

جامعة ميدأوشن

كلية الإدارة

قسم / تخصص إدارة مخاطر



العنوان باللغة العربية

إدارة مخاطر السلامة والبيئة في جودة الحياة بالمملكة العربية السعودية

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العام الدراسي:

2023

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Introduction:

In the areas of resource conservation, environmental preservation, and meteorology, the Kingdom of Saudi Arabia has achieved enormous progress. Article (322) of the Statute states that "the State shall take steps to safeguard, preserve, improve the environment as well as prevent its pollution." Therefore, it should come as no surprise that the theme of the environment and preservation has been adopted to be safeguarded throughout the Basic Law of Governance. Given how long it took the federal government to support environmental efforts and protect our natural resources, this is a significant consummation.

Recognizing the value of the natural environment and its preservation, the General Council for Meteorology and the Protection of the Environment, the wise government body in charge of environmental affairs in the Kingdom, has unwavering support. This has a noticeable and palpable effect Saudi Arabia established the Directorate General of Meteorology in 1370–1950. It was later restructured in 1981–1401H to become the Department of Meteorology and Environmental Protection. This department was given the responsibility of being the entity/body that is responsible for environment affairs in the Kingdom of Saudi Arabia at the national level as well as its role in the field of meteorology. This was done in light of the development and the attention to environmental elements both

domestically and internationally, as well as their impact on ambitious development plans and the interaction between development and environmental protection, as well as pollution and deterioration due to rapid economic growth and expansion (mewa, 2023).

The Kingdom of Saudi Arabia's efforts to protect biodiversity have taken many forms, encompassing efforts to maintain its constituent parts in their native environments as well as efforts to develop it in a way that will guarantee its survival and sustainability for upcoming generations. With the help of the International Union for Conservation of Nature's expertise, the Kingdom sought assistance in carrying out the essential biological and social studies and surveys to prepare its national system for protected areas. A 1991 report titled "A national system for preserving wildlife and equitable agricultural growth in the Kingdom of Saudi Arabia" by experts from the Union and NCWCD served as the foundation for the declared network of protected areas that has been in place up to this point. A proposal to preserve 75 areas is part of the system, which was recently updated in response to environmental developments (which includes 62 terrestrial areas, 13 coastal regions and marine areas) (my.gov.sa, 2023).

The Kingdom of Saudi Arabia understands that in order to improve the standard of living for its inhabitants and citizens, safety and hazards to the environment must be managed. Owing to its abundance of natural resources and quick economic growth, the Saudi

government has made great efforts to safeguard public health and environmental protection.

Saudi Arabia has put in place extensive laws and procedures aimed at reducing risks and advancing public safety. To monitor safety standards and enforce laws, the government has established a number of agencies, including the General Directorate of Traffic and the Saudi Civil Defense. These organizations strive to avoid mishaps, maintain fire safety, and efficiently handle emergency situations (Khalil, 2023).

In order to improve safety, the Kingdom has also made large investments in infrastructure development. To ensure the efficient and safe movement of people and goods, this includes building and maintaining public transportation systems, roads, bridges, and airports. Additionally, in order to reduce risks and safeguard communities and workers, the government has put strong safety regulations into place in sectors like construction, petrochemicals, and oil and gas (oecd, 2021).

Regarding environmental hazards, Saudi Arabia has taken steps to preserve its natural resources and the environment, and it recognizes the significance of sustainable development. The nation has put in place environmental laws and guidelines to control pollution, preserve water supplies, and support renewable energy sources. The government's commitment to addressing environmental challenges and

moving towards a more sustainable future is demonstrated by initiatives like the National Environmental Strategy and the Saudi Green Initiative (sustain, 2018).

Furthermore, Saudi Arabia has made efforts to increase public awareness of environmental issues. Sustainable behaviors and responsible environmental practices are the goals of partnerships with international organizations, public initiatives, and educational campaigns. The Kingdom of Saudi Arabia places a high premium on risk management for both the environment and safety. The government works to safeguard the welfare of its citizens, preserve the environment, and improve the standard of living in the nation through strict regulations, infrastructure investments, and sustainable development programs (Abubakar, 2021).

Study problem:

The research challenge for this paper stems from the need to study the impact of visualization tools such as charts and charts on safety and environmental risk management in quality of life in the Kingdom of Saudi Arabia. While the use of graphical representations in time management has risen internationally, only a few studies have been conducted in Saudi Arabia to verify their usefulness regarding risk management and their impact on quality of life and environmental safety in Saudi Arabia.

The problem addressed in the study is the management of safety and environmental risks and their impact on the quality of life in the Kingdom of Saudi Arabia. The study aims to understand the current state of safety and environmental practices in the country and identify measures that can be taken to mitigate risks and improve the overall quality of life for residents.

The study may examine various safety risks prevalent in Saudi Arabia, such as workplace accidents, traffic accidents, and public safety concerns. It may investigate the causes and consequences of these risks and evaluate the existing safety measures in place.

The study may focus on environmental risks, including air pollution, water pollution, waste management, and the depletion of

natural resources. It may assess the impact of these risks on the environment and the health and well-being of the population.

The study may analyze the relationship between safety, environmental risks, and the overall quality of life in Saudi Arabia. It may explore factors such as access to healthcare, educational opportunities, social infrastructure, and recreational facilities, and how safety and environmental risks influence these factors.

The study may examine the existing regulatory framework and policies related to safety and environmental protection in Saudi Arabia. It may evaluate the effectiveness of these regulations and identify potential gaps or areas for improvement.

Based on the findings, the study may provide recommendations for managing safety and environmental risks more effectively. It may suggest best practices, policy interventions, and strategies to enhance safety standards, promote sustainable development, and improve the overall quality of life in the Kingdom.

The most important environmental issues Saudi Arabia is dealing with are tainted well water, waste from cement plants, higher emissions of sulfur dioxide and nitrogen oxide, desertification and land degradation, and other issues that could lead to more pollution and environmental hazards. Continuous population growth, fast urbanization, rising energy and water consumption, and the demands of economic development all contribute to these problems.

The importance of the study:

The study on managing safety and environmental risks in the quality of life in the Kingdom of Saudi Arabia is of significant importance for several reasons:

1. **Human Safety:** Ensuring the safety of individuals is paramount for any society. By studying and addressing safety risks, the study can contribute to reducing accidents, injuries, and fatalities in various domains such as workplaces, roads, and public spaces. This, in turn, enhances the overall well-being and quality of life for residents in Saudi Arabia.
2. **Environmental Protection:** Saudi Arabia, like many other countries, faces environmental challenges such as air pollution, water contamination, and waste management issues. By examining environmental risks and proposing effective management strategies, the study can contribute to preserving and protecting the natural resources, biodiversity, and ecosystems in the country. This has long-term benefits for both the environment and the quality of life of its inhabitants.
3. **Health and Well-being:** Safety and environmental risks have a direct impact on the health and well-being of individuals. Addressing these risks can help prevent or reduce the occurrence of diseases, respiratory problems, and other health

issues associated with exposure to hazardous environments. By improving safety practices and environmental conditions, the study can enhance the overall health outcomes and quality of life for the Saudi population.

4. **Sustainable Development:** Managing safety and environmental risks is vital for achieving sustainable development goals. By promoting sustainable practices and reducing risks, the study can contribute to a more sustainable and resilient society in Saudi Arabia. This includes the responsible use of resources, the reduction of carbon emissions, and the adoption of eco-friendly technologies, leading to a more sustainable future for the country.

5. **Policy and Decision-making:** The findings and recommendations of the study can serve as valuable inputs for policymakers and decision-makers in Saudi Arabia. It can help in formulating and implementing effective regulations, policies, and interventions to manage safety and environmental risks.

Evidence-based decision-making can lead to improved safety standards, better environmental protection measures, and the overall enhancement of the quality of life for the Saudi population.

In summary, the study on managing safety and environmental risks in the quality of life in the Kingdom of Saudi Arabia is important as it contributes to human safety, environmental protection, health and

well-being, sustainable development, and informed policy-making. It has the potential to create positive impacts on multiple aspects of Saudi society, leading to a safer, healthier, and more sustainable future for its residents.

The objectives of the study:

1. **Assess Current Safety and Environmental Risks:** The study aims to evaluate the existing safety and environmental risks prevalent in different sectors of Saudi Arabian society. This involves identifying and analyzing risks related to workplaces, transportation, public spaces, air and water quality, waste management, and other relevant areas.
2. **Understand the Impact on Quality of Life:** The study seeks to understand how safety and environmental risks affect the overall quality of life in Saudi Arabia. This includes examining the social, economic, and health implications of these risks on individuals and communities. By quantifying and qualitatively assessing the impact, the study can provide a comprehensive understanding of the relationship between risks and quality of life.
3. **Identify Gaps in Safety and Environmental Practices:** The study aims to identify gaps and deficiencies in the current safety and environmental practices in Saudi Arabia. This involves analyzing existing regulations, policies, and enforcement

mechanisms to determine their effectiveness and identify areas for improvement. By identifying gaps, the study can provide insights into areas where interventions are needed to enhance safety and environmental management.

4. **Propose Strategies for Risk Mitigation:** Based on the findings, the study aims to propose strategies and recommendations for effectively managing safety and environmental risks. This may include suggesting policy interventions, regulatory frameworks, technological advancements, and best practices to mitigate risks and enhance safety measures. The objective is to provide actionable insights that can guide decision-makers in implementing effective risk management strategies.
5. **Promote Sustainable Development:** The study aims to promote sustainable development by integrating safety and environmental considerations into various sectors. This involves exploring opportunities for sustainable practices, such as renewable energy, waste reduction, and resource conservation. By highlighting the benefits of sustainable development, the study can contribute to a more balanced and environmentally conscious approach to managing risks.
6. **Enhance Stakeholder Awareness and Collaboration:** The study aims to raise awareness among stakeholders, including government agencies, industry, civil society organizations, and the public, about the importance of managing safety and

environmental risks. It seeks to foster collaboration and partnerships among stakeholders to collectively work towards improving safety standards and environmental sustainability.

Overall, the objectives of the study revolve around assessing risks, understanding their impact on quality of life, identifying gaps, proposing mitigation strategies, promoting sustainable development, and enhancing stakeholder collaboration. By achieving these objectives, the study can contribute to creating a safer, healthier, and more sustainable living environment for the people of Saudi Arabia.

Study questions:

This study raises many questions of Managing safety and environmental risks in the quality of life in the Kingdom of Saudi Arabia, and these questions will be presented in a main question followed by sub-questions of interest in the same context.

a) The main research question is:

1. How can safety and environmental risks be effectively managed to enhance the quality of life in the Kingdom of Saudi Arabia?

b) Sub-questions for this research are:

1. What are the major safety risks currently affecting the quality of life in Saudi Arabia?

2. What are the major environmental risks currently affecting the quality of life in Saudi Arabia?
3. What are the key factors contributing to safety risks in Saudi Arabia?
4. What are the key factors contributing to environmental risks in Saudi Arabia?
5. What policies and regulations are in place to manage safety risks in Saudi Arabia?
6. What policies and regulations are in place to manage environmental risks in Saudi Arabia?
7. How effective are the existing safety management strategies in Saudi Arabia?
8. How effective are the existing environmental management strategies in Saudi Arabia?
9. What are the potential social and economic impacts of improving safety and environmental management in Saudi Arabia?
10. What are the best practices and lessons learned from other countries in managing safety and environmental risks?
11. What are the potential barriers to implementing effective safety and environmental management strategies in Saudi Arabia?
12. What technological advancements can be utilized to mitigate safety and environmental risks in Saudi Arabia?

13. What are the roles and responsibilities of different stakeholders (government, industries, communities) in managing safety and environmental risks in Saudi Arabia?
14. How can public awareness and education be improved to promote safety and environmental consciousness in Saudi Arabia?
15. How can safety and environmental management be integrated into urban planning and infrastructure development in Saudi Arabia?

Previous studies and theoretical framework:

The state has encouraged extensive use of motorized vehicles. Saudi Arabia, the world's most urbanized nation, recently unveiled Saudi Vision 2030. Eight out of ten Saudi Arabians are said to reside in urban areas. The country of Arabia seeks to transform from traditional cities into an environmentally sustainable nation through population growth, industrialization, urbanization, fuel abundance, and climate change. A variety of initiatives pertaining to intelligent, sustainable, and digital development have been put forth in an effort to support this new phase of growth and prosperity. One way to solve these issues is to shift toward greener products and things. Green mobility is now essential in places like Saudi Arabia. Put another way, the nation is heading toward using green components to solve the

aforementioned problems. In Saudi Arabia, the industrial sector currently requires green mobility. In order to reduce or even completely eradicate the mobility issues related to air pollution, the nation must carry out significant operations (Heliyon, 2023).

The increased use of groundwater resources around the world has led to both an increase in contamination and a decline in water quality. In the Kingdom of Saudi Arabia (KSA), one of the most significant sources of water supply for irrigation and drinking is groundwater. Groundwater extraction in the Kingdom of Saudi Arabia has escalated over the last thirty years, amounting to 17 billion m³/year. In Saudi Arabia, groundwater supplies 80% of the demand for water. When contrasted with the rate of withdrawal, the net annual recharge of groundwater is extremely low. The quality of the groundwater is also impacted by the dropping levels. Overlying the fractured Precambrian basement, a significant source of groundwater in the area, are the deep aquifers in the sedimentary formations of the Arabian shield. These formations are made up of a thick sequence of Paleozoic to recent sedimentary succession. These aquifers have developed secondary porosities (Mallick, 2021).

Since the National Committee on Quality Assurance in primary healthcare services was established in the 1990s, the Saudi Ministry of Health (MOH) has been involved in quality improvement. The King Abdul-Aziz Quality Award was established in 1999 as a result

of these efforts and a national push to raise awareness of quality. This award was intended to motivate both the public and private sectors to provide high-quality services, including healthcare. Medical errors, lengthy wait times, and poor service quality are just a few of the issues facing Saudi Arabia's healthcare system, despite the country's strong government commitment to raising the standard of care. In light of these pressing issues, the healthcare system performs below par even with enormous financial investments (Alasmari, 2021).

Environmental challenges have become increasingly significant worldwide, with organizations concerned about conducting business environmentally responsibly. While commitment to the natural environment has become critical today, the maritime transport and logistics business has received less attention from stakeholders than the sustainability concerns of aviation and overland freight industries. Although sea transport has fewer environmental impacts than other modes of transportation per kilometer driven, this is still a significant issue when considering the global nature of international trade (Alzahrani, 2022).

The Competent Agency will be notified through regional and international organizations, programs, and agencies of any environmental pollution resulting from sources outside Saudi Arabia's borders and territorial waters. The Responsible Agency will carry out the necessary air, land, and marine monitoring, observation, and

follow-up, as well as implement the national contingency plans for the abatement of pollution and take the necessary actions (elaw, 2001).

In the context of managing safety and environmental risks in the quality of life in the Kingdom of Saudi Arabia, a theoretical framework can provide a structured approach for understanding and addressing these challenges. Here is an example of a theoretical framework that can

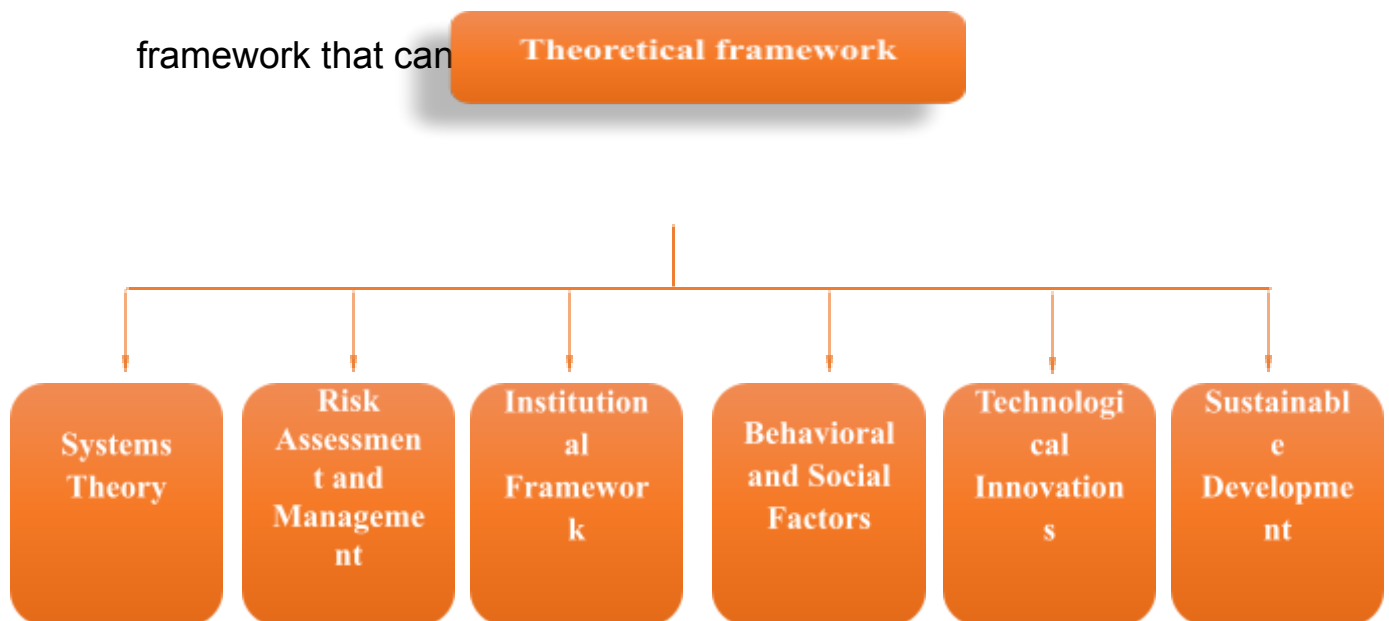


Figure 1: Theoretical framework

1. **Systems Theory:** Systems theory can be used to understand the interdependencies and interactions between various components of the safety and environmental management system in Saudi Arabia. It emphasizes viewing the system as a whole and recognizing the relationships and feedback loops between different elements, such as government regulations, industrial practices, public awareness, and technological advancements.

2. **Risk Assessment and Management:** This framework involves identifying and assessing safety and environmental risks in Saudi Arabia, both at the macro and micro levels. It includes techniques such as hazard identification, risk analysis, risk evaluation, and risk treatment. Risk management strategies can be developed based on the assessment outcomes, considering factors like probability, severity, and acceptability of risks.
3. **Institutional Framework:** This component focuses on the institutional structures and governance mechanisms in place to manage safety and environmental risks. It includes analyzing the roles and responsibilities of different stakeholders, such as government agencies, regulatory bodies, industries, non-governmental organizations (NGOs), and the public. The framework explores the effectiveness of existing policies, regulations, enforcement mechanisms, and coordination mechanisms among stakeholders.
4. **Behavioral and Social Factors:** This aspect recognizes the influence of human behavior and social factors on safety and environmental risks. It involves studying the attitudes, beliefs, and behaviors of individuals, communities, and organizations towards safety and environmental regulations. Factors such as awareness, education, social norms, cultural values, and incentives can shape behaviors related to risk management and compliance.

5. **Technological Innovations:** This framework acknowledges the role of technological advancements in managing safety and environmental risks. It examines the potential of emerging technologies, such as artificial intelligence, Internet of Things (IoT), remote sensing, and data analytics, in improving risk assessment, monitoring, and response capabilities. It also considers the challenges and ethical implications associated with the adoption of new technologies.
6. **Sustainable Development:** This component integrates the concept of sustainable development into the framework. It emphasizes the need to balance economic growth, social well-being, and environmental protection in Saudi Arabia. The framework explores how safety and environmental risks can be managed in a way that promotes sustainable development, including strategies such as pollution prevention, resource conservation, green technologies, and corporate social responsibility.

Theoretical premises of study:

Managing safety and environmental risks is a crucial aspect of ensuring a high quality of life in any country, including the Kingdom of Saudi Arabia. The theoretical premises of studying and addressing these risks can be categorized into several key areas:

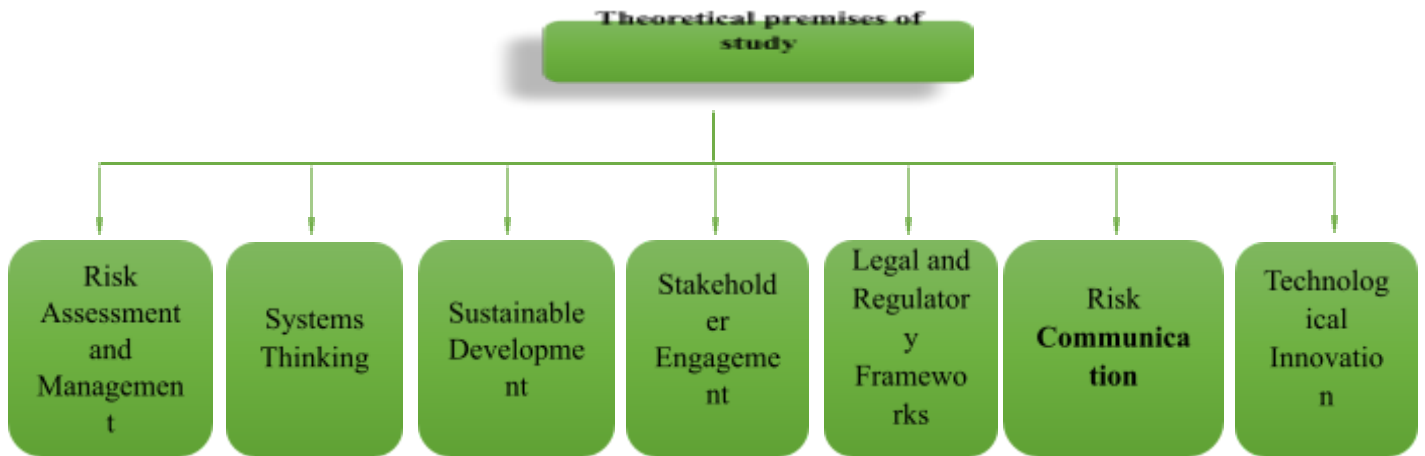


Figure 2: Theoretical premises of study

1. **Risk Assessment and Management:** The first premise involves assessing and managing safety and environmental risks. This includes identifying potential hazards, evaluating their likelihood and impact, and implementing measures to mitigate or control those risks. The theoretical frameworks and models of risk assessment and management provide a systematic approach to understanding and addressing safety and environmental challenges.
2. **Systems Thinking:** Managing safety and environmental risks requires a holistic understanding of the interconnectedness of various factors. Systems thinking emphasizes the need to consider the complex relationships and feedback loops between social, economic, and environmental systems. It involves recognizing that changes in one aspect of the system can have wide-ranging consequences elsewhere, and thus, a

comprehensive approach is necessary to manage risks effectively.

3. **Sustainable Development:** Another theoretical premise is the concept of sustainable development, which seeks to balance economic growth, social well-being, and environmental protection. Sustainable development frameworks emphasize the integration of environmental considerations into policy-making and decision-making processes. By adopting sustainable practices, the Kingdom of Saudi Arabia can reduce risks to both safety and the environment while promoting long-term prosperity.
4. **Stakeholder Engagement:** Engaging stakeholders, including government agencies, communities, industries, and civil society organizations, is a crucial premise for managing safety and environmental risks. Stakeholders have diverse perspectives, knowledge, and interests, and involving them in decision-making processes ensures that a wide range of concerns are taken into account. Effective stakeholder engagement fosters collaboration, transparency, and accountability, leading to better risk management outcomes.
5. **Legal and Regulatory Frameworks:** Establishing robust legal and regulatory frameworks is essential for managing safety and environmental risks. These frameworks provide the necessary standards, guidelines, and enforcement mechanisms to ensure compliance and accountability. Theoretical premises in this area

include understanding the role of legislation, regulations, and enforcement agencies in establishing a culture of safety and environmental protection.

6. **Risk Communication:** Effective communication plays a vital role in managing safety and environmental risks. Theoretical premises related to risk communication include understanding how to convey complex information to different audiences, promoting transparency, addressing public concerns and perceptions, and fostering trust. By engaging in open and transparent communication, authorities can enhance public awareness, knowledge, and participation in risk management efforts.

7. **Technological Innovation:** Advancements in technology offer opportunities for managing safety and environmental risks more effectively. Theoretical premises related to technological innovation include exploring emerging technologies, such as artificial intelligence, remote sensing, and data analytics, to enhance risk assessment, early warning systems, monitoring, and response capabilities. Integrating technological solutions can improve the efficiency and effectiveness of risk management strategies.

Methodology and research methods:

The study on managing safety and environmental risks in the quality of life in the Kingdom of Saudi Arabia can be approached using a combination of qualitative and quantitative research methods. The following methodology is proposed for conducting such a study:

- **Literature Review:** Conduct a comprehensive review of relevant academic journals, reports, government publications, and other reliable sources to gather information on the current state of safety and environmental risks in Saudi Arabia. This review will provide a foundation for understanding the existing research, identifying gaps, and establishing a theoretical framework.
- **Data Collection:** Gather primary and secondary data to analyze safety and environmental risks. Primary data can be collected through surveys, interviews, and focus groups with key stakeholders such as government officials, industry representatives, and the public. Secondary data can be obtained from government databases, environmental impact assessments, accident reports, and other relevant sources.
- **Risk Assessment:** Evaluate safety and environmental risks using established risk assessment methodologies. This involves identifying hazards, assessing their likelihood and potential impact, and prioritizing risks based on their severity. Quantitative

techniques such as fault tree analysis, event tree analysis, or statistical modeling can be employed to assess risks quantitatively.

- **Case Studies:** Select specific case studies within different sectors of the economy, such as construction, transportation, or industrial activities. Analyze these case studies to understand the specific safety and environmental risks associated with each sector, the existing management practices, and their impact on the quality of life in Saudi Arabia.
- **Comparative Analysis:** Conduct a comparative analysis of safety and environmental practices and regulations in other countries or regions, particularly those with similar socio-economic characteristics to Saudi Arabia. This analysis will provide valuable insights into best practices and lessons learned that can be applied in the Saudi Arabian context.
- **Stakeholder Engagement:** Engage with relevant stakeholders, including government authorities, industry representatives, environmental organizations, and community members. Seek their input, perspectives, and recommendations regarding safety and environmental risks and their management. This engagement can be done through workshops, seminars, or consultations.
- **Data Analysis:** Analyze the collected data using appropriate statistical methods, qualitative analysis techniques, or risk assessment tools. This analysis should provide insights into the

current state of safety and environmental risks, identify areas of concern, and assess the effectiveness of existing management strategies.

- **Recommendations:** Based on the findings and analysis, develop practical recommendations for managing safety and environmental risks in Saudi Arabia. These recommendations should address policy, regulatory, and management aspects and aim to enhance the quality of life by mitigating risks and promoting sustainable practices.

It is worth noting that scientific research methods mean the method followed by the researcher to obtain information related to a specific topic related to a specialization, and that method differs entirely from one researcher to another according to the available material or intellectual ingredients, as well as regarding the quality of the research.

In this research, the quantitative methodology will be applied as it represents the prevailing research framework in administrative sciences and the impact of time management on business organization will be studied. This methodology also refers to a set of strategies, techniques and assumptions used to study the effects of charts and graphs on time management by exploring modern methods and applications to manage data visualization forms in a way that increases user knowledge (Rahman, 2020).

The purpose of this research is to consider the impact of safety and environmental risk management, with a focus on effective approaches to sustaining quality of life in the Kingdom of Saudi Arabia. For this reason, specific objectives, research questions, and many null hypotheses have been developed. The theoretical and empirical literature on the study topic was comprehensively studied, and a survey research design using questionnaire was used to collect data (Nasrullah, 2018).

Study tools (data collection tools):

Contrary to the nature of the data collected from qualitative research, the data collected and deduced from quantitative research are in the form of numerical values, and due to this difference, both research differ from each other in a number of tools and methods used to collect data. In this research, the quantitative approach will be relied upon in data analysis, where quantitative research can be defined as a systematic study based on collecting quantifiable data through specialized tools such as opinion polls and questionnaires, or by processing data that has already been counted using computational

techniques. Various programs such as Excel, SPSS and other programs that are used in data analysis (Ho, 2018).

1. Questionnaire method:

The method of implementing the questionnaires will be highlighted as the method that will be used to collect data in this research, as the questionnaires still play a pivotal role in collecting quantitative data to this day, as they help simplify and measure the answers and the data collected, and they are characterized by legitimacy and privacy to the answers Respondents, questionnaires are further classified into several classes as two main types of questionnaires can be used: sectional questionnaires and longitudinal questionnaires. A cross-sectional questionnaire provides an assessment of similar characteristics and differences between several samples of data, done simultaneously. Longitudinal scanning involves looking at a single data cluster over different times. This requires administering questionnaires at several points in time describing change, stability, or trends over a specified period of time.

2. Using SPSS in data analysis:

Statistical Package for the Social Sciences or SPSS is a program used for deep search and analysis of complex quantitative data. It is one of the most useful programs for organizations and businessmen as well as scientists and researchers in a huge collection

of data and information for better analysis and evaluation, so it will be relied upon to analyze the data for this research.

It is possible to conclude that SPSS is a high-quality software package used for interactive or pooled statistical analysis, which is useful for analyzing and collecting data and information. Researchers can also organize data through SPSS data analysis software and perform functions within SPSS such as MANOVA testing in addition to regression analysis so that the relationship between the data its direction is clear, as it can be effectively identified.

Most major research agencies around the world use SPSS to analyze data so that they can get the most out of their research and investigative projects.

3. Advantages of data analysis with the help of SPSS software:

SPSS data analysis appears in the small amount of effort that the researcher needs to use this program. The primary functions of SPSS are statistics programming, model programming, and text analysis for questionnaire programs. Through these functions, data analysis can be carried out in a systematic process. Through SPSS it will be possible to critically analyze the relationship and interdependence between variables within the framework of data sets and develop an in-depth critical assessment, which will contribute to .improving the quality of this research

Study limitation:

When conducting a study on managing safety and environmental risks in the quality of life in the Kingdom of Saudi Arabia, it is important to acknowledge and address the potential limitations that may affect the research. Some study limitations in this context could include:

1. **Data Availability:** One limitation could be the availability and accessibility of relevant data. Accurate and comprehensive data on safety and environmental risks may not be readily available or may be limited in scope. This can pose challenges in conducting a thorough analysis and may require relying on incomplete or outdated information.
2. **Data Reliability:** The reliability and accuracy of the available data could be another limitation. Data collection methodologies, monitoring systems, and reporting practices may vary, potentially leading to inconsistencies or biases in the data. Researchers must critically assess the quality of the data and consider potential limitations in its reliability.
3. **Cultural Factors:** Cultural factors and societal norms can influence perceptions and behaviors related to safety and environmental practices. These factors may affect the willingness of individuals and organizations to participate in the

study or disclose certain information. Cultural nuances should be considered to ensure a comprehensive understanding of the context.

4. **Language and Translation:** Language barriers and translation issues may arise when working with data, documents, or interviews conducted in Arabic. The accuracy and nuances of translated materials can impact the interpretation and analysis of the study findings. It is important to address potential language-related limitations and ensure the accuracy of translations.
5. **Institutional Factors:** The effectiveness of safety and environmental risk management can be influenced by institutional factors, including governance structures, regulatory frameworks, and enforcement mechanisms. These factors may vary over time and across different regions within Saudi Arabia. It is important to consider these variations and their potential impact on the study findings.
6. **Scope and Generalizability:** The study's scope may be limited to specific regions, sectors, or aspects of safety and environmental risks. Findings derived from a specific context may not be fully generalizable to the entire Kingdom of Saudi Arabia. Researchers should clearly define the scope of the study and acknowledge the limitations in terms of geographical and sectoral coverage.

7. **Time Constraints:** Conducting a comprehensive study on managing safety and environmental risks requires time and resources. However, time constraints may limit the depth and breadth of the study. Researchers should be aware of these limitations and make transparent decisions regarding the study's scope and the depth of analysis within the available timeframe.
8. **Stakeholder Cooperation:** The cooperation and willingness of stakeholders to participate in the study can impact data collection and the overall research process. Limited participation or lack of cooperation from relevant stakeholders may affect the completeness and representativeness of the findings.

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