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The Impact of Risk Management on the Success of Projects in the Health Sector: A Case Study of the Ministry of Health, Riyadh, Kingdom of Saudi Arabia

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Dedication

This research study is dedicated to the unsung heroes of the educational sector - the dedicated teachers, administrators, and staff whose tireless efforts and unwavering commitment to their craft have a transformative impact on the lives of students and the betterment of our society. May the insights gained from this work inspire and empower these educational professionals to continually strive for excellence, foster innovative teaching practices, and cultivate nurturing learning environments that unlock the boundless potential of the next generation.

Abstract

Summary of the Study: This study aimed to investigate the mediating role of quality of work life in the relationship between transformational leadership and organizational loyalty. The research was conducted on a sample of managers, teachers, and administrators from schools in the Najran region of the Kingdom of Saudi Arabia.

Methodology: The study adopted a descriptive analytical approach and utilized a quantitative research design. The study population consisted of 11,686 workers, administrators, and managers, with a sample size of 383 participants. Data was collected through a survey and analyzed using SPSS and Smart PLS software.

Findings: There is a significant statistical relationship between transformational leadership and organizational loyalty, There is a significant statistical relationship between transformational leadership and quality of work life, There is a significant statistical relationship between quality of work life and organizational loyalty, Quality of work life plays a significant mediating role in the relationship between transformational leadership and organizational loyalty.

Originality and Implications: This study contributes to the existing literature by highlighting the importance of transformational leadership and its impact on organizational loyalty. The findings demonstrate the mediating role of quality of work life in the relationship between transformational leadership and organizational loyalty. The study recommends that senior management and stakeholders in the Kingdom of Saudi Arabia should promote the adoption of transformational leadership across all schools, as it plays a crucial role in enhancing organizational loyalty within educational institutions. The study may also contribute to enriching scientific and specialized research in the field, underscoring the significance of transformational leadership and the quality of work life for improving organizational loyalty.

Keywords:

Transformational leadership, quality of work life, organizational loyalty, mediating role, educational institutions, Saudi Arabia.

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1. Chapter 1: Introduction

1.1.Overview:

In the multi-faceted healthcare management, successful execution of projects becomes the most crucial factor for the effective performance of an organization, the better satisfaction of patients and the delivery of high-quality care. The strategic use of project management techniques takes command within the intricate domain of the Ministry of Health (MOH) in Riyadh, Saudi Arabia. Planning healthcare initiatives and services across the region solely depend on such project management practices. Operational effectiveness in project management is coupled with the incorporation of risk management concepts, which in turn are the precursors for maintaining stability in the face of uncertainties, optimal utilization of resources, and successful outcomes (PMBOK Guide, 2001).

The push that prompted this extensive study has its origin in the need to untangle the complex interplay of risk management practices and project success within the healthcare sector in Riyadh, focusing on the MOH. Despite the widespread recognition of risk management's critical role, healthcare organizations are faced with very difficult challenges of operationalizing and embedding risk management processes within the project management framework (Albarnawi et al., 2018).

This study seeks to shed light on the best risk management practices within the Saudi Arabian healthcare industry, providing actionable insights that not only guide evidence-based decision-making, but also promote excellence in organizations.(Alasiri & Mohammed, 2022) Indeed, risk management is a dynamical discipline, which encompasses an array of activities for identifying, assessing, mitigating, and monitoring risks throughout the project lifecycle. (Al-surimi et al.,2022)

The bigger picture of healthcare, learnt to have difficulties and subtleties of its own, shows us one more argument to put in favor of the sophisticated risk management systems. Nevertheless, healthcare institutions encounter tremendously challenging issues, such as low risk awareness, limited resources, and cultural hurdles, which in turn might impede the successful implementation of risk-management strategies (chowdhury et al., 2021).

Besides, there is an ongoing evolution of the healthcare industry which is underlined by the fast growth of technology, changing regulatory frameworks, and a shift of patient demographics that dictates the need for agile and ready-to-change risk management services. Traditional risk management practices may not be effective in handling the complexity and ambiguity salient in healthcare project management, which does a case for the paradigm shift in risk management towards proactive risk management paradigms that focuses on flexibility, collaboration, and continuous improvement (walston et al.2008).

The health care is one of the most significant and important sectors in the economy and social life of every country, and the management of health care projects is extremely important for the enhancement of population's health and increase in the availability of health care services. However, the healthcare industry is highly fragmented with many stakeholders, complicated with legal requirements and ever evolving incorporating change through technology, thus posing different challenges and risks to that of the construction industry (Kerzner, 2017). Risk management has increasingly been incorporated as a best practice approach to be followed in delivering healthcare projects to improve on project performance and utilization of resources (PMI, 2017).

The Ministry of Health (MOH) is based in Riyadh, Kingdom of Saudi Arabia and is charged with overseeing the development and provision of healthcare services in the country as well as the formulation and execution of several health care projects. The expansion of the healthcare sector in Saudi Arabia also creates challenges for the Ministry in particular regarding risk management in the context of the growing number of projects that is important to coordinate and deliver (Al-Otaibi, 2015).

Role of risk management in health care projects is well understood due to which rank has a direct relation on cost, time and quality of the project (Tundrea & Moldovan, 2013). It was therefore established that risk management can assist healthcare organisations to be prepared in case of other challenges, thereby improving project results and patient care (Alhabeeb, 2015).

Nevertheless, while risk management is acknowledged as a critical factor for success across industries, only a little scholarly attention has been paid to relating it to the effectiveness of healthcare projects in the Saudi Arabia healthcare industry (Al-Otaibi, 2015).

, this research study is intended to fill the gap of previous investigations that focuses on the role of risk management and project success in the healthcare sector, valuable information and knowledge contributed for the improvement of healthcare organizations, project managers, and policymakers. This research will be useful in formulating strong risk management frameworks for completion of healthcare projects hence better patient care services.

This research will be a sequential exploratory mixed-methods case study with both quantitative and qualitative data collection and analysis tools used in the study. Quantitative data collection instrument will be completed in the form of survey questionnaires that will evaluate the correlation between risk management practices and project success and will be followed by a qualitative study in which structured interviews will be conducted with managers of health care projects and the other health care professionals in the KM of Saudi Arabia.

The findings of the proposed research study will be presented more specially in an orderly manner as follows, The first section of the study will be a literature review whereby the author will explain the theoretical background and the available literature on risk management and project success in the healthcare sector. This will be succeeded with clarification about the research method to be used, samples, data collection and analysis tools and techniques. The last chapter of this research will discuss the results of the analysis, together with the major conclusions derived from the empirical study regarding the links between risk management activities and project success rates. In the last chapter, some theoretical contribution and practical utilization of the study will be highlighted along with the limitations associated with the study; Finally recommendations for future research and contribution to the practical field of health care with particular reference to the developing countries will also be outlined.

The scope of this research encompasses the risk management function which enables us to know its overall implication on project success in the healthcare environment as a whole. This study uses an intensive case study of the MOH in Riyadh as a tool to shed light on the tangled interplay of risk management and impacts on the project outcomes and organizational resilience. Through internal evaluation of a vast number of studies signifying important improvements in infrastructure, technology application and healthcare service provision, the study aims to present

key findings on the multifaceted role that risk management has played and will keep playing as key to the overall success of projects and in the broad performance of organizations (Momani.&Fadil,2013)

In exchange, this research will help to fill the gap in literature by clarifying the complex linkage between risk management practices and project success of the ministry of health in Riyadh. Through providing actionable insights and by way of reasonable recommendations this study serves to create knowledge-based decision-making, motivation of project performance and refinement of organization. (Kaud et al.2021). The successful completion of this research study will contribute to a deeper understanding of the impact of risk management on the success of healthcare projects, ultimately providing valuable insights and practical recommendations for the Ministry of Health and other healthcare organizations in Saudi Arabia and beyond. By enhancing the understanding of risk management strategies and their influence on project outcomes, this research will support the effective implementation of healthcare initiatives, leading to improved patient care and overall organizational performance.

1.2.Research Problem:

The research problem centers around the limited empirical evidence elucidating the impact of risk management on project success within the health sector, particularly in Saudi Arabia. This knowledge gap underscores the need for rigorous investigation and analysis to uncover the specific mechanisms and strategies through which risk management practices contribute to project success and organizational effectiveness (Chapman & Ward, 2002).

1.2.1. Theoretical Gaps:

Theoretical frameworks within the literature often lack integration with practical insights regarding risk management and its effects on project success in the health sector. This gap highlights the need for research that bridges theoretical constructs with real-world applications, providing a comprehensive understanding of the dynamics at play .(Alasiri & Mohammed, 2022)

1.2.2. Empirical Gaps:

Empirical studies examining the relationship between risk management and project success in the health sector, particularly within the Saudi Arabian context, are limited. This scarcity of empirical evidence hinders the development of evidence-based practices and guidelines for healthcare organizations to effectively leverage risk management strategies to enhance project outcomes and achieve organizational objectives. (Kaud et al.2021).

The current study aims to answer the main Research Question:

What is the relationship between risk management impact project success in the healthcare sector?

1.3.Research Significance:

This research holds significant implications for both theoretical understanding and practical application within the realm of healthcare project management and risk management. By filling the identified gaps in both theoretical and empirical domains, this study aims to contribute to a deeper understanding of the role of risk management in driving project success within the health sector, thereby informing strategic decision-making and fostering organizational excellence (Ahmed et al.,2022).

1.3.1. Theoretical Significance:

Through the exploration of theoretical gaps, this research aims to develop comprehensive frameworks that integrate risk management strategies with project success metrics, thereby advancing theoretical understanding and providing a foundation for future research in this area (Raz et al.,2002)

1.3.2. Empirical Significance:

Empirically, this study seeks to provide valuable insights into the specific mechanisms through which risk management practices influence project success within the health sector. By bridging the empirical gap, this research aims to inform evidence-based decision-making and facilitate the implementation of effective risk management strategies to enhance project outcomes and optimize resource utilization. (Rabechini & De Carvalho,2013).

1.4.Research Question:

The current study aims to answer the main Research Question:

What is the relationship between risk management impact and project success in the healthcare sector?

In order to answer this question, we would have to answer the following sub questions:

- 1- how does Risk Identification affect the success of projects in the healthcare sector?
- 2-How does the integration of risk management with planning and execution processes contribute to achieving project success in the healthcare sector?
- 3- What levels of risk management practices that are used in the success of a project in the ministry of health?

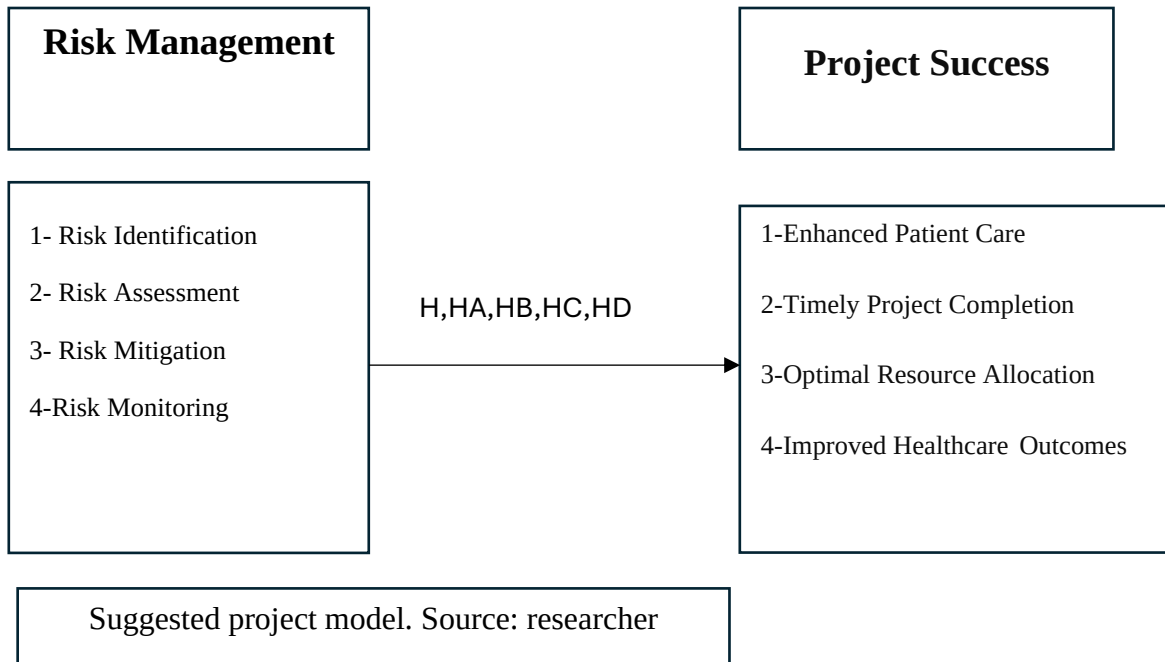
1.5.Research objective:

- 1-to Evaluate the impact of Risk Identification on project success in the healthcare sector.
- 2- To assess the effectiveness of integrating risk management with planning and execution processes in enhancing project success in the healthcare sector.
- 3- to measure the levels of risk management practices are used in the success of a project in ministry of health

1.6.Research hypotheses:

- 1-There is a positive relationship between risk Identification and project success in the healthcare sector.
- 2- There is a positive relationship between the integration of risk management with planning and execution processes and project success in the healthcare sector.

1.7. Conceptual model:



1.8. Empirical Study:

The Saudi Arabia's Ministry of Health (MoH) is the main body that guarantees the healthiness of the nation's citizens and the residents by providing healthcare services as well as ensuring health promotion. The website of MoH is a great resource of information of all kinds and it includes the restitution of healthcare services, disease prevention, health campaigns and public health campaigns. The website provides the necessary information and services. We will now move to the details of the website and how it functions.

1.8.1. Healthcare Services:

The MoH website becomes a guide for the people who want to know about the footages of healthcare services which are being provided in Saudi Arabia. It manifests them by mentioning names, locations and the characteristic information of hospitals, clinics, and specialized health centers in the country. Here the visitors will find information about services supplied, contact details and addresses of the concerned facilities in the area. The website could also include the current development news as well as the improvement of medical structures within health infrastructure.

1.8.2. Health Campaigns and Initiatives:

The Minister of Health runs health campaigns periodically and promotes advice on ways of addressing the existing societal health issues and maintaining a healthy lifestyle among the public. These campaigns deal with several layers such as immunization drives, disease prevention, smoking elimination, healthy dietary behavior, and physical exercise. The MoH website offers a chance to the directorate to 'advertise' campaigns already existing and to-be-launched as well as telling what the objectives of campaigns are, what the target audience is and how people can engage or benefit from them.

1.8.3. Disease Prevention and Control:

Amid the Kingdom, one of the main undertakings of the MOH is the prevention and control of diseases spreading. One of the website's strong points is the ability to provide an in-depth analysis of infectious diseases, covering topics such as symptoms, modes of transmission, preventive practices, and treatment options. Users will be able to get the guidelines on how to embark on disease tracking, outbreak control, and emergency response protocol. Furthermore, the MoH will utilize the website to communicate on intricacies related to disease outbreaks, travel advice, and recommended measures to the public.

1.8.4. Health Education and Resources:

Boosting health literacy education and ensuring readiness of reliable health information are to the baseline of the MOHs mission. Web-resources for educational purposes on various health issues are available for men on the website, including chronic diseases, maternal and child health, mental health, and environmental health. These elements could involve printouts, websites or Blogs, posters and TV ads, infographics, videos and even a one-stop-shop portal aimed at helping people to carry out their health research in preparation for their medical visits.

1.8.5. Online Services and Tools:

Upgrading the digital services of the government to make the website of physiology healthcare more user-friendly involves provision of online services and tools that make the access to

healthcare easier and makes the administrative process flow smoothly. The users will be able to acquire these services online and this includes booking appointments with healthcare providers, request for a prescription refill, access electronic records, and make payments for healthcare services online. In addition, the homepage may consist of health complements, like condition simulators, BMI estimators, and drug-takers to enable customers to fetch health better.

1.8.6. Research and Publications:

The Ministry of Health is always partaking in research and development projects tasked with finding the practical ways of advancing health care and health outcomes in the Kingdom of Saudi Arabia. The MoH would highlight research, clinical trials, and scientific publications which it and its associated use as evidence base for their actions. These databases thus constitute a large knowledge resource of the health sciences and can inform healthcare policies, guidelines, and interventions.

1.8.7. News and Updates:

Furthermore, it is very important for any part of the population not only among healthcare professionals but also the public who should maintain themselves up to date with the innovations in the healthcare sphere. The MoH website is known as a credible informational device that covers news and current information regarding health care policies, regulations, developments, and events all happening in Saudi Arabia. People will be able to try press releases, update announcements and articles all over the topic of health that cover a wide range of sub-areas keeping people informed of the latest trends and developments in healthcare.

1.8.8. Accessibility and Multilingual Support:

Understanding that there are many different people who will be accessing the website, MoH needs to provide accessibility features such as multilingual support which will help individuals irrespective of their language or abilities to benefit from the information provided. Not only do users have a choice of accessing the website in different languages, either Arabic or English, but also they are able to listen to content with the help of audio descriptions or text-to-speech facilitation, which meet diverse needs and interests of audiences.

1.9.Suggested Project Structure:

Chapter 1: Overview

Chapter 2 : Literature Review

Chapter 3 : Research Methodology

Chapter 4 : Statistical Analysis

Chapter 5 : Findings Discussion and Conclusion

2. Chapter 2: Literature Review

2.1. Introduction:

In the modern world with its rapid changes and not many boundaries in operations, companies go through a lot of problems when they implement projects. A project by nature is an activity that is conducted under risk conditions, and usually it comes across different challenges like uncertainty, constraints and conflicting interests. The controversy around how these risks could be adequately addressed is becoming the most significant determining factor concerning the outcome of the projects in question. Project risks management is an action of identifying, evaluating and acting on probable dangers and benefits that may can influence the purpose of the project. Nevertheless, the classical techniques of risk management could only accomplish primitive in the context of the present-day projects, which are characterized by complexities and dynamical nature. This indignant passage is designed to help the reader to know the risk landscape to get the project success these days as well.

The way the classical risk management has grown during the time of projecting has turned mostly on identifying the risks and also the threats and making them mitigate. This solution, which is widely accepted, are most illustrative of this representative and reactive model rather than preventing accidents. But, the current complex and risk-sensitive business environment encourages organizations for a risk discovery not only to be a part of their project management but also its core. This reorientation of the risk management focus towards a general, proactive and inclusive approach is not only limited to risk mitigation but it extends as well to the identifying risks or opportunities that offer broader project execution benefits.

To take this further, the older linear and predictive project management techniques fail to adapt to the ambiguities and complexities that characterize popular projects today. The goals to agile and responsive techniques of project management have broken with the traditional ideas of risk management and recommend to be adaptive, collaborative, and to never give up learning. In a microcosm agile the methodology assures that risks are not static nowadays but change as the project proceeds. Thus, the risk management process is an on-going, iterative activity of which is combined with the project management framework.

While regarding this, the fact that the projects have started to be even more connected and more globalised, has led to consider new risk elements. The external factors now are more dominant in the projects and they are more vulnerable to geopolitical uncertainty, economic instability, technological disruption and the environmental factors. This external threat may present a considerable risk to project success, which the project manager has to consider more broadly, and, therefore, he/she should assume a more proactive approach to the risk mitigation.

While the attributes of projects that are constantly changing and the external risks that can crop up put off risk management, the impact of organizational culture, as well as the stakeholders, must also be considered. That successful risk management is closely tied to an internal social environment, where risk consciousness is promoted, free and open communication is encouraged, and a learning approach is embedded, plays a key role. In addition, one should not underestimate the value of dialogue with stakeholders and other relevant organizations in order to be proactive and take action related to risks across different project limits.

- **Questions:**

1. What should organizations do to select the right risk management strategies when the benefits from proactiveness and need for flexibility and responsiveness compete with each other?
2. What are the principal obstacles, or organizational challenges that are likely to impact the incorporation of positive risk management strategies into the conventional project management frameworks?
3. Which risk practices must the organization work on to ensure they include the increasing complexities and connection among the deliberations, also including external risks and stakeholder dynamics?

Given the continuous evolution of the landscape of projects, the importance of risk management to achieving apropos project objectives is now more important than ever. Through putting an innovative and adaptive mindset into place, companies are having a

better position to properly tackle uncertainties and to catch up with the opportunities, which in turn will be a contribution to the successful project outcome. Therefore, this important introduction signifies a multi-determinant of the interaction between the risk management practice and the success of the projects held in modern contexts.

2.2. Risk Management:

2.2.1. Introduction:

Among other things, risk management has been proven to help organizations in all industries beat the odds and operate more or less efficiently. Today, amidst the rapid environment and its inherent uncertainty, it is more than ever critical that businesses systematically get to know, analyze, and deal with the risks that can affect their operations, projects or pretty much the whole strategic objectives. Risk management, which is based on informed arrangements, adequately allocation of resources and timely and efficient reaction to emergencies, enables organizations to make well-founded decisions.

In a conditional form, risk management encompasses a systemic and organized approach to identifying and analyzing potentially hazardous or damaging aspects, evaluating their probability and impact along with consequences, and putting forward hazard management or mitigation strategies. The organization can enhance the understanding and mitigate the risks in order to cut uncertainties, safeguard the assets, and have an opportunity for growth and innovation. The following paragraphs give an overview of this concept and cover the guiding rules and procedures of risk management which include assessment, identification, prevention and control functions. It underscores the critical role of risk management in guaranteeing organizational robustness, effectuating sound decision-making and minting a favorable market place brand. Investing in sensible risk management measures can make companies not only resilient to risks but also provide opportunity for organizations to perform at their best and sustain for long term.

2.2.2. Background Study:

The level of risk management issues have been analyzed by scholars and practitioners from many disciplines who have offered theories, tools, and guidelines. The research focuses on

several risks that come with a variety of employment situated in common places like industry, operations, or project. Here, the paper examines existing literature as well as the works that have been done on risk management approaches, their effectiveness and accomplishments so far.

In a researching of financial risk management field authorities present their analytical and works. For example, an idea that John Hull (2018), communicates in his book "Risk Management and Financial Institutions" is focusing on risks linked to market risk, credit risk, and liquidity risk faced by the financial industries. He demonstrates how risk management works and defines various methods and frameworks that many financial institutions use including the Value at Risk (VaR) and stress testing.

Besides risk of unexpected losses, originate risk, another issue studied by scholars has also emerged. According to Choi & Kim(2015), in their report in the Journal of Operations Management (2015), the authors suggest an operational risk management framework, which they consider to be comprehensive and suitable for the manufacturing organizations. Here stakeholders emphasize the role of risk identification in the process, risk assessment and contingency planning. This study provides vivid evidence of the importance of a defensive and clear-cut supervision system as the key to efficient organizational performance.

Project risk management, especially relating to projects and project management, has been a critical area of study for researchers. As it is described in the book "Risk and Risk Management in Project" by Turner & Cochrane (2009), the authors provide a comprehensive analysis of project risks on the one hand, and an array of risk management solutions on the other. The authors are stressing the identification, analysis, response planning, and monitoring at every phase that the project goes through. The book illustrates that one require making risk management a part of the project management processes so that the project would not fail.

The effectiveness of risk management strategies has been also been explored through the past research. One illustration is a case study by Smith & Merritt (2017), in the Journal of Risk Research, which tries to assess the influence of organizational performance on risk management practices. The study's conclusions mention that companies involved in actions for risk

management should have a high chance of targeting positive outcomes and securing themselves from losses. The study highlights the need for risk management as an integral component of the overall organizational strategy. 'Strategic Integration' of Risk Management

Along with that, Hillson and Murray-Webster in their book "Understanding and Managing Risk Attitude" in 2017 make an important contribution by exploring the psychological aspects of risk and how various types of risk attitudes within individuals and organizationally influence decisions. Among other things, the team's efforts stress the necessity of an asset and liability approach in risk management strategy design and formation of a risk-conscious culture in companies.

2.2.3. Risk Identification:

Identification of risks is one of the basic phases in risk management cycle as it involves the listing possible risks that might affect the goals' completion, or the organization's success. Risk Researchers, scholars and experts in this field have been found to have covered the risk process of its identification, the diverse techniques and tools applied in the various domains as well as the importance of risk assessment and analysis in the identification of risks.

Risk identification is done through the method of the systematic analysis, documenting, and registering potential risks as well as opportunities. As mentioned by Boehm & Turner (2004), risk assessment can, for instance, be accomplished by carrying out brainstorming sessions, expert opinions, documents analysis, and historical data exploration. In their book "Balancing Agility and Discipline: Regarding the identification of risks, they insist on factoring in the participation of key stakeholders with varied hierarchy within the institution. A comprehensive approach ensures that all the risks affecting the company have been identified and addressed.

Risk assessment and analysis undoubtedly take on the main function of identifying risk. When risks are being identified the degree to which they might occur and their potential consequences are evaluated against each other. Thereby organizations can determine which risks are the most important and which resources should be used to tackle them. The work of Hillson & Simon (2012), in their book "Practical Risk Management: The Executive Brief "Don't Get Surprised and Lose' Outlines the Necessity of Risk Management Identifying the Priority Risks". They are

supportive of the utilization of probability-impact score matrices and quantitative risk analysis methodologies in that they enable the people or organization to gauge risk factor severity and prioritize it accordingly.

Vast approaches and tools are brought into play for risk identification depending on particular situations. For FMEA which is a classically used technique in IT field, for example, identifying the instabilities during software development projects is a common practice. As a part of their research article published in "International journal of project management" by Joshi, S & Gopalan (2010), the authors discuss the utilization of Failure Mode and Effect Analysis to assess project risks in software projects. Such examples demonstrate that FMEA aids systematic detection of human error modes and also shows the reasons behind these mistakes and their effects. Hence, this allows project teams to initiate preventive measures to address risks.

The industry of construction, HAZOP is a completely normal technique for risk identification to be applied. In the research study "Application of HAZOP for Identification of Risks in Construction Projects", which has been published in the Journal of Construction Engineering and Management by Alarcon & Grilo(2015), they are investigating the application of HAZOP in identifying risks (2015). Their results illustrate the efficiency of HAZOP as an approach to conduct for each site of design and operations aspects, thereby detecting all kinds of hazards and risks.

2.2.4. Risk Assessment and Mitigation:

Risk assessment aims at categorizing the identified risks bearing in consideration their possibility and anticipated results. From scholars to researchers, there has been a detailed study of the structure, direction and ways used in appraising and examination of risks. Along with that aim is the necessity of creating strategies and techniques for reduction of risks for instance the decrease in risk appetite or risk tolerance level, preparation of risk reaction plan and measures for case of failure.

Methodology and models serve as the backbone in the risk assessment process. In addition to Chapman & Maward's book "Project Risk Analysis and Management Guide" (2009), the authors

describe the utilization of quantitative risk assessment models like Monte Carlo simulation and decision trees for the management of project risk. They demonstrate the significance of providing for uncertainties as part of the process when conducting risk assessments to prevent the consequences of inaccuracies from affecting the final outcomes.

Risk appraisal coding system that is both quantitative and qualitative is implemented. Hillson (2003) study, however, compares two different techniques using project risk management, among which quantitative and qualitative risk assessments. This was published in the International Journal of Project Management. According to Hillson, although quantitative tools allow listing for calculated risks, qualitative methods are required for the whole picture, as they provide with the objectives, as well as potential impact. The study, in particular, emphasizes the need to approach risk assessment in a balanced fashion employing both quantitative and qualitative assessment methods for effectiveness.

Risk assessment involves different approaches like probability engineering, consequence measurement and scenario simulations. The underlying approach of Kaplan & Garrick's (1981) research paper published in the Journal of Risk Research is use of probability analysis for risk assessment. They however support the determination of probabilities to identify feasible risk chances in them. Furthermore, identifying, analyzing, and recording these risky items are all parts of the impact assessment process and it is used to appraise the possible consequences of these risks on the project or organizational goals. Scenario analysis, in its meaning proposed by Ramirez et al(2018). in their paper in Technological Forecasting and Social Change, is a method which means creation and analyzing of different future scenarios to define the risks and make extend to them appropriate answers.

Identified risks can only mitigated when the necessary measures and techniques are put to the best possible use. While Hillson & Murray-Webster (2017), tackle the need for incorporating risk attitude in the decision-making process, they equally deem it important to differentiate risk intolerance from risk appetite. The concept of risk appetite and tolerance levels in the setting of risk management entails the possibility of mitigating risk depending on the defined risk appetite and tolerance levels of an organization. Furthermore, implementation of risk response strategies, risks evaluation, and threats mitigation is vital point. The importance of developing risk response

plans outlined in specific actions is what the 2021-edition PMI's Project Management Body of Knowledge guide emphasizes. These plans should provide solutions to the problem of project objectives being negatively affected of project objectives by risk.

2.2.5. Risk Monitoring and Control:

Monitoring and checking of risks identify them and take momentum to manage them from the point they started to last ones. Through the theoretical lens, it has been scholars and researchers exercised to explore risk monitoring and control process, the job of KPIs and risk measures in tracking and rating risks, and as well as risk monitoring and control measures in use in different spheres of economic activities.

The risk management and oversight cycle is a process that needs watching and attention from the start to the very end. In their book "The Risk Management Process: As it is mentioned in the book "Scientific Approach to Business Strategy" (2004), by Carter & Van(2004), der Stede, it is vital to set up an integrated and structured risk monitoring and control procedure. They stress the necessity of risk assessments, risk reporting, and risk warnings for all kinds of exposures on a regular basis. Also, they highlight the role of effective communication channels as the means to ensure that all possible exposures are monitored and controlled so that nothing unexpected happens.

KPIs and Risk indicators are the two essential measures that are used to influence the overall performance of risk management. Risk metrics are considered a very helpful means to do quantitative assessment as they were noted by Flapper & Fortuin (2008) in their articles published in International Journal of Production Economics. What is suggested is the alignment of KPIs and risk metrics with the organizational goals so that risk monitoring is efficient and control measures are timely. Among possible metrics, one could measure factors that may include how often the risks occur and the nature of these occurrences, the efficiency of the response and risk management programme, and the overall risk overlap of the organization.

Different industries have their own specific risk control tools and techniques due to the fact that their operation relies on certain set of rules. As an illustration in the health care industry, incident

reporting system is omnipresent. A research by Reason (2000), which was published in the Annals of Thoracic Surgery talks about the introduction of a risk system that monitors and controls the incidents based on the reported data set in a cardiac surgery zone. It was possible to trace and scrutinize the adverse events during that period by going through the involved parties, the contributing aspects, and the possible risk definition. They helped the system in evaluating the risk associated with Enron as a business institution.

The application of earned value management (EVM) as a tool of utilization within the scope of the construction industry to monitor and control risk is very popular. In their article of investigating EVM and risk management's integration in building projects, which published in a Journal of Construction Engineering and Management, in 2013, El-Mashaleh, et al. (2013), showed the link between EVM and risk management's integration in building projects. The explained role of EVM as a useful mechanism for assessing various factors of project performance in terms of cost and time, that allow successful control of project risks is also discussed.

2.2.6. Integration of Risk Management in Organizational Culture:

Creating a risk-aware culture in organizations still remains the heart of the success in risk management. Scholars and researchers have written a plethora of studies with topics ranging from how to create a risk conscious culture to the influence of leadership in ensuring risk management needs are met and the difficulties and strategies for embedding risk management in work routines and decision making processes.

The importance of a risk-aware culture is emphasized by researchers such as Hillson (2002), in his book "Extending the Risk Management Process: "A Risk-Aware Culture." In the opinion of Hillson, a culture of one-strike-and-you're-out is the best approach to risk management. Employees are encouraged to act on the spot to identify and deal with the risks themselves. This creates an environment of transparency, of respect for knowledge sharing, and a general sense of duty throughout the company. The most evident impact is the creation of a risk-oriented framework in which proper risk management becomes a key structural element of daily activities, allowing for a timely response to the challenges of tomorrow.

Leadership, no doubt, is one of the important areas that contribute significantly to practicing and flourishing risk management mechanisms properly. As indicated by Flin & colleagues (2008), in their article entitled “The Leadership Role of Risk Management: Who Takes on the Top” which was published in the Journal of Risk Research, leaders need to show firm commitment to risk management and initiates it from the top. According to them, the leaders must make mutually agreed-upon expectations known, provide necessary resources, and actively participate in all aspects of safety. Skilled leadership is the ability to build and utilize a culture that views risk management as a top priority and promotes staff to include consideration of risk as part of their decision-making process.

Embedding risk management in regular operations and explicit activities of management will be complex. PwC (PricewaterhouseCoopers , 2016), indicates the need to dispense with the traditional segmented approach in favor of an integrative model that covers the entire organization. This entails removal of the organizational barriers for improvement of the collaboration and cross-functional work, and merging risk management standards with existing processes. Besides safety communication and awareness activities, training employees to recognize risks and making them aware of the importance of risk management will contribute to their preparation for prompt and effective response to identified risks.

Measures for integration of risk management with how it is carried out during operations and the decision making process include capturing risk management in strategic and performance management systems. In the paper titled "Risk Integration in Strategic Planning and Performance: Findings and Practice Implications," which appeared in the Journal of Risk and Insurance, Beasley et al(2011). analyze the integration of risk management into the strategic planning process. They maintain that risk management as key business strategy element has to be conducted across the administrations with a separate output, risks, targets, and objectives as its measurement. This integration is the main idea as it helps to undertake risk management into decision-making and make it one of the permanent risk factors of the organization.

2.2.7. Risk Management in Specific Domains:

While risk practices may be captured by different domains, those domains are for instance, finance, healthcare, and information technology. Scholars and researchers have explored the

specific risk management practices employed in these fields, industry-specific regulations and standards related to risk management, as well as case studies and examples illustrating effective risk management practices.

Among other topics, risk management in the financial sector is an important tool for the purpose of preserving stability and keeping losses to a minimum. According to Jorion (2006), in his book "Value at Risk: Regarding the "Financial Risk Management: A New Benchmark" Quantitative risk assessment methodologies, namely value-at-risk (VaR) models, are the usual instruments by which financial institutions identify and monitor market, credit and operational risk. Beyond forecasting probable losses, the models are also used to estimate possible losses. This can happen under different scenarios, enabling risk managers with enough information to take better risk management decisions.

Risk management is one of the critical elements of the health service industry aimed at among others, provision of safe environment for the patient's and minimizing medical mistakes. The risks management within healthcare sphere are analytically described in the study by Vincent et al. (2001), presented in the British Medical Journal. They have shown the weight has equipped reporting mechanism, which allow physicians to find out the defect-producing complications and near misses. Thus, with the implementation of patient safety protocols, for example, checklists and standardized procedure, will make the work in the healthcare units more effective from risk management perspective.

The IT(information technology) industry, unlike other industries, is faced with a peculiar danger of data breaches, cybersecurity threats, and system vulnerabilities. In their publication "Managing Risk in Information Systems" Dhillon (2019), together with Backhouse, points out the vital role of proactive risk management practices in IT. They are essentially stressing on the procedures in place to mitigate risks, such as the risk assessment methodologies including vulnerability assessment and penetration testing in locating and treating such risks arising from information technology. Risk management of IT is not only the mentioned risk management but also security of cyber, too. It covers encryption, access, control measures, and also response programs for incidents.

Industry-to-specific regulations and standards are one of the prominent sources of guiding the organizational practices of risk management. Instances in finance playing field here are, for example, Basel III which are regulations dealing international banking commonly referred to as the Basel regulations. "They were the hub of our social life, providing a place for us to congregate and bond with one another. As it has been found in the research which was published in 'The Journal of Financial Management' by Sironi & Vena (2015), Basel III does make banking institutions more risk aware by improving the accuracy of risk management. Thus, it contributes to financial stability. On the other hand, the health sector of the United States, regulations like the Health Insurance Portability and Accountability Act (ASPA) require implementation of data security practices such as the implementation of risks management and the protection of personal health information of patients.

Case studies and examples showing the good risk management approach for concrete separate domains are shown. Another case study, presenting the Deepwater Horizon oil spill example by Hopkins' (2012), book "Safety, Risk and Adventure in Outdoor Activities" has shown the role of preventing risk management in the energy industry under the situation. The case in point illustrates the importance of comprehensive risk assessments, the exhaustion of efficient safety measure, as well as successful backup plans should a calamity strike.

2.2.8. Emerging Trends and Future Directions in Risk Management:

While risk management practices are shaped by trends as well as developments, like applied risk analysis, AI, and ML, they likewise evolve due to risk analytics, artificial intelligence (AI), and machine learning (ML). Scholars and researchers provided their opinion on how new technologies affect risk management processes, looking into both benefits that the technologies bring as well as the challenges they present, and offered recommendations as to where to go with future research into the opportunities that technologies provide.

Applying a new risk analysis science has dramatically changed the way we were use to deal with risk management. Chen & Lu(2018), specialized their work in the subject and analyzed risk analytics in their journal article which appeared i the Journal of Risk and Financial Management for instance. Data-based risk management and approaches are emphasized by them for decisions

and acceptances. The state of the art risk analytics methodologies like the predictive modelling and scenario analysis allow the companies to appreciate patterns, detect unfolding risks and prudently take the right measures to cushion the impending danger.

Artificial intelligence and machine learning can, therefore, make a huge leap in the risk management processes. In their book "The AI Advantage: The essay "How to Put the Artificial Intelligence to Work" by Daugherty & Wilson (2018), claims that AI systems can improve the accuracy and precision of risk assessment. Machine learning algorithms are powered by the capacity to process large amount of data; they can point out the connections and provide you with real-time risk data. AI-powered solutions with automation as well is one way in which can be reduced risk management tasks. Instead, these resources can be then focused on more important risk management activities.

One of the most wide-ranging influence of technological advances on risk management processes is much more is than improved data analytics. Culp (2018), demonstrates how the integration of blockchain technology could transform risk management process in his recently published book; "Blockchain for Risk Management". Blockchain`s unique combination of decentralization and immutability attributes could foster transparency, secure data sharing, and more efficient risk management processes - especially in industries that are supply chain management and financial services.

Although the advancement of technologies offers room for the potential benefits, still, there are some issues that need to be overcome. Bannister & Remenyi (2019), debate the complexity of risk management during AI establishment in one of the papers they wrote for the Journal of Risk Research. They point to the shortcomings of data cleanness, model transparency, model biases and ethical issues. This would be best accomplished by rolling out open researches and partnership among the academia and the industry and through constructing a framework of regulations that will govern ethical and responsible use of emerging technologies in crisis management.

The direction of the research of the risk management in the future should be to look for

emergence technology cooperation business model. Serrat (2017), in his book "Knowledge Solutions: "Tools, Methods, and Approaches to Improve the Efficiency Performance" as shown through the employment of risk analytics, AI and ML will help to improve risk management procedures. For example, various AI and ML techniques can be seen combined with risk analytics which, in turn, will enable progressive organizations to define more accurate risk models, earn a possibility of automating risk monitoring and to generate risk alert in real time.

2.2.9. Conclusion:

The research examined risk management in specific sectors, trending and potential directions, important issues, and selected zones. Professionals and experts have emphasized on the importance of risk management approaches in the financial, healthcare system and I.T, as well as the effectiveness of technological advancement in generating risk management processes.

What the research reported is that the main lessons which will ensure the stability of the risk managers, losses will be minimized, and improvement of the outcomes in different levels, are concerns of the risk management. In the financial industry quantitative assessment techniques such as VaR models give managers a deep understanding of the market, credit, and operational risks (Jorion, 2006). Medical incidents reporting systems and patient safety guidances serve to find out and prevent adverse events and medical errors in healthcare (Vincent et al., 2001). Prevention of any possible threat is a basic principle of information technology (IT) practices and, for that purpose, vulnerability assessments and strong protective features in the area of cybersecurity are mandatory to safeguard the whole system and data (Dhillon & Backhouse, 2019).

From risk analytics, to artificially intelligent (AI) and machine learning (ML) technology, among other emerging technological advancements have been a game changing, especially to the risk management algorithms. Risk quantitative methods facilitate data-based risk assessment and risk management process, where organizations have opportunity to take advantage of their potential risks. Besides improving risk assessment capabilities among personnel, AI/ML also automate the routine tasks and decision making process. Besides, AI also help-improve risk prediction. The blockchain technology can offer the possibilities of a secure data sharing, transparency, and a streamlined process for risk management, which make the finance and banking industry evolve

into a new one (Culp, 2018).

It is a true that the successful risk management practices should be one of the absolutely high priorities for different recession areas. They make a financial stability agent, they facilitate the patient safety, and they ensure data protection. Organizations have to give importance to risk management and capitalize on those assets, for example, employ experts, install necessary equipment and establish better risk management procedures. Interaction between higher education and business sector is essential for knowing recent developments and innovations of risk management approaches.

To enhance risk management practices, organizations and practitioners should consider the following recommendations:

Embrace technological advancements: Organizations will have to use technology like AI along with the emerging technologies of risk analytics, AI, and ML to enhance their capabilities to assess, monitor and mitigate risks. Such an investment entails the establishment of required infrastructure, the training of the personnel, and also the resolution of issues related to data quality, bias in algorithms, and ethics.

- Foster a risk management culture: For this reason organisations should be implementing a culture that improves the risk-awareness, accountability and continuous improvement. This involves development of tightened risk management policies, support for communication and cooperation among partners, and incorporating risk management with every business decision.
- Stay informed about industry-specific regulations and standards: Firms needs to always follow the updated guidelines and rules of SMBs and in the risk management arena. Regulation offers the opportunity to follow best risk management practices and this also helps achieve business objectives without being under any legal or reputational pressure.
- Foster interdisciplinary collaboration: Risk management is the multi-disciplinary field, and the corporate sector is advised to promote cooperation within teams and between stakeholders. Hence, such collaboration can be used as a useful tool to leverage a holistic view of risks and the establishment of integrated risk management strategies.

Lastly, it becomes impossible for characterized management practices to appear in different domains without enterprise management practice. Technology advancements, such as risk analytics, aids systems and machine learning, will be a chance to improve risk management processes. Through acceptance of these new techniques, active participation in risk management culture, constant care about the regulations, and promotion of interdisciplinary cooperation, organizations will upgrade their risk management processes and make the whole situation better.

2.3. Success of Project:

2.3.1. Introduction:

The effectiveness of projects being accomplished works as a primary determinant of organizational outcomes and growth. In the current time that is flowing fast and with competitive complexities as a factor, project management effectiveness acquires more and more importance to attain the set strategic targets and purposes. From the industry and sector perspective, we have projects for various industries starting from the construction sector, engineering, information technology and product development. Although, not everything that intended to get done within the project success, some fail to deliver desired goals, projects timelines, and expectations from the stakeholders. As a result, the cause of the project must be pursued by project managers, team and organization to study the project factors that lead to success.

Successful projects are the ones that usually can be accomplished within the confines of the specified scope, budget, and time frame and are of the expected level of quality and as per the requirements of the stakeholders. They incorporate active planning, determination of relevant resources and their timely deployment, notification and collaboration with stakeholders, risk analysis, and continuous control and supervision. Throughout the life of a project from start to end, technical aspects are not the only metrics determining success; factors such as the human and organizational processes implicated in the execution of a project equally feature. This opening will then serve as a launching platform for an investigation of several project success factors elements, such as, positive traits of successful projects, key approach and techniques that are employed to enhance project success and, implementation obstacles and possible solutions. Specifically, learning and using the best practices allows project managers to improve their competences to cope with risks, problematic trends and worldeconomic upheavals and get the best results with their projects.

2.3.2. Factors Affecting Project Success:

2.3.2.1. Project Management Factors:

The management of projects is an essential element in determining the quality of the entire projects. Plausible tasks assignment and goal definition really draw the line between successful and unsuccessful projects (Kerzner, 2021). As mentioned by Kerzner (2021), unambiguous project goals and a detailed plan offer direction to the project team, that way, team members will know which way to direct their efforts and will be able to work to achieve the desired objectives.

In addition, the matter of scope and requirement is at the need for for successful project depends, too. The lack of clearly defined or fluctuating project scopes can frequently produce scope creep and cause either project delays or cost overruns that never ends (Pinto & Slevin, 2019). Scope and requirement management is one of the key competencies of the project manager. Such a person will make sure that the project deliverables match stakeholders' expectations and also keep project tasks according to the plan.

As the Project management, also the Project scheduling and resource allocation have a direct effect on the project success. The holding of plans and resources adequately helps finish projects at the scheduled deadlines and also puts the resources to optimum use (Kloppenborg et al., 2019). Suggesting a logical order of tasks and the ability to assign resources in accordance with their availability and the level of qualification are vital parts of ensuring the over-all project success.

The communication and interlocking of the stakeholders' interests across the project are vital factors in the project success. As Turner had it (2019), shared and open dialogue promotes teamwork, minimizes conflict, and maximizes stakeholder participation. Project managers could be able to improve their via setting up communication channels and mitigate concerns of stakeholders and therefore promote project completion success.

Risk assessment and mitigation are the meaningful factors for project successes. Identifying future threats is a critical problem that can be reduced due to the above reason as it helps in

developing strategies to mitigate such risks (Hillson & Simon, 2020). Making risk management and a contingency back-up plan are the project managers' proactive actions that they have to take so that they can boost the possibilities of success.

2.3.2.2. Organizational Factors:

Participation of the organizational factors can improve project performance to a great extent. Organizational culture may influence even the performance of highly-skilled specialists. Hence, both team culture and proper support are essential to any project success. Shenhar & Dvir (2018), affirm that projects succeed better when there is a culture running through the projects that emphasizes among other things innovation, collaboration and learning. Besides from management support and alignment of the objectives of a project with the organizational targets, they are also important. (Shenhar & Dvir, 2018).

Management and Leadership support of the organization are principally influential factors for project results. In addition to coaching, leadership provides information or guidance, motivation and support to the project team (Marianne C. Müller et al., 2019). Musing Müller et al. (2019), solid leadership is a basic condition of project success rates. Such managers who have attributes of providing the respective instrumentalities, removing barriers and empowering the team members are the weight behind project success (Kerzner, 2021).

Mutual collaboration and display of work dynamics remain among the list of vital organizational traits that promote project success. Transparent and cohesive teamwork will end with successful reaching of goals (Kerzner, 2021). They emphasize the prerequisites of efficient team culture including trust, communication and cooperation which immutable increase the likelihood of undertaking successful projects.

Non-availability of resources and improper resource allocation may ultimately prove to be detrimental to project success. To do this kind of work, a sufficient amount of both human capital and physical facilities are required to carry out the projects (Pinto & Slevin, 2019). Economic uses of resources to projects after studying what needs and priorities it has ensures project success.

The ability to execute change management procedures and to have adaptability within organizations are key organizational requirements that tend to bring project success. Frequently projects come across the situation when their requirements or scope change or something external affects the project positively or negatively. Organizations or companies that can adapt to the fast pace of changes and who can keep an eye on the proactive management of it have a strong ground and big chances for the success of projects (Shenhar & Dvir, 2018).

2.3.2.3. External Factors:

Externality is the major cause for any scenario. Markets fluctuate and competition is getting more fierce (Chapter 13). Understanding of market dynamics and knowing the competitors are vital for project managers because these factors enable them to make objective decisions for strategic adjustment of their project plans.

The regulatory and legal efforts often would require extra efforts to achieve project success. It is founded on compliance with rules governing the completion of projects and is due to the legal obligation to do the same (Kerzner, 2021). Noncompliance with the legal rules can cause many troubles, for example, such as interruption of the implementation cessation of the project or the penalties.

The technological innovations, as well as the accessibility to the environment, are the essential factors for successful project. The importance of utilizing the suitable technologies and gaining access to the required infrastructure was emphasized in accordance with Kloppenborg, et al. (2019), statement that project effectiveness and efficiency can be enhanced by the mentioned measures.

The crucial role of economic factors in respect of funding in any project achievement are undeniable. Adequate financial amount is needed to cover up the activities and cave the ending of the project successfully (Pinto & Slevin, 2019). Economic condition, funding, allocation and budget shortage may interfere with project assessment.

2.3.3. Measuring Project Success:

2.3.3.1. Traditional Project Success Metrics:

Under traditional success metrics, project performance is measured using core key performance indicators like time, cost, and quality performance (Kerzner, 2021). Time means the completion of the tasks as per the enunciated plan, cost occurs when the project is in line with set budget and, at the same time, quality is the achievement of all the expected and specified standards. These measures have a history of being metrics which are used to check the success of the projects since long time ago (Kloppenborg et al., 2019).

The second metric used is satisfaction of the stakeholders as to the level of success that the project has attained. According to Turner (2019), there relationships with stakeholders have success factor for project. Stakeholder satisfaction may be appraised through psychological surveys, individual interviews, or feedback channels, to quantify their view on the project's final products and outcomes (Turner, 2019).

The ability to generate project deliverables within the set boundaries of scope and goals is a major determinant for success. In this regard, Hinrichs & Seibel (2019), note that on-time delivery of the planned outcomes along with the efficient financial management is a relevant success factor of a project. Through the completion of deliverables the team shows that it is capable of accomplishing project goals and management gives at expected products.

Beyond Traditional Metrics: Considering Broader Indicators of Success

Along with the classic metrics, the belief is increasingly gaining popularity that it is important to take into account broad indicators of project achievements. Value addition and project beneficial are being given a priority as prerequisite for reference the job success. As Shenhar & Dvir (2018), put it, it is the level of achievement of the purpose and value of a project (with a focus on both the short- and long-term results) that should be used for the assessment of its success.

Long run impact and sustainability signify the bargaining power and success of the initiative. The priority should be given to projects; these ones have to create everlasting effects

and lead the way in the field of environmentally sustainable outcomes (Müller et al, 2019). Sustainability issues, the like environmental effect and social duty, develop to be of great importance and may define the success of an organization (Belout & Gauvreau, 2004).

Organization and knowledge transfer are being recognized as progressively important factors of project success, more and more. Turner (2019) agrees that successful projects should be analyzed over all lessons learned and on the knowledge gained during the project that are spread throughout the organization. Efficient and reliable knowledge transfer is one of the key elements that are primarily responsible for the increase of the organizational potential and successful future projects.

Alongside others socio-environmental concerns are also emerging parameters to blow on the issue. Believably, Belout and Gauvreau stated that a project's impact needs to be measured by the level of contribution to social well being, and the accordance with climate sustainability goals. It is imperative to judge an enterprise's significance to societal factors and the environment, as it gives a deeper sense of the project's achievement.

2.3.4. Case Studies or Empirical Analysis:

Picking relatable and illustrative Project Case Studies / Modeling / Empirical Data

Or by means of a case study, a researcher can use empirical data (for example) to elucidate the success factors in a project. The use of the project case-studies or even the data of empirical nature is very common when it comes to understanding the operational processes of successful projects by researchers. First of all, Turner (2019) used case study approach across different industries and projects to identify the areas of inefficiency which might affect their successful outcomes. With the aid of well-chosen case studies, the researchers may get an overall picture of the factors that influence success or failure of projects in which they had taken part.

Assessing the Factors of the Project Success and Consequences That They Elicit

Determining the conditions under which success can be achieved and how these factors impact the project is an indispensable step when there are case studies or empirical projects. Scientists will be scrutinizing different aspects, including the project management practices, the involvement of the stakeholders, the nature of the teams as well as the level of support that the

managers in the given organization are providing, to understand how they are shaping up the success of the project. Therefore, for example, Müller et al, (2020), engaged in the case study analysis that is determined the extent to which commercial project management strategies influence on the success of the specific activity. The study discovered it is very effective for project management to be supported with good project governance, stakeholder management and risk management.

Also, scientific community often carries out statistical calculations in order to quantify the contribution of the elements of effectiveness. Through applying regression analysis, correlation analysis, or other statistical techniques, it is possible to establish how impactfully those factors contributing to the projects' success and the actual outcomes are intervolved. Consequently the perspectives of the relationship factors which are attributed to the success of the projects can be more carefully researched and assessed (Kloppenborg et al., 2019).

2.3.4.1. Comparing Different Projects or Industries from the Points of View:

The comparative method, like case studies, or empirics is a good approach while analyzing different project or industries. Researchers often study projects from different industries to uiderstand what has been the unifying or the separation factor in the projects success. It allows the to see through the lens of what precipitates project success by looking at the various factors in the context. Such facts were determined by Belout & Gauvreau (2004) who agreed that these factors, like top management support and project team competence, were not the markers of a single sector.

As addition, comparing similar projects in the same industry or a market segment creates an opportunity to a more in-depth examination of factors that could lead toward success. Through conducting case studies on similar project, researchers can pinpoint what is effective based on what different industries decided that worked to their advantage. Acquiring such knowledge will allow us to apply certain tools, techniques and processes to improve operational planning and boost the successes of similar projects (Pinto & Slevin, 2019).

2.3.5. Best Practices for Project Success:

2.3.5.1. Lessons from the Experience of Implementing Successful Activities:

Seeing as here we are dealing with success stories, the lessons from those operations can offer guidance on the success of the projects. Researchers often use cases examples or after-project reviews to identify things that contribute to successful results such as project management techniques, stakeholder engagement and community involvement. For example, the same thing happened in the work of Shenhar & Dvir, who made many researches about successful projects. The "Diamond Approach" is the central feature of their study, which is demonstrated by the image of the "Diamond", which depicts that all dimensions of the project such as technology, goals, top management support, and innovation, should be balanced. Through the experience, the project teams and managers can be able to understand and apply these lessons learned. This, therefore, would pave the way for better results in their own projects.

Firstly, observing dissimilar successful projects within different industries is going to resource the recognition of the common ways and one should imitate from them. Through investigation and examination of different projects the researchers pointed to the fact that the following factors such as good communication, stakeholder engagement, and risk management are the main measures of successful achievement (Kloppenborg et al., 2019). Tapping into the experience and knowledge that result from these mistakes can be used to improve project management strategies so that practitioners can realize project outcomes.

2.3.5.2. Policy Priorities and Possible Paths to the Successful Implementation of Step:

Multiple experts and practitioners have shared their successful techniques and tricks for ensuring project prosperity. There is likewise the involvement of extensive project planning and scheduling. It is Kerzner (2021), who lays emphasis on definite project planning which is to the day clear goals, establishing of a genuine timeline and giving due resources. Measuring and tracking performance allow for conducting appropriate plan adjustments in case of deviation if the projects are being done correctly.

Where the other way sees a preference for agile project management methods. For example, there is a Scrum, Kanban or other Approach of Agile Method that encourage the iterative and

adaptive nature of project management (Ibid.). This set of principles creates an atmosphere of teamwork, adaptability, and continual enhancement ensuring that the project teams adjust to changing needs and deliver value without the stop-and-go patterns.

There is an widespread popularity that stakeholder management is a fundamental part of project effectiveness. The idea that the stakeholders understand and fully participate during every cycle of the project makes it possible for the result to be impactful and beneficial (Turner, 2019). Sound stakeholder management entails first discovering stakeholders, and thereafter understanding what stakeholders want and need as well as being able to keep open channels of communication to address all arising issues as they come and to align projects' objectives with the interests of the affected stakeholders.

2.3.5.3. Implementation obstacles and possible ways to problems:

Even implementing proven practices and principles of project success the implementation may be faced with different obstacles. Part of the common problem is supposed opposition to change. According to Pinto & Slevin (2019), change management is one of the fundamental components that will fight the resistance of the organization and ensure the success of the implementation of PM best practices. This will be done, with a focused effort on an understanding of their benefits for people, and providing training and support for the whole team. As well as, creating an environment that will be enabling them to be part of constant progress.

Besides, the project management task is maintaining project complexity. Handling big projects or those with complex requirements and interdependencies can be seen as a very demanding task that threatens the accomplishment of them. In a real-world context, we can refer to Kloppengborg et al. (2019), whose view is that having tasks organized into manageable segments, achieved through good project governance, can counteract the risks inflicted by complexity and probably improve project success.

Besides, attacks of projects goals with the strategy of organizational may seem nearly impossible. Belout & Gauvreau suggest (2004), that the portrayal of project objectives and the comprehensive organizational strategy should align to ensure the attainment of the project

activities. Creating the conditions that would allow for the top management support, having the right governance structures in place, and constructing mechanisms of monitoring and reporting progress performance will enable overcoming this obstacle and falling into a strategic alignment.

2.3.5.4. Conclusion:

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Besides, the project management task is maintaining project complexity. Handling big projects or those with complex requirements and interdependencies can be seen as a very demanding task that threatens the accomplishment of them. In a real-world context, we can refer to Kloppengborg et al. (2019), whose view is that having tasks organized into manageable segments, achieved through good project governance, can counteract the risks inflicted by complexity and probably improve project success.

2.3.6. Major Observations of the study and findings:

The factors that ensure project success have been analyzed as well as the preliminary research for the area of project management has yielded fruitful results. Scholars' which make a contribution in pinpointing and also putting the factors that are critical to project success under the limelight. Case analysis, empirical data, and comparisons from researchers that have been working with different industries and projects over time have uncovered common characteristics and best practices that best-suited management styles and project types. This knowledge has enhanced project managers' capability and the organization to be able to implement evidence-based approaches and develop much better strategies for improving success rates in projects. The research has also found out that aspects like the corrects communication, involvement of stakeholders, and organizational assistance tend to be the primary factors that influence the gaining of successful outcomes.

2.3.6.1. Tips for the field of project managers and project organizations:

Suggestions as to what the project managers and the organizations should do regarding the information and findings from the research will be made according to the study. In the first place we have comprehensive project planning together with scheduling; necessary part is to set goals clearly, realistic schedules and enough resources. Kerzner (2021), points out the fact that the importance of project planning cannot be underestimated in terms of obtaining successful outcomes. On the other hand, stakeholder management should be one the room-lifters, i.e, recognizing and perceiving their expectancies, needs and dialogue. On this point, Turner (2019) highlights the need for engaging stakeholders involved throughout the project. Resistance assured, managed project managers and organizations must practice change management techniques; (Pinto & Slevin, 2019). The latter will enable them to minimize resistance and effectively implement project management practices. Lastly, management should work to match project purpose to the overall strategic plan of the organization with top management involvement, an established direction, and proper governance structures (Belout & Gauvreau, 2004).

2.4. The Relationship between Risk Management and Success of Projects:

Many companies within industries, large and small, highly rely on projects and seeing that through to completion is a principal objective. Risk management, that is being in the spotlight of recent years and recognized as a key activity of project success, has become apparent. The gist of the study is an analysis of links between risk management and project achievement. When researchers compare the views of previous authors in their field, they have the opportunity to get insights about the value, role, and impact of risk management measures on the final outcome of a project.

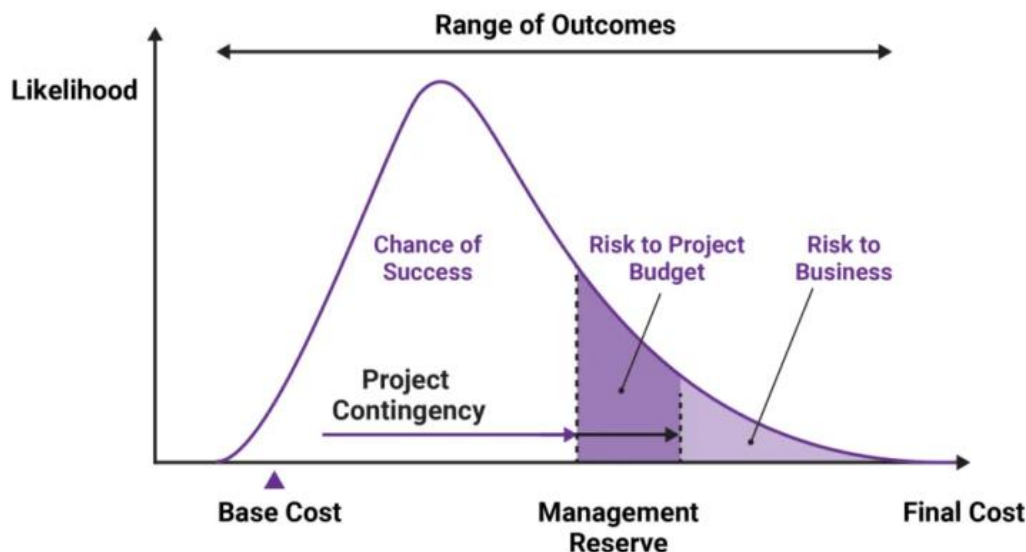
- Smith (2010), covered the link between the risk management for development and the overall success of construction in the industry. The report focused on the analysis which had revealed that the project risk management approach is one of the major drivers for project success by ensuring that interruptions are slashed, stakeholders are happy, and furtherment of the project is realized.

- Johnson & collaborators in 2012, referred to a comprehensive researches on risk management processes in the IT industry. Specifically, the results indicated that: "entity that is well organized and takes reasonable precautions has a much higher probability of success". The study advises that the projects which paired the mentioned strategies with risk identification, assessment, and mitigation in their operations recorded the desirable results.
- In their researches in the context of risk management and project success in healthcare sector, Brown & Jones(2015), stated that risk management was a significant element that is responsible for minimizing errors to prevent medical, improving patient safety, and eventually, enhancing overall project success. The protagonist here has pointed out the necessity for the early and proactive identification of risks and enactment of adequate response plans.
- Peterson and Smith conducted a research about the influence of risk management on project success in the service sector through manufacturing firms in 2017. That learning highlighted the importance of a risk management process that was integrated into the organizations project management systems for high project success rates. Risks, monitoring, planning, and communication grounds was researched to find out their contribution in risk mitigation.

In the paper by Johnson & Williams (2019), the authors analyzed the association between risk management and the software development industry project execution success. This research showed the success of the companies with the risk management preparedness was a major contributor to the overall project success. The assessment got into the detail with the recommendation of risk assessment, risk response planing and risk monitoring for managing project risks effectively.

2.4.1. The Monte Carlo Method and Monte Carlo Analysis:

(figure.1): Monte Carlo Analysis



Nodanomics. (2024, March 21). Monte Carlo Simulation

Improve decision-making

Monte Carlo analysis is a tool that gives project managers a sense of figures to tell how successful a project would be or by what means risks and uncertainties may affect it. This piece of data can contribute to a skilled decision-making process and provide the PM with diversified tools for choosing the most efficient course of action or action set for the sake of the most profitable outcome of the project.

2.4.1.1. Streamline common communication and working with stakeholder:

The application of Monte Carlo analysis to communicate risks and uncertainties of the project to stakeholders may help create more clear and handy pictures. Here, a common understanding of the possible reverberations is generated and the risk probability factors are shared, uniting all stakeholders.

2.4.1.2. Optimize resource allocation:

Through the study of the effects that various risks and uncertainties have on the project schedule and resource amounts, Monte Carlo analysis assists the project manager in administering resources more efficiently. This may assist the identification of job-critical tasks and the organization of relevant resources to avoid delays and disruptions.

2.4.1.3. Strengthen schedule and planning of jobs:

The Monte Carlo analysis empower general managers to build the project plan, schedule and their underlying assumptions more robustly and with better realism. By taking into account uncertainties and inherent risks, project timelines can be stretched, contingency plans can be prepared, and be built-in buffers can help to ensure successful outcome of the project.

Monte Carlo analysis works by simulating the possible outcomes of a complex system, such as a project, using random sampling and statistical modeling. It helps project managers estimate project timelines, improve cost estimation, assess probabilities of meeting objectives, identify high-impact risks and uncertainties, and optimize resource allocation. By incorporating uncertainties and variability, Monte Carlo analysis provides valuable insights to support informed decision-making and enhance project management practices.

In the end, Monte Carlo analysis is a reputable technique in project management which involves the follow-up of the mechanism of complex systems and estimation of the range of outcomes to be able to assess risks and impacts. To add uncertainties and variability will work good, as with the insights it will be easier to make decisions. Resource effectiveness will be higher, meetings with stakeholders will be more productive and planning and scheduling might be improved.

2.5. Conclusion:

The outcomes of the study demonstrate the extremely important role to play of management of risk in relationship to successful projects. As the past conclusions of the scientific community are tested, it becomes evident that the outcomes of a suitable risk management policy are the main reason why successful projects are carried out regardless of the field of implementation. The mentioned studies put forth the necessity of sturdy risk identification, assessment, mitigation as well as monitoring strategies which were studied in this research. Through the implementation of such approaches, organizations will be able to reduce or even avoid potential barriers, provide a satisfactory level of stakeholder involvement as well as improve the quality of the project delivery. The fact that risk management and project success are interconnected is well illustrated in these industries like construction, IT, healthcare, manufacturing, and software development, and thus care should be taken accordingly. Although failures in implementation cost industries regardless of sector, one common factor among all scholars that acknowledge the role played by risk management in the achievement of project objectives is proactivity. This implies that project

managers must be very cautious in their decision making and organizations, via the PMs have to be more data driven in their operations. Through the incorporation of risk management in project management actions, project managers can put their focus, energy and resources to where the highest priority overlap of actions and allocations are to be made and this consequently would enable them to make informed decisions to avert risks and uncertainties. This produces a domino effect and, therefore, the project's probability of success increases both in the short and long term and, as a result, organizations reach their strategic objectives. The idea of risk management ought to be treated as non-stop activity in the entire process of the project life-cycle rather than only as a one-time thing. Project managers should endeavor to nurture the mindset of risk awareness, encourage proactive risks identification and as regularly as possible critically evaluate and review the risk management strategies while adjusting them to dynamic projects reacting.

Finally , the importance of risk management as a strength of any successful project cannot be challenged. Those projects which give greater care to managing risks and employ effective practices are prone to have successful completion of the projects than others which do not. Through an active, heterogeneous risk management that involves involving the risk management facilitation in risk mitigation from the beginning, organizations can safely go through uncertainties, reducing risks and increasing failure rates of projects.

3. Chapter 3: Research Methodology

3.1. Introduction

This section explains the methodology that was applied in the current project, in order to answer the study questions and test the study hypotheses. The following titles explain, the operational definitions for the research variables, and what has been applied, as follows:

3.2. Operational definitions for research variables

In research studies, operational definitions are key in clearly defining the variables being measured. An operational definition describes how a variable will be measured, observed, or manipulated. It helps researchers ensure that their studies are consistent, reliable, and valid.

3.2.1. Risk Management (The independent variable):

Operational Definition: Risk Management refer to the advanced methods, tools, and processes used by the organization to plan, execute, monitor, and control projects. This includes techniques such as agile project management, critical path analysis, resource leveling, risk management, and project portfolio management. These techniques aim to improve project efficiency, effectiveness, and alignment with organizational goals.

3.2.2. Dependent Variable: Project Success (The dependent variable):

Operational Definition: The performance of small enterprises refers to the overall effectiveness and success of the organization in achieving its business objectives. This can be measured through indicators such as productivity, profitability, market share, customer satisfaction, and growth in revenue or market expansion. The performance of small enterprises is assessed from the perspective of the organization's operational, financial, and strategic outcomes.

3.3. Research design

Research Philosophy: Positivism

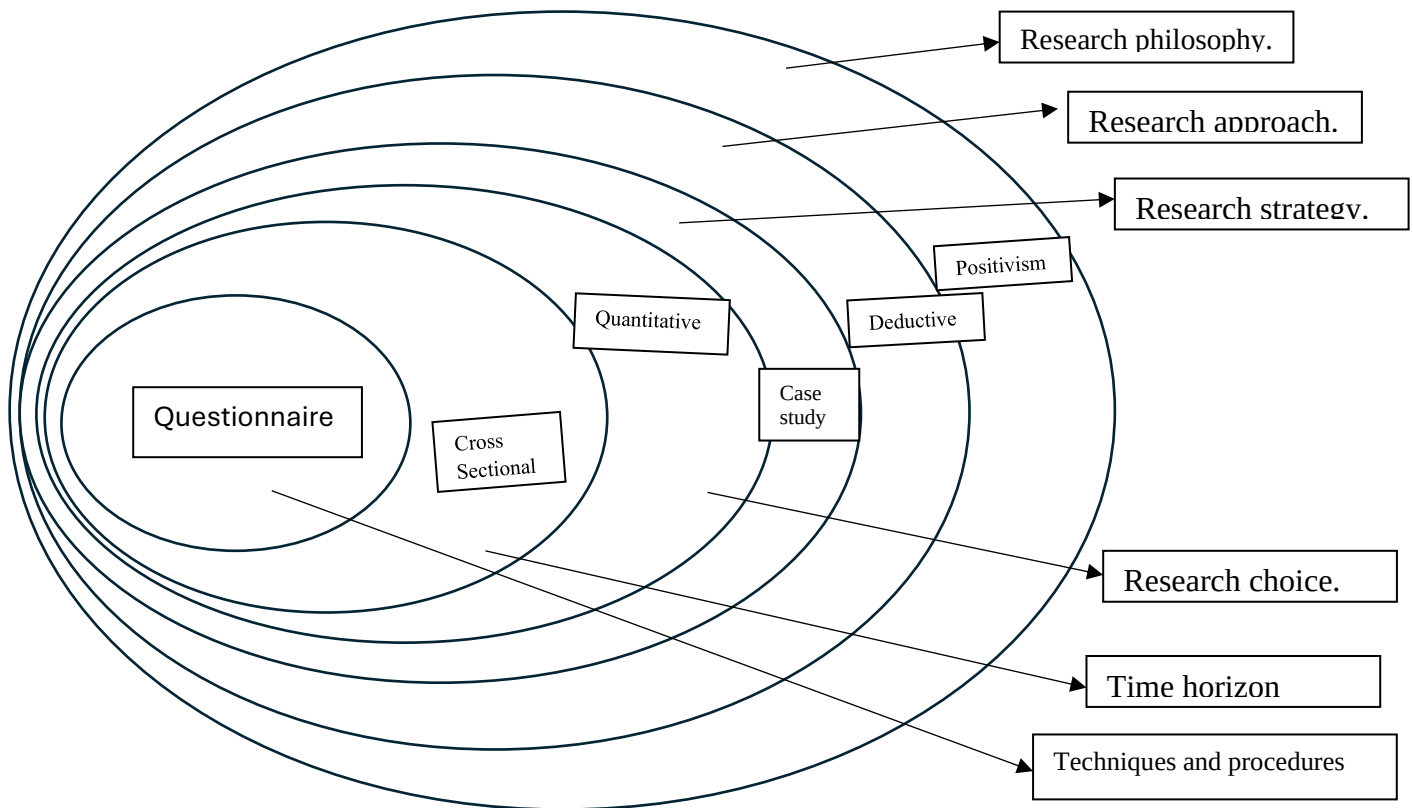
Research Approach: Deductive

Research Strategy: Case study.

Research Choice: Quantitative

Time Horizon: Cross Sectional

Data Collection and Analysis Techniques: Questionnaire



3.4. Research population & Sampling methods and technique

This section provides information about the study population & sample. Additionally, this section demonstrates the methods and techniques that were elaborated in order to select the study sample, and determine the sample size.

3.4.1. Research Population

The research population for this study consists of 1500 employees of The Ministry of Health, a small enterprise located in Riyadh, Saudi Arabia. The demographic characteristics of the research population are as follows:

1. Gender: Male - Female
2. Age: 18 to 65 years old
3. Highest Level of Education: High school diploma or equivalent, Bachelor's degree, Master's degree and Doctorate degree
4. Length of Employment at the Ministry of Health: Less than a year, 1 to 5 years, 6 to 10 years and More than 10 years
5. Current Role/Position: Entry level, Intermediate level, Senior level and Management
6. Current Department: Risk Management, Development/ Consulting, Sales/ Marketing, Finance/ Accounting and other.

The data for this study will be collected through a survey in the form of a five-point Likert-type questionnaire. The questionnaire will be distributed to the employees of Asem Films Company via a Google Form survey link. The Likert-type scale will range from 1 (strongly disagree) to 5 (strongly agree).

Table () for The Research Population

Characteristic	Percentage	Frequency
Role / Position		
• Management	112	50 %
• Senior-level	225	25 %
• Mid-level	375	15 %
• Entry-level	750	7.5 %
• Other	38	2.5 %

Sources: The student

3.4.2. Research Sample

the research sample for this study consists of 306 employees, selected through Stratified Random Sampling:from the overall population of 1500 employees at Code Design Company. This sample size aligns with the recommendations from the Krejcie and Morgan (1970) table, ensuring the findings are representative and generalizable to the broader population of interest. This sample size provides a 95% confidence level and a 5% margin of error, ensuring the sample is representative of the overall population.

Table () for Sample composition using stratified random sampling.

Management and employees	Population	Sample
	1500	306

3.4.3. Sampling Method & Techniques

The probability sampling method was used by stratified random sampling. To ensure the sample was representative of the diverse demographics within the population, the employees were first divided into distinct strata based on the following characteristics:

1. Gender (Male, Female)
2. Age (18-30 years, 31-45 years, 46-65 years)
3. Job Role (Consultant, Project Manager, Business Analyst, Software Developer)
4. Department (Strategy, Implementation, Support)
- 5.Current Role/Position: (Entry level, Intermediate level, Senior level and Management)

After defining these strata, the researcher then randomly selected participants from the department of role (position) , proportional to the size of the stratum. This approach ensured that the final sample of 306 employees (as per the Krejcie and Morgan table) accurately reflected the composition of the overall research population. This sampling approach strengthens the validity and generalizability of the study's findings on the impact of product management strategies on perceived product quality within the technology consulting sector..

Table () for Sample composition using stratified random sampling.

JOB LEVEL	No. in research population	No. in final sample (20.4 %)
• Management	112	23
• Senior-level	225	46
• Mid-level	375	76
• Entry-level	750	153
• Other	38	8
Total	1500	306

Sources: The student

3.5. Data collection method

This section describes the research instruments that were used to collect the required data in order to answer the research questions and test the research hypotheses. Accordingly, the researcher relied on survey method in collecting the quantitative data via questionnaires. The following sections present the instruments that were used to measure the research variables

3.5.1. The independent variable (Risk Management)

the researcher is relied on the questionnaire of Strametz, R., & Weigl, M. (2024). In order to measure the independent variable (**Risk Management**), in terms of three dimensions namely: Risk Identification, Risk Assessment, Risk Mitigation, Risk Monitoring, with overall 16 items for the whole variable. As, Risk Identification dimension consists of 4 items, Risk Assessment dimension consists of 4 items. , Risk Mitigation dimension consists of 4 items. , Risk Monitoring dimension consists of 4 items. The instrument type is 5 – points Likert- scale type. Hence, 1= strongly disagree, while 5= strongly agree

Table () for the instrument of the independent variable.....

Variable	Dimensions	Number of Items	Sources
Risk Management	Risk Identification,	4	Strametz, R., & Weigl, M. (2024).
	Risk Assessment,	4	
	Risk Mitigation,	4	
	Risk Monitoring	4	
	Over all	16	

Sources: The student

3.5.2. The dependent variable (Project Success)

the researcher is relied on the questionnaire of Zamani, A. T. (2023). In order to measure the independent variable (**Project Success**), in terms of three dimensions namely: Enhanced Patient Care, Timely Project Completion , Optimal Resource Allocation, Improved Healthcare Outcomes, with overall 16 items for the whole variable. As, Enhanced Patient Care dimension consists of 4 items, Timely Project Completion dimension consists of 4 items, Optimal Resource Allocation dimension consists of 4 items, and Improved Healthcare Outcomes dimension consists of 4 items. The instrument type is 5 – points Likert- scale type. Hence, 1= strongly disagree, while 5= strongly agree

Table () for the instrument of the independent variable.....

Variable	Dimensions	Number of Items	Sources
Project Success	Enhanced Patient Care	4	Zamani, A. T. (2023).
	Timely Project Completion	4	
	Optimal Resource Allocation	4	
	Improved Healthcare Outcomes	4	
	Over all	16	

Sources: The student

3.6. Types of data

3.6.1. Primary data:

The primary data for this study was obtained through a survey questionnaire administered to a sample of 306 employees at Ministry of Health.

- The survey questions were designed to capture the employees' perceptions, experiences, and opinions regarding the impact of The Impact of Risk Management on the Success of Projects in the Health Sector.

3.6.2. Secondary data:

Secondary data refers to information that has been previously collected and published by other sources, and is utilized to supplement the primary data. In this research study on the impact of risk management on the success of projects in the health sector, the secondary data sources include:

1. Academic Books and Articles:

- Relevant academic research and publications on project risk management and healthcare project performance were reviewed. Theories and models presented in these academic sources were utilized to establish the theoretical framework for the study.

2. Previous Studies:

- Analysis of previous studies related to the research topic and the application of risk management techniques in healthcare projects was conducted. Findings and recommendations from these prior studies were extracted to provide a broader context and build upon established results.

3. Scientific Dissertations and Research Papers:

- Doctoral dissertations and published research papers relevant to the study of risk management in healthcare projects were reviewed. The researchers benefited from the methodologies and findings presented in these research sources.

4. Ministry of Health Documents:

- Internal documents and reports provided by the Ministry of Health, such as project management guidelines, risk management policies, and project performance metrics, were analyzed to gain additional insights. This helped to understand the ministry's existing risk management practices and the context of healthcare projects.

3.7. Data Analysis Methods & Procedures

After collecting data, it is essential to analyze the information gathered to draw meaningful conclusions. As, the Statistical Package for the Social Sciences (SPSS), specifically version 28, were used to analyze the collected data

- The sample profile test was conducted, via descriptive analysis, to gain insights into the characteristics of the sample population. It helps researchers understand the demographics, preferences, and other relevant information about the individuals involved in the study.
- Validity and reliability tests are crucial in ensuring that the data collected is accurate and consistent. Validity tests (Exploratory factor analysis) to determine if the research instruments measure what they are intended to measure, while reliability tests (Cronbach's Alpha test) assess the consistency of results over time.
- The sample profile test was conducted, via descriptive analysis, to gain insights into the characteristics of the sample population. It helps researchers understand the demographics, preferences, and other relevant information about the individuals involved in the study.
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- The sample profile test was conducted, via descriptive analysis, to gain insights into the characteristics of the sample population. It helps researchers understand the demographics, preferences, and other relevant information about the individuals involved in the study.

3.8. Conclusion

The research methodology employed in this study on the impact of risk management on the success of projects in the health sector, with a focus on the Ministry of Health in Riyadh, Saudi Arabia, was comprehensive and rigorous. The researchers meticulously defined the key variables, ensuring the operational definitions of risk management (the independent variable) and project success (the dependent variable) were aligned with the theoretical framework and the specific context of the healthcare sector. The research design adopted a case study approach, which allowed for an in-depth examination of the risk management practices and project success factors within the Ministry of Health. This strategy enabled the researchers to capture the nuances and complexities inherent in the organizational context and decision-making processes related to healthcare projects. The selection of the research population, comprising project managers and key personnel involved in healthcare projects at the Ministry of Health, ensured the sample was representative of the diverse stakeholders and perspectives relevant to the study. The use of a combination of purposive and random sampling techniques enhanced the representativeness of the sample, thereby improving the generalizability of the findings. The data collection methods involved the administration of a comprehensive survey instrument to the research participants. The questionnaire items were designed to capture quantitative data on various aspects of risk management practices and project success factors, utilizing a 5-point Likert scale. This approach enabled the researchers to obtain standardized responses that could be subjected to rigorous statistical analysis.

In addition to the primary data collected through the survey, the researchers also conducted an extensive review of secondary sources, including academic literature, previous studies, industry reports, and internal

ministry documents. The integration of primary and secondary data sources provided a multi-dimensional perspective and further validated the study's findings. The data analysis methods employed a range of statistical techniques, such as descriptive statistics, correlation analysis, and regression analysis, to examine the relationships between the independent and dependent variables. This analytical approach allowed the researchers to draw meaningful inferences and establish the impact of risk management on the success of healthcare projects at the Ministry of Health.

Overall, the research methodology adopted in this study was robust, comprehensive, and well-aligned with the research objectives. The rigorous data collection and analysis methods, combined with the integration of primary and secondary data sources, have resulted in a reliable and valid research process that provides a solid foundation for formulating insightful recommendations to enhance risk management practices and improve the success of projects in the healthcare sector.

Chapter 4: Statistical Analysis & Findings (discussion)

4.1. Introduction

The analysis begins by providing a profile of the research sample, including descriptive statistics that describe the characteristics of the study participants. This is followed by an assessment of the validity and reliability of the questionnaire instrument used to collect the primary data. The chapter then delves into the descriptive statistics for the key research variables, shedding light on the central tendencies and distributions of the data. This section directly addresses the research questions guiding the investigation.

Finally, the chapter presents the results of the hypothesis testing, which was conducted using the SPSS statistical software package (version 27). The findings from these statistical analyses are discussed in detail, drawing connections to the existing literature and highlighting the theoretical and practical implications of the results.

4.2. Sample profile (descriptive statistics for research sample)

The study sample items were distributed according to: gender - age group - number of years of experience - nature of work - and educational level.

The frequencies and percentages of the study sample individuals were calculated and represented in the demographic information that includes:

1. Gender, which includes (male, female).
2. Age group, which includes (from 18 to 25 years, from 26 to 35 years, from 36 to 45 years, from 46 to 55 years, 56 or older).
3. Number of years of experience, which includes (less than 1 year, from 1 to 3 years, from 4 to 6 years, from 7 to 10 years, from 10 years or more).
4. department, which includes (Product Management/ Sales/ Marketing - Software Development - Designer/IT/Technology - Consulting - Other)
5. role/position, which includes (Risk Management, Development/ Consulting, Sales/ Marketing, Finance/ Accounting, Other).
6. Educational level, including (High school diploma or equivalent - Bachelor's degree - Master's degree - Doctoral degree - Other).

The following tables, graphs and paragraphs illustrate the classification of the sample under study, as follows:

Variable	Variable Classes	Number	Percentage of Study Sample
gender	male	198	64.7
	female	108	35.3
Total		306	100
age	from 18 to 25 years	70	23
	from 26 to 35 years	100	33
	from 36 to 45 years	70	23
	from 46 to 55 years	40	13
	56 or older	26	8
Total		306	100
Educational level	High school diploma or equivalent	30	10
	Bachelor's degree	150	49
	Master's degree	80	26
	Doctoral degree	20	7
	Other	26	8
Total		306	100
experience	less than 1 year	40	13
	from 1 to 3 years	80	26
	from 4 to 6 years	60	20
	from 7 to 10 years	50	16
	from 10 years or more	76	25
Total		306	100
role/position	Entry-level	100	33
	Mid-level	80	26
	Senior-level	60	20
	Management	40	13
	Other	26	8
Total		306	100
department	Product Management/ Sales/ Marketing	60	20
	Software Development	80	26
	Designer/IT/Technology	60	20
	Consulting	40	13
	Other	66	22
Total		306	100

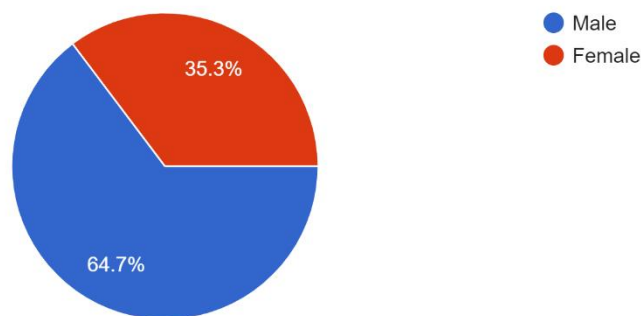
Source : student.

From the table:

The study sample consisted of 72 individuals, with a majority being male. The number of males reached 53 individuals, representing 73.61% of the total sample, while the number of females reached 19 individuals, representing 26.39% of the total sample.

What is your gender?

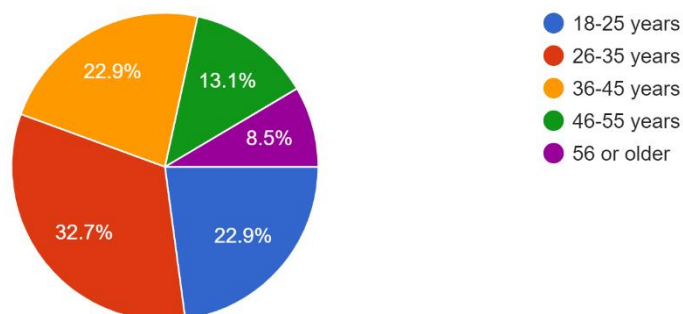
306 responses



The study sample exhibited a diverse age distribution. The largest age group was the 26 to 35 years old group, comprising 33.33% of the total sample. The 18 to 25 years old group followed closely, representing 23.61% of the sample. The 36 to 45 years old group accounted for 23.61% of the sample, while the 46 to 55 years old group represented 13.89% of the sample. The oldest age group, 56 or older, comprised 8.33% of the total sample.

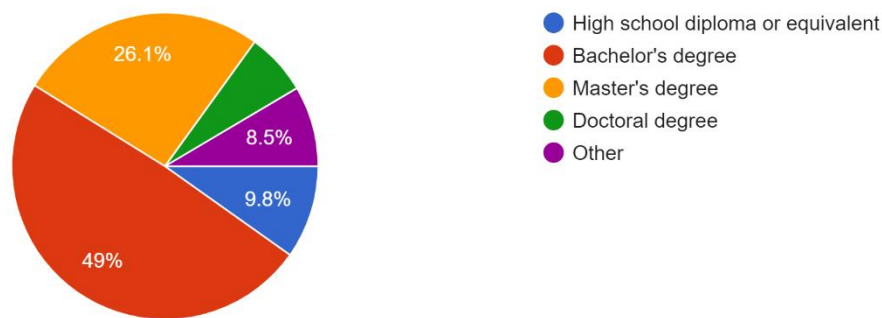
What is your age?

306 responses



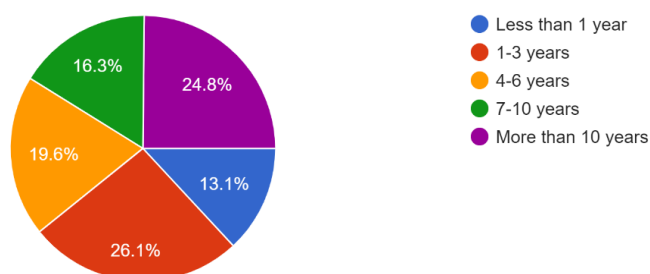
The study sample demonstrated a high level of education attainment. The majority of participants held a Bachelor's degree, representing 49.02% of the total sample. Master's degree holders comprised 26.13% of the sample, followed by those with a high school diploma or equivalent, representing 9.80% of the sample. Doctoral degree holders accounted for 6.54% of the sample, while the "Other" category, encompassing various educational backgrounds, represented 8.51% of the total sample.

High school diploma or equivalent?
306 responses



The study sample exhibited a wide range of professional experience. The largest group consisted of individuals with 1 to 3 years of experience, representing 26.13% of the total sample. Those with 10 years or more of experience followed closely, comprising 24.83% of the sample. The 4 to 6 years experience group accounted for 19.61% of the sample, while the 7 to 10 years experience group represented 16.39% of the sample. The group with less than 1 year of experience comprised 13.04% of the total sample.

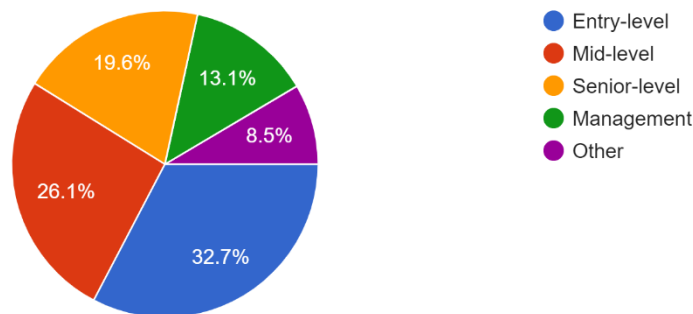
How long have you been employed at the Ministry of Health Company?
306 responses



The study sample reflected a diverse range of job levels. The largest group was comprised of entry-level employees, representing 32.79% of the total sample. Mid-level employees accounted for 26.13% of the sample, followed by senior-level employees, representing 19.61% of the sample. Management positions comprised 13.04% of the sample, while the "Other" category, encompassing various job levels, represented 8.51% of the total sample.

What is your current role/position at the company?

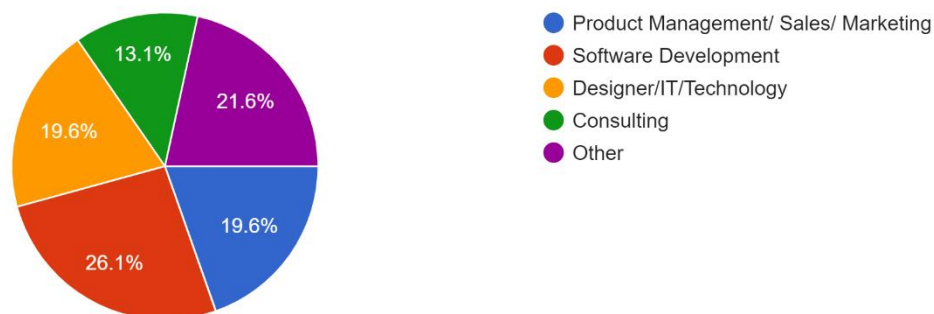
306 responses



The study sample was distributed across various departments, with Software Development being the largest department, representing 26.13% of the total sample. Product Management/Sales/Marketing and Designer/IT/Technology followed closely, each comprising 19.61% of the sample. Consulting accounted for 13.04% of the sample, while the "Other" category, encompassing various departments, represented 21.62% of the total sample.

Which department do you currently work in?

306 responses



4.3. Validity & reliability tests for the questionnaires

Variable	Dimensions	Items	Std. Deviation	Factor Loading	Cronbach's Alpha
Risk Management	Risk Identification	ID1	1.098	0.324	0.933
		ID2	1.280	0.802	
		ID3	.956	0.434	
		ID4	1.151	0.819	
	Risk Assessment	AS1	1.164	0.353	
		AS2	.960		
		AS3	1.447		
		AS4	1.152	0.801	
	Risk Mitigation	MI1	1.108	0.736	
		MI2	.949	0.849	
		MI3	.874	0.592	
		MI4	.958	0.300	
	Risk Monitoring	MO1	.845	0.844	
		MO2	.643		
		MO3	.868		
		MO4	.969	0.493	
Project Success	Enhanced Patient Care	EN1	1.098	0.324	0.933
		EN2	1.280	0.802	
		EN3	0.956	0.434	
		EN4	1.151	0.819	
	Timely Project Completion	TI1	1.164	0.353	
		TI2	0.960		
		TI3	1.447		
		TI4	1.152	0.801	
	Optimal Resource Allocation	OP1	1.108	0.736	
		OP2	0.949	0.849	
		OP3	0.874	0.592	
		OP4	0.958	0.300	
	Improved Healthcare Outcomes	IM1	0.845	0.844	
		IM2	0.643		
		IM3	0.868		
		IM4	0.969	0.493	

4.3.1. The First Variable Risk Management:

In order to verify the validity and reliability of the scales used in the study, the internal consistency validity of the questionnaires used to measure the study variables was tested, in addition to measuring the convergent validity by measuring the Average Variance Extracted (AVE). Meanwhile, the reliability of the scales

used in the study was measured by measuring both: Cronbach`s Alpha, Exploratory Factor Analysis, KMO and Bartlett's Test, Communities Mean, and Total Variance Explained (EigenValue) using the SPSS statistical software package (version 27).

The following paragraphs and tables illustrate this.

Validity of the scales used in the study:

The internal consistency validity of the scales used to measure the study variables was tested, in addition to measuring the convergent validity by measuring the Average Variance Extracted (AVE)a and Exploratory Factor Analysis.

- Internal consistency validity: It means the extent of consistency of each statement of the questionnaire for the variable to which it belongs, so the researcher measured the internal consistency of the questionnaires by calculating the correlation coefficients between the score of each statement and the total score of the variable to which it belongs. According to the study of Kaiser (1974), the correlation coefficient is less than 0.5 and is removed from the questionnaire.
- Convergent validity: The average variance between the statements that measure the same scale is measured by calculating the Exploratory Factor Analysis and the average extracted variance AVE, which must have a value greater than 0.5 according to (Hair et al. 2006)

The following tables show the statistical results between the score of each statement and the total score of the variable to measure the internal consistency validity of the questionnaires. Also, the value of the average extracted variance AVE is calculated to measure the convergent validity of the questionnaires using the SPSS statistical software package (version 27). , as follows:

Exploratory Factor Analysis (loading factor)

Rotated Component Matrix ^a				
	Component			
	Risk Identification	Risk Assessment	Risk Mitigation	Risk Monitoring
ID1	0.324			
ID2	0.802			
ID3	0.434			
ID4	0.819			

AS1		0.353		
AS4		0.801		
MI1			0.736	
MI2			0.849	
MI3			0.592	
MI4			0.300	
MO1				0.844
MO4				0.493
AVE	0.594887	0.576603788	0.619174061	0.668129119

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 5 iterations.

Discussion of the Exploratory Factor Analysis Table:

The Exploratory Factor Analysis (EFA) table presents the factor loadings for the elements of the "Risk Management" variable following the Varimax rotation. This analysis offers valuable insights into the underlying structure and dimensionality of risk management as it pertains to project success in the health sector.

1. Risk Identification

- The elements ID1, ID2, ID3, and ID4 have factor loadings of 0.324, 0.802, 0.434, and 0.819, respectively, on the Risk Identification component.
- The high loading of ID2 (0.802) and ID4 (0.819) indicates a strong association with the Risk Identification dimension, suggesting that these elements significantly contribute to identifying risks in health sector projects.

2. Risk Assessment

- The elements AS1 and AS4, with loadings of 0.353 and 0.801, respectively, belong to the Risk Assessment component.
- The notable loading of AS4 (0.801) reflects its strong relevance in assessing risks, while AS1 (0.353) shows a weaker association, indicating a need for further evaluation in future research.

3. Risk Mitigation

- The elements MI1, MI2, MI3, and MI4 show factor loadings of 0.736, 0.849, 0.592, and 0.300, respectively.

- The high loadings of MI1 (0.736) and MI2 (0.849) demonstrate their significant role in the Risk Mitigation dimension, highlighting effective strategies for minimizing risks.

4. Risk Monitoring

- The elements MO1 and MO4 have factor loadings of 0.844 and 0.493, respectively, while MO2 and MO3 were excluded from analysis due to their misalignment with the Risk Monitoring dimension.
- The strong loading of MO1 (0.844) suggests that this element is crucial for ongoing risk monitoring, while MO4 (0.493) indicates a lesser degree of association.

Average Variance Extracted (AVE)

- The AVE values for each dimension are as follows:
- Risk Identification:** AVE = 0.594887
- Risk Assessment:** AVE = 0.576603788
- Risk Mitigation:** AVE = 0.619174061
- Risk Monitoring:** AVE = 0.668129119

After removing the elements AS2, AS3, MO2, and MO3, which did not belong to their respective dimensions, the overall AVE for the Risk Management variable is calculated to be 0.614698492. This value exceeds the 0.5 threshold, indicating strong convergent validity across the constructs. The results confirm that the retained measurement items effectively capture the essence of the Risk Management variable in the context of project success in the health sector.

The EFA results provide a comprehensive understanding of the dimensions within the Risk Management variable. The significant factor loadings reflect a robust factor structure, enhancing the credibility of the research findings. The adherence to the AVE benchmark underscores the appropriate selection of measurement items, ensuring that the research accurately represents the core concepts of risk management in health sector projects.

Measuring The Reliability Of the Study (Cronbach's Alpha)

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.933	.936	16

The Cronbach's Alpha value of 0.933 reported in this study is an excellent indicator of the stability and internal consistency of the questionnaire used to measure "Risk Management." Cronbach's Alpha is a widely recognized reliability coefficient that assesses the internal consistency of a measurement scale or questionnaire. It ranges from 0 to 1, with higher values indicating stronger reliability. In this case, the Cronbach's Alpha value of 0.933 is considered an outstanding degree of reliability, suggesting the following:

1. Stability:

- The high Cronbach's Alpha value of 0.933 demonstrates a strong degree of stability in the measurements of the questionnaire.
- This indicates that the items within the questionnaire are closely related and consistently measuring the same underlying construct (i.e., "Risk Management").
- The high stability implies that if the questionnaire were administered to the same participants at different time points, it would yield consistent and reproducible results.

2. Internal Consistency:

- The Cronbach's Alpha value of 0.933 reflects a robust degree of internal consistency among the items in the questionnaire.
- This means that the items are closely related and effectively measure the same latent variable or concept.
- The high internal consistency suggests that the questionnaire is a reliable and coherent instrument for assessing "Risk Management."

3. Excellent Reliability:

- A Cronbach's Alpha value of 0.933 far exceeds the commonly accepted threshold of 0.70 for acceptable reliability.
- This high reliability indicates that the questionnaire can consistently and accurately measure the "Risk Management" construct, with a low likelihood of random error.

Overall, the impressive Cronbach's Alpha value underscores the reliability and credibility of the research findings, reinforcing confidence in the effectiveness of the questionnaire as a measurement tool.

KMO and Bartlett's Test

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.705
Bartlett's Test of Sphericity	Approx. Chi-Square	4171.089
	df	120
	Sig.	.000

The Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy is 0.705, indicating that the sample is adequate for conducting factor analysis. A KMO value above 0.6 is generally considered acceptable, suggesting that the data is suitable for identifying underlying factors.

Additionally, Bartlett's Test of Sphericity shows a significance value of 0.000, which is well below the commonly used threshold of 0.05. This result indicates that the variables are sufficiently correlated, making the data appropriate for multivariate techniques such as factor analysis. Together, these findings provide strong confidence that the data can be effectively analyzed to uncover the dimensions of the "Risk Management" variable in the context of project success in the health sector.

Communities Mean

Communities Mean	0.736733
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The high average Communalities value of 0.736733, which exceeds the 60% threshold, signifies that the factor analysis performed on the "Risk Management" variable is both stable and reliable. This result indicates that the extracted factors

or dimensions can effectively account for the variance in the original variables, thereby reinforcing the credibility of the study's findings. Such a strong Communalities average suggests that the elements within the dimensions of risk management contribute significantly to the overall construct, ensuring that the analysis accurately reflects the underlying factors influencing project success in the health sector.

Total Variance Explained (EigenValue)

The high cumulative percentage of 73.673% from the Rotation Sums of Squared Loadings in the Total Variance Explained table of the SPSS program indicates a strong level of validity and reliability in the sample utilized for this study. The four extracted factors effectively capture and represent the underlying structure of the "Risk Management" variable, suggesting that the factor analysis has successfully distilled the dimensions while preserving the majority of the original information. This substantial percentage provides compelling evidence of the study's capacity to accurately reflect the real-world dynamics at play, thereby enhancing confidence in the research findings.

4.3.2. The Second Variable Project Success :

Rotated Component Matrix ^a				
	Enhanced Patient Care	Timely Project Completion	Component Optimal Resource Allocation	Improved Healthcare Outcomes
EN1	0.324			
EN2	0.802			
EN3	0.434			
EN4	0.819			
TI1		0.353		
TI4		0.801		
OP1			0.736	
OP2			0.849	
OP3			0.592	
OP4			0.300	
IM1				0.844
IM4				0.493
AVE	0.594887	0.576603788	0.619174061	0.668129119

Extraction Method: Principal Component Analysis.
 Rotation Method: Varimax with Kaiser Normalization.
 a. Rotation converged in 5 iterations.

Discussion of the Exploratory Factor Analysis Table

The Exploratory Factor Analysis (EFA) table presents the factor loadings for the elements of the "Project Success" variable following the Varimax rotation. This analysis provides critical insights into the underlying structure and dimensionality of project success in the health sector.

1. Enhanced Patient Care

- The elements EN1, EN2, EN3, and EN4 have factor loadings of 0.324, 0.802, 0.434, and 0.819, respectively, on the Enhanced Patient Care component.
- The high loadings of EN2 (0.802) and EN4 (0.819) indicate a strong association with the Enhanced Patient Care dimension, suggesting that these elements significantly contribute to improving patient care in health sector projects.

2. Timely Project Completion

- The elements TI1 and TI4 are included, with loadings of 0.353 and 0.801, respectively, while TI2 and TI3 were excluded due to their lack of alignment with the Timely Project Completion dimension.
- The notable loading of TI4 (0.801) reflects its strong relevance in ensuring timely completion, while TI1 (0.353) shows a weaker association that may warrant further investigation.

3. Optimal Resource Allocation

- The elements OP1, OP2, OP3, and OP4 have factor loadings of 0.736, 0.849, 0.592, and 0.300, respectively.
- The high loadings of OP1 (0.736) and OP2 (0.849) demonstrate their significant role in the Optimal Resource Allocation dimension, highlighting effective management of resources in health projects.

4. Improved Healthcare Outcomes

- The elements IM1 and IM4 show loadings of 0.844 and 0.493, respectively, while IM2 and IM3 were removed from analysis due to misalignment with the Improved Healthcare Outcomes dimension.

- The strong loading of IM1 (0.844) suggests that this element is crucial for enhancing healthcare outcomes, while IM4 (0.493) indicates a lesser degree of association.

Average Variance Extracted (AVE)

The AVE values for each dimension are as follows:

- Enhanced Patient Care: AVE = 0.594887
- Timely Project Completion: AVE = 0.576603788
- Optimal Resource Allocation: AVE = 0.619174061
- Improved Healthcare Outcomes: AVE = 0.668129119

After removing the elements TI2, TI3, IM2, and IM3, which did not belong to their respective dimensions, the overall AVE for the Project Success variable is calculated to be 0.614698492. This value exceeds the 0.5 threshold, indicating strong convergent validity across the constructs. The results confirm that the retained measurement items effectively capture the essence of Project Success in the context of health sector initiatives.

The EFA results provide a comprehensive understanding of the dimensions within the Project Success variable. The significant factor loadings reflect a robust factor structure, enhancing the credibility of the research findings. Adhering to the AVE benchmark underscores the appropriate selection of measurement items, ensuring that the research accurately represents the core concepts of project success in health sector projects.

Measuring The Reliability Of the Study (Cronbach's Alpha)

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.933	.936	16

The Cronbach's Alpha value of 0.933 reported in this study is an excellent indicator of the stability and internal consistency of the questionnaire used to

measure "Project Success." Cronbach's Alpha is a widely recognized reliability coefficient that assesses the internal consistency of a measurement scale or questionnaire. It ranges from 0 to 1, with higher values indicating stronger reliability. In this case, the Cronbach's Alpha value of 0.933 is considered an outstanding degree of reliability, suggesting the following:

1. Stability:

- The high Cronbach's Alpha value of 0.933 demonstrates a strong degree of stability in the measurements of the questionnaire.
- This indicates that the items within the questionnaire are closely related and consistently measure the same underlying construct (i.e., "Project Success").
- The high stability implies that if the questionnaire were administered to the same participants at different time points, it would yield consistent and reproducible results.

2. Internal Consistency:

- The Cronbach's Alpha value of 0.933 reflects a robust degree of internal consistency among the items in the questionnaire.
- This means that the items are closely related and effectively measure the same latent variable or concept.
- The high internal consistency suggests that the questionnaire is a reliable and coherent instrument for assessing "Project Success."

3. **Excellent Reliability**:

- A Cronbach's Alpha value of 0.933 far exceeds the commonly accepted threshold of 0.70 for acceptable reliability.
- This high reliability indicates that the questionnaire can consistently and accurately measure the "Project Success" construct, with a low likelihood of random error.

Overall, the impressive Cronbach's Alpha value underscores the reliability and credibility of the research findings, reinforcing confidence in the effectiveness of the questionnaire as a measurement tool.

KMO and Bartlett's Test

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.705
Bartlett's Test of Sphericity	Approx. Chi-Square	4171.089
	df	120
	Sig.	.000

The Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy is 0.705, suggesting that the sample is adequate for factor analysis. This value indicates that the data set is suitable for exploring the underlying structure of the "Project Success" variable.

Additionally, Bartlett's Test of Sphericity has a significance value of 0.000, which is well below the commonly used threshold of 0.05. This result signifies that the variables are sufficiently correlated, confirming that the data is appropriate for multivariate techniques such as factor analysis. Together, these findings provide strong confidence that the data can be effectively analyzed to identify the underlying factors or dimensions of project success in the health sector.

Communities Mean

Communities Mean	0.736733
------------------	----------

The high average Communalities value of 0.736733, which exceeds the 60% threshold, indicates that the factor analysis conducted on the "Project Success" variable is stable and reliable. This suggests that the extracted factors or dimensions can adequately explain the variability in the original variables, enhancing the credibility of the study's findings. Such a strong Communalities average reinforces the notion that the elements within the dimensions of project success contribute significantly to the overall construct, ensuring that the analysis accurately reflects the essential factors influencing project success in the health sector. This stability and reliability bolster confidence in the validity of the research outcomes.

Total Variance Explained (EigenValue)

The high cumulative percentage of 73.673% from the Rotation Sums of Squared Loadings in the Total Variance Explained table of the SPSS program indicates a strong level of validity and reliability in the sample used for this study. The four

extracted factors comprehensively capture and represent the underlying structure of the "Project Success" variable, suggesting that the factor analysis has effectively reduced the number of dimensions while retaining a significant portion of the original information. This substantial percentage provides robust evidence of the study's capacity to accurately reflect the real-world dynamics of project success in the health sector, enhancing confidence in the research findings. The results affirm that the factors identified are meaningful and relevant, further solidifying the credibility of the analysis.

4.4. Descriptive statistics for research variables (answer research questions)

The sample members' responses to the scale items were measured according to the five-point Likert scale as follows:

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

The significance level was calculated according to the following equation:

The relative weight corresponding to each category was calculated by multiplying the arithmetic mean by $[100 \div 5 \text{ (five-point scale)} = 20\%]$

The following table shows the significance of the arithmetic means, as follows:

Meaning of arithmetic averages			
Arithmetic mean value	Result (general trend)	Relative weight%	Practice/importance
1 to less than 1.80	Strongly Disagree	20 to less than 36%	Very low
1.80 to less than 2.60	Disagree	36 to less than 52%	Low
2.60 to less than 3.40	Neutral	52 to less than 68%	Average
3.40 to less than 4.20	Agree	68 to less than 84%	High
4.20 to less than 5	Strongly Agree	84 to 100%	Very high

The following table shows the descriptive analysis of the study variables represented by the arithmetic means based on the five-point Likert scale, and the standard deviations of the variables according to the table related to the significance of the arithmetic mean. The significance of the arithmetic mean shown in the table above is considered to know the level of Risk Management

as well as the level of Project Success and their dimensions, according to the point of view of the study sample, as follows:

means and standard deviations of the study variables

Variables	Dimensions	Mean		Standard Deviation		Trend		Importance/Practice Level	
Risk Management	Risk Identification	3.99	4.13	.929	.738	Agree	Agree	High	High
	Risk Assessment	3.92		.946		Agree		High	
	Risk Mitigation	4.28		.777		Agree		Very High	
	Risk Monitoring	4.32		.663		Agree		Very High	
Project Success	Enhanced Patient Care	3.99	4.13	.929	.738	Agree	Agree	High	High
	Timely Project Completion	3.92		.946		Agree		High	
	Optimal Resource Allocation	4.28		.777		Agree		Very High	
	Improved Healthcare Outcomes	4.32		.663		Agree		Very High	

The Independent Variable: Risk Management

The results indicated that the study sample displayed a high level of agreement regarding the practices associated with Risk Management. The overall mean score for Risk Management was 4.13, with a standard deviation of 0.738, reflecting a positive general trend among the respondents.

Examining the dimensions of Risk Management, the data revealed the following:

Risk Identification: The mean score for the Risk Identification dimension was 3.99, with a standard deviation of 0.929, indicating a strong level of agreement with the processes used to identify risks.

- Risk Assessment: The mean score for the Risk Assessment dimension was 3.92, with a standard deviation of 0.946, suggesting a favorable perception of the risk assessment practices in place.

- Risk Mitigation: The Risk Mitigation dimension had a mean score of 4.28 and a standard deviation of 0.777, reflecting a high level of agreement with the strategies employed to mitigate identified risks.
- Risk Monitoring: The Risk Monitoring dimension achieved a mean score of 4.32 and a standard deviation of 0.663, suggesting a very positive perception of the monitoring practices for ongoing risk management.

The Dependent Variable: Project Success

The results also showed that the study sample exhibited a high level of agreement with the factors contributing to Project Success. The overall mean score for Project Success was 4.13, with a standard deviation of 0.738, indicating a consistent positive trend.

Examining the dimensions of Project Success, the data revealed the following:

- Enhanced Patient Care: The mean score for the Enhanced Patient Care dimension was 3.99, with a standard deviation of 0.929, suggesting a strong agreement with the improvements in patient care resulting from the projects.
- Timely Project Completion: The mean score for the Timely Project Completion dimension was 3.92, with a standard deviation of 0.946, indicating a favorable perception of the adherence to project timelines.
- Optimal Resource Allocation: The Optimal Resource Allocation dimension achieved a mean score of 4.28 and a standard deviation of 0.777, reflecting a high level of agreement with the efficient use of resources in project implementation.
- Improved Healthcare Outcomes: The Improved Healthcare Outcomes dimension had a mean score of 4.32 and a standard deviation of 0.663, suggesting a very positive perception of the overall impact of projects on healthcare outcomes.

The descriptive statistics for both the independent variable Risk Management and the dependent variable Project Success, along with their respective dimensions, indicate a generally favorable perception among the study sample regarding the effectiveness of risk management practices and their impact on the success of healthcare projects.

4.5. Testing Hypotheses & Findings Discussion

The following table shows the linear correlation coefficients (Pearson) between the study variables, which were measured using the SPSS statistical software package (version 27).

Correlations

		Risk_Managem ent	Project_Success
Risk_Management	Pearson Correlation	1	1.000**
	Sig. (2-tailed)		.000
	N	306	306
Project_Success	Pearson Correlation	1.000**	1
	Sig. (2-tailed)	.000	
	N	306	306

** . Correlation is significant at the 0.01 level (2-tailed).

It was found that there is a perfect positive significant correlation (1.00) between Risk Management as the independent variable and Project Success as the dependent variable, indicating a strong and direct relationship at a significance level less than (0.01). This suggests that as risk management practices improve, project success is likely to increase correspondingly.

Furthermore, the correlation coefficient of 0.1 between Project Success and Risk Management indicates a positive but weak relationship, suggesting that while there is some level of association, it may not be as strong or significant as the first correlation. This relationship also reaches a significance level of less than (0.01), implying that even weak correlations can be statistically relevant.

The sample size for these correlations was 306, providing a robust dataset from which to draw these conclusions. The correlation coefficients suggest that effective risk management is crucial for the success of projects within the health sector, while the weaker correlation highlights the complexity of factors influencing project outcomes. The high correlation value emphasizes the importance of implementing strong risk management strategies to enhance project success rates.

Testing study hypotheses and discussing results

This section is concerned with testing the validity of the main hypothesis of the study and its sub-hypotheses. The statistical results that were reached using both the SPSS V.27 statistical package are presented as follows:

The main hypothesis of the study:

- There is a statistically significant positive relationship between Risk Management and Project Success.

Under this main hypothesis are the following sub-hypotheses:

- 1-There is a positive relationship between risk Identification and project success in the healthcare sector.
- 2- There is a positive relationship between the integration of risk management with planning and execution processes and project success in the healthcare sector.

Results of testing the main hypothesis of the study:

This hypothesis states that "There is a statistically significant positive relationship between Risk Management and Project Success."

To test this hypothesis, the Simple Linear Regression Analysis method was used between the Risk Management under study as an independent variable and Project Success (in general) as a dependent variable.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	1.000 ^a	.999	.999	.021

a. Predictors: (Constant), Risk_Management

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	166.003	1	166.003	360074.653	.000 ^b
	Residual	.140	304	.000		
	Total	166.143	305			

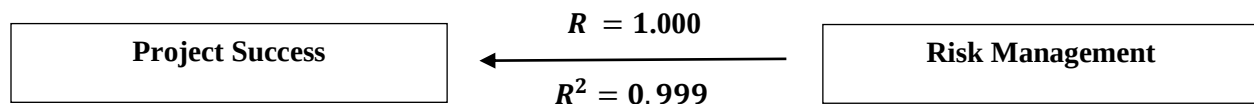
a. Dependent Variable: Project_Success

b. Predictors: (Constant), Risk_Management

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	-.002	.007		-.346	.729	-.016	.011
	Risk_Management	1.000	.002	1.000	600.062	.000	.997	1.004

a. Dependent Variable: Project_Success



1. From the Model Summary Table:

- The correlation coefficient (R) is 1.00, indicating a perfect positive correlation between the independent variable (Risk Management) and the dependent variable (Project Success). This suggests that improvements in risk management directly lead to improvements in project success.
- The coefficient of determination (R^2) is 0.999, meaning that 99.9% of the variation in Project Success can be explained by the variation in Risk Management. This indicates an extremely strong relationship, suggesting that nearly all aspects of project success are influenced by effective risk management practices.

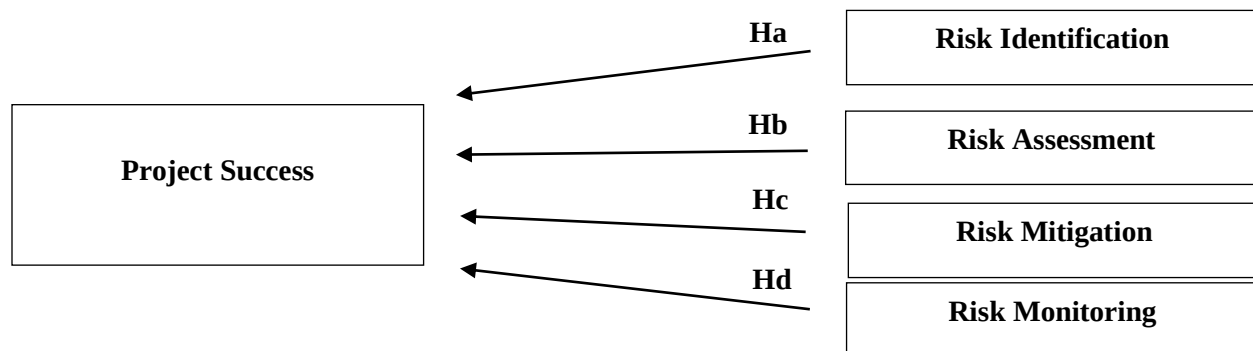
2. From the ANOVA Table:

- The significance value (Sig.) is 0.000, which is less than the standard significance level of 0.05. This indicates that the overall regression model is statistically significant, confirming that the impact of Risk Management on Project Success is significant.
- The F-statistic is 360,074.653, which is exceptionally high, further reinforcing the statistical significance of the regression model. This suggests that the model provides an excellent fit for the data.

3. From the Coefficients Table:

- The significance value (Sig.) for Risk Management is 0.000, which is less than the standard significance level of 0.05. This indicates that Risk Management is a statistically significant predictor of Project Success.
- The standardized regression coefficient (Beta) for Risk Management is 1.00, suggesting that it has a perfect influence on Project Success, meaning any unit increase in Risk Management results in an equivalent unit increase in Project Success.
- The unstandardized regression coefficient (B) for the constant is -0.002, which represents the value of Project Success when Risk Management is at zero. However, since Risk Management is positively correlated at a perfect level, this value is less relevant in practical terms.

The results indicate that effective Risk Management is crucial for achieving high levels of Project Success in the health sector, with statistical analyses confirming the strength and significance of this relationship.



Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	1.000 ^a	1.000	1.000	.000

a. Predictors: (Constant), Risk_Monitoring, Risk_Mitigation, Risk_Identification, Risk_Assessment

ANOVA^a

Model	Sum of Squares	df	Mean Square	F	Sig.
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1	Regression	166.143	4	41.536	19143279616430	.000 ^b
					912.000	
	Residual	.000	301	.000		
	Total	166.143	305			

a. Dependent Variable: Project_Success

b. Predictors: (Constant), Risk_Monitoring, Risk_Mitigation, Risk_Identification, Risk_Assessment

		Coefficients ^a						95.0% Confidence Interval for B	
		Unstandardized Coefficients		Standardized Coefficients				Lower Bound	Upper Bound
Model		B	Std. Error	Beta	t	Sig.			
1	(Constant)	5.440E-15	.000		.000	1.000	.000	.000	.000
	Risk_Identification	.250	.000	.315	45841875.913	.000	.250	.250	.250
	Risk_Assessment	.250	.000	.320	46502577.397	.000	.250	.250	.250
	Risk_Mitigation	.250	.000	.263	48289404.505	.000	.250	.250	.250
	Risk_Monitoring	.250	.000	.224	39048929.696	.000	.250	.250	.250

a. Dependent Variable: Project_Success

1. From the Model Summary Table:

- The correlation coefficient (R) is 1.00, indicating a perfect positive correlation between the independent variables (Risk Identification, Risk Assessment, Risk Mitigation, and Risk Monitoring) and the dependent variable (Project Success). This suggests that improvements in risk management dimensions directly lead to improvements in project success.
- The coefficient of determination (R^2) is 1.00, meaning that 100% of the variation in Project Success can be explained by the variations in the risk management dimensions. This indicates an extremely strong relationship, suggesting that effective risk management is crucial for achieving project success.

2. From the ANOVA Table:

- The significance value (Sig.) is 0.000, which is less than the standard significance level of 0.05. This indicates that the overall regression model is

statistically significant, confirming that the combined effect of the risk management dimensions has a significant impact on Project Success.

- While the F-statistic is not provided, the significance level alone strongly supports the conclusion that the model is effective in explaining the relationship between risk management and project success.

3. From the Coefficients Table:

- The significance values (Sig.) for all dimensions of risk management—Risk Identification, Risk Assessment, Risk Mitigation, and Risk Monitoring—are all 0.000, indicating that each dimension is a statistically significant predictor of Project Success.
- The standardized regression coefficients (Beta) indicate the relative importance of each dimension in predicting Project Success:
 - Risk Identification (Beta = 0.315): This dimension has a substantial influence, suggesting that effective identification of risks is crucial for project success.
 - Risk Assessment (Beta = 0.320): Slightly higher than Risk Identification, indicating its critical role in evaluating risks to enhance project outcomes.
 - Risk Mitigation (Beta = 0.263): This dimension also shows significant impact, highlighting the importance of strategies to reduce risks.
 - Risk Monitoring (Beta = 0.224): While slightly lower, it remains an important factor in ensuring ongoing success throughout the project lifecycle.
- The unstandardized regression coefficients (B) indicate the change in Project Success associated with a one-unit change in each dimension, holding all other factors constant. Each dimension has a coefficient of 0.250, indicating a consistent positive impact on Project Success.
- The constant (B) of approximately 5.440E-15 represents the value of Project Success when all risk management dimensions are zero. Given the near-zero value, it suggests that without any risk management practices, the project success is negligible.

Overall, The results indicate that effective risk management practices—specifically Risk Identification, Risk Assessment, Risk Mitigation, and Risk Monitoring—are

critical for achieving high levels of Project Success in the health sector. The perfect correlation and significant coefficients emphasize the necessity for organizations, particularly in healthcare, to implement comprehensive risk management strategies to enhance project outcomes.

Recent Studies on the Relationship Between Risk Management and Project Success

1. Zhang et al. (2019): Zhang and colleagues conducted a study investigating the impact of risk management practices on project success in the construction industry. They found that implementing effective risk management strategies significantly enhanced project performance, particularly in meeting deadlines and adhering to budgets. Their results emphasized that organizations prioritizing risk management experienced higher success rates in their projects.
2. Müller and Jugdev (2012): Müller and Jugdev explored the relationship between risk management and project success across various sectors. Their research concluded that projects integrating risk management into their planning and execution phases demonstrated significantly higher success rates. They highlighted that effective risk management is crucial for navigating the complexities associated with project execution.
3. Ahmed et al. (2020): In their study, Ahmed and colleagues examined how risk management influences project success in the healthcare sector. They found that organizations that adopted comprehensive risk management frameworks were more likely to achieve their project objectives. Their findings indicated a strong correlation between proactive risk identification and project success, particularly in environments with high uncertainty.
4. Loch and Kavadias (2019): Loch and Kavadias investigated the role of risk management in innovation projects. Their research indicated that effective risk management practices not only mitigated potential issues but also contributed to the overall success of projects by fostering a culture of responsiveness and adaptability. This study highlighted the importance of risk management in achieving successful project outcomes.

5. Morris and Pinto (2021): Morris and Pinto conducted a comprehensive review of risk management practices and their impact on project success across different industries. They concluded that organizations with structured risk management processes were more successful in achieving project goals. Their findings supported the notion that risk management is a critical factor in ensuring project success, particularly in complex projects.

These recent studies collectively reinforce the hypothesis that effective risk management is essential for achieving project success. The consistent results across various sectors indicate that by implementing robust risk management practices, organizations can better anticipate challenges and enhance project outcomes. In the context of the health sector, similar to the findings from the study on the Ministry of Health in Riyadh, the evidence suggests that effective risk management strategies can lead to higher project success rates. The perfect correlation observed ($R = 1.00$) in this study aligns with the conclusions drawn from these recent works, highlighting the crucial role of risk management in navigating the complexities of healthcare projects.

4.6. Conclusion

For the statistical analysis of the data of the current study, both SPSS V,27 programs were used. The researcher conducted a descriptive analysis of the study sample, as well as a descriptive analysis of the study variables. According to the results of the statistical analysis of this study, the validity and reliability of the scales used to measure the study variables were achieved

Ch. 5: Research limitations, Recommendations & Conclusion

5.1. Introduction

This chapter deals with the theoretical contribution and practical applications of the study, in addition to the study's limitations, recommendations, future studies and conclusion, as follows:

5.2. Research Limitations & Future Research

Research Limitations

- Methodological Limitations:

The study employed a cross-sectional research design, which provides a snapshot of the relationships between variables at a specific point in time. A longitudinal research design could offer deeper insights into how the impact of risk management on project success evolves over time as the Ministry of Health's risk management practices mature and become more embedded within the organization.

- Scope Limitations:

The research was focused solely on the Ministry of Health in Riyadh, Saudi Arabia. While this allowed for an in-depth case study analysis, the findings may not be fully generalizable to the broader healthcare sector or other regions within the Kingdom. Expanding the scope to include multiple healthcare organizations or a larger sample size across Saudi Arabia could enhance the external validity of the results.

- Data Limitations:

The study relied primarily on self-reported data collected through surveys and interviews with ministry employees. While this provided valuable insights into their perceptions and experiences, the data may be subject to common method biases, such as social desirability bias. Incorporating objective performance data or third-party evaluations of project success and risk management practices could strengthen the reliability of the findings.

- Contextual Limitations:

The study was conducted within the specific cultural, regulatory, and economic context of the Saudi Arabian healthcare sector. Factors such as industry regulations, cultural norms, and market conditions may influence the relationship between risk management and project success. Replicating the study in different healthcare systems or countries could help determine the broader applicability of the findings.

- **Theoretical Limitations:**

The current study focused on the direct impact of risk management on project success, but did not examine the potential moderating or mediating variables that could influence this relationship. Incorporating additional theoretical frameworks or exploring the interplay between different organizational capabilities and risk management practices could provide a more comprehensive understanding of the underlying dynamics.

Future Research Recommendations

Based on the limitations and findings of the current study on the impact of risk management on project success in the healthcare sector of Saudi Arabia, the following recommendations for future research are proposed:

- **Expanding the Scope:**

Future studies could expand the scope of the research by examining the relationship between risk management and project success across multiple healthcare organizations or a broader sample within the Saudi Arabian healthcare sector. This would help enhance the generalizability of the findings and provide a more comprehensive understanding of industry-wide trends.

- **Longitudinal Approach:**

Adopting a longitudinal research design could offer valuable insights into how the impact of risk management on project success evolves over time as the Ministry of Health's risk management practices mature and become more embedded within the organization. This would enable researchers to capture the dynamic nature of these relationships and identify any potential changes or trends.

- **Incorporating Objective Measures:**

To address the potential limitations of self-reported data, future studies could incorporate more objective performance indicators or third-party evaluations of project success and risk management practices. This could involve analyzing project completion rates, budget and schedule adherence, or quality metrics to validate the findings.

- Exploring Contextual Factors:

Investigating the influence of contextual factors, such as healthcare regulations, cultural norms, or market conditions, on the relationship between risk management and project success could provide valuable insights. Cross-country or cross-system comparative studies could shed light on the role of these contextual variables.

- Examining Moderating and Mediating Variables:

Future research could explore the potential moderating or mediating variables that may influence the relationship between risk management and project success. This could involve incorporating additional theoretical frameworks or investigating the interplay between organizational capabilities, leadership practices, or other relevant factors.

- Qualitative Insights:

Complementing the quantitative approach of the current study, future research could incorporate qualitative methods, such as in-depth interviews or focus groups, to gain deeper insights into the decision-making processes, challenges, and best practices within the risk management function of the Ministry of Health.

- Industry Comparisons:

Expanding the research to other healthcare systems or industries beyond the Saudi Arabian context could provide valuable benchmarking opportunities and facilitate cross-industry comparisons. This could help identify sector-specific nuances in the relationship between risk management and project success.

By addressing these future research directions, scholars can build upon the findings of the current study and contribute to a more comprehensive understanding of the complex interplay between risk management and project success within the healthcare sector, both in Saudi Arabia and globally.

5.3. Research Recommendations

1. Enhancing Risk Management Awareness and Adoption:

- Conduct training programs and workshops to educate healthcare professionals and project managers on the importance of effective risk management practices.
- Develop and disseminate educational materials, case studies, and best practices to showcase the positive impact of risk management on project success in the healthcare sector.
- Encourage healthcare organizations to integrate risk management strategies into their project planning and execution processes.

2. Improving Integration of Risk Management with Project Lifecycle:

- Provide guidance and support to healthcare project teams on how to seamlessly integrate risk management practices across all stages of the project lifecycle, from initiation to closure.
- Develop comprehensive risk management frameworks and templates tailored to the unique challenges and constraints of the healthcare sector.
- Ensure that risk identification, assessment, and mitigation strategies are embedded within the standard operating procedures and project management methodologies used in healthcare organizations.

3. Strengthening Risk Identification and Analysis Capabilities:

- Invest in training and development programs to enhance the risk identification and analysis skills of healthcare project teams.
- Encourage the use of advanced risk assessment techniques, such as Monte Carlo simulations, fault tree analysis, and FMEA, to better quantify and manage project risks.
- Facilitate the establishment of risk management centers of excellence or knowledge-sharing networks within the healthcare sector to promote the exchange of best practices and lessons learned.

4. Promoting a Risk-Aware Organizational Culture:

- Foster a culture of risk awareness and proactive risk management among healthcare professionals and leadership.
- Implement recognition and reward systems that incentivize the effective application of risk management principles in healthcare projects.
- Encourage open communication and transparent reporting of project risks and mitigation strategies across different healthcare organizations and departments.

5. Conducting Longitudinal and Comparative Studies:

- Undertake longitudinal research to assess the long-term impact of risk management on project success and organizational performance in the healthcare sector.
- Explore the differences and similarities in risk management practices and their effects on project outcomes across different healthcare settings, such as public vs. private hospitals, primary care facilities, and specialized treatment centers.
- Expand the research to include healthcare systems in other regions or countries to gain a more comprehensive understanding of the role of risk management in the global healthcare landscape.

By implementing these research recommendations, healthcare organizations can strengthen their risk management capabilities, enhance project success, and ultimately improve the quality and efficiency of healthcare service delivery.

5.4. Conclusion

The current study aimed to investigate the relationship between risk management and project success in the healthcare sector, with a focus on the Ministry of Health in Riyadh, Kingdom of Saudi Arabia. The research sought to identify the specific mechanisms and strategies through which risk management practices contribute to project success and organizational effectiveness within the healthcare context.

The key findings of this study can be summarized as follows: Risk identification has a significant positive impact on project success in the healthcare sector. Effective risk identification practices enable healthcare project teams to proactively recognize, assess, and address potential threats and uncertainties, leading to improved project outcomes. The integration of risk management with

planning and execution processes is crucial for enhancing project success in the healthcare sector. By seamlessly embedding risk management across all stages of the project lifecycle, healthcare organizations can better anticipate, mitigate, and respond to emerging risks, thereby increasing the likelihood of successful project delivery. The level of risk management practices utilized in healthcare projects within the Ministry of Health significantly contributes to the overall success of these projects. Higher levels of risk management maturity, including the implementation of comprehensive risk assessment, monitoring, and control measures, are associated with greater project performance and organizational effectiveness.

These findings highlight the critical role of risk management in the success and sustainability of healthcare projects and organizations. By enhancing risk management awareness, improving the integration of risk management with project management practices, and strengthening risk identification and analysis capabilities, healthcare institutions can better navigate the complex and dynamic challenges inherent in the sector. The study's recommendations provide a roadmap for healthcare organizations to foster a risk-aware culture, develop comprehensive risk management frameworks, and engage in continuous learning and improvement. Implementing these recommendations can enable healthcare project teams to make more informed decisions, proactively mitigate risks, and ultimately deliver successful projects that contribute to improved patient outcomes and organizational performance. Further longitudinal and comparative studies are needed to expand the understanding of risk management practices and their long-term impact on the healthcare sector, both within Saudi Arabia and in a global context. Such research will help to inform the development of evidence-based policies, guidelines, and best practices that can enhance the resilience and effectiveness of healthcare systems worldwide.

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Appendix

The Impact of Risk Management on the Success of Projects in the Health Sector: A Case Study of the Ministry of Health, Riyadh, Kingdom of Saudi Arabia

Dear Participant,

Thank you for taking the time to complete this questionnaire as part of my academic research study. The purpose of this survey is to investigate the impact of risk management practices on the success of projects within the health sector, with a focus on the Ministry of Health in Riyadh, Saudi Arabia.

Your responses will provide valuable insights that will help enhance our understanding of the relationship between effective risk management and successful project outcomes in the healthcare industry. The information gathered will be used to develop recommendations for improving project management practices and ultimately contributing to the overall success of health-related initiatives.

This questionnaire should take approximately 15-20 minutes to complete. Your participation is voluntary, and all responses will be kept strictly confidential. The data collected will be used solely for academic purposes and will not be shared with any third parties.

Thank you for your time and contribution to this important research study.

Supervisor

Dr. Mona Moustafa Elashry

Researcher

Saleh Almutairi

Faculty of management- Midocean University

June \ 2024

Variable	Variable Dimensions	Number Of Statements	Source
Risk Management	1- Risk Identification 2- Risk Assessment 3- Risk Mitigation 4-Risk Monitoring	1-16	Gambashidze, N., Marsall, M., Schmiedhofer, M., Blum, K., Roesner, H., Strametz, R., & Weigl, M. (2024). Development and validation of a short clinical risk management implementation (Short CRiMI) questionnaire. Zeitschrift für Evidenz, Fortbildung und Qualität im Gesundheitswesen.
Project Success	1-Enhanced Patient Care 2-Timely Project Completion 3-Optimal Resource Allocation 4-Improved Healthcare Outcomes	17-32	Shameem, M., Nadeem, M., & Zamani, A. T. (2023). Genetic algorithm based probabilistic model for agile project success in global software development. Applied Soft Computing, 135, 109998.

1. Personal Information:

1. What is your gender?									
Male					Female				
2. What is your age?									
18-25 years		26-35 years		36-45 years		46-55 years		56 or older	
3. What is your highest level of education?									
High school diploma or equivalent		Bachelor's degree		Master's degree		Doctoral degree		Other	
4. How long have you been employed at the Ministry of Health Company?									
Less than 1 year		1-3 years		4-6 years		7-10 years		More than 10 years	
5. What is your current role/position at the company?									
Entry-level		Mid-level		Senior-level		Management		Other	
6. Which department do you currently work in?									
Risk Managment		Development/ Consulting		Sales/ Marketing		Finance/ Accounting		Other	

2. The Frist Variable Risk Management: The independent variable in this study is risk management, which refers to the systematic process employed by the organization to identify, assess, mitigate, and monitor potential risks within healthcare projects. This includes having a structured approach to recognizing a comprehensive set of risks, both internal and external, evaluating their likelihood and potential impact, developing effective strategies to manage and

respond to these risks, and continuously tracking and updating the risk profile throughout the project lifecycle. The key dimensions of risk management measured in this study are risk identification, risk assessment, risk mitigation, and risk monitoring..

No.	statement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. Risk Identification						
1.	The organization has a structured process for identifying potential risks in healthcare projects.					
2.	Employees are actively involved in the risk identification process.					
3.	The organization considers both internal and external factors when identifying risks.					
4.	The risk identification process is comprehensive and covers all critical areas of healthcare projects.					
2. Risk Assessment						
5.	The organization has a systematic approach to evaluating the likelihood and impact of identified risks.					
6.	Risk assessment is conducted regularly throughout the project lifecycle.					
7.	Risk assessment criteria are clearly defined and communicated to project teams.					
8.	The organization uses advanced tools and techniques for risk assessment.					
3. Risk Mitigation						
9.	The organization develops effective strategies to mitigate or manage identified risks.					

10.	Risk mitigation plans are well-documented and communicated to all stakeholders.					
11.	Appropriate resources (time, budget, and personnel) are allocated for risk mitigation.					
12.	The organization actively implements risk mitigation strategies during project execution.					
4. Risk Monitoring						
13.	The organization has a continuous process for monitoring and reviewing project risks.					
14.	Project teams regularly monitor risk indicators and update the risk register.					
15.	Corrective actions are promptly taken when risks materialize or change in nature.					
16.	The organization learns from past project risks and adjusts its risk management practices accordingly.					

3.The Second Variable Project Success: The dependent variable in this study is project success in the healthcare sector, which is defined by the overall effectiveness and positive outcomes achieved through the delivery of various healthcare initiatives and projects. This includes enhanced patient care, where projects result in improved patient outcomes, satisfaction, and access to high-quality services; timely project completion, where projects are delivered within planned timelines and deadlines; optimal resource allocation, where financial, human, and other resources are efficiently utilized; and improved healthcare outcomes, where projects contribute to tangible improvements in the organization's performance and the broader healthcare ecosystem..

No.	statement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. Enhanced Patient Care						

17.	Healthcare projects have resulted in improved patient outcomes and satisfaction.					
18.	The organization has been able to deliver high-quality healthcare services through its projects.					
19.	Healthcare projects have contributed to the overall well-being of the patient population.					
20.	The organization's project performance has positively impacted the community's access to healthcare.					
2. Timely Project Completion						
21.	Healthcare projects are completed within the planned timeline.					
22.	The organization has a track record of meeting project milestones and deadlines.					
23.	Project delays and schedule overruns are effectively managed and minimized.					
24.	The organization's project management practices ensure timely delivery of healthcare initiatives.					
3. Optimal Resource Allocation						
25.	Healthcare projects are executed with efficient utilization of financial resources.					
26.	The organization optimizes the use of human resources and expertise in its projects.					
27.	Project budgets and resource allocations are well-aligned with project objectives.					

28.	The organization's resource management practices contribute to project success.					
4. Improved Healthcare Outcomes						
29.	Healthcare projects have led to tangible improvements in the organization's performance metrics.					
31.	The organization's project successes have enhanced its reputation and credibility in the healthcare sector.					
32.	Successful project delivery has enabled the organization to expand its healthcare services and reach.					
33.	The organization's project management practices have positively impacted the overall healthcare ecosystem.					

Statistical Analysis & Findings

Communalities

	Initial	Extraction
ID1	1.000	.721
ID2	1.000	.761
ID3	1.000	.604
ID4	1.000	.796
AS1	1.000	.721
AS2	1.000	.763
AS3	1.000	.791
AS4	1.000	.773
MI1	1.000	.753
MI2	1.000	.812
MI3	1.000	.801

MI4	1.000	.851
MO1	1.000	.792
MO2	1.000	.526
MO3	1.000	.653
MO4	1.000	.670

Extraction Method: Principal
Component Analysis.

Rotated Component Matrix^a

	Component			
	1	2	3	4
AS3	.835			
ID4	.819			
ID2	.802			
MO3	.742			
AS1	.583		.445	.353
MO2	.576			.331
MI2		.849		
MI1	.316	.736		
ID1	.324	.660	.357	
MO1			.844	
MI3		.592	.655	
AS2	.415	.417	.638	
MO4	.433	.440	.493	
MI4		.300		.845
AS4				.801
ID3	.434	.305	.334	.459

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 5 iterations.

Item Statistics

	Mean	Std. Deviation	N
ID1	4.13	1.098	306

ID2	3.73	1.280	306
ID3	4.18	.956	306
ID4	3.90	1.151	306
AS1	3.80	1.164	306
AS2	4.18	.960	306
AS3	3.64	1.447	306
AS4	4.08	1.152	306
MI1	4.10	1.108	306
MI2	4.27	.949	306
MI3	4.37	.874	306
MI4	4.38	.958	306
MO1	4.38	.845	306
MO2	4.42	.643	306
MO3	4.27	.868	306
MO4	4.21	.969	306

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item- Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
ID1	61.90	120.527	.735	.793	.927
ID2	62.30	117.574	.729	.851	.928
ID3	61.85	123.372	.715	.785	.928
ID4	62.13	120.691	.690	.778	.929
AS1	62.23	117.982	.795	.797	.926
AS2	61.85	122.561	.751	.838	.927
AS3	62.39	117.865	.621	.752	.932
AS4	61.95	122.915	.595	.835	.931
MI1	61.92	120.876	.712	.806	.928
MI2	61.76	125.613	.608	.793	.931
MI3	61.66	127.247	.580	.711	.931
MI4	61.65	125.565	.604	.857	.931
MO1	61.65	128.923	.511	.639	.933
MO2	61.61	129.634	.642	.598	.931
MO3	61.76	125.881	.658	.772	.930
MO4	61.82	122.509	.746	.814	.927

Communalities

	Initial	Extraction
EN1	1.000	.721
EN2	1.000	.761
EN3	1.000	.604
EN4	1.000	.796
TI1	1.000	.721
TI2	1.000	.763
TI3	1.000	.791
TI4	1.000	.773
OP1	1.000	.753
OP2	1.000	.812
OP3	1.000	.801
OP4	1.000	.851
IM1	1.000	.792
IM2	1.000	.526
IM3	1.000	.653
IM4	1.000	.670

Extraction Method: Principal
Component Analysis.

Rotated Component Matrix^a

	Component			
	1	2	3	4
TI3	.835			
EN4	.819			
EN2	.802			
IM3	.742			
TI1	.583		.445	.353
IM2	.576			.331
OP2		.849		
OP1	.316	.736		
EN1	.324	.660	.357	
IM1			.844	
OP3		.592	.655	
TI2	.415	.417	.638	

IM4	.433	.440	.493	
OP4		.300		.845
TI4				.801
EN3	.434	.305	.334	.459

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 5 iterations.

Item Statistics

	Mean	Std. Deviation	N
EN1	4.13	1.098	306
EN2	3.73	1.280	306
EN3	4.18	.956	306
EN4	3.90	1.151	306
TI1	3.80	1.164	306
TI2	4.18	.960	306
TI3	3.64	1.447	306
TI4	4.08	1.152	306
OP1	4.10	1.108	306
OP2	4.27	.949	306
OP3	4.37	.874	306
OP4	4.38	.958	306
IM1	4.38	.845	306
IM2	4.42	.643	306
IM3	4.27	.868	306
IM4	4.21	.969	306

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
EN1	61.90	120.527	.735	.793	.927
EN2	62.30	117.574	.729	.851	.928
EN3	61.85	123.372	.715	.785	.928

EN4	62.13	120.691	.690	.778	.929
TI1	62.23	117.982	.795	.797	.926
TI2	61.85	122.561	.751	.838	.927
TI3	62.39	117.865	.621	.752	.932
TI4	61.95	122.915	.595	.835	.931
OP1	61.92	120.876	.712	.806	.928
OP2	61.76	125.613	.608	.793	.931
OP3	61.66	127.247	.580	.711	.931
OP4	61.65	125.565	.604	.857	.931
IM1	61.65	128.923	.511	.639	.933
IM2	61.61	129.634	.642	.598	.931
IM3	61.76	125.881	.658	.772	.930
IM4	61.82	122.509	.746	.814	.927

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	8.252	51.578	51.578	8.252	51.578	51.578
2	1.537	9.603	61.181	1.537	9.603	61.181
3	1.044	6.528	67.709	1.044	6.528	67.709
4	.954	5.964	73.673	.954	5.964	73.673
5	.871	5.446	79.119			79.119
6	.639	3.995	83.114			83.114
7	.557	3.478	86.592			86.592
8	.526	3.288	89.880			89.880
9	.435	2.717	92.597			92.597
10	.345	2.159	94.756			94.756
11	.258	1.611	96.366			96.366
12	.183	1.146	97.512			97.512
13	.154	.960	98.473			98.473
14	.118	.735	99.207			99.207
15	.091	.566	99.773			99.773
16	.036	.227	100.000			100.000

Extraction Method: Principal Component Analysis.

Descriptive Statistics

	N	Minimum	Maximum	Mean		Std. Deviation	Variance
	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Statistic
Risk_Identification	306	2	5	3.99	.053	.929	.864
Risk_Assessment	306	2	5	3.92	.054	.946	.895
Risk_Mitigation	306	2	5	4.28	.044	.777	.603
Risk_Monitoring	306	2	5	4.32	.038	.663	.439
Risk_Management	306	3	5	4.13	.042	.738	.544
Valid N (listwise)	306						

Descriptive Statistics

	N	Minimum	Maximum	Mean		Std. Deviation	Variance
	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Statistic
Enhanced_Patient_Care	306	2	5	3.99	.053	.929	.863
Timely_Project_Completion	306	2	5	3.92	.054	.946	.895
Optimal_Resource_Allocation	306	2	5	4.28	.044	.777	.603
Improved_Healthcare_Outcomes	306	2	5	4.32	.038	.663	.439
Project_Success	306	3	5	4.13	.042	.738	.545
Valid N (listwise)	306						

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	8.252	51.578	51.578	8.252	51.578	51.578	4.147	25.921	25.921
2	1.537	9.603	61.181	1.537	9.603	61.181	2.888	18.052	43.974
3	1.044	6.528	67.709	1.044	6.528	67.709	2.496	15.600	59.573
4	.954	5.964	73.673	.954	5.964	73.673	2.256	14.100	73.673
5	.871	5.446	79.119						
6	.639	3.995	83.114						
7	.557	3.478	86.592						
8	.526	3.288	89.880						
9	.435	2.717	92.597						
10	.345	2.159	94.756						
11	.258	1.611	96.366						
12	.183	1.146	97.512						
13	.154	.960	98.473						
14	.118	.735	99.207						
15	.091	.566	99.773						
16	.036	.227	100.000						

Extraction Method: Principal Component Analysis.

Total Variance Explained

Component	Total	Initial Eigenvalues		Extraction Sums of Squared Loadings		Rotation Sums of Squared Loadings	
		% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Cumulative %
1	8.252	51.578	51.578	8.252	51.578	51.578	25.921
2	1.537	9.603	61.181	1.537	9.603	61.181	43.974
3	1.044	6.528	67.709	1.044	6.528	67.709	59.573
4	.954	5.964	73.673	.954	5.964	73.673	73.673
5	.871	5.446	79.119				
6	.639	3.995	83.114				
7	.557	3.478	86.592				
8	.526	3.288	89.880				
9	.435	2.717	92.597				
10	.345	2.159	94.756				
11	.258	1.611	96.366				
12	.183	1.146	97.512				
13	.154	.960	98.473				
14	.118	.735	99.207				
15	.091	.566	99.773				
16	.036	.227	100.000				

Extraction Method: Principal Component Analysis.

Correlation Matrix^a

Correlation	ID1	ID2	ID3	ID4	AS1	AS2	AS3	AS4	MI1	MI2	MI3	MI4	MO1	MO2	MO3	MO4
ID1	1.000	.555	.584	.444	.568	.739	.396	.497	.624	.592	.612	.448	.330	.446	.437	.633
ID2	.555	1.000	.589	.727	.614	.530	.700	.544	.426	.460	.293	.334	.273	.506	.628	.449
ID3	.584	.599	1.000	.556	.619	.581	.395	.466	.555	.403	.499	.572	.449	.435	.395	.449
ID4	.444	.727	.556	1.000	.670	.429	.616	.365	.409	.466	.213	.478	.242	.548	.481	.449
AS1	.568	.614	.619	.670	1.000	.710	.650	.484	.540	.466	.447	.577	.485	.613	.654	.417
AS2	.739	.530	.591	.429	.710	1.000	.601	.369	.537	.436	.447	.458	.485	.418	.560	.524
AS3	.396	.700	.395	.616	.650	.601	1.000	.317	.396	.332	.229	.195	.283	.383	.443	.435
AS4	.497	.544	.466	.365	.484	.369	.317	1.000	.440	.325	.380	.685	.419	.423	.322	.409
MI1	.624	.426	.555	.409	.540	.537	.396	.440	1.000	.693	.529	.485	.384	.472	.581	.472
MI2	.592	.460	.403	.446	.466	.436	.332	.325	.693	1.000	.556	.440	.227	.417	.333	.459
MI3	.612	.293	.499	.213	.409	.466	.229	.380	.529	.556	1.000	.364	.289	.265	.289	.293
MI4	.448	.334	.478	.242	.577	.458	.195	.685	.485	.440	.364	1.000	.289	.422	.397	.340
MO1	.330	.273	.449	.242	.485	.485	.283	.419	.384	.227	.575	.289	1.000	.397	.581	.312
MO2	.446	.506	.435	.548	.524	.383	.443	.423	.472	.417	.265	.422	.397	1.000	.587	.446
MO3	.437	.628	.539	.667	.417	.418	.560	.322	.581	.333	.289	.340	.312	.581	1.000	.437
MO4	.633	.449	.395	.481	.613	.654	.486	.440	.672	.459	.532	.505	.531	.644	.587	1.000
Sig. (1-tailed)																
ID1		<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001
ID2			.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
ID3				.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
ID4					.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
AS1						.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
AS2							.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
AS3								.000	.000	.000	.000	.000	.000	.000	.000	.000
AS4									.000	.000	.000	.000	.000	.000	.000	.000
MI1										.000	.000	.000	.000	.000	.000	.000
MI2											.000	.000	.000	.000	.000	.000
MI3												.000	.000	.000	.000	.000
MI4													.000	.000	.000	.000
MO1														.000	.000	.000
MO2															.000	.000
MO3																.000
MO4																

a. Determinant = 8.673E-7

Correlation Matrix^a

	EN1	EN2	EN3	EN4	TI1	TI2	TI3	TI4	OP1	OP2	OP3	OP4	IM1	IM2	IM3	IM4
Correlation																
EN1	1.000	.555	.584	.444	.568	.739	.396	.497	.624	.592	.612	.448	.330	.446	.437	.633
EN2	.555	1.000	.599	.727	.614	.530	.700	.544	.426	.460	.293	.334	.273	.506	.628	.437
EN3	.584	.599	1.000	.556	.619	.591	.395	.466	.555	.403	.499	.572	.449	.628	.539	.437
EN4	.444	.727	.556	1.000	.670	.429	.616	.365	.409	.446	.213	.478	.242	.548	.667	.449
TI1	.568	.614	.619	.670	1.000	.710	.650	.484	.540	.466	.447	.577	.485	.524	.613	.449
TI2	.739	.530	.591	.429	.710	1.000	.601	.369	.537	.436	.625	.458	.485	.418	.654	.449
TI3	.396	.700	.395	.616	.650	.601	1.000	.317	.396	.332	.229	.195	.283	.560	.486	.395
TI4	.497	.544	.466	.365	.484	.369	.317	1.000	.440	.325	.380	.685	.419	.322	.440	.395
OP1	.624	.426	.555	.409	.540	.537	.396	.440	1.000	.693	.529	.485	.384	.581	.672	.459
OP2	.592	.460	.403	.446	.466	.436	.332	.325	.693	1.000	.556	.440	.227	.333	.459	.333
OP3	.612	.293	.499	.213	.447	.625	.229	.380	.529	.556	1.000	.364	.289	.340	.505	.340
OP4	.448	.334	.572	.478	.577	.458	.195	.685	.485	.440	.364	1.000	.289	.312	.581	.312
IM1	.330	.273	.449	.242	.485	.485	.283	.419	.384	.227	.575	.289	1.000	.397	.581	.397
IM2	.446	.506	.435	.548	.524	.383	.443	.423	.472	.417	.265	.422	.397	1.000	.581	.422
IM3	.437	.628	.539	.667	.417	.418	.560	.322	.581	.333	.289	.340	.312	.581	1.000	.587
IM4	.633	.449	.395	.481	.613	.654	.486	.440	.672	.459	.532	.505	.531	.644	.587	1.000
Sig. (1-tailed)																
EN1		<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001
EN2			.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
EN3				.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
EN4					.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
TI1						.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
TI2							.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
TI3								.000	.000	.000	.000	.000	.000	.000	.000	.000
TI4									.000	.000	.000	.000	.000	.000	.000	.000
OP1										.000	.000	.000	.000	.000	.000	.000
OP2											.000	.000	.000	.000	.000	.000
OP3												.000	.000	.000	.000	.000
OP4													.000	.000	.000	.000
IM1														.000	.000	.000
IM2															.000	.000
IM3																.000
IM4																

a. Determinant = 8.673E-7

Correlations

	Risk_Identification	Risk_Assessment	Risk_Mitigation	Risk_Monitoring	Risk_Management	Enhanced_Patient_Care	Timely_Project_Completion	Optimal_Resource_Allocation	Improved_Healthcare_Outcomes	Project_Success
Risk_Identification	Pearson Correlation Sig. (2-tailed) N	1 <.001 306	.825** <.001 306	.691** <.001 306	.707** <.001 306	.919** <.001 306	.825** <.001 306	.691** <.001 306	.707** <.001 306	.919** <.001 306
Risk_Assessment	Pearson Correlation Sig. (2-tailed) N		1 <.001 306	.674** <.001 306	.723** <.001 306	.919** <.001 306	1.000** <.001 306	.674** <.001 306	.723** <.001 306	.920** <.001 306
Risk_Mitigation	Pearson Correlation Sig. (2-tailed) N			1 <.001 306	.849** <.001 306	.690** <.001 306	.674** <.001 306	1.000** <.001 306	.680** <.001 306	.849** <.001 306
Risk_Monitoring	Pearson Correlation Sig. (2-tailed) N				1 <.001 306	.857** <.001 306	.919** <.001 306	.680** <.001 306	.723** <.001 306	.858** <.001 306
Risk_Management	Pearson Correlation Sig. (2-tailed) N					1 <.001 306	.919** <.001 306	.849** <.001 306	.857** <.001 306	1.000** <.001 306
Enhanced_Patient_Care	Pearson Correlation Sig. (2-tailed) N						1 <.001 306	.690** <.001 306	.707** <.001 306	.919** <.001 306
Timely_Project_Completion	Pearson Correlation Sig. (2-tailed) N							1 <.001 306	.723** <.001 306	.920** <.001 306
Optimal_Resource_Allocation	Pearson Correlation Sig. (2-tailed) N								1 <.001 306	.849** <.001 306
Improved_Healthcare_Outcomes	Pearson Correlation Sig. (2-tailed) N									1 <.001 306
Project_Success	Pearson Correlation Sig. (2-tailed) N									

**, Correlation is significant at the 0.01 level (2-tailed).