SE7220 Assignment

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Introduction

Risk management plays a crucial role in project environments by identifying, evaluating, and mitigating potential hazards and uncertainties that can have an effect on project outcomes (Hopkin, 2018; Power, 2004; Rasmussen, 1997). It is a systematic approach that enables organisations to proactively address risks and increase the probability of effectively completing project objectives. This work will examine the fundamental principles and key concepts of risk management in project contexts, with a special emphasis on the case study of the failed NHS patient record system (Cresswell & Sheikh, 2009).

According to Rasmussen (1997), risk management is the process of identifying, analysing, and addressing potential threats to the success of an undertaking. It entails a methodical and organised process for evaluating uncertainties and developing strategies to minimise their negative impact (Hopkin, 2018). Risks can originate from a variety of sources, including technological, organisational, financial, and environmental variables (Tchankova, 2002). They can be classified as internal or external to the enterprise and can have positive or negative effects, which are commonly referred to as opportunities and hazards, respectively (Tchankova, 2002).

Risk management relies heavily on risk assessment (Gambrill & Shlonsky, 2000). It involves identifying, analysing, and evaluating risks to determine their probability and potential repercussions. By executing a thorough risk assessment, project managers and stakeholders gain a deeper comprehension of the overall risk exposure and are able to make more informed decisions regarding risk response strategies (Stern & Fineberg, 1996). This facilitates the prioritisation of risks based on their significance and the allocation of adequate resources to mitigation efforts (Tchankova, 2002).

Risk mitigation is an indispensable aspect of risk management (Gambrill & Shlonsky, 2000). It entails implementing measures to reduce the probability or impact of identified hazards (Gambrill & Shlonsky, 2000). This may involve instituting preventative measures, developing contingency plans, transferring risks to third parties, or accepting risks whose prospective impact is deemed permissible (Gambrill & Shlonsky, 2000; Power, 2004). By proactively addressing risks with mitigation strategies, organisations improve the likelihood of project success and reduce the likelihood of potential disruptions (Council, 2009; Gambrill & Shlonsky, 2000).

The engagement of stakeholders is essential throughout the risk management process (Sloan, 2009). Effective stakeholder engagement ensures that project stakeholders' perspectives and expertise are considered when identifying and responding to risks (Sloan, 2009). Engaging stakeholders fosters collaboration, promotes transparency, and increases the probability of successful risk management results (Thaler & Levin-Keitel, 2016). By actively involving stakeholders, organisations can gain access to their knowledge and insights, resolve their concerns, and gain support for their risk mitigation efforts (Sloan, 2009; Thaler & Levin-Keitel, 2016).

Overall, risk management principles and methods are essential for the successful completion of a project (Power, 2004). By systematically identifying, evaluating, and mitigating risks, organisations can reduce the negative impact of uncertainties and increase

the probability of achieving project objectives (Rohrmann, 2008). Engagement of stakeholders and effective communication plays a crucial role in ensuring that risks are identified and addressed from diverse perspectives (Sloan, 2009; Thaler & Levin-Keitel, 2016). Through continuous development and learning, organisations can refine their risk management practises and increase their capacity to navigate effectively through challenges and uncertainty.

The NHS Patient Record System

The NHS patient record system serves as a prominent example of a large-scale IT project whose risk management failed catastrophically (Brennan, 2005). Despite its initial goals of developing the largest non-military IT system in the world (Brennan, 2005), the project encountered numerous obstacles and setbacks. Delays, concerns over the applicability of the software, and disruptions to user operations all contributed to its ultimate neglect, resulting in a substantial financial burden on taxpayers (Dolfing, 2019).

This study will examine how risk management principles, methods, and tools could have been implemented, enhanced, or adapted to address the complexities of such a large undertaking (Gambrill & Shlonsky, 2000; Qazi et al., 2016). By analysing the degree of complexity, the applicability of risk management ideals, and the limitations and benefits of qualitative and quantitative methods (McNeil et al., 2015), valuable insights can be obtained for improving risk management practices in similar contexts (Qazi et al., 2016).

Overview of the NHS System Failure (Level of Complexity)

Ineffective risk management in major IT projects can lead to disasters (Hopkin, 2018) like the NHS patient record system fiasco. The NHS's ambitious plan to construct a big healthcare-focused IT system for patient data failed in September 2013, creating a financial burden and operational chaos (Dolfing, 2019).

The primary goal was to create a consolidated electronic record system that would modernise healthcare delivery, increase patient care coordination, and speed up NHS administrative operations (Dolfing, 2019). Delays, faulty software, and mismanagement caused the project to fail (Campion-Awwad et al., 2014).

NHS patient record system failure caused the financial disaster. Taxpayers paid £10 billion, £3.6 billion more than expected (Dolfing, 2019). Mismanagement of cash and risk management generated this outrageous cost excess (Dolfing, 2019).

According to Sheikh et al. (2011), early delays and software appropriateness problems plagued the project (Dolfing, 2019). Due to worries about software components, critical systems were repeatedly delayed (Dolfing, 2019). This delayed NHS patient administration system adoption (Campion-Awwad et al., 2014).

System failure has dire repercussions. Only 13 of 169 acute facilities obtained the National Programme's full patient administration systems after seven years of deployment (Dolfing, 2019).

The new technologies also confused and disrupted NHS users (Campion-Awwad et al., 2014). This disturbance delayed crucial cases and cost a lot owing to additional staff and internal

investigations. The Milton Keynes Foundation Trust wrote a warning letter about the system's ineffectiveness (Anderson, 2010; Sampson, 2012; Sheikh et al., 2011).

The NHS patient record system disaster shows the need for risk management in complicated IT projects. Risk assessment (Tchankova, 2002), software evaluation, and stakeholder participation (Sloan, 2009; Thaler & Levin-Keitel, 2016) are crucial during deployment. This project's failure shows the need for risk assessment (Gambrill & Shlonsky, 2000), mitigation, and contingency planning for IT system delivery in healthcare and beyond (Bandyopadhyay et al., 1999).

This work will analyse risk management concepts, tactics, and instruments that may have been adopted or improved to handle the NHS patient record system project's difficulties in the following sections. Moreover, it also aims to improve enterprises' risk management practises by examining complexity, assessing risk management concepts, and addressing the pros and cons of qualitative and quantitative methodologies (Qazi et al., 2016).

Relevant Risk Management Strategies

Risk management systematically identifies, evaluates, and mitigates possible hazards and uncertainties, which is crucial to project success. Risk management may have prevented the NHS patient record system collapse (Martin et al., 2007).

Risk management involves recognising, evaluating, and managing hazards to an endeavour’s success (Hopkin, 2018). It involves a systematic approach to assessing risks and devising mitigation methods (Stern & Fineberg, 1996). Opportunities and dangers can be internal or external to the organisation and have positive or negative repercussions (Rohrmann, 2008).

Risk assessment underpins risk management (Gambrill & Shlonsky, 2000). Risk identification, analysis, and evaluation determine the likelihood and consequences. Project managers and stakeholders may make better risk response decisions after a thorough risk assessment (Gambrill & Shlonsky, 2000). This makes risk prioritising and mitigation resource allocation easier.

Risk minimization is essential as it involves taking steps to mitigate dangers (Reason et al., 2001). This may entail taking precautionary actions, creating contingency plans, shifting risks to third parties, or accepting acceptable risks (Reason et al., 2001). Organisations increase project success and prevent interruptions by proactively mitigating risks (Hopkin, 2018; Pyke & Tang, 2010; Reason et al., 2001).

Risk management requires stakeholder involvement (Sloan, 2009; Thaler & Levin-Keitel, 2016). Stakeholder involvement helps project stakeholders identify and address hazards (Sloan, 2009; Thaler & Levin-Keitel, 2016). Stakeholder engagement enhances openness, cooperation, and risk management success (Sloan, 2009; Thaler & Levin-Keitel, 2016). Organisations may acquire stakeholder information, settle issues, and get support for risk mitigation by actively involving them (Rasmussen, 1997).

Risk management is crucial to project success (Rohrmann, 2008). Organisations can minimise uncertainty and boost project success by methodically identifying, analysing, and managing risks. Stakeholder engagement and

communication help identify and handle hazards from multiple viewpoints (Sloan, 2009). Organisations may improve their risk management and handle uncertainty via continual development and learning (Council, 2009).

The NHS patient record system programme may have enhanced risk management by implementing these relevant risk management concepts and tactics (Sampson, 2012). These principles ensure that risks are discovered, assessed, and managed when implemented diligently. Such concepts and procedures would have improved the project's chances of success and reduced the NHS patient record system failure's financial and operational costs (Sampson, 2012).

The report's fundamental concepts

To understand risk management methods and their application to the NHS patient record system breakdown, firstly the report's essential ideas must be understood (Brennan, 2005). The above concepts provide the foundation for examining complex issues, evaluating risk management principles, and offering improvements.

Risk management is a systematic approach to project management (McNeil et al., 2015). The process involves identifying, assessing, and mitigating project risks (Stern & Fineberg, 1996). Risk management is used to evaluate the NHS patient record system after its failure (Campion-Awwad et al., 2014).

Risks might affect project goals, mostly due to technical, organisational, financial, and external factors that might cause challenges (Qazi et al., 2016; Rasmussen, 1997). Understanding risk is essential to understanding and analysing the NHS patient record system project's challenges (Stern & Fineberg, 1996).

Risk assessments are essential to risk management (Gambrill & Shlonsky, 2000). Risks are assessed for probability and impact on project goals. Project teams may identify critical risks and allocate resources by assessing risks by severity, priority, and controllability (Power, 2004; Sloan, 2009).

Prevention, transfer, and reduction strategies are developed and implemented under risk mitigation (ChePa et al., 2015). This approach may prevent possible dangers, protect project goals, and boost project success (ChePa et al., 2015). To improve risk management, the NHS patient record system project's risk mitigation techniques must be reviewed (Sampson, 2012).

Risk management requires stakeholder participation as stakeholder involvement improves risk identification, collaboration, and perspective (Sloan, 2009; Thaler & Levin-Keitel, 2016). Stakeholder engagement in the NHS patient record system project may be assessed as its impact on risk management.

Contingency planning is crucial to risk management as substitute techniques are created to reduce risks (Zsidisin et al., 2000). Project teams may reduce interruptions by creating risk response strategies that can be implemented quickly (Martin et al., 2007). Contingency planning in the NHS patient record system programme provides insights into reaction techniques and suggestions for future initiatives.

Recording and storing project findings helps firms enhance their risk management methods (Rohrmann, 2008). The NHS patient record

system failure provides significant information into key areas for improvement and future projects (Sheikh et al., 2011).

To conclude, understanding and using risk management concepts and methods—risk appraisal, reduction, stakeholder participation (Sloan, 2009; Thaler & Levin-Keitel, 2016), backup planning, and knowledge acquisition improve project success (Stern & Fineberg, 1996). By addressing risk management and using effective strategies, organisations may enhance their ability to detect, analyse, and mitigate risks, enhancing project success (Hopkin, 2018).

The NHS patient record system risk management methods may be understood and assessed using these core ideas (Campion-Awwad et al., 2014). A thorough investigation of these ideas might reveal challenges, risk reduction strategies, and risk management implications (Sampson, 2012).

Complexity exhibited by the NHS Project

Its scope and ambition made the NHS patient record system project complicated (Martin et al., 2007). The goal was to create a nationwide non-military IT infrastructure for the National Health Service (NHS) to improve patient record management and healthcare delivery. The project's size and lofty goals made it difficult throughout (Martin et al., 2007).

The NHS patient record system initiative was complicated by geographical expanse, stakeholder background, technical challenges, organisational transformation, data migration and amalgamation, temporal and resource constraints, and regulatory and compliance considerations (Anderson, 2010; Brennan, 2005; Campion-Awwad et al., 2014). The patient record system's acceptance and UK healthcare services' improvement depended on expert management of its complexities (Campion-Awwad et al., 2014).

The initiative covered a vast UK medical network. Coordination, integration (Martin et al., 2007), and countrywide interoperability were difficult due to the project's size.

The project's stakeholders had diverse needs and interests (Sheikh et al., 2011). Involving and organising parties like healthcare providers, IT merchants, the government, CEOs, and patients was crucial yet difficult (Anderson, 2010). Stakeholder governance and careful manoeuvring were needed to balance opposing interests and promote efficient collaboration among different parties (Elias et al., 2002).

Creating a comprehensive patient record system was difficult because integrating various IT systems while moving data and guaranteeing security was hard (Anderson, 2010). Compatibility with several medical equipment and systems added to the technological challenges (Sheikh et al., 2011).

The organisational transformation was key to the project's process, procedural, and technology changes in healthcare organisations (Bandyopadhyay et al., 1999). Large-scale change management in a diverse technology and cultural environment could be challenging (Bandyopadhyay et al., 1999; Cresswell & Sheikh, 2009). Addressing staff concerns, overcoming change resistance, and ensuring seamless transitions required effective change management practises (Rasmussen, 1997).

Consolidating a lot of patient data from many systems into a single record system was difficult (Cresswell & Sheikh, 2009). Data correctness, integrity, and interoperability across platforms

and legacy systems need careful planning and execution (Anderson, 2010). Data cleaning, standardisation, and mapping may help data migration and integration go smoothly (Martin et al., 2007).

Due to its goal of creating an all-encompassing system quickly, the project had resource and time constraints (Martin et al., 2007; Rasmussen, 1997). Furthermore, effective project management balanced time restrictions and resource allocation guarantees thorough testing, stakeholder involvement, and quality assurance (Martin et al., 2007; Rasmussen, 1997). Planning and prioritising were needed to overcome these constraints and complete the project (Martin et al., 2007).

The healthcare industry must follow strict rules to protect patient privacy, data security, and ethics (Anderson, 2010). Legal and ethical issues have to be understood and followed throughout the project to manage rules including data protection legislation and healthcare standards.

Due to its scale, the diverse stakeholder landscape, intricate technical obstacles, and rigorous regulatory requirements, the NHS patient record system was unparalleled in complexity (Brennan, 2005; Campion-Awwad et al., 2014). Risk reduction and successful IT projects need understanding and addressing these complexities (Stern & Fineberg, 1996).

The Usefulness of Risk Management Principles

Risk management might have helped the NHS patient record system project manage its complexities and risks. Through risk management, analysis, and mitigation, these approaches may have helped the project succeed (Aven, 2011). Risk management may improve the NHS patient record system project.

Risk identification might have helped the project team anticipate and resolve patient record system installation concerns (Aven, 2011; Tchankova, 2002). Early risk identification and risk mitigation reduce the chance of hazards materialising and inhibiting project goals (Aven, 2011; Tchankova, 2002).

Risk management emphasises risk assessment (Gambrill & Shlonsky, 2000). The project team can identify major risks by assessing likelihood and impact (Perera, 2017). Knowledge helps the team prioritise actions and manage high-priority hazards that might hinder patient record system installation (Campion-Awwad et al., 2014; Cresswell & Sheikh, 2009).

Risk management reduces risks proactively since teams can build and implement risk response strategies by identifying and assessing possible hazards (Council, 2009; Tchankova, 2002). Risk mitigation strategies may include comprehensive software testing, a pilot programme to test the system's functionality in select healthcare institutions, and contingency plans for potential disruptions (Bandyopadhyay et al., 1999; Council, 2009; Qazi et al., 2016).

Risk management emphasises stakeholder engagement and communication (Sloan, 2009; Thaler & Levin-Keitel, 2016). Healthcare professionals, IT specialists, and end-users may help with risk management. Stakeholder engagement early in the NHS patient record system project might have improved risk detection and comprehension (Martin et al., 2007). Effective communication channels would have helped stakeholders stay informed and give

input throughout the project by quickly disseminating risk-related information (Rohrmann, 2008).

For complicated projects like the NHS patient record system, contingency planning is essential (Martin et al., 2007). Project team contingency planning help reduces risk (Zsidisin et al., 2000).

Furthermore, systematic surveillance detects new dangers, reassesses existing risks, and changes risk mitigation techniques (Council, 2009; Zsidisin et al., 2000). Continuous evaluation helps the project team review and improve risk management measures (Council, 2009; Rasmussen, 1997). Continuous monitoring of the NHS patient record system project would have helped identify software performance difficulties, user input concerns, and possible risks quickly, allowing swift remediation (Anderson, 2010).

Adoption of risk management techniques

Risk management requires several methods to identify, assess, and mitigate risks (Power, 2004). The NHS patient record system project may have been managed better with such tools and procedures (Anderson, 2010). Documenting risk descriptions, likelihood and repercussions would have helped risk assessment and response planning (Bandyopadhyay et al., 1999).

The risk assessment matrix, also known as the risk probability and effect matrix, is a visual tool used to rate hazards by chance and impact (Eppler & Aeschimann, 2009). The project team may graphically analyse risk size and focus on high-priority issues that could significantly impact project goals using a matrix (Shenoy, 1994).

Table 1: NHS Risk scoring guide, 2018. Taken from www.ulh.nhs.uk

	Severity score & descriptor (with examples)				
Risk type	**1 Very low**	**2 Low**	**3 Moderate**	**4 High**	**5 Very high**
Harm (physical or psychological)	Low level of harm affecting a small number of patients, staff or visitors within a single location.	Low level of harm affecting a large number of patients, staff or visitors within a single location.	Significant but not permanent harm affecting multiple patients, staff or visitors within a single directorate.	Significant long-term or permanent harm affecting multiple patients, staff or visitors within one or more directorates.	Significant long-term or permanent harm affecting a large number of patients, staff or visitors throughout the Trust.
Service disruption	Manageable, temporary disruption to peripheral aspects of service provision affecting one or more services.	Noticeable, temporary disruption to essential aspects of service provision reducing the efficiency & effectiveness of one or more services.	Temporary, unplanned service closure affecting one or more services or significant disruption to efficiency & effectiveness across multiple services.	Extended, unplanned service closure affecting one or more services; prolonged disruption to services across multiple directorates / sites.	Indefinite, unplanned general hospital or site closure.
Compliance & reputation	Limited impact on public, commissioner or regulator confidence. e.g.: Small number of individual complaints / concerns received.	Noticeable, short term reduction in public, commissioner and / or regulator confidence. e.g.: Recommendations for improvement for one or more services; concerns expressed in local / social media; multiple complaints received.	Significant, short term reduction in public, commissioner and / or regulator confidence. e.g.: Improvement / warning notice for one or more services; independent review; adverse local / social media coverage; multiple serious complaints received.	Significant, long-term reduction in public, commissioner and / or regulator confidence. e.g.: Special Measures; prohibition notice for one or more services; prosecution; sustained adverse national / social media coverage.	Fundamental loss of public, commissioner and / or regulator confidence. e.g.: Suspension of CQC Registration; Parliamentary intervention; vitriolic national / social media coverage.
Finances	Some adverse financial impact (unplanned cost / reduced income / loss) but not sufficient to affect the ability of the service / department to operate within its annual budget.	Noticeable adverse financial impact (unplanned cost / reduced income / loss) affecting the ability of one or more services / departments to operate within their annual budget.	Significant adverse financial impact (unplanned cost / reduced income / loss) affecting the ability of one or more directorates to operate within their annual budget.	Significant adverse financial impact (unplanned cost / reduced income / loss) affecting the ability of the organisation to achieve its annual financial control total.	Significant aggregated financial impact (unplanned cost / reduced income / loss) affecting the long-term financial sustainability of the organisation.

Table 2: NHS Risk scoring matrix, 2018. Taken from www.ulh.nhs.uk

Likelihood score & descriptor (with examples)				
1 Extremely unlikely	**2 Quite unlikely**	**3 Reasonably likely**	**4 Quite likely**	**5 Extremely likely**
Unlikely to happen except in very rare circumstances. Less than 1 chance in 1,000 (< 0.1% probability). No gaps in control. Well managed.	Unlikely to happen except in specific circumstances. Between 1 chance in 1,000 & 1 in 100 (0.1 - 1% probability). Some gaps in control; no substantial threats identified.	Likely to happen in a relatively small number of circumstances. Between 1 chance in 100 & 1 in 10 (1- 10% probability). Evidence of potential threats with some gaps in control.	Likely to happen in many but not the majority of circumstances. Between 1 chance in 10 & 1 in 2 (10 - 50% probability). Evidence of substantial threats with some gaps in control.	More likely to happen than not. Greater than 1 chance in 2 (>50% probability). Evidence of substantial threats with significant gaps in control.

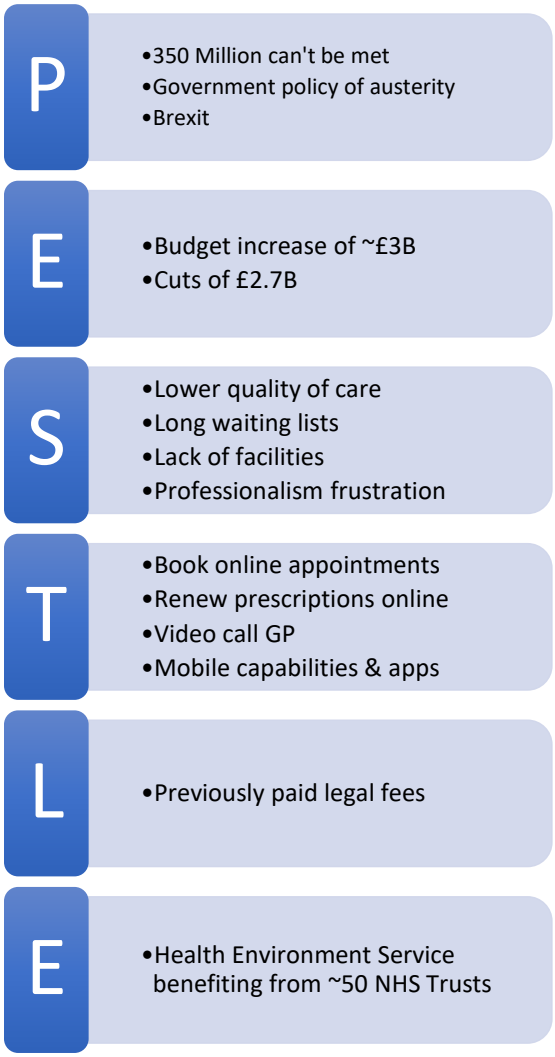
Risk scoring matrix						
Severity	5	5	10	15	20	25
	4	4	8	12	16	20
	3	3	6	9	12	15
	2	2	4	6	8	10
	1	1	2	3	4	5
		1	2	3	4	5
		Likelihood				
Risk rating		Very low (1-3)	Low (4-6)	Medium (8-10)	High (12-16)	Very high (20-25)

Fishbone diagrams, also known as Ishikawa diagrams or cause-and-effect diagrams, provide visual aids to investigate and understand the root causes of a problem or risk (Eppler & Aeschimann, 2009). The aforementioned diagrams (Tables 1 & 2) offer a systematic framework for discerning plausible causal factors that may contribute to a particular risk occurrence (Shenoy, 1994). Through the examination of various causal categories, including individuals, procedures, technology, and surroundings, project teams can attain a more profound comprehension of the fundamental elements that give rise to potential hazards (Bandyopadhyay et al., 1999; Eppler & Aeschimann, 2009; Rasmussen, 1997; Thaler & Levin-Keitel, 2016). The utilisation of fishbone diagrams within the scope of the NHS patient record system initiative could have facilitated a methodical examination of the fundamental origins of potential hazards, thereby enabling the formulation of focused risk mitigation tactics.

Graphical representations of decision trees facilitate the analysis and evaluation of various alternative courses of action, including their respective risks (Shenoy, 1994). Probability trees offer a graphical depiction of possible results and their associated likelihoods, facilitating the process of making informed choices in situations characterised by indeterminacy (Shenoy, 1994). Within the framework of the NHS patient record system initiative, decision trees could have potentially furnished valuable support in the assessment of diverse implementation strategies while taking into account their respective risks and advantages (Anderson, 2010; Campion-Awwad et al., 2014).

The PESTLE analysis is a strategic tool utilised to identify and assess external factors that could potentially affect the achievement of a project's objectives (Perera, 2017). The phenomenon in question comprises a multitude of dimensions, namely political, economic, social, technological, legal, and environmental factors (Rastogi &

Trivedi, 2016). By conducting an analysis of these factors, project teams can proactively anticipate potential risks and opportunities that may emerge from the external environment (Perera, 2017; Rastogi & Trivedi, 2016). The implementation of a PESTLE analysis could have yielded significant benefits for the NHS patient record system project by offering valuable insights into external factors such as regulatory modifications, technological advancements, or social acceptance. This, in turn, would have facilitated a more comprehensive risk assessment and response planning (Gambrill & Shlonsky, 2000).



The Monte Carlo simulation method is utilised as a means to model and simulate uncertainties and their potential impact on project outcomes (Khedr, 2006). The process entails the creation of numerous iterations of a project's variables through the application of probability distributions, followed by a subsequent analysis of the outcomes (Zio & Zio, 2013). Through the utilisation of simulations, project teams are able to evaluate the probability of various risk scenarios and their potential ramifications on project timelines, expenditures, or efficacy (Zio & Zio, 2013). The utilisation of Monte Carlo simulation within the project of the NHS patient record system would have enabled a numerical evaluation of hazards and their probable consequences, thereby enabling better allocation of resources.

Methodologies employed for objectives

The NHS patient record system effort included several risk management measures (Brennan, 2005; Campion-Awwad et al., 2014). The above strategies addressed the project's complexities, improve risk management and increase the chance of success. The selected case study used many main approaches (Campion-Awwad et al., 2014).

A project management framework for the NHS patient record system was implemented to structure risk management (Sheikh et al., 2011). Project risk management relied on stakeholder participation and communication (Sloan, 2009; Thaler & Levin-Keitel, 2016). The project team often spoke with stakeholders including healthcare experts, IT specialists, administrators, and patients to gather their opinions, information, and concerns about project hazards

(Elias et al., 2002; Sheikh et al., 2011). Stakeholder input helped the project team understand their expectations and develop risk mitigation strategies (Stern & Fineberg, 1996).

Risk training and brainstorming helped project team and stakeholder collaboration that allowed participants to share their knowledge about potential threats (Anderson, 2010; Campion-Awwad et al., 2014; Sheikh et al., 2011). The project team discovered and analysed dangers from several viewpoints, resulting in unique risk reduction methods (Anderson, 2010; Campion-Awwad et al., 2014; Sheikh et al., 2011). Analysis increased risk management and informed future initiatives that were ranked by the project team, as mentioned by Awwad et al. (2014). While risk assessment helped the team prioritise project-impacting issues, contingency planning managed project risk (Qazi et al., 2016; Rohrmann, 2008; Sheikh et al., 2011). Risk reduction, resource allocation, and project continuity were planned and the team reduced risk via contingency planning (Campion-Awwad et al., 2014; Sheikh et al., 2011; Zsidisin et al., 2000).

Monitoring and reporting were introduced to evaluate risk management efforts by assessing risk reduction progress and monitoring the project's risk profile, and KPIs were created (Anderson, 2010; Sheikh et al., 2011). Consistent communication about risks, developments, and mitigation methods may keep the project team and stakeholders informed about the project's risk environment, enabling quick action as needed (Rohrmann, 2008).

Due to the project's size and complexity, change management techniques were needed to reduce organisational and technical risk (Qazi et al., 2016). Stakeholder participation, effect evaluation, change request administration, and communication methods to ease transitions and reduce change resistance were part of the above procedures (Rohrmann, 2008). The project team reduced risks from these transitions via effective change management (Hopkin, 2018).

Suggestions on Risk Management Systems

Based on the NHS patient record system project, some risk management suggestions may be made. Organisations should create and implement a thorough, context-specific risk management framework. The framework should clearly define risk management roles, responsibilities, and processes throughout the project (Gambrill & Shlonsky, 2000; Stern & Fineberg, 1996). Integrating best practices and industry standards into risk management ensures consistency (Council, 2009). To keep risk mitigation strategies relevant and effective, stressing the importance of periodic risk assessments and adjustments is vital (Council, 2009).

Organisations should actively include project teams, end-users, subject matter experts, and relevant external partners (Rohrmann, 2008). Engaging stakeholders early and often during the project may provide useful insights, experiences, and risk perceptions (Sloan, 2009; Thaler & Levin-Keitel, 2016). Communication and collaboration with appropriate parties help identify risks and develop risk mitigation strategies (Rohrmann, 2008).

To ensure a complete risk assessment, firms should use a number of methods (Gambrill & Shlonsky, 2000). Workshops, brainstorming, lessons learned analysis, scenario planning, and external benchmarking may be used. Qualitative methods are crucial, but risk assessment should

use quantitative methods wherever possible (Council, 2009). Data-driven analysis, probabilistic modelling, and simulations can improve risk assessments as organisations may prioritise risks and allocate resources accordingly (Gambrill & Shlonsky, 2000). Moreover, transparent communication and a proactive approach to risk identification and mitigation help integrate risk management within the company (Rohrmann, 2008).

To adapt to changing project variables, external circumstances, and new risks, risk management must be regularly reviewed and revised (Council, 2009). This involves assessing risk mitigation tactics, identifying new hazards, and adapting solutions. Regular risk assessments allow firms to address risk management issues (Council, 2009; Gambrill & Shlonsky, 2000) and ensure alignment with goals.

External risk management expertise may benefit some companies. Similarly, independent consultants, risk management professionals, and external auditors can provide useful insights, objectivity, and skill in detecting and reducing project risks (Haughton et al., 2015). External experts can give new perspectives and industry-specific experience to help firms identify weaknesses and execute effective risk management methods (Hopkin, 2018). Their knowledge of managing dangers across varied projects and sectors helps create robust risk management techniques and improves the organization's risk management competency (Anderson, 2010; Haughton et al., 2015).

Professional Lessons and Key Takeaways

The failed NHS patient record system project has serious professional repercussions and offers valuable lessons for complex IT projects and risk reduction (Coiera, 2007). Coiera (2017) examines the case analysis's professional implications and Anderson et al. (2010) talk about key insights and what went wrong.

Subsequently, the failed NHS patient record system project shows the necessity of understanding needs before starting complex IT projects (Anderson, 2010; Campion-Awwad et al., 2014; Coiera, 2007; Cresswell & Sheikh, 2009). Insufficient understanding of user requirements and a mismatch between technology solutions and institutional needs can cause major risks and project failure (Stern & Fineberg, 1996). Organisations should dedicate enough time and resources to collecting and analysing requirements to avoid these risks (Coiera, 2007). End-users and subject matter experts must be involved in solution selection to guarantee that results meet goals and reduce project failure (Sloan, 2009; Thaler & Levin-Keitel, 2016).

Risk management requires stakeholder participation and communication (Sloan, 2009; Thaler & Levin-Keitel, 2016). Stakeholders from different levels and disciplines help businesses understand their perspectives, manage their expectations, and overcome their fears. Open and transparent communication channels provide regular updates, issue resolution, and stakeholder confidence (Sloan, 2009; Thaler & Levin-Keitel, 2016). Stakeholder participation and effective communication may improve risk management and project success (Sloan, 2009; Thaler & Levin-Keitel, 2016).

Risk management was essential for the NHS patient record system project (Anderson, 2010; Brennan, 2005; Cresswell & Sheikh, 2009). Organisations should use systematic methods to detect, analyse, rank, and mitigate risks

throughout a project (Hopkin, 2018; Power, 2004). By using a mix of qualitative and quantitative risk analysis methodologies, developing risk registers, implementing proactive risk response measures, and regularly monitoring risk status, organisations may identify and address risks (McNeil et al., 2015). Risk management methods improve project resilience and performance, as discussed previously.

Continuous learning and development increase risk management effectiveness (Hopkin, 2018). Organisations should encourage learning from both successes and failures (Hopkin, 2018). Comprehensive post-project assessments, capturing insights, and sharing knowledge throughout the company improve risk mitigation methods and reduce mistakes. Continuous improvement improves risk management and project success (Council, 2009; Rasmussen, 1997).

Large IT initiatives require change management (Ćirić & Raković, 2010). Stakeholder participation, training, and clear communication about the pros and disadvantages of proposed robust changes should be prioritised in change management initiatives (Rohrmann, 2008; Sloan, 2009). Furthermore, an integrated change management strategy with change management methods helps organisations mitigate change-related risks, limit disruptions and realise project benefits (Ćirić & Raković, 2010).

The project's failure raises ethical questions about public finances too (Dolfing, 2019). Stakeholder confidence and patient safety concerns were addressed poorly due to communication (Dolfing, 2019). The project's credibility and integrity depended on transparent financial management, regulatory compliance, patient data protection, and stakeholder-centred decision-making (Anderson, 2010; Campion-Awwad et al., 2014; Coiera, 2007; Cresswell & Sheikh, 2009). Ethical behaviour builds stakeholder trust and ensures the initiative meets public demands (Frewer, 2004).

Conclusion

Requirements analysis, stakeholder involvement, and risk assessment and mitigation can anticipate and resolve issues (Gambrill & Shlonsky, 2000). The NHS patient record system failure highlights the importance of risk management practices and provides significant information to improve future risk management projects (Coiera, 2007). Stakeholders may decrease risks and improve project performance by incorporating these lessons into risk management techniques (Sloan, 2009).

The selected case study also emphasises risk management tools and strategies, as risk registers, risk assessment matrices, decision trees, and other analytical methods help improve risk management discussions (Hopkin, 2018; Power, 2004; Rohrmann, 2008). These tools help businesses make decisions by assessing risks quantitatively and qualitatively (McNeil et al., 2015).

Moreover, showing the pros and cons of using qualitative and quantitative methods to assess project uncertainty (Qazi et al., 2016), the selected case study also shows qualitative approaches to provide risk factors and context. Similarly quantitative methods used are more accurate and measurable (McNeil et al., 2015). These two methods can provide a complete picture of project risks and help establish risk

reduction strategies (McNeil et al., 2015; Power, 2004). Organisations should consider project specifics while choosing techniques.

NHS patient record system breakdown shows project complexity. Due to its large scale, ambitious goals, and complex linkages, the project failed. The project's many stakeholders, technical integrations (Martin et al., 2007), and organisational changes made risk management more complicated. Organisations must recognise the complexity of their projects and adapt their risk management strategies (Power, 2004; Stern & Fineberg, 1996). This requires emphasising governance, stakeholder engagement, and change management (Ćirić & Raković, 2010; Council, 2009; Power, 2004; Qazi et al., 2016; Sloan, 2009; Stern & Fineberg, 1996).

Entities may improve risk management by using case study insights(Gambrill & Shlonsky, 2000; Haughton et al., 2015; Qazi et al., 2016). Implementing competent governing frameworks, thorough prerequisite evaluation, active stakeholder involvement throughout the project, meticulous risk management methods, and a culture of continuous learning and improvement are the above suggestions (Council, 2009; Rasmussen, 1997). To increase project performance and maintain stakeholder confidence (Sloan, 2009; Thaler & Levin-Keitel, 2016), enterprises should use external knowledge (Haughton et al., 2015) and communicate properly (Eppler & Aeschimann, 2009; Frewer, 2004; Rohrmann, 2008).

To conclude, the failed NHS patient record system project is a caution for complex IT projects (Anderson, 2010; Campion-Awwad et al., 2014; Coiera, 2007). Adopting relevant risk management principles, using appropriate tools and techniques, considering the complexity, and learning from both positive and negative outcomes can improve risk management and project delivery (Qazi et al., 2016). Organisations may better handle unanticipated events and meet project goals by employing a strategy of continuous improvement and proactive risk mitigation (Council, 2009; Rasmussen, 1997).

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