forward.

Virtual meetings and video conferencing come in handy as effective strategies for improving communication. It is also common knowledge that firms and organizations are becoming more diverse, increasing the likelihood that a project team member may not be a native English speaker. Zulch (2014) noted that this could lead to more misunderstandings when the project is discussed. As a result, it is vital to be aware of any cultural or linguistic barriers among team members. Whenever possible, a project manager and the project team members should avoid employing terminology that is specific to one culture or language group, such as colloquialisms, jokes, or sarcasm. Finally, according to Zulch (2014), a big part of one's work as a project manager is to serve as a gatekeeper for information. A project team relies on the

information shared with them, but a project manager also has a responsibility to keep them safe from material that could confuse or interrupt their workflow.

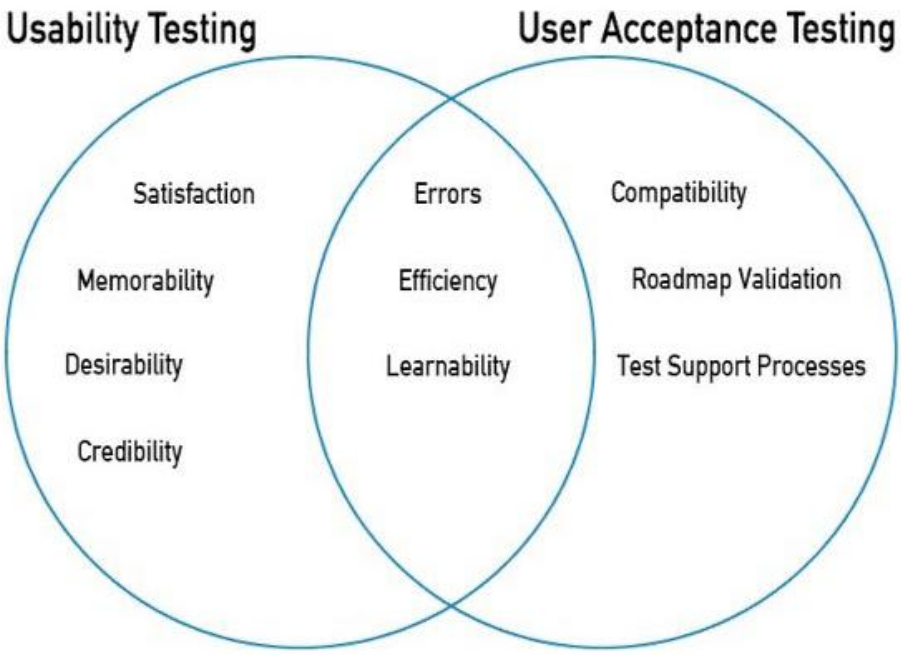
Managing a project necessitates a thorough understanding of who has access to what information. For this topic, Katerega and Sebunya (2017) clarified that the appropriate channel and method of communication for each audience is at the project manager's discretion. Project managers must be prepared to adjust communication tactics with certain stakeholders or members of a project team if they believe it is necessary in order to keep the project on track. An EHR system's project manager may know that one stakeholder prefers to the statistical detailsand could create an in-depth report for them with all the information they need to make an informed decision. Another stakeholder may only care about high-level numbers and essential takeaways; therefore, the project manager may use graphs and charts to convey those crucial points.

Ensuring Usability Testing Always After EHR Implementation and Before its Official use by Hospital Staff

Among the factors highlighted as useful for the successful implementation of EHR systems in this study is the usability test. This recommendation, therefore, revolves around the idea that usability tests should be conducted during every EHR execution to ensure that the staff is comfortable navigating and applying its features and capabilities. According to Fox (2015), this procedure involves the execution of two activities simultaneously: that is, usability testing and usability acceptance testing, to capture any errors in the user experience with a system or affirm that the user experience is characterized by efficiency and learnability.

Figure 1

Usability Testing and User Acceptance Testing Elements (Fox, 2015)



There are many approaches to usability testing but the most recommended for systems like EHR, according to Hertzum (2020), is recording audio and video sessions of users as they interact with the system. The results of these recordings, which the evaluator examines later, are coded using a behavior grid. User behavior and performance measures such as time to complete a task, recovery time from errors, several incorrect icon choices, perceptions of frustrations, perplexity, and satisfaction are all taken into account by an evaluator (Abbitt& Watt, 2020). Specifically, this coding requires specific software and hardware, as well as a great deal of time and effort. Software tools are being created to maximize the effectiveness of user testing. The evaluator can manipulate video recordings with some of these techniques, making it possible to pinpoint the start and endpoints of behaviors and the duration of activities with pinpoint accuracy. For example, the Observer and Theme from Noldus(http://www.noldus.com) offer the assessors descriptive data on the behaviors seen—frequencies, total duration, mean duration (Fox, 2015).

The time spent coding video recordings can be greatly reduced by using these programs. In addition to Morae, which may be used to record and track user interactions, several other tools are available for this purpose. It is a great tool for conducting user testing on web pages (Reeves, 2019). User interactions with a website or program, including desktop activity and audio recordings and a complete history of system events, are all synchronized into one file. The program enables the evaluators to examine and evaluate the information and choose video sequences to emphasize specific exchanges. According to Fox (2015), it is possible to export all recorded occurrences into a statistical software. The automatic recording of user actions was vital for several reasons, and tools were developed for this purpose.

Some researchers have conducted studies on the automatic recording of user interaction and found that it is not only for users testing the web (Hertzum, 2020; Reeves, 2019). In the early days, certain instruments allowed visual comparisons of novices' and experts' actions. Two major issues affect automatic recording ofuser interactions: the volume of data collected and the granularity of these assessments. For example, KALDI is a more contemporary technology that allows the recording of both user behavior and the software components displayed (Fox, 2015). The use of such a tool enables the representation of user activities graphically and their display at various levels of abstraction (elementary activities and tasks). This explains why a usability test can be time- and resource-intensive (Fox, 2015). Automation can reduce usability evaluation costs by eliminating the need to manually track user events, increasing the consistency of problems uncovered, and increasing the coverage of features examined (Fox, 2015). This is a viable option to supplement existing approaches. Despite their usefulness in specific elements of the user test (data collection, analysis, and visualization), current technologies still fall short. There is still a lack of integration across the various options (Fox, 2015).

Leveraging on Super-Users as Trainers for Hospital Staff on the use of EHR Systems Upon Their Implementation

According to Obwegeser et al. (2019), a "superuser" group can be formed by taking advantage of vendor training. The EHR system's "super users" are employees educated to utilize the system efficiently and share their knowledge with others. Training for office personnel and physicians can be provided by theEHR super users. Training for super users is a critical part of any EHR implementation strategy because they combine specialist EHR knowledge and knowledge of the EHR's intended use in the organization's unique workflow and patient population. However, Obwegeser et al. stated that when depending on super users to train other employees, the following considerations should be made:

Prioritizing the ERP System Execution and Education of an Organization's Super Users

According to Obwegeser et al. (2019), super users are in high demand. Reducing superusers' workloadto devote time to learning the program and collaborating with the implementation team on its proper implementation will be a worthwhile investment as an organization's experience and depth of knowledge grow.

The complexity of EHR systems makes it tough to become an expert in all aspects of the system. A sense of ownership and increased competence can be gained by providing super users with a specific business area or module to learn and master (Mease et al., 2018). After an EHR implementation, it is necessary to document job instructions and user manuals. Documentation from super users will be critical to the EHR system's transactional correctness (and consequently data integrity) as more people are hired, job roles are restructured, and the software implementation team reduces in importance (Obwegeser et al., 2019).

Maintaining Fair Expectations and Workloads

It is not uncommon for the top performers to be regularly given more responsibilitiesduring an EHR rollout as they demonstrate the skill and willingness to swiftly master a complex new system. Worker fatigue, job frustration, and mistakes that may have been avoided are possible outcomes (Mease et al., 2018). A super user's primary responsibility during an EHR implementation is to pass on the team's expertise to the system's end usersand set them up with all they need, from training materials to teaching hints (Obwegeser et al., 2019). Scott Kruse et al. (2018) affirmed that the time and money a hospital spends training and educating its EHR super users would pay dividends for many years. Subject matter experts, problem solvers, and leaders make up a valuable group of users. They serve as a link between the business's software and its actual operations. For this reason, hospitals with EHR systems should dedicate time and effort to ensure their success.

Ensuring a Strong EHR Leadership

From the conclusions of this study, the EHR leadership team, sometimes referred to as the project team, determines whether or not an EHR project succeeds or fails. Another important recommendation, therefore, is that hospitals planning to implement EHR successfully should consider establishing a strong EHR leadership. Kruse et al. (2018) affirmed that the highly technical nature of implementing an EHR system makes it more likely that an EHR project would fail without a strong leadership team. A leadership team's participation in the implementation should be examined because of its importance. Leaders are charged with starting projects and driving them forward through implementation, and then ensuring they reach their final goal of a successful rollout. If a hospital planning to implement an EHR system wants to succeed as a leadership team, it must have the proper people and demonstrate the correct skills (Ajami&Bagheri-Tadi, 2013).

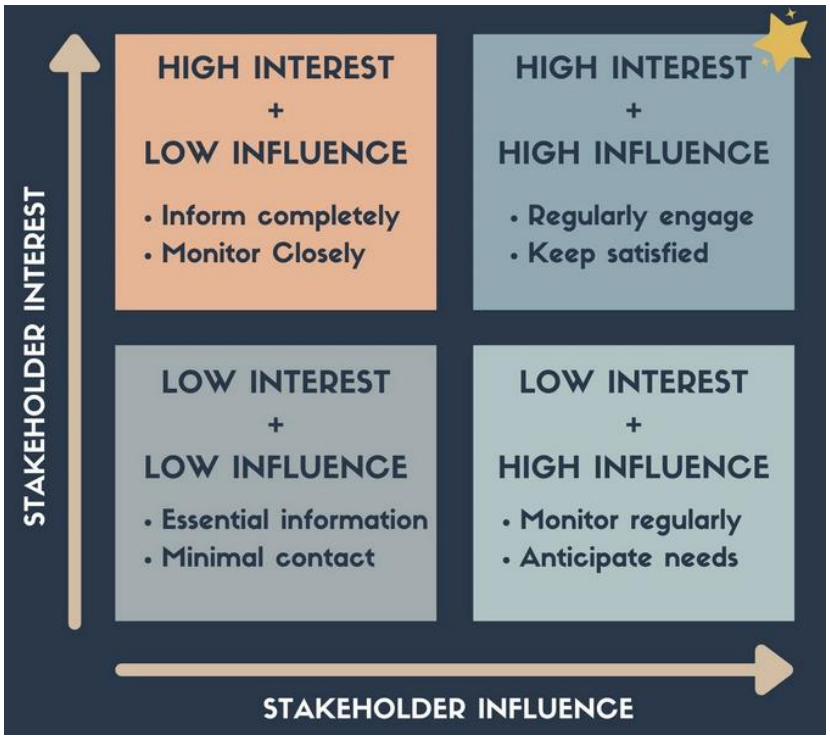
Having a leadership team that reflects a company's most important stakeholders is essential. Individuals with specialized responsibilities should be included on the leadership team, in addition to representatives from various departments (Scott Kruse et al., 2018). To get the best ideas for workflow and design, it's important to have members of the clinical staff on the leadership team. The executive staff should be well-versed in a wide range of skills. Several skills are required to work in an interdisciplinary environment. The leadership team's different backgrounds and expertise must mirror the project's broad scope, and this necessitates the ability to balance opposing goals while staying focused on the end goal (Kruse et al., 2018). Leaders must be able to precisely outline their project's scope and timetable and its deliverables. Furthermore, the leadership team should be aware of the significance of adaptability and innovative decision-making, especially if the project fails to meet expectations. In addition to these competencies, it is necessary for members of an EHR leadership team to commit sufficient time to the leadership team's responsibilities, such as conducting meetings and acquiring information (Ajami&Bagheri-Tadi, 2013).

Ensuring Sufficient Stakeholder Engagement in EHR Implementation

It is also paramount, with regards to the findings of this study, to recommend the proper engagement of all stakeholders involved in EHR implementation. Ensuring sufficient engagement of the EHR stakeholders in implementing the system is as important as making and maintaining an effective EHR implementation team, according to Acharya and Werts (2019), and can make or fail an EHR implementation project. The stakeholder engagement process should also be guided by a matrix, as illustrated in Figure 2 below, as not all stakeholders are of equal importance to an EHR project.

Figure 2

Stakeholder Engagement Matrix (Acharya &Werts, 2019)



To get the EHR implementation team involved in a hospital's EHR deployment, these guiding principles must be adopted as a starting point:

- According to Acharya and Werts (2019), a hospital's management should identify interested employees or solicit volunteers to allow its employees participate willingly.
- As part of a hospital's EHR implementation team, management should also define expectations and explain how team members will interact with each other.
- Time should be allocated tonon-patient care time for a meeting to discuss the EHR project with staff at the hospital. It is crucial for the personnel to be considerate of patients and meet outside patient-care hours.

- A hospital’s management should show that it cares about giving its employees enough time to do their work. A hospital’s management should allow employees to work on EHR installation duties during normal business hours and maintain their work-life balance (Acharya &Werts, 2019).
- In addition to rewarding hard work, a hospital's leadership should also allow staff employees to know how vital their work is and recognize them for reaching major milestones (Mease et al., 2018).
- A hospital’s management should also recognize that the employees have the answers: The staff is most equipped to answer inquiries about how changes will influence productivity (Stocker et al., 2020).
- A hospital’s management should additionally ensure that the personnel is aware of the advantages of using EHRs and how the various departments (front desk, medical records, telephone nursing staff, referral employees, billing staff) would benefit directly from EHR deployment (Acharya &Werts, 2019).
- Hospital administrators should also keep an eye on the prize: patient outcomes. A hospital's administration needs to help the team stay focused on the EHR installation endeavor and avoid mistakes or tangents (Mease et al., 2018).
- A hospital’s management should keep the EHR implementation team motivated by acknowledging and celebrating all of the institution's accomplishments, no matter the size (Acharya &Werts, 2019).

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Appendix A: Code Book

Name of Nodes	Description of nodes
Barriers in strategy implementation	This node is an aggregate node that contains the various barriers to implementation that participants identified.
Devices or Technology requirements	This node refers to situations where initial decisions on the required devices for EHR changed, leading to replacing the initial devices.
Ensuring stakeholders are on the same page.	This node refers to instances where leaders struggled to ensure that stakeholders had seamless information.
Lack of consistent messaging	This node refers to a situation where messaging was inconsistent due to various challenges, such as having many employees in one health facility.
Manual records due to workload	This node refers to instances where end-users result in manual or paper-based records due to high workload.
Poor leadership	This node refers to instances where leaders were reported to have displayed poor leadership skills.
Stakeholders' resistance to change	This node refers to instances where stakeholders were indicated to resist change associated with EHR.
Start-up costs	This node refers to the initial costs of setting up an EHR system
It takes away from direct patient face time	This node refers to instances where EHR usability was not good, and end-users spent less face time with their clients.
Wi-Fi dead zones	This node refers to areas within a health facility that lacked access to the Wi-Fi network.
Benefits of EHR	This node refers to the health systems benefits of an EHR system
Employees reaction to effective implementation	This node contains a description of employees' reaction to the successful implementation of EHR within their health facility

Name of Nodes	Description of nodes
of EMR	
Facilitators to strategy implementation	This node includes factors that facilitated the implementation of identified strategies for successfully implementing EHR.
Availability of experienced leaders	
Embraced by some employees	This node refers to instances where employees were indicated to have shown support for EHR.
Strategies to implement an EHR successfully	This node is an aggregate node that indicates various strategies health leaders utilize to implement EHR successfully.
Communication	This node refers to a strategy that emphasizes timely, accurate, and effective communication with stakeholders. The purpose of the strategy was to reduce resistance and enhance success.
Education and training	This node refers to a strategy that emphasizes the training or education of stakeholders on EHR.
Identifying super users	This node refers to the process of selecting individuals who understood the health system and were technology savvy to teach their peers about EHR. This strategy was a training strategy.
Engaging stakeholders	This node includes narratives that describe how the different stakeholder types (end users, experts, residents, clients, etc.) were engaged in EHR implementation.
Patience	This node refers to the capacity to accept or tolerate delays without becoming annoyed or anxious.
Strong Leadership	This node refers to a strategy where the leadership took deliberate steps to oversee and coordinate stakeholders before and during the EHR implementation.
Usability testing	This node refers to a strategy where end-users provide input by testing the system or workflows before going live.

Name of Nodes	Description of nodes
What informed the strategies	This node is an aggregate node that describes what informed the strategies chosen by the health facility management.
Consultants and EHR vendor recommendations	This node refers to instances where health leaders found out about implementing EHR from the EHR vendor or consultant.
Known best practices	This node refers to situations where the best practices were identified from literature or EHR implementation experience