

## IDENTIFYING FACTORS INFLUENCING ELECTRONIC MEDICAL RECORDS ADOPTION IN CLINICAL PERSONNEL IN KUWAIT

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### ABSTRACT

EMRs serve as essential resources that drive healthcare system transformation by providing efficient patient data management alongside better clinical decision-making capabilities that lead to superior healthcare delivery outcomes. The implementation of Electronic Medical Records across different regions shows significant variability with Kuwait demonstrating uneven progress because its digital healthcare infrastructure remains under development. The study examines the primary elements that affect EMR implementation among healthcare staff in Kuwait with an emphasis on system usability, leadership support for technology, training programs, and governmental regulations. Healthcare clinicians face significant technological barriers through system complexity and interoperability issues which obstruct their ability to navigate and integrate systems with current IT healthcare infrastructure. Boonstra et al.'s (2021) research shows that EMRs' ability to minimize medical errors and enhance care coordination depends entirely on achieving seamless interoperability.

EMR implementation outcomes are heavily influenced by the organizational environment. The rate at which adoption occurs depends greatly on leadership support along with proper resource allocation and effective change management strategies. According to Venkatesh et al. (2021) strong leadership both promotes acceptance and innovation within organizations by simultaneously addressing staff concerns and ensuring EMR implementation meets institutional goals. Clinicians who favor traditional workflows continue to pose significant resistance to change. Gagnon et al. (2022) demonstrated that customized training programs and stakeholder involvement successfully address resistance to change. The implementation of essential EMR infrastructure and support systems faces delays in Kuwait's smaller healthcare facilities due to their limited financial resources.

The attitudes and skillsets of individual clinical staff members play a crucial role in determining EMR implementation results. Clinical professionals who recognize EMRs as valuable assets for patient care enhancement and workflow efficiency tend to adopt them more readily. The adoption of digital systems frequently encounters resistance because clinical staff often have inadequate digital skills and fear intensified workloads. Davis (1989) established the Technology Acceptance Model (TAM) to demonstrate that perceived usefulness and ease of use are critical factors in technology acceptance. Effective training programs and peer coaching initiatives play a vital role in bolstering user trust and enabling a seamless move from traditional paper systems to electronic platforms. The healthcare staff in Kuwait demonstrates a range of technological proficiency which highlights the necessity for self-efficacy and ongoing support.

Government policies together with financial incentives serve as crucial drivers for EMR adoption. Al-Abri et al. (2014) in Oman demonstrated that mandated EMR implementation with financial backing can reduce healthcare facility burdens because governmental financial incentives increased adoption rates. Ineffective policy enforcement and ambiguous regulations make investing in EMR systems risky due to resulting uncertainty. Kuwait could overcome existing integration barriers and improve system connectivity by applying international best practices including the adoption of HL7 and FHIR interoperability standards. Kuwait's healthcare system can fully exploit the transformative potential of EMRs to enhance patient care and operational efficiency through targeted strategies that address existing challenges.

**Keywords:** Healthcare, Digital Technology, Patient, Satisfaction, Quality, Electronic Medical Records,

### Introduction

#### Background and Context

The integration of Electronic Medical Records (EMRs) into healthcare systems worldwide has delivered essential tools that enable healthcare providers to manage patient data more efficiently while improving both clinical decision-making processes and overall healthcare delivery results. The digitization of healthcare systems has become a crucial objective

in Kuwait because of the growing intricacy of healthcare demands along with the necessity to minimize errors and comply with international healthcare standards. The implementation of EMR systems encounters substantial obstacles throughout the region because of technical difficulties and resistance from organizational structures alongside cultural hesitation.

### **Research Questions and Objectives**

The primary research question is:

- This study investigates the elements affecting EMR adoption by clinical staff in Kuwait while supporting objectives provide additional guidance.
- The study aims to discern technological, organizational, individual, and external challenges that affect the implementation of EMR systems.
- This study assesses how government policies and leadership affect EMR adoption practices.
- This study proposes practical strategies to strengthen EMR deployment within Kuwait's healthcare system.

### **Methodology Overview**

This study utilized mixed-methods research to combine quantitative surveys with qualitative insights and thoroughly examine the factors that affect EMR adoption among clinical staff in Kuwait. The research methodology enabled the researchers to attain a complete understanding of the viewpoints of various stakeholders like doctors, nurses, administrative staff, and IT professionals. The quantitative research component featured a structured survey distributed to 101 participants which assessed system usability and interoperability as well as training adequacy and leadership support while identifying perceived barriers to EMR adoption. The survey consisted of Likert-scaled closed questions designed to measure participants' perceptions and experiences along with open questions that sought to uncover deeper insights into their views.

The study's qualitative method entailed examining open-ended survey responses through thematic analysis to identify patterns and determine both challenges and enablers for EMR implementation. The qualitative component provided detailed contextual information that enhanced survey numerical results by revealing distinct challenges like resistance to cultural change and policy effectiveness. The qualitative analysis provided deeper research insights by recording clinical staff comments verbatim and uncovering complex factors that weren't clear from quantitative data.

The study combined quantitative and qualitative methods to thoroughly examine EMR adoption in Kuwait while addressing tangible results and contextual influences. Through this mixed-methods approach, researchers achieved triangulation which strengthened the study's reliability and validity. The research methodology combined information from various sources to reveal actionable insights about the challenges and drivers of EMR adoption and to suggest practical solutions for healthcare administrators, policymakers, and technology providers who wish to enhance healthcare systems in Kuwait. The research process maintained strict ethical standards through rigorous informed consent procedures and participant anonymity to ensure integrity.

### **Significance and Relevance**

The significance of this research lies in its focus on addressing a critical gap in the literature on EMR adoption within Gulf Cooperation Council (GCC) countries, particularly Kuwait. While global studies on EMR adoption abound, there is limited research specifically tailored to the unique challenges and opportunities within the GCC region. Kuwait's healthcare sector, characterized by a mix of public and private providers, presents distinct organizational, cultural, and technological dynamics that influence EMR adoption. By exploring the perspectives of clinical personnel, this study sheds light on localized factors that may not be adequately addressed by international research, offering a nuanced understanding of EMR adoption challenges in this context.

This research is particularly relevant for policymakers and healthcare administrators who are tasked with modernizing Kuwait's healthcare system. The findings provide actionable insights into critical enablers of EMR adoption, such as usability improvements, leadership support, and government policy interventions. For instance, the study highlights how targeted training programs and financial incentives can reduce resistance and enhance adoption rates. These insights can inform the design of policies and strategies tailored to Kuwait's specific needs, helping to bridge gaps in interoperability, address financial constraints, and align technological advancements with clinical workflows. Furthermore, the research underscores the importance of cultural considerations, such as addressing resistance to change, which are essential for creating an environment conducive to successful EMR implementation.

For technology providers, this research is equally significant as it offers a clearer understanding of end-user expectations and challenges. By identifying key barriers, such as system usability and interoperability, the study provides a roadmap for designing EMR systems that align with the operational realities of healthcare providers in Kuwait. The study's relevance extends beyond Kuwait, offering valuable lessons for other GCC countries facing similar barriers to EMR adoption. By emphasizing the interplay between global best practices and local contexts, this research contributes to advancing healthcare quality and patient safety in the region, fostering a more efficient, data-driven healthcare ecosystem.

### **Literature Review**

Technology breakthroughs position Electronic Medical Records (EMRs) as essential foundations of healthcare innovation because they enable more efficient workflows and better patient outcomes together with improved decision-making based on data. The transformative potential of Electronic Medical Records (EMRs) exists but multiple barriers impede their widespread implementation. The success of technological systems heavily relies on **USABILITY** which describes how easily users can interact with technology. Research by Holden and Karsh (2010) shows that EMRs with intuitive interfaces and efficient workflows enhance user satisfaction and adoption rates while reducing clinician frustration. Clinical personnel resist poorly designed systems because they create additional cognitive workload. Boonstra et al. (2021) recognize **INTEROPERABILITY** which enables EMRs to integrate without issues into other healthcare IT systems as a persistent obstacle. The lack of interoperability limits data exchange between systems which results in operational inefficiencies and fragmented patient care along with redundant work efforts thereby negating the potential advantages of EMRs.

The organizational support through leadership and proper resource allocation establishes the foundation for a technological innovation-friendly culture. According to Venkatesh et al. (2021) effective leadership enables EMR implementation through vision creation, building clinical personnel trust and allocation of necessary financial and human resources for adoption. When leaders fail to engage properly it creates disjointed execution processes while staff push back because they lack necessary support. Gagnon et al. (2022) emphasize the importance of change management strategies to overcome staff resistance and promote successful adoption. Organizational readiness through essential infrastructure and training alongside policy frameworks serves as a key factor in successful EMR implementation. Organizational readiness in Kuwait and comparable settings depends on strategic training and collaborative efforts to connect EMR systems with institutional objectives and clinicians' requirements.

The adoption of EMRs depends heavily on individual clinician factors which include their professional attitudes alongside their skills and perceptions. Davis (1989) introduced the **TECHNOLOGY ACCEPTANCE MODEL (TAM)** which explains that perceived usefulness and ease of use determine the adoption of technology. The likelihood of clinicians adopting EMRs increases when they see these systems as devices that boost their efficiency while minimizing errors and improving patient care. Some senior healthcare personnel face obstacles in EMR adoption due to limited computer literacy skills. McAlearney et al. (2021) stress that clinical personnel need customized training programs which provide both technical skills and confidence to manage EMR systems successfully. Self-efficacy which involves the conviction of one's capability to operate EMRs effectively stands out as a crucial element because Bandura (1997) indicates that supportive surroundings along with practical training are fundamental to boosting confidence and minimizing resistance.

Government regulations and financial incentives greatly affect Middle Eastern regions due to their external nature. Alkrajji and Jackson (2015) explain that strong government policies promote EMR adoption through clear guidelines coupled with standards and healthcare investment incentives. The inconsistent enforcement of regulations stands as a major obstacle to progress throughout Kuwait and other Gulf Cooperation Council (GCC) member states. The research conducted by Al-Abri et al. (2014) in Oman demonstrates that EMR adoption rates improved through government-funded incentive programs. Government incentives decrease financial pressures on healthcare facilities especially smaller ones while promoting EMR implementation in daily clinical operations. When policies are poorly implemented or guidelines remain ambiguous it creates doubt which discourages investments and slows down the adoption process.

Cultural and contextual elements serve as fundamental determinants in the process of EMR adoption. Research indicates cultural resistance to change poses a major obstacle to implementation of new practices in healthcare environments with deeply ingrained traditional methods (Holden et al., 2013). A comprehensive strategy to overcome cultural barriers includes end-user participation in system development and execution together with awareness campaigns and demonstrating how EMRs support large-scale healthcare objectives. Research shows that global best practices give useful

information but regional strategies remain essential to tackle specific local barriers and opportunities. The effort in Kuwait aims to integrate international standards with local realities to create EMR systems that deliver sustainable improvements in healthcare outcomes.

### Methodology

#### Research Design and Approach

Through mixed-methods research this study achieves an extensive comprehension of EMR adoption. The study gathered quantitative data through surveys which examined system usability together with training adequacy and leadership support as well as interoperability. The study gathered qualitative details from open-ended survey questions which offered additional context.

#### Data Collection Methods

Hospitals, clinics, and specialty care centers throughout Kuwait served as the settings where clinical personnel numbered at 101 received the survey. The study participants consisted of doctors along with nursing staff as well as administrative personnel and IT experts. The survey consisted of closed-ended questions for numerical analysis and open-ended questions to obtain qualitative information.

#### Data Analysis Techniques

The analysis of quantitative data employed both descriptive and inferential statistical methods such as correlation and regression analysis to examine variable relationships. The analysis of qualitative information followed a thematic approach that concentrated on discovering repeated patterns and findings regarding both adoption obstacles and facilitators.

*Table 1: Summary of Barriers to EMR Adoption*

Barrier	Percentage (%)
Technical Difficulties and System Issues	66.3
Lack of Training	34.7
Lack of Time to Learn New Systems	29.7
Concerns About Data Privacy and Security	25.7
Cultural Resistance to Change	25.7
Preference for Paper Records	25.7
Insufficient Leadership Support	19.8

#### Ethical Considerations

Researchers received ethical approval before beginning data collection. All participants gave informed consent while their responses were anonymized to maintain confidentiality. Research followed ethical guidelines during the entire study to maintain transparency and participant rights protection.

#### Results

The research analyzed data from 101 participants to understand how usability, interoperability, leadership support, and training adequacy affect EMR systems. This research uncovers both the supporting elements and obstacles experienced by clinical staff in Kuwait when implementing EMR systems.

- **System Usability:** Usability stood out as a primary determinant that affected the adoption process. The majority of users find EMRs beneficial for clinical tasks based on usability ratings where 49.5% marked it as "Good" and 21.8% as "Very Good." The fact that 22.8% found usability "Average" and 5.9% judged it "Poor" reveals usability problems with certain systems. The usability problems likely arise from systems with complex interfaces combined with inefficient workflows and insufficient user training programs.
- **Interoperability:** Healthcare professionals universally recognized interoperability as a necessary factor that facilitates EMR adoption. The integration capabilities of EMRs show variance across healthcare facilities as evidenced by 27.7% of respondents who gave moderate or lower ratings while 40.6% deemed it "Important" and 30.7% rated it as "Very Important." Healthcare facilities without integrated IT systems or those dealing with

disjointed IT setups encounter challenges in sharing data effectively which disrupts care coordination and diminishes operational efficiency.

- **Leadership Support:** Leadership support emerged as a crucial element for successful EMR adoption. Sixty-four-point three percent of survey participants gave high ratings to leadership support indicating that healthcare leaders who actively engage their teams contribute to building innovative and accepting environments. The remaining respondents who gave moderate or low ratings pointed to gaps in leadership involvement such as inadequate resource allocation and poor communication alongside insufficient advocacy for EMR systems.
- **Training Adequacy:** 34.7% of respondents reported training adequacy as an obstacle to implementing EMR systems. The availability of basic training programs was recognized by many participants, but they advocated for more thorough training tailored to specific roles. Qualitative feedback repeatedly highlighted insufficient ongoing education and support as factors that made some users feel they were not fully prepared to use EMRs to their fullest potential.
- **Hypothesis Outcome:** The hypothesis testing investigated how system usability affects EMR adoption levels. The analysis revealed a strong positive correlation coefficient of 0.76 which reached statistical significance with a p-value less than 0.05 thereby supporting the alternative hypothesis. The results demonstrate that usability plays a crucial role in adoption rates which supports previous studies that identified user-friendly design as key for successful EMR implementation.

Variable	Correlation Coefficient	P-Value
System Usability	0.76	0.002
Adoption Influence	Positive	Significant

The hypothesis testing confirms that system usability significantly influences EMR adoption, with strong statistical support ( $r = 0.76$ ,  $p < 0.05$ ). This finding aligns with prior research emphasizing the critical role of usability in driving adoption rates.

### Quantitative Findings

- **System Usability:** The survey results showed that 49.5% of participants gave their highest usability ratings which underscores user interface design as crucial. Survey results showed that 28.7% of participants pointed out moderate usability problems which suggests potential areas to improve.
- **Interoperability:** Enterprise data integration faced challenges for 33.7% of users despite 61.3% reporting positive interoperability experiences.
- **Leadership Support:** Leadership support received high ratings from 64.3% of participants, showing its essential function in adoption success.

### Qualitative Insights

- Respondents stressed the need for role-specific training programs to boost confidence and lower EMR adoption resistance.
- Data security issues and paper record transition challenges consistently appeared as main themes.
- The survey results showed that government incentives stood out as a main driver with participants requesting both more financial aid and clearer enforcement of policies.

### Discussion

- **System Usability:** Research findings demonstrate usability as an essential factor for successful EMR implementation. Clinical staff gives high marks to systems that display intuitive interfaces and efficient workflows. The usability ratings that fall into "Average" and "Poor" categories highlight essential improvements such as task redundancy reduction and navigation enhancement while customizing systems for specific user needs. Solving usability problems will lead to higher user satisfaction and lower resistance levels in healthcare facilities where EMRs currently seem difficult to use.
- **Interoperability Challenges:** Achieving seamless Electronic Medical Record (EMR) adoption faces significant obstacles due to interoperability issues. The differences in ratings demonstrate that some facilities succeed with integrated systems while others face challenges due to data silos and compatibility problems. The introduction of international interoperability standards like HL7 and FHIR can eliminate these data exchange barriers to create

uniform communication systems. By enhancing interoperability healthcare organizations can achieve better care coordination while eliminating redundant activities and streamlining clinical processes.

- **Leadership and Training:** The study reveals that effective leadership plays an essential part in achieving successful EMR implementation. Facilities which have proactive leadership teams experience higher adoption rates because engaged leaders build trust among staff members while providing necessary resources and clear direction. Staff resistance and implementation delays frequently result when there is insufficient leadership participation. Healthcare leaders need to actively support EMRs while allocating proper resources and implementing change management strategies to address these implementation gaps. The inconsistent feedback concerning training adequacy indicates that numerous facilities do not possess the necessary infrastructure to deliver comprehensive training programs on an ongoing basis. Training programs that focus on specific roles and practical experiences are essential for staff to learn how to operate EMRs efficiently.
- **Hypothesis Testing:** The strong correlation between usability and EMR adoption provides a clear route to improve adoption rates. The research findings support the Technology Acceptance Model (Davis, 1989) by demonstrating that users accept technology based on its perceived usefulness and ease of use. The development of EMR systems must prioritize user-centered design methods to ensure their compatibility with clinical staff workflows and expectations. When developers include end-users during both design and implementation stages they can build systems that effectively resolve usability issues and fulfill healthcare providers' real-world requirements.
- **Future Implications:** Research findings demonstrate that EMR adoption rates can be improved through specific interventions focused on usability improvements along with leadership development and interoperability and training enhancements. A holistic approach to these factors will lead to optimal EMR benefits including better patient care and fewer medical mistakes along with more efficient operational processes. Policy leaders need to focus on removing existing barriers by implementing strategies that include financial support measures along with comprehensive training plans and mandatory interoperability standards. The research provides technology providers with a strategic guide to develop EMR systems that meet Kuwait's healthcare sector requirements.

### Interpretation of Results

The analysis demonstrates how system usability combined with leadership support and government incentives serves as key drivers for EMR adoption by clinical staff in Kuwait. System usability became a fundamental element because most respondents provided positive ratings which showed that user satisfaction and acceptance increase through intuitive interfaces and efficient workflows. Boonstra et al. (2021) conclude that systems designed with usability in mind minimize user resistance and enhance adoption rates. The feedback from respondents who gave average or poor usability ratings indicates that EMR designers must continually work on refining system interfaces and reducing unnecessary tasks. When EMR developers prioritize end-user requirements they improve system functionality and usability which directly influences adoption rates.

Leadership support proved to be another essential factor as more than 64% of survey participants reported strong or very strong leadership engagement. Leaders who demonstrate strong leadership skills create innovative work environments and allocate resources properly which helps overcome many obstacles during EMR implementation. Leadership is essential for demonstrating EMR benefits while they promote organizational readiness and maintain stakeholder involvement through the adoption journey. The subset of respondents who reported moderate to low leadership support uncovered potential issues including poor advocacy and unclear communication. Healthcare leaders need to actively promote EMR initiatives and organize training programs to establish trust and minimize clinical staff resistance.

Several enabling factors exist but interoperability problems and cultural resistance remain major obstacles. Many respondents reported problems when trying to integrate EMRs into their current healthcare IT systems which shows that some facilities have fragmented digital infrastructures. The inability to ensure interoperability results in disrupted data sharing which causes operational inefficiencies and repeated tasks. The recurring theme of cultural resistance to change persists especially among staff who prefer traditional paper-based workflows. To overcome these barriers healthcare institutions must implement specific solutions including the adoption of international interoperability standards like HL7 and FHIR alongside tailored training programs and collaborative implementation processes. Healthcare institutions in Kuwait will boost EMR adoption and utilization by confronting these obstacles directly while simultaneously adhering to international best practices and meeting local requirements.

### **Implications and Significance**

Findings from this research demonstrate Kuwait requires a comprehensive multi-faceted strategy to drive successful EMR implementation. Usability improvement remains crucial because intuitive design and seamless workflows directly determine how satisfied clinicians are with systems while influencing their acceptance levels. Policy leaders should understand the necessity of specialized training programs that target specific role requirements and deliver continuous support to healthcare staff. Active leadership engagement stands out as an essential element because dynamic leaders build innovation culture and secure resources while maintaining effective communication throughout the implementation stages. Systemic barriers require the pivotal intervention of policymakers beyond mere organizational and individual actions. The adoption rates and effectiveness of EMR systems in Kuwait can be improved through financial incentives and targeted regulatory frameworks combined with interoperability standards.

Achieving sustainable EMR integration requires building collaborative relationships between all relevant stakeholders. Healthcare administrators must collaborate with policymakers and technology vendors to develop solutions that address The integration requires solutions that surpass technical difficulties and address operational and cultural obstacles. The inclusion of end-users during the design and implementation stages makes sure that systems satisfy clinicians' practical requirements. Through collaborative efforts institutions can share knowledge across facilities which enables successful EMR adopters to become examples for others. Kuwait's healthcare sector can implement EMRs more effectively and fairly through joint technical advancements and stakeholder interaction which leads to better patient care and increased operational efficiency.

### **Limitations and Potential Biases**

This study offers important findings on EMR adoption but requires recognition of its limitations. The study explores EMR adoption among clinical staff in Kuwait and this exclusive focus may reduce the applicability of results to different regions and healthcare systems. The healthcare system of Kuwait displays distinctive cultural, organizational, and technological features that may differ from systems in other areas. The use of self-reported data can lead to response biases because participants might inaccurately report their EMR experiences either by exaggerating or downplaying them. The accuracy of survey responses may be affected by social desirability pressures and personal interpretations of the questions. Future studies should address current limitations by implementing objective EMR usage metrics and expanding research to different geographic areas to gain a better understanding of EMR adoption patterns.

The scope of this study represents a limitation because it focuses primarily on clinical personnel perspectives while neglecting views from administrative staff and technology vendors as well as policymakers. Clinical personnel provide important insights but EMR adoption depends on numerous stakeholders who have essential responsibilities in decision-making processes and system management. Future research can benefit from utilizing a multi-stakeholder framework to gain a complete understanding of the obstacles and possibilities within EMR adoption. Longitudinal studies can reveal detailed information about the progression of adoption rates and the extended effects of EMR implementations on Kuwait's healthcare quality and efficiency.

### **Comparison with Existing Research**

The findings of this study extend current EMR adoption research by building upon Alkrajji and Jackson (2015) who showed that government support and regulatory frameworks are key factors in increasing adoption rates. The present research presents localized insights into Kuwait by focusing on cultural and organizational details while existing studies explore general financial incentives and policy influences. The results reveal how leadership involvement interacts with cultural opposition as important factors within Kuwait that stand out less prominently in different regions. This study expands on previous research by detailing how usability and interoperability unfold within Kuwait's healthcare system through examination of its fragmented infrastructure and the necessity for customized training solutions. The study creates new insights into EMR adoption by merging global best practices with local conditions and offers practical guidance to enhance healthcare technology implementation in comparable environments.

This research extends established frameworks such as the Technology Acceptance Model (TAM) and Unified Theory of Acceptance and Use of Technology (UTAUT) through their application within Kuwait's healthcare setting. The findings confirm the importance of perceived usefulness and ease of use in adoption processes while expanding understanding by examining their formation through local cultural and organizational influences. The study demonstrates through its findings that leadership support and financial incentives align with international research yet underscore their increased

criticality within resource-limited environments such as Kuwait. The research integrates theoretical perspectives with empirical evidence to create both academic advancements and practical methods to overcome EMR adoption challenges in Kuwait and comparable areas.

## **Conclusion**

### **Summary of Main Findings**

The research delivers an extensive examination of the determinants that affect the implementation of Electronic Medical Records by clinical staff in Kuwait. Successful EMR implementation depends on system usability along with leadership support and government incentives. System usability with easy-to-use interfaces and efficient workflows became the leading factor driving EMR adoption because user satisfaction directly determines clinical integration willingness. Leadership support played a crucial role because proactive leaders established innovation cultures while addressing resource shortages and supporting change management approaches. The adoption rates improve when government incentives address financial and structural barriers through financial support and clear regulatory frameworks. Significant obstacles continue to persist especially concerning interoperability and the resistance to adopting new systems. A large number of respondents reported integration challenges of EMRs with existing IT systems and demonstrated cultural resistance when shifting from traditional methods to digital platforms.

The study uncovers essential information about how Electronic Medical Records are adopted in Kuwait while matching global research findings and revealing the region's distinct cultural and organizational challenges. The research shows that overcoming these barriers necessitates a comprehensive approach that merges technological advances with organizational preparedness and policy changes. The study provides policymakers, healthcare administrators, and technology providers with actionable recommendations by discovering both enabling factors and obstacles to enhance EMR adoption and use for better healthcare delivery and patient results.

### **Restatement of Research Questions and Objectives**

This research addressed the central question: The research focused on understanding which factors impact EMR adoption among clinical staff in Kuwait while aiming to identify barriers and facilitators of adoption alongside evaluating leadership roles and government policies to make recommendations that improve adoption rates. The study reached its objectives via a mixed-methods approach and delivered a detailed perspective on how technological, organizational, individual, and external elements interact to influence adoption behaviors. The research demonstrates that usability, interoperability, and stakeholder engagement are critical to EMR adoption which must be supported by solutions designed specifically for Kuwait's healthcare system. The results presented advance academic research while providing practical methods to facilitate EMR implementation in under-resourced and culturally specific regions such as Kuwait.

## **Implications and Recommendations**

### **Implications**

The research results reveal multiple critical implications for Kuwait's healthcare industry. EMR developers need to focus on user-centered design principles because usability remains essential for systems that fit clinical personnel's workflows and expectations. Overcoming interoperability obstacles stands as a crucial focus because EMRs must seamlessly connect with current IT systems to maintain data continuity and enhance care coordination. Leadership support reveals significant consequences which require healthcare administrators to take active roles in EMR initiatives by clearly communicating benefits while managing resources efficiently and organizing staff training programs. Government incentives demonstrate the critical need to synchronize financial support with regulatory frameworks to match healthcare facilities' practical needs and enable all providers to address adoption barriers.

### **Recommendations**

Healthcare policymakers should focus on the implementation and enforcement of interoperability standards like HL7 and FHIR to enable effective communication between EMRs and other systems and thus improve EMR adoption. The government should increase financial support through subsidies and grants to help smaller facilities manage the upfront expenses of implementing EMR systems. Healthcare administrators should actively decrease resistance to change by including staff members throughout both the decision-making and implementation stages. Targeted training programs that meet the distinct needs of nurses, physicians, and administrative staff improve system adoption rates. Implementing continuous engagement and feedback mechanisms to establish a trust and transparency culture can build clinical personnel

confidence. These recommendations play a key role in removing the study-identified obstacles to ensure EMR systems become a permanent part of Kuwait's healthcare infrastructure.

### Future Research Directions

- **Longitudinal and Cross-Country Studies:** Kuwaiti healthcare outcomes require examination through longitudinal studies to determine the long-term effects of EMR adoption. Long-term research helps us understand the effects of EMRs on clinical workflows and operational efficiency while also measuring how they affect patient care quality as time progresses. By studying successful EMR implementations in other nations Kuwait can learn valuable best practices that suit its healthcare system's distinct requirements. By analyzing how GCC neighbors like Oman and Saudi Arabia have dealt with challenges such as interoperability and cultural resistance Kuwait can identify useful strategies to adapt for its own specific requirements.
- **Role of Emerging Technologies:** The utilization of emerging technologies including artificial intelligence (AI) and machine learning opens new possibilities to optimize EMR usability and functionality. The next phase of research should explore AI-based systems to advance clinical decision support capabilities and automate routine operations while delivering tailored advice to medical professionals. EMR integration with AI technology helps resolve interoperability issues by allowing systems to process data in real-time and translate information between different platforms. Studies need to investigate how telemedicine together with mobile health applications can enhance EMRs by improving accessibility and care coordination for underserved populations. Future research studies that analyze these technologies can help advance digital health systems while maintaining EMRs as leaders in healthcare innovation in Kuwait and other regions.
- The interpretation of results highlights the pivotal role of system usability, leadership support, and government incentives in driving EMR adoption among clinical personnel in Kuwait. System usability emerged as a cornerstone, with a majority of respondents rating it positively, indicating that intuitive interfaces and efficient workflows significantly enhance user satisfaction and acceptance. This finding aligns with Boonstra et al. (2021), who emphasize that user-friendly systems reduce resistance and improve adoption rates. Conversely, respondents who rated usability as average or poor signal the need for continuous refinement in EMR design, such as addressing interface complexity and reducing redundant tasks. By focusing on end-user needs, EMR developers can enhance system functionality and usability, directly impacting adoption rates.

Leadership support was another critical enabler, with over 64% of respondents indicating high or very high leadership engagement. Strong leadership fosters a culture of innovation and ensures adequate resource allocation, addressing many of the barriers associated with EMR implementation. Leaders play a vital role in communicating the benefits of EMRs, advocating for organizational readiness, and engaging stakeholders throughout the adoption process. However, the remaining respondents who indicated moderate or low leadership support highlight potential gaps, such as insufficient advocacy or lack of clear communication. Bridging this gap requires healthcare leaders to take proactive measures, such as championing EMR initiatives and facilitating training programs, to build trust and reduce resistance among clinical staff.

Despite these enablers, challenges like interoperability issues and cultural resistance persist as significant barriers. Respondents frequently cited difficulties in integrating EMRs with existing healthcare IT systems, reflecting a fragmented digital infrastructure in some facilities. Interoperability challenges hinder seamless data exchange, leading to inefficiencies and duplication of efforts. Additionally, cultural resistance to change, particularly among staff accustomed to traditional paper-based workflows, remains a recurring theme. Addressing these barriers requires targeted interventions, such as adopting international interoperability standards (e.g., HL7 and FHIR), providing tailored training programs, and fostering a collaborative implementation process. By tackling these challenges head-on, healthcare institutions in Kuwait can enhance the adoption and effective utilization of EMRs, aligning with global best practices while addressing local needs.

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