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Survey on Risk Management in Engineering Projects

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Abstract: ***This study, which was survey-based, examined risk management procedures utilised in engineering projects. Understanding the existing level of risk management, identifying typical difficulties experienced by engineering project teams, and offering suggestions for enhancing risk management effectiveness are the goals. The study gathers information from experts working on engineering projects in many industries, enabling a thorough examination of risk management procedures, instruments, and methods. The results of this survey help increase project success rates and provide guidance for upcoming risk management plans in the engineering field.***

Keywords: Risk Management, Engineering project, Comparative Analysis, Practices, Challenges.

I. INTRODUCTION

In engineering projects, risk management is essential because it identifies, evaluates, and helps reduce any risks that could have an adverse effect on project success. For a project to be completed within the parameters of budget, schedule, and quality, effective risk management techniques must be used. Nevertheless, despite its importance, there is a need to examine and assess the condition of risk management in engineering projects as it stands today, to pinpoint the difficulties that project teams are facing, and to make suggestions for improvement. Engineering projects cover a wide range of activities, including building, creating new infrastructure, creating new products, and advancing technology. These initiatives stand out for their inherent uncertainty, complexity, and multifaceted stakeholder participation. In order to proactively identify and mitigate potential risks that could result in budget overruns, schedule delays, safety hazards, and other unfavourable outcomes for engineering projects, effective risk management is essential. Therefore, it is crucial to comprehend present risk management practises, difficulties, and areas for development.

II. LITERATURE REVIEW

The literature review on risk management offers a summary of the important ideas, theories, and procedures involved in the recognition, evaluation, reduction, and oversight of risks in numerous fields. This section emphasises the value of risk management in ensuring project success and examines various strategies, methods, and technologies that can be used to manage risk successfully.

1) *Engineering Projects' Conceptual Framework for Risk Management:* The literature research will get started by looking at engineering projects' conceptual framework for risk management. The essential ideas, theories, and models that underlie risk management in the context of engineering projects will be covered in this part. Throughout the project lifecycle, it will delve into ideas like risk identification, risk assessment, risk reduction, and risk monitoring. To give readers a thorough knowledge of the conceptual underpinnings of risk management in engineering projects, a number of frameworks, including the Project Risk Management Framework of the Project Management Institute and ISO 31000, will be reviewed.
2) *Key Obstacles in Risk Management:* For effective risk mitigation, it is crucial to recognise and comprehend the major obstacles in risk management. In order to identify and address the typical difficulties with risk management in engineering projects, this part will study the literature. These difficulties could be brought on by things like insufficient risk identification, incomplete risk assessments, a lack of resources for risk management, poor stakeholder participation and communication, and shifting project needs. The review will investigate how these difficulties may affect the results of projects and offer suggestions for potential remedies or coping mechanisms.
3) *Review of Current Studies and Surveys:* This section will review current surveys and studies in the topic of risk management in engineering projects in order to build upon earlier research and surveys. Research papers, reports, and other publications that have examined risk management techniques, difficulties, and efficiency in engineering projects will be included in the review. The main conclusions, methodology, and any gaps or restrictions found in the prior research will be highlighted. This evaluation will help identify areas for future research and lay the groundwork for the present survey-based investigation into risk management in engineering projects.

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III. METHODOLOGY

1) Creating a well-structured survey instrument that is in line with the study objectives and gathers pertinent information on risk management practises is the task of the survey design and questionnaire creation stage. A variety of risk management-related topics, including risk identification, assessment, mitigation tactics, and risk monitoring, will be covered by the survey. The questions will be constructed to elicit responses from the participants that are both quantitative and qualitative. To verify the survey's questions are clear, valid, and reliable, a pilot test will be conducted
2) The target population must be identified in order to choose a representative sample from it during the sample selection procedure. The professionals and specialists active in risk management in numerous businesses or particular domains may be the target population for this study. To ensure proper representation and the generalizability of the results, the sample size will be decided upon based on statistical considerations. The type of the study will decide the data collection techniques. An efficient method for gathering data is to disseminate online surveys through targeted organisations, professional networks, and trade groups. To elicit more in-depth perspectives from important stakeholders, it may occasionally be necessary to conduct in-person interviews or focus groups. The data gathering procedure will guarantee privacy and informed consent from all participants.
3) Data analysis methods: Following the acquisition of the data, the information will be analysed and interpreted using the proper data analysis methodologies. Both quantitative and qualitative methods of analysis will be used.
4) Quantitative Analysis: Descriptive statistics like frequencies, percentages, means, and standard deviations will be used to analyse the quantitative data that was gathered through closed-ended survey questions. To find relationships between variables and evaluate research hypotheses, statistical procedures like correlation analysis, regression analysis, or hypothesis testing may be used.

Thematic analysis will be used to examine the qualitative information gathered through open-ended survey questions, interviews, or focus groups. A thorough understanding of the viewpoints, experiences, and difficulties that participants have with risk management in engineering projects will be possible thanks to the coding and categorization of the replies into themes and patterns.



Fig 1. Credit (Google)

IV. SURVEY RESULTS AND ANALYSIS

1) *Participants' Demographics:* This section lists the participants' demographics, including their responsibilities in engineering projects, years of experience, sectors they represented, and organisational sizes. The demographic information will be compiled using descriptive statistics.
2) *Engineering Projects' Current Risk Management Practises:* To determine the current risk management strategies used in engineering projects, the survey results will be examined. This study may evaluate the frequency and scope of risk identification, the methods used for risk assessment, the risk response plans put in place, and the risk monitoring and management actions. The findings will give a general summary of risk management best practises.

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3) *Utilisation of Risk Management Tools and Techniques:* The analysis of data pertaining to the usage of risk management tools and techniques is the main goal of this section. It looks at how frequently different tools and methods are used in engineering projects, including risk registers, risk matrices, Monte Carlo simulation, and decision trees. The analysis may involve determining the most popular tools and methods as well as examining any variations in tool use between various project kinds or industries.
4) *Risk Management Issues:* The survey data will be examined to determine the main issues with risk management in engineering projects. Finding reoccurring themes or categories of issues highlighted by the participants is the goal of this research. Common problems could be poor risk identification, a lack of risk management resources, a lack of stakeholder involvement, or issues with measuring and prioritising risks. The analysis will shed light on the principal issues that must be resolved in order to enhance risk management procedures.
5) *Comparison of Practises Across Different Industries:* The survey data will be analysed and contrasted in order to find differences in risk management practises across industries. Examining disparities in the use of particular practises, tools, or approaches across industries may be part of this analysis. It will shed light on variables unique to the industry that affect risk management strategies. Depending on the type of data and research questions, the analysis of survey results will be done using the relevant statistical approaches, such as descriptive statistics, cross-tabulations, or inferential statistics. In order to support the analysis, the results will be presented in a clear and succinct manner utilising tables, graphs, or charts.

V. DISCUSSION

1) *Key Findings from the Survey Analysis:* The key findings from the survey analysis are covered in this section. It provides a summary of the key findings about existing risk management procedures, the use of tools and approaches, difficulties encountered, and opinions regarding the efficacy of risk management. The explanation provides a thorough review of the survey results by highlighting any noteworthy trends, patterns, or contrasts found in the data.
2) *Identification of Common Challenges in Risk Management:* The analysis of the survey data is used to identify common challenges in risk management. It looks at the issues raised by the participants, including poor risk identification, a lack of resources, ineffective stakeholder involvement, and concerns with quantifying and prioritising risks. The debate sheds light on the fundamental reasons behind these difficulties and their potential effects on project results. It may also contain suggestions or approaches for dealing with these difficulties.
3) *Analysis of Risk Management Practises and Tools:* The analysis of risk management practises and tools found in the survey is the main topic of this section. The prevalence and efficiency of different practises, including risk identification, assessment, action plans, and monitoring, are discussed. The use of particular tools and techniques, as well as their advantages, drawbacks, and any variances across other industries or project types, are highlighted in the discussion. The results can be compared to accepted best practises or industry standards, giving an idea of how effective the existing risk management strategies are.
4) *Enhancing Risk Management Effectiveness Recommendations:* This section offers suggestions for improving risk management effectiveness in engineering projects based on survey results and analysis. The discussion may include recommendations for enhancing risk identification procedures, implementing more thorough risk assessment methods, putting in place successful risk response plans, and enhancing risk monitoring and control operations. The advice ought to be applicable, doable, and customised to the particular study setting.

The discussion section summarises the survey results and relates them to the body of knowledge and research goals. It provides a greater understanding of how risk management is currently being used in the context of engineering projects, identifies opportunities for improvement, and offers practical suggestions for improving risk management procedures.

VI. CONCLUSION

1) *Summary of Survey Findings:* A summary of the major conclusions from the survey analysis is given in this section. The discussion summarises the key findings from the survey, including the use of tools and procedures, common problems encountered, and perceptions of the efficacy of risk management. The most important and pertinent study findings are highlighted in the summary.
2) *Impact on Engineering Project Management:* This section examines how the survey results may affect engineering project management. It goes over how project outcomes, stakeholder satisfaction, and organisational performance may be impacted by the identified risk management practises, difficulties, and perceptions of efficacy. The necessity of resolving particular issues, implementing useful techniques, and including risk management into project management methodology may be emphasised in

the discussion. The consequences can give practitioners and decision-makers involved in engineering project management direction and understanding.

3) *Conclusion:* Based on the results and constraints of the current study, the conclusion makes some recommendations for future research topics. It points out areas that need more research to increase knowledge and use of risk management in engineering projects. This could involve researching cutting-edge risk management technologies, looking into how organisational culture affects risk management efficiency, looking into risk management in certain sectors or project types, or researching the efficiency of various risk response techniques. Future academics and researchers interested in advancing knowledge and employing risk management in engineering projects might use the future research directions as a jumping-off point.

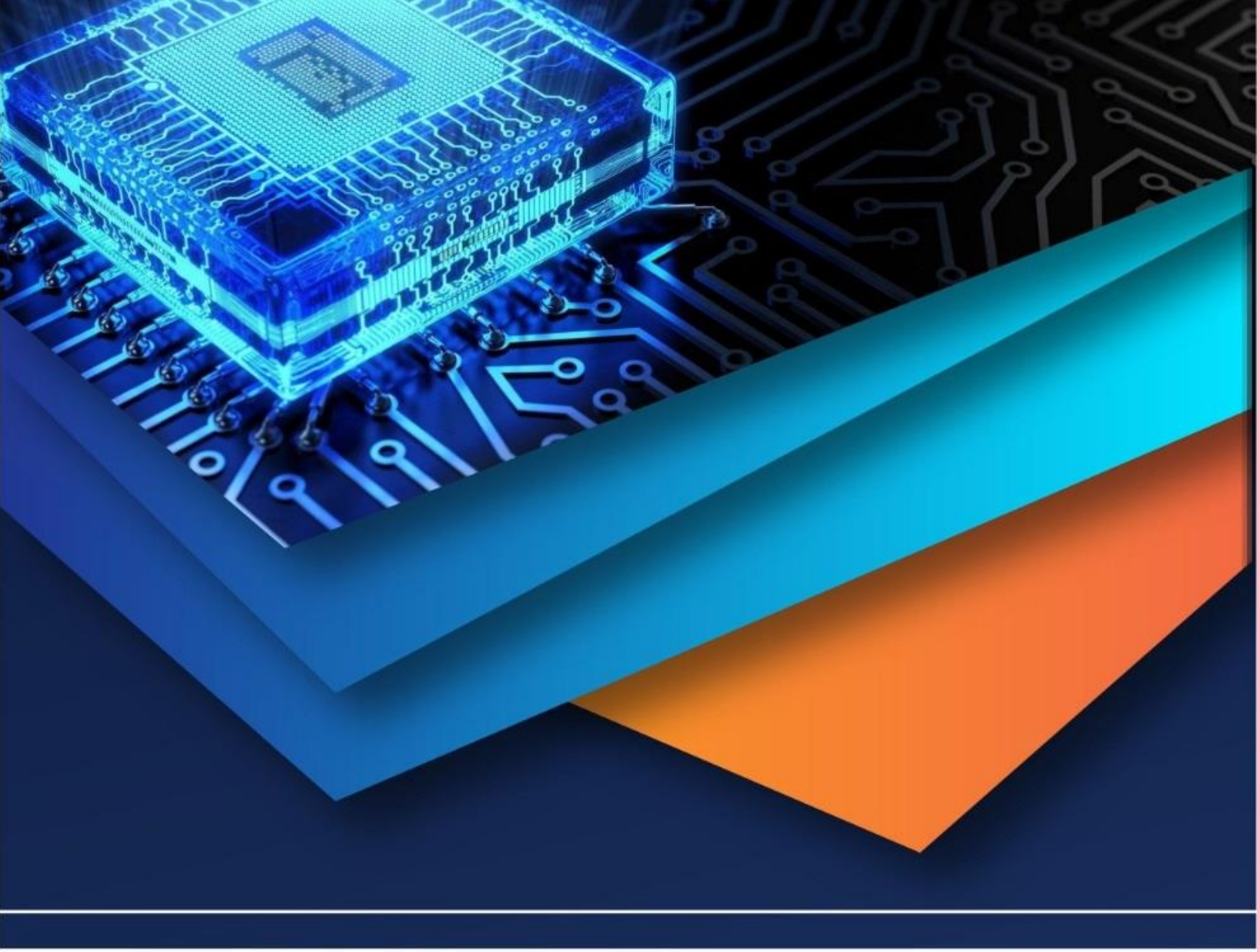
REFERENCES

[1] Chapman, C. B. (2011). Controlling risk in project management. John Wiley & Sons.
[2] Hillson, D., & Simon, P. (2007). Practical risk management: The ATOM methodology. Management Concepts
[3] Project Management Institute. (2017). A guide to the project management body of knowledge (PMBOK® guide) (6th ed.). Project Management Institute
[4] Rau sand, M., & Hoy land, A. (2004). System reliability theory: Models, statistical methods, and applications (2nd ed.).
[5] Wideman, R. M. (1992). Project risk management: A proactive approach. Project Management Institute.

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