

Embracing Technology and Risks in Healthcare Management

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ABSTRACT

Background: The implementation of various forms of technology in recent years has resulted in a significant shift in the management of healthcare facilities. The landscape of healthcare is undergoing a transformation as a result of technological advancements such as electronic health records and telemedicine.

Aim: To investigate the complex link that exists between the implementation of new technologies and the management of risks in the healthcare industry. Also explores the benefits and cons of integrating technology, as well as several ways for reducing potential risks and upcoming developments in the industry.

Method: A thorough study of data acquired through desktop searches and government reports. In addition, case studies, expert opinions, and a questionnaire were provided to Jordanian healthcare providers working in various institutions.

Conclusion: This research has illuminated the importance of technology in healthcare administration and its risks and prevention. To succeed in the market, healthcare firms must be able to balance technology's benefits and risks. In the modern era, healthcare businesses must embrace technology and prioritize risk management. These rules aim to safeguard patient health and healthcare system credibility.

Keywords: Healthcare technology, Electronic health records, Telemedicine

1. Introduction

The process of systematically identifying potential hazards that could constitute a risk to an organization, its patients, its personnel, or any other individuals who may be present with in the institution is an essential part of risk management in the healthcare industry. When compared to its analogues in other sectors of the economy, risk management in the healthcare sector is distinguished by the direct influence it has on individual patients' lives.

The prompt illustrates the importance of speed, accuracy, and efficiency in resolving risks, since these factors have the potential to impact the outcome of life-or death situations for

patients, staff members, or visitors. The prompt also highlights the need of preventing risks from occurring in the first place. While it is essential to protect the organization's financial stability in order to ensure that it will continue to exist in the future, the protection of individual people should take precedence over all other concerns.

In addition, there is a growing tendency among healthcare providers to make use of innovative technology such as tele health platforms, which consequently contributes to an increase in the cost of providing healthcare. The introduction of new programs, such as reimbursement and performance evaluation criteria, can be credited with contributing to the increase in complexity that was seen. The prevalence of problems, such as compliance with

privacy regulations and cybersecurity standards, is constantly growing, as is the severity of these problems. The efficiency of a healthcare risk management program is directly proportional to the degree to which it makes use of centralized and integrated risk management technologies.

As a consequence of this, a great number of healthcare companies continue to use separate point solutions to handle a variety of issues, including patient safety, compliance, claims, and patient experience, amongst others. The lack of integration that exists across these many systems creates issues in terms of organizing, reporting, and responding in a timely and effective manner. A delayed reply could be an indication that additional patients were put in danger before the problem was resolved.

2. Problem Statement

Concerns that were previously unheard of and are now becoming more pervasive are being brought about as a result of the faster rate of technological innovation in the healthcare industry. In addition, the healthcare industry is undergoing technological change, which presents unique risks that are becoming increasingly pervasive. These risks include cyberattacks, data breaches, difficulties in meeting regulatory compliance requirements, and operational resilience problems.

In the realm of medical care, the use of artificial intelligence has the potential to provide a number of challenges, and the purpose of this investigation is to identify those challenges and investigate possible responses to those challenges. These dangers include issues that arise in the areas of ethics, law, society, and technology. Remote access, data management, patient involvement, and preventive care are few examples of essential aspects of the healthcare industry that have garnered a large amount of attention and importance in recent years.

3. Literature Review

Technology has emerged as an indispensable component of modern healthcare, which has led to an abundance of administrative advancements within the healthcare sector as a whole, that's way as¹ specified it's an essential component in in the process of facilitating data driven decision. Additionally², state that the use of technology into the management of healthcare administration has led to the realization of major benefits. These benefits include a rise in patient participation, a reduction in administrative responsibilities, improvement in clinical decision support, and an expansion of access to healthcare services. Making, enhancing resource allocation, and encouraging optimal patient care. These developments cover a broad range of technological areas, including electronic health record (EHR) systems, telemedicine platforms, AI driven analytics, and robotic process automation, to name a few. Together, these technological advancements are transforming the face of healthcare in a way that promises increased productivity and better outcomes for patients. The management of healthcare has been met with a great deal of difficulty as a result of the introduction of technology.

First and foremost, the digitalization of healthcare data has increased the worries that surround data security and patient privacy, with the possibility of data breaches and unauthorized access to electronic health information looming large³. In addition, although technology may bring potential benefits in clinical decision-making, it also adds the chance of errors, such as inconsistencies in data entry or dependence on incorrect

algorithms, which presents a serious risk to patient care⁴.

These errors pose a threat to the quality of treatment that patients get. In addition to these clinical problems, healthcare companies also have to deal with the complex web of challenges associated with regulatory compliance. This is especially true in the context of tough legislation such as HIPAA in the United States, which mandate stringent data protection and privacy protections.

In addition, the significant financial investments required by the adoption of technology come with their own set of inherent risks, particularly in the event that the anticipated returns on investment (ROI) do not materialize in the manner that was envisioned⁵. Within the context of today's technology driven healthcare environment, the presence of problems with several facets highlights the necessity of cautious navigation and strategic risk management. On the other hand, when it comes to the administration of healthcare, effective risk management requires taking a strategic approach to the risks associated to technology. This begins with the methodical identification and evaluation of possible threats and vulnerabilities within the technical infrastructure, making use of techniques such as risk assessment frameworks and technology risk audits⁶.

In light of the tremendous influence that technology has on risk management, strategies need to be rethought in order to make better use of real-time data and predictive analytics in order to improve risk assessment and risk mitigation. Also, proactive risk mitigation is of the utmost importance, and it is imperative that enterprises preemptively identify and address potential risks by utilizing risk management plans that are both comprehensive and routinely updated⁷. This will ensure that organizations are resilient in the face of an ever-changing technological world.

With the help of this multidimensional strategy, administration in the healthcare industry is better equipped to successfully negotiate the complexities of technology integration. Examples such as data breaches that put patient records at risk, ransomware attacks on healthcare organizations, and weaknesses in medical devices offer as compelling examples. The process of drawing conclusions and learning from previous accidents is essential to improving risk management⁸. Finding and analyzing incidents like this gives healthcare companies the ability to hone their tactics, strengthen their cybersecurity measures, and strengthen their approach to technology integration, which ultimately helps them strengthen their defences

4. Methodology

Among the procedures are searches of the databases starting in 2016 and going forward in checking whether there are already articles connected to the technology that is used in the healthcare industry is one of the ways that the complete search methods are offered. Furthermore, the methodologies encompass the screening of abstracts from other works that discuss the incorporation of technology in general for health organizations by cross checking the references list of the articles that are included to ensure that they are relevant to the primary topic. On the other hand, a questionnaire was developed to help obtain thoughts and input on the issue of the integration of technology and the associated risks in healthcare administration. This questionnaire was made to emphasize the crucial component for the integration of technology and the associated risks in healthcare administration.

4.1 Technology Integration in Healthcare Management

Fostering a culture that accepts technology and encourages workers to adapt and engage in its deployment is crucial for healthcare technology integration. Staff training and education allow healthcare practitioners to use technology successfully through regular training programs. Additionally, technology solutions should be chosen and implemented in accordance with the company's goals through extensive study, vendor assessments, and project management². Furthermore, to enable seamless and secure technology adoption, compliance with data protection laws, healthcare regulations, and industry standards is crucial. Healthcare technology integration prioritizes cybersecurity via data encryption, access controls, and vulnerability assessments⁹. Likewise, Technology system monitoring and auditing provide real time threat identification and quick security incident responses. Comprehensive incident response strategies are also needed to organize and effectively respond to security breaches and technology incidents. Collaborative risk management integrates IT, clinical, and administrative stakeholders to identify and mitigate risks, improving risk management efficacy¹⁰. Last but not least, healthcare technology includes electronic health records (EHRs), telemedicine, wearable devices, artificial intelligence (AI), and Internet of Things (IoT) devices, among others, and the benefits of such technology are for sure dependent on the types of technology used in healthcare management.

4.2 Threats Posed by Technology in Healthcare

Data Security and Privacy Concerns: The potential of data breaches and privacy violations is one of the most important issues. With so much patient data kept online, healthcare companies must be especially diligent in protecting this sensitive information.

6.3 Medical errors caused by technology

While technology can reduce errors, it can also create new hazards, such as software glitches or data misinterpretation, resulting in medical errors with catastrophic implications.

Regulatory Compliance Difficulties: Healthcare is highly regulated, and technology must follow stringent compliance rules, which can be difficult to traverse. Noncompliance can have legal and financial consequences.

Financial Risks and Investments: The upfront expenses of deploying technology can be significant, and if not managed correctly, they can put a burden on healthcare organizations' finances.

4.4 Technology and Risk Management in Context

The first step in proactive risk identification is to conduct an assessment of the vulnerabilities present in technological systems, as well as the possible dangers that these pose and the effect they have on the safety of patient data. In addition to this, it is essential for efficient risk management to conduct an analysis of the effects that technology has on risk management by gaining an awareness of the ways in which technology alters the risk landscape. This involves being aware of the ways in which technology might reduce some dangers while simultaneously increasing other risks. Also, discussed the significance of proactive risk mitigation, which examines the idea that rather than taking a reactive approach, healthcare organizations should adopt a proactive attitude and adopt a proactive posture by adopting risk mitigation measures and developing contingency plans.

4.5 Recommended Techniques for Using Technology

First recommended technique is developing a culture that values and supports the use of technology which is essential to a successful healthcare management strategy to develop a culture that values and supports the use of technology. Then conducting training and education for staff, as the extensive training programs guarantee that medical professionals are able to make appropriate use of technology and are aware of any hazards that may be linked with its application. Also, selecting and putting into practice the most appropriate technology requires which is vital to engage in extensive planning, review, and implementation processes in order to reduce the risks associated with the adoption of technology.

Finally, a assuring compliance with regulations In order to minimize compliance-related risks, healthcare companies need to ensure that they are always up to date on the ever-changing regulations and standards.

5. Risk Mitigation Strategies

Implementing strong cybersecurity measures: It is necessary to have effective cybersecurity measures in place, as well as continuous monitoring, in order to protect patient data and infrastructure against cyber threats.

Continuous Monitoring and Auditing: Regularly checking and auditing technology systems helps find possible security holes so they can be fixed as soon as possible.

Incident Response Planning: Making plans for how to handle an incident Because of the potential harm that a security breach or a technology problem could cause, it is important to have a clear plan for how to handle an event.

Collaborative Approaches to Risk Management: Ways of managing risk that are based on working together It is very important for IT groups, healthcare providers, and risk management teams to work together to reduce risk across the board.

6. Case Studies

The example of healthcare institution ransom ware a attacks is. The wanna Cry ransomware outbreak in 2017 disrupted healthcare services worldwide, including the NHS. This taught us the significance of frequent system updates, employee cybersecurity training, and a strong incident response plan to mitigate cyberattacks. Data breaches are another example of Health insurance provider Anthem Inc. Which was breached in 2015, revealing almost 78.8 million personal records. The lessons gained include the importance of strong encryption, regular security audits, and employee training on phishing scams. Another issue was incorrect software configuration. A software error in the radiation therapy machine There a 25 caused radiation overdoses and deaths in the early 2000s. The importance of thorough software testing, validation, and fail safes to prevent catastrophic failures. Similar concerns concerning telemedicine privacy. A 2019 telemedicine app security is exposes patient-provider conversations. Lessons learnt ensure telehealth platforms have end-to-end encryption and regular vulnerability checks. Finally, AI Misdiagnosis an AI system misidentified a rare eye illness in 2018, resulting in inaccurate treatment options. Lessons learnt include the necessity for AI algorithm validation and human monitoring in diagnosis.

7. Discussion and Analysis of the Questionnaire

7.1 Questionnaire overview

This questionnaire targeted healthcare stakeholders and professionals, as the feedback can provide valuable insights and perspectives on technology integration and its risks in healthcare administration and provide a comprehensive understanding of the respondent's views, experiences, and concerns. It can be tailored to the audience and interests.

The survey assessed respondents' knowledge with contemporary healthcare administration technologies. In addition to Continuous training and education for healthcare Personnel which is necessary due to the fast integration of technology in healthcare.

Furthermore, questions to highlight Privacy and Security of Data, because digital health records and telemedicine have made data privacy and security crucial, as this question measures respondents' data breach and misuse concerns and high worry may signal a need for better security or increased data protection transparency. On the other hand, an open-ended question about Future View which lets respondents envision healthcare administration's future with technology, because their answers can reveal hopes, expectations, and innovation opportunities. The same for the question regarding Technology Integration Obstacles Effective implementation requires understanding barriers, as healthcare managers can improve technology integration by recognizing common challenges and devising solutions.

7.2 Data Analysis

The questionnaire had a total of 35 respondents, and 35 of those respondents came from a medical background. 21 of them had a medical doctorate (67.7%), 7 had a medical technology degree (22.6%), 2 had a biomedical engineering degree (6.5%), and 1 had a pharmacy degree (3.2%). The average number of years worked in health care facilities was 8.95 for all participants. Only nine (26.5%) of the respondents had not come across any information on the incorporation of technology into the healthcare industry, while the remaining 25 (73.5%) had.

Only three of the respondents (8.8%) didn't see how the integration technology could be really advantageous, whereas a total of 14 (41.2%) respondents saw it as extremely beneficial. About 25 of the respondents (71.4% of the total) had a greater familiarity with electronic health records (EHR), 13 (37.1% of the total) had a greater familiarity with telemedicine platforms and wearable health devices (WHD), 12 (34.3% of the total) had a greater familiarity with artificial intelligence (AI) in diagnostics, and 5 (14.3%) had a greater familiarity with virtual reality (VR) in patient care.

Because training and education of integration technology to healthcare administration is an important factor during the rapid qualitative shift in technology nowadays, this questionnaire found that 14 of the respondents, or 42.4 percent, said that there is insufficient training and education to healthcare employs, while only 7 of the respondents, or 21.2%, said the opposite.

It is essential for effective work to have an understanding of the obstacles that stand in the way. Fifteen of the respondents (44.1%) were of the opinion that the cost

of the technology was the most significant barrier that it could encounter, followed by ten (28.6%) for a lack of knowledge and/or awareness and two (5.7%) for technical faults.

7.3 Findings

The respondents who possessed a higher level of familiarity with electronic health records (EHR), as well as those who possessed a higher level of familiarity with telemedicine platforms and wearable health devices (WHD), perceived the integration of these technologies as highly advantageous. On the other hand, individuals who possessed a lesser degree of familiarity with artificial intelligence (AI) in the field of diagnostics, as well as virtual reality (VR) in the realm of patient care. It is asserted that engaging in training activities will augment one's proficiency in effectively navigating and managing the technologies. The significance of integrating technology into healthcare administration is a crucial aspect in the current era of rapid technological advancements. However, it has been observed that the training and instruction provided to healthcare employees in this field are inadequate. Moreover, a substantial number of participants indicated that possessing an awareness of the hindrances that impede progress is crucial for achieving successful outcomes. Additionally, they emphasized that the expense associated with implementing the technology was seen as the most prominent barrier. Furthermore, a lack of expertise was also identified as a key impediment.

8. Conclusions

In conclusion, this study has conducted a thorough examination of technology integration within healthcare administration, putting light on both its significant benefits and the inherent concerns it poses. While emphasizing the benefits of technology adoption, it has also addressed significant risks, such as data security and regulatory issues, and has outlined effective risk mitigation techniques.

Recognizing the critical need of maintaining a delicate balance between technology and risk management, this article emphasizes that, despite technology's revolutionary potential, healthcare institutions must proactively address the vulnerabilities created by technology.

Furthermore, the ongoing education and training pertaining to health technology inside healthcare organizations contribute significantly to the integration of these technologies, resulting in substantial benefits and enhanced proficiency in technology navigation and administration.

Looking ahead, successful navigation of the ever changing healthcare IT Landscape is dependent on prioritizing cybersecurity, prudent adoption of emerging technologies, and the nurturing of an innovative and adaptable culture.

9. Acknowledgement

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10. Conflict of Interest

There is no conflict of interest.

11. Rferences

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