

# Identification of Construction Management Risk and Preparation of Detailed Project Report (DPR) for Construction Projects

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## Abstract

Rural roads are the tertiary road system that connects rural areas to markets and other service hubs in the broader road network. In India, rural roads have been planned and developed in accordance with a comprehensive plan. Rural development during the past five decades, with the goal of providing all-weather connectivity. The country's long-term road development plans set policy guidelines and priorities for rural roads, while the finances for rural roads were distributed in the Five-Year Plans.

The Government of India has recently launched a dedicated initiative called as the Pradhan Mantra Gram Sadak Yojana (PMGSY) Over the last five years, the Government of India has established a dedicated project known as the Pradhan Mantra Gram Sadak Yojana (PMGSY) to provide rural connectivity to all habitations under the Ministry of Rural Development. More recently, Bharat. In this paper risk associated with DPR also indentified.

**Keywords:** Detailed Project Report (DPR), Infrastructure, Risk Identifications, Risk Mitigation

## I. INTRODUCTION:

The outcomes of a project's planning and design phase are detailed project reports (DPRs). A DPR is a very thorough and elaborated project plan that specifies the project's general programmer, specific roles and responsibilities, activities, and resources. The project report includes extensive information on the land required, annual manufacturing capacity, manufacturing process, machinery and equipment prices and specifications, raw material requirements, electricity and water requirements, workforce requirements, and project marking costs. A detailed project report is a comprehensive and detailed summary of a project that includes critical information such as resources and tasks that must be completed in order for the project to succeed. What you wish to achieve towards the end of the project is the project goal. This could include concrete items like deliverables and assets, as well as intangible objectives like enhancing productivity or motivating others. At the end of the project, your goals should be quantifiable, achievable, and time-bound. In order to bring your project's concept into reality, you'll need a complete project report. A DPR serves as a stepping stone to success, allowing your project to reach new heights. You will undoubtedly achieve fantastic results if you prepare the project report with a great deal of attention to detail.

The DPR follows the same format and content as the techno-economic feasibility report. Every important component of location and site

**About DPR** – It is the most important report in the process of developing an investment proposal. The details included in the study are used to make investment decisions. It is also known as the project's final plan, after which the implementation and operational processes can begin. The roles and responsibilities are underlined in this comprehensive project report, as well as the safety steps to take if an issue emerges while carrying out the plan. It includes technical, financial, marketing, management, and social factors.

**Problem Statement:** For any enormous foundation ventures the extend achievability is exceptionally critical and after that arranging plays exceptionally imperative part in execution stage of ventures for this planning the detail venture examination is required ,which gives an thought of developments ventures in all regards .Arrangement of DPR incorporates all viewpoints of developments and administration due to which the ponder for Planning of Detail Venture Report (DPR) for Framework Ventures is required

**Importance of DPR**

In order to bring your project's concept into reality, you'll need a complete project report. A DPR serves as a stepping stone to success for your project. Incredible heights If the project report is created with great care and attention to detail, you will undoubtedly achieve good outcomes if you delve into detail.

Managing the budget or expenditures - Managing the budget or expenditures is a difficult task, especially when there are so many aspects of your project to consider. As a result, a DPR comes to your aid and assists you in planning and managing your budget in such a way that you do not exceed your specified budget.

**Advantages of DPR**

Managing the budget – Overseeing the budget or use isn't a simple assignment, particularly after you have to be seen at so numerous perspectives of your project.

- Minimizing dangers – In some cases, in spite of giving awesome consideration to subtle elements, dangers, and issues emerge amid the usage of the venture. Subsequently it is pivotal to recognize and decrease these dangers as much as possible.
- Project advance take after up – One of the foremost critical angles of a point by point venture report is to have a control on the extend progress.
- Holdover the extend – Extend detailing keeps up hold of the higher specialist, such as supervisors, over the extend so that they can keep a check on advance.

**Significance / Motivation of Study:** A detailed project report offers numerous advantages in terms of guiding a project to success. To ensure that no stone is left unturned, a DPR should be created by a professional person/firm with necessary expertise and skillset. It is also critical that the project team member has relevant experience in the field in order to take on the project management responsibilities. Putting the DPR preparation process in the hands of an untrained person can also result in a significant financial loss, so choose prudently.

**Structure of a DPR**

- Title Page, Name, Affiliations, Date, ETC.
- Acknowledgement
- Content List
- Abbreviations
- Executive Summary
- Introduction & Background
- Main Technical & Financial Analysis
- Recommended Action Plan

**Objectives:**

In order to bring your project's concept into reality, you'll need a complete project report. A DPR serves as a stepping stone to success for your project. Incredible heights If the project report is created with great care and attention to detail, you will undoubtedly achieve good outcomes if you delve into detail.

Managing the budget or expenditures - Managing the budget or expenditures is a difficult task, especially when there are so many aspects of your project to consider. As a result, a DPR comes to your aid and assists you in planning and managing your budget in such a way that you do not exceed your specified budget.

Minimizing risks - Even with meticulous attention to detail, risks and issues can occur throughout the project's implementation. As a result, it's critical to identify and mitigate these risks as much as possible so that the project can be completed smoothly. Making room for improvement includes disclosing hazards to the project management prior to implementation.

Follow-up on project progress - Keeping track of project progress is one of the most critical components of a complete project report. As a result, one can maintain track of the project's schedule and resolve any issues that arise. Holdover of the project - Project reporting keeps the project under the control of higher authority, such as managers, so that they may monitor progress and eliminate factors that cause the project to stall. The team members' performance and quality of work are also assessed.

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**Need or Scope of the Study:**

Around 40% of India's 825,000 villages lacked all-weather access roads in the year 2000. This hampered economic activity and prevented access to five important services. Nearly 74% of India's rural population, which makes up the majority of the country's impoverished, was not completely integrated into the national economy. Due to insufficient coordination between different financing streams and agencies, the rural roads sector, which is a state responsibility, also lacked effective

planning and management. Rural roads were given minimal attention and were seen as separate from the need for state and national highways.

## II. LITERATURE REVIEW:

**Jayant Mishra, Ajay Swaroop (December 2017):** - Rural roads are the tertiary road system in the overall road network that connects rural residents to markets and other service hubs. In India, rural roads are planned and designed in the interests of comprehensive rural development, with the goal of providing all-weather connection. The allocation of funds for road construction established policy rules and priorities for rural roads. Where satisfactory results are not attained, rural road improvement is required.

**G. Calis, S.A. Yildize, Turkey [2020]** The most typical criterion for determining the success of a construction project is if it is completed on time, on budget, and according to the project requirements. Because construction projects have numerous unknowns at the start, and this continues throughout the project, most projects are completed after or before the contractual completion date. Construction delays are a typical problem that exists in many countries. The site's data assists the management team in determining progress, health and safety, and the status of equipment and materials. It is critical to obtain information as accurately as possible, and the management team must receive information on time. This allows team members to monitor progress and problems on the job site. It has been proven that rework of defective components of a building project discovered late wastes up to 12.45% of the construction cost. Construction project status reporting is critical for project management and stakeholder management. While it has an impact on communication, it is also beneficial in speeding up the decision-making process. The project management team, and therefore the project manager, must guarantee that higher management has a clear picture of the project's progress. Upper management would struggle to take immediate action if they didn't have a clear grasp of the project.

**Er. Om Prakash Giri Pokhara [2019]** A project manager is the person in charge of overseeing the project's successful start-up, planning, design, execution, monitoring, control, and closure. The project manager is responsible for completing the project on time, on budget, and with high quality to ensure its success. The construction industry contributes significantly to the country's economy. However, the industry has numerous problems, including completing projects on time, on budget, and with high quality. As a result, the project manager is a crucial resource in achieving the project's goals. Unfortunately, the project manager's function is frequently disregarded. It is considered that the project manager's leadership position is evaluated in terms of time, cost, quality, and customer satisfaction. The purpose of this research is to identify several responsibilities that project managers should play in order to improve project performance. The results of good project management procedures and qualified project managers are always better.

**Mohammadreza Yadollahi, Mohammad Mirghasemi, Rosli Mohamad Zin, and Bachan Singh (2014):** - Civil, mechanical, and electrical engineers, quantity surveyors, and architects all play critical roles in the construction process. Architects are commonly appointed as project managers among them (PM). The success of the project's implementation will be determined by the PM's role. As a result, an architect's capacity to act as a project manager (ArPM) is crucial in decreasing problems. As a result, identifying these difficulties is a critical step in selecting an acceptable ArPM. The goal of this research is to identify the most significant problems that an ArPM has when working on building projects. Questionnaires and interviews with architects and specialists in the Malaysian construction industry were used to gather data. Fuzzy Set Theory is used to identify important difficulties due to the fuzziness and ambiguity of subjective responses. A total of 65 questionnaires were distributed, with 36 of them returning. The findings found that "poor planning," "unfamiliar technology," "unfamiliarity with green structures and materials," "wrong scheduling," and "bad workmanship" are the major problems that an ArPM faces. After that, all important obstacles were divided into six categories: technical, managerial, human skills, contractual, psychological, and financial.

**Atul R Nikumbh, Dr. S.S. Pimplikar (2014).** Real estate and infrastructure are two sorts of construction sectors that the construction business deals with. Residential, industrial, corporate, and commercial real estate are the four types of real estate. Roads, railways, urban infrastructures, ports, airports, and power are all part of the infrastructure industry. To manage such unusual projects, you'll need experience working with organisations and a broad knowledge base. The goal of this research is to analyse or break down the role of project management consultancy and investigate the challenges that PMC faces when implementing projects. Project Management Consultancy plays a varied role in such initiatives, providing services from the beginning to the end. The ideas of proactiveness and generating a win-win situation are required at every stage of the project life cycle, with the customer / client's expectations in mind. Project Management Consultancy (PMC) is one of the most efficient and effective management options for increasing and improving the efficiency and outcome of a construction project.

**Dr. Urmila vikas Patil (2015):** Road transportation is becoming increasingly vital, and it plays a significant part in the country's economic development. M.S.R.T.C.'s primary goals are to provide adequate passenger transportation services to the community in a cost-effective and timely manner. A well-functioning transportation system is critical to emerging

countries' economic development. Manpower is required for an efficient transportation system and efficient operation. To meet the needs of developing cities, Maharashtra has its own transportation service. The purpose of this research report is to assess MSRTC's capital structure. Secondary data is used to gather information about capital and liabilities, fixed assets, work in progress, investment, current assets, and so on for this study. This research is critical for MSRTC's economic development.

**Pranav Maheshwari, Hitesh Goyal, Yashwant Rathore, Satyam Jha, Hetram Sharma, Pradeep Kr. Jain, Brijlata Sharma. (2020):** - The entire length of the rural road has expanded from 3,54,530 kilometres in 1970-71 to 24,50,559 kilometres recently. These figures demonstrate the significance of rural road development in the overall development of the country. Furthermore, studies suggest that public investment in infrastructure, particularly in rural road rehabilitation, benefits the local community and market development. In numerous countries, studies on rural road construction have revealed increases in male agricultural earnings and cumulative crop indices (Bangladesh), increased food availability, primary school graduation rates, and farm worker pay (Vietnam), and so on. However, research on Indian rural roads is almost non-existent.

**Pratyush Singh, Ankit pal, Ankur Yadav, mardev Yadav, Khating Ashwini (2021):** Rural Road connectivity is an important component of rural development because it promotes access to economic and social services, resulting in increased agricultural productivity, non-agriculture employment, and non-agricultural productivity, all of which increase rural growth opportunities and real income, reducing poverty. According to a study conducted by the International Food Policy Research Institute on the relationship between government spending and poverty in rural India, a one-crore investment on roads pulls 1650 impoverished people out of poverty. Public investment in roads has an impact on rural poverty through increasing agricultural output, non-farm employment options, and rural wages. Improvements in agricultural productivity not only directly reduce rural poverty by increasing the income of impoverished households, but they also indirectly lower it.

### III. METHODOLOGY:

**A. Rural Roads and Socio-economic Development:** - • Rural roads have been shown to be catalysts for rural economic development and poverty alleviation; this goal should be pursued with greater intensity.

• In the future, instead of using fair-weather roads, the goal should be to connect all habitations with all-weather rural roads.

**B. Rural Roads and Socio-economic Development:** -

• Upgrading is required in addition to new connectivity lines for the coordinated growth of rural connectivity, as anticipated in Bharat Nirman.

• Rural road development targets (based on the 2001 population census and subject to change after the next census) will necessitate the program's continuation beyond the 11th Plan era.

• The current delivery structure and processes should be strengthened and maintained. The success of the programme demonstrates the need to accelerate the implementation process in order to meet the goals.

**C. Planning and Design –**

• In the 11th Plan, the DRRP and Core Network preparation will be continued in a master plan framework.

• In the 11th Plan, network design may be reconsidered, and an optimal network, including multiple connectivity, may be attempted to provide network circuitry and integrated development objectives.

• Pilot projects should be launched in specific locations such as Arunachal Pradesh, Jammu and Kashmir, and others to explore and include the functional accessibility-based planning method in order to determine optimal routes for settlements distributed across a large geographical area.

**D. Material and construction –**

• Low-cost marginal and industrial waste materials might be pushed for rural road construction; design and specifications would need to be established.

• Standard building technologies should be used to ensure construction quality; nevertheless, labor-based construction methods should be employed whenever possible to create jobs for local residents. However, it is important to note that the goal of rural road projects is not to create jobs.

**E. Quality Assurance -** • The primary goal of PMGSY has been to generate long-lasting assets by maintaining quality. This programme has established a very high quality standard for rural roads, which must be maintained.

• PMGSY's three-tier quality control system needs to be strengthened further in order to reach the higher targets set forth in the 11th Plan.

• For better results, new technology should be introduced in both construction and quality control.

**f. Environmental and Social Issues –**

• Environmental issues must be protected in all rural road developments. Furthermore, direct engagement of authority responsible for environmental clearances will enable quick construction.

• Plantations of fruit trees and other afforestation along rural roads should be implemented as part of the design (i.e. DPR).

**g. Road Safety Issues –**

- All safety engineering measures must be incorporated into the project roads' design (i.e., DPR). All designs must pass a safety inspection.
- A PRI level Safety Committee/Council be formed to gather and report incident data in a common format to the District Police. All such PRI committees will provide input to the district level committee.

#### **h. Material Management –**

- No asset lasts as long as it is not properly maintained, and country roads are no exception. During the 11 Plan, routine and periodic maintenance should be scheduled and done with proper budgeting for the finances.
- For PMGSY/Bharat Nirman roads, the State and Central Governments might look into projecting maintenance options with appropriate cost sharing.

**Risk associated with DPR and Its Mitigation:** - The critical aspects of a Detailed Project Report (DPR) for risk identification and mitigation in construction projects, emphasizing its importance in project management. The DPR covers commercial, financial, and socio-economic considerations, providing guidelines for contractual relationships, arbitration, supply chain management, tendering processes, and financial projections. It also addresses the socio-economic impacts of projects on local communities, suggesting the need for community-based surveys and development programs.

The significance of a DPR lies in its role as a risk mitigation tool, aiding in decision-making, financial planning, stakeholder communication, project monitoring and control, resource optimization, and ensuring compliance with regulatory approvals. It serves as a comprehensive overview for project stakeholders, offering a realistic view of financial requirements and expected returns, and facilitating informed decision-making.

The DPR risk mitigation the types of cost risks, categorizing them as internal or external, direct or indirect, and operational or input-related. It highlights the importance of distinguishing between these risks to develop appropriate mitigation strategies. Additionally, it introduces other cost risk categories such as credit risk, interest rate risk, exchange rate risk, legal and compliance risk, and taxation risk, which can impact project costs.

To determine cost risks in a project, the document suggests an integrated approach that considers both schedule and cost risks simultaneously. It recommends using simulation programs for more accurate cost risk analysis. The document also details the process of mitigating cost risks through the DPR, emphasizing the importance of establishing risk reserves, including management and contingency reserves, to buffer against unknown and known risks, respectively.

#### **IV. CONCLUSION:**

DPR is most essential part or a tool for any stage of the construction .DPR Gives as a prior information or a statement regarding estimated cost, cost of project Even because of DPR we can get a idea of how much time required for the construction With the help of DPR we can execute the project in practical point of view According the study or information mentioned in DPR of any project we can acknowledge the information about construction land and we can accumulate the proper steps for improvisation DPR includes Specification, drawing, technical feasibilities and gives us detailed information regarding the same. With the help of DPR will get the Knowledge about cost of raw material, general information, background and experience of project promoters. nWith the help of DPR we can manage maintenance and can give the quality assurance. We can help of DPR we know the environmental and social impact DPR is itself is present and future of the work Helping hand for the fresher Engineers to understand and the knowledge of the project and its importance Understanding technical financial feasibilities. Give idea for DPR Preparation of road projects. Engineers know the value of the DPR which is execution of the project. After some of years may total handled by technically with the help of modern civilization. the DPR is a vital instrument for project management, offering a structured approach to risk identification and mitigation, financial planning, and stakeholder communication. It provides a framework for project monitoring and control, resource optimization, and compliance with regulatory requirements, ultimately ensuring the successful completion of construction projects

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