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Paving the Path to EMR Implementation Success: The Role of Vendor IT Capability and Coercive Pressure

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Abstract

This study examines the environmental factors influencing the implementation of Electronic Medical Records (EMRs) in Malaysian public healthcare institutions, focusing on Vendor IT Capability and Coercive Pressure. EMRs are critical for enhancing healthcare quality, yet their implementation has been slow due to unique challenges like interoperability, inadequate IT infrastructure, and resistance to change. Using the Technology-Organization-Environment (TOE) framework, this research identifies vendor IT capability including personnel capability, methodology capability, and client management capability as crucial for successful EMR implementation. Additionally, coercive pressures from external entities such as customers, suppliers, and partners further shape implementation strategies. The study highlights that overcoming these challenges requires strategic investments in IT infrastructure, capacity building, fostering a supportive organizational culture, and promoting collaboration between stakeholders. The findings provide valuable insights for healthcare administrators, policymakers, and technology vendors to develop effective frameworks for promoting EMR utilization, thereby improving patient outcomes and healthcare efficiency in Malaysia's evolving digital health landscape.

Keywords: EMR Implementation Success, Vendor IT Capability, Coercive Pressure and Malaysian Public Healthcare Institutions

Introduction

The implementation of Electronic Medical Record (EMR) systems is essential for modernizing healthcare by improving patient care, minimizing errors, and enhancing operational efficiency. In an era of digital transformation, the healthcare sector's shift toward EMRs is crucial for enhancing data management and clinical decision-making. Despite these benefits, EMR adoption has been slow in developing countries like Malaysia due to unique challenges such as interoperability, inadequate IT infrastructure, resistance to change, and varying technological readiness levels (Ilyana, 2021; Hira et al., 2022). Unlike developed countries that often have robust IT support and regulatory frameworks, Malaysia's public healthcare sector

faces significant barriers that hinder EMR deployment and sustainability (Salleh et al., 2021). The success of EMR implementation is influenced by several environmental factors that extend beyond an organization's direct control, as proposed by the Technology-Organization-Environment (TOE) framework. These factors include vendor IT capability—referring to a vendor's technical expertise, client management, and support and coercive pressure from external entities such as regulatory bodies, insurers, and patient advocacy groups (Jianxun et al.,2021). Both factors are crucial in shaping how healthcare organizations adopt EMRs, particularly in public healthcare settings where compliance with standards and effective vendor partnerships are essential (Joimur et al., 2022). The complexity of these issues underscores the need for a comprehensive, strategic approach involving investment in IT infrastructure, workforce capacity building, and collaborative efforts between healthcare providers, policymakers, and vendors (Ibrahim et al., 2022; Ilyana, 2023). Given the profound implications for patient care and healthcare efficiency, this study aims to investigate how environmental factors influence EMR adoption in Malaysia's public healthcare sector. By examining these influences, this research provides critical insights for developing targeted strategies to promote widespread EMR utilization. Ultimately, understanding and addressing these challenges is essential to improving the quality, integration, and efficiency of healthcare services as Malaysia continues its journey toward a more digital and connected health system.

Literature Review

Vendor IT Capability

The capability and support provided by IT vendors are critical factors in the successful implementation of IT systems in public sector organizations. Vendors facilitate the seamless integration of new systems with existing workflows and processes, while also providing ongoing technical support and staff training (Saha & Joshi, 2024). This study conceptualizes vendor IT capability through three dimensions: personnel capability, methodology capability, and client management capability, which are primarily related to human and organizational resources (Levina and Ross, 2003).

Personnel capability refers to the knowledge, skills, and expertise of a vendor's personnel in delivering effective services and support for IT projects in the public sector (Makhloufi et al., 2018). This includes proficiency in system integration, user training, and technical assistance. Previous studies indicate that strong personnel capability, deep knowledge and specialized expertise are essential for effective service delivery and comprehensive support (Okolo et al., 2024). The vendor's human capital is thus a key driver of the smooth implementation and ongoing success of IT systems.

Studies have also found that a vendor's methodological capabilities, which refer to their ability to deliver solutions through standardized and well-structured processes, play a significant role in the implementation of IT systems (Wowak et al., 2022). These capabilities encompass the vendor's approach to requirements gathering, system design, implementation, and post-deployment support. According to Murthy et al (2023), vendors with robust methodologies are better equipped to address the unique challenges faced by public sector organizations, facilitating smoother system integration.

From a client management capabilities perspective, effectively managing customer expectations, clarifying roles, and providing regular feedback are essential for successful IT

implementation. Wang and Wang (2019), posit that maintaining transparent communication, setting realistic expectations, and fostering collaboration help vendors minimize project uncertainties and increase the likelihood of a successful deployment. Moreover, strong client management can be developed through clear milestones, proactive problem-solving, and effective communication to ensure that the implementation process runs smoothly. Furthermore, Du et al (2020), found that a vendor's commitment to comprehensive training and ongoing support further enhances the adoption and integration of the IT system within the organization's workflows.

Coercive Pressure

The public sector operates within a complex network of interdependencies involving various external stakeholders, including customers, suppliers, and partners, each exerting significant coercive pressures. These pressures often stem from power imbalances that compel public organizations to adhere to specific behaviours, standards, and practices (DiMaggio & Powell, 1983). Customers, which encompass both citizens and businesses, frequently impose demands for compliance with regulatory standards and high service quality. These demands are reinforced by legal mandates and political directives, making adherence a critical aspect of public sector management (Tenggono et al., 2024). Failure to meet these expectations can lead to severe consequences such as reputational damage, legal repercussions, or loss of funding. For instance, public health agencies are required to provide timely and high-quality healthcare services, as stipulated by stringent regulatory frameworks (Nilsen et al., 2020). Similarly, suppliers also play a crucial role in shaping coercive pressures, as public sector organizations often rely on them for essential goods and services. This reliance is regulated by strict procurement laws that mandate transparent bidding processes. Non-compliance with supplier terms can result in legal penalties or contract cancellations, thereby further constraining organizational autonomy and operational flexibility (Tinali, 2023; Jacob Nsiah-Sarfo et al., 2023).

In addition, partners such as other governmental entities, non-governmental organizations (NGOs), and international bodies contribute to coercive pressures through collaborative efforts, joint ventures, and public-private partnerships. These partnerships often require adherence to shared goals, performance metrics, and governance standards to ensure effective and efficient collaboration (Kaunda et al., 2023). For example, inter-agency collaborations might necessitate aligning with common regulatory frameworks or performance targets, which can further complicate the management of organizational priorities and resources.

The impact of these coercive pressures is both profound and multifaceted, prompting a spectrum of organizational responses. Ahmad et al., 2020 posit that these responses can range from compliance and adaptation to resistance and negotiation. For instance, organizations may seek to comply with external demands to avoid penalties and maintain legitimacy, while also exploring adaptive strategies to better align with evolving expectations. In some cases, they might resist or negotiate terms to protect their autonomy or pursue alternative approaches that better align with their internal goals (Pan & Fan, 2023). The dynamic interplay between these pressures and responses highlights the complexities of public sector management in a highly regulated and interdependent environment. As organizations navigate these external demands, they must strategically balance adherence to

these pressures with the need for operational flexibility, innovation, and strategic alignment. While such pressures may enforce conformity with external standards and practices, they also present challenges related to organizational autonomy, cost, and alignment with internal objectives.

EMR Implementation Success

The rapid advancement of technology has sparked a wave of digital transformation across various sectors, including healthcare. In Malaysia, this digital shift has gained significant momentum, driven by the increasing demand for improved healthcare services alongside technological progress (Ilyana, 2023). The Malaysian government is committed to aligning with global digital trends, as outlined in the 12th Malaysian Plan, which aims to provide better healthcare access to communities, thereby enhancing their well-being and quality of life. This initiative also supports the Sustainable Development Goals (SDGs) Agenda 2030. Digital healthcare, or healthcare technology, has become a key focus at the community level and for achieving operational and strategic goals. One crucial element of this digital transformation is the implementation of EMRs which play a significant role in modernizing healthcare services. EMRs encompass a range of information systems that handle patient records, charts, images, financial details, and other data traditionally stored in physical systems (Jacquemard et al., 2021). These systems offer diverse data types and analytical capabilities, marking a significant shift from physical records. Adopting EMRs involves more than just digitizing paper-based data; it requires careful planning and integration of new monitoring, scheduling, and analytical systems (Macabasag et al., 2022). The process of transferring data and upgrading systems enhances functionality and opens opportunities for further system integration. Effective implementation of EMRs in Malaysia promises long-term benefits, such as ensuring continuity of care, improving clinical judgment, and increasing healthcare productivity through better patient outcomes (Ibrahim et al., 2022; Sulaiman & Wickramasinghe, 2014). Additionally, EMRs can reduce overall costs by minimizing paperwork and avoiding redundant tests.

Vendor IT Capability and Coercive Pressure in Achieving Successful EMR Implementation

The adoption of Electronic Medical Records (EMRs) is increasingly seen as vital for enhancing healthcare efficiency, despite mixed evidence about its overall impact. Recent studies, including those by Stoumpos et al (2023), suggest a growing trend of positive findings, indicating that EMRs can improve both the quality of care and clinical outcomes. However, the extent to which a hospital can enhance its EMR capabilities depends on various factors, with vendor selection being a crucial element. Vendor selection is one of these elements. A mismatch between the vendor's capabilities—such as personnel, methodology, and client management—and the hospital's clinical processes can significantly hinder EMR implementation. This is compounded by other challenges like resource shortages and user resistance to change. According to Saha & Joshi, 2024, the concept of vendor IT capability pertains to the ability of a vendor organisation to identify, resolve, and manage customer demands related to IT.

The organisational capability of a vendor's IT infrastructure is a critical factor that has a notable influence on the improvement of IT outsourcing services' performance. Despite the increasing importance of vendors in the outsourcing partnership, the essential element of vendor IT capability has been largely overlooked in the majority of research studies (Wang

and Wang, 2019; Zhang & Ravishankar, 2019; Du et al., 2020). Participation with the vendor during the post-installation phase for continuous support from the vendor, which includes sharing the status of ongoing projects as well as promoting the understanding of participant roles, and providing valuable comments and feedback, has been one of the factors that have contributed to the successful adoption of EMRs. Wowak et al (2022), stressed the significance of establishing a solid connection between the healthcare organisation and the vendor to enable enhanced quality of service, a good patient experience, and increased operational efficacy. Additionally, as healthcare delivery increasingly focuses on patient-centred care, the technology supporting it becomes more predictable and complex (Okolo et al., 2024). Hence, healthcare professionals and users of EMRs have an open channel of contact with EMR vendors, providing feedback on the limits of the EMRs in order to inspire future advancements (Barrett, 2018).

Meanwhile, the adoption of certain forms of information systems or information technology by a firm's rivals, suppliers, or patients puts pressure on non-adopters to do the same. The belief that users would enjoy certain competitive benefits by utilising particular technologies contributes to this pressure (Ahmad et al., 2020). Encouragement or pressure from the public can be used to exert influence. These tactics can also include making suggestions, making requests, offering rewards or punishments, or any combination of these. Customers, including patients and government agencies, demand higher transparency, accuracy, and efficiency in health data management, while partners and suppliers push for integration and interoperability to streamline operations and improve service delivery (Kaunda et al., 2023). In the Malaysian context, public hospitals are particularly susceptible to these coercive pressures due to their reliance on public funding and adherence to national healthcare policies, which often stipulate EMR adoption as a criterion for compliance (Ahmadi et al., 2017). As a result, hospitals face significant external pressure to align their practices with broader national and international health standards. This pressure not only accelerates EMR adoption but also ensures that the implementation aligns with the expectations of key stakeholders, ultimately contributing to the overall success of EMR initiatives.

Significance of Study

This study holds significant value as it directly addresses the factors influencing the successful implementation of EMR in Malaysia’s public healthcare sector. In a country where EMR adoption has been notably slow, understanding these factors is essential for overcoming persistent barriers that have hindered progress (Hira et al., 2022). The study is particularly focused on the impact of external environmental elements, specifically vendor IT capability and coercive pressure, providing a detailed examination of how these forces shape EMR adoption strategies.

First and foremost, this study is highly beneficial to healthcare policymakers and regulators. It offers a clearer understanding of the external pressures and environmental constraints that impact EMR adoption, providing them with evidence-based guidance to develop more supportive policies and regulations. These insights can drive the creation of frameworks that align with global best practices, ensuring Malaysia’s healthcare system keeps pace with international standards.

IT vendors and service providers, too, stand to gain from this research. By understanding the critical role they play in shaping EMR adoption, vendors can tailor their solutions to better meet the needs of healthcare organizations. The study highlights the importance of providing robust technical support, client management, and flexible solutions that align with the technological readiness of healthcare providers in Malaysia. This alignment is crucial for ensuring long-term sustainability and fostering trust between vendors and healthcare institutions.

Finally, the study has broader implications for the healthcare workforce. EMR systems, when effectively adopted, reduce administrative burdens, minimize errors, and allow healthcare professionals to focus more on patient care (Walle et al., 2023; Kabukye et al., 2020). By exploring the challenges and strategies surrounding EMR implementation, this research can guide initiatives aimed at training and capacity building, thereby ensuring that the workforce is better prepared to embrace digital tools in healthcare settings.

Overall, this research provides actionable insights for developing tailored strategies that address both technical and regulatory challenges. The findings are crucial for improving healthcare delivery, enhancing patient outcomes, and ensuring that Malaysia's public healthcare system is better equipped to integrate EMR systems successfully.

Conclusion

The implementation of Electronic Medical Records (EMRs) in Malaysia's public healthcare sector is significantly shaped by Vendor IT Capability and Coercive Pressure. Vendors with strong technical skills and effective client management are crucial for successful EMR integration and support. Simultaneously, external pressures from government regulators, patients, and partners drive compliance and adoption, underscoring the complex environment in which Malaysian public healthcare organizations operate. In conclusion, the insights gained from this study provide valuable guidance for stakeholders aiming to improve EMR implementation strategies. By focusing on enhancing vendor support and navigating external pressures, Malaysia's healthcare sector can better align with global digital health trends, ultimately contributing to improved patient outcomes and a more efficient healthcare system.

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