

## Project Definition Rating Index with Feasibility Study in Infrastructure Projects

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### ABSTRACT

Project Definition Rating Index is a rating tool which helps in predicting the outcome of project. Infrastructure projects are very complex as number of organizations involved is more, the money involved is also too big. In spite of feasibility study done on infrastructure project there are many cases where huge projects have failed having positive feasibility study. PDRI combined with feasibility study can help in achieving knowledge of different hidden areas which might not be seen in feasibility study and vice versa. Combination of these two predicting tools can help in making pre-planning work even better.

**Keywords** – Combination, Feasibility study, Infrastructure projects, PDRI, Predicting tools

### I. INTRODUCTION

Project Definition Rating Index is a tool in which a project is rated depending upon categories and elements. There are two types of PDRI **Industrial PDRI** and **Building PDRI**. Industrial PDRI was developed in the year 1996 and Building PDRI was developed in the year 1999. Industrial PDRI consists of 70 elements and Building PDRI consists of 64 elements.

**Infrastructure PDRI** is a mixture of both industrial and building PDRI having a total of 68 elements. It consists of three sections with a total of 13 subsections and 68 elements.

In PDRI a low score corresponds to a project that has good scope definition or a project having a better chance for success and a high score corresponds to poor scope definition and lesser chance for success. Lower the score better is the project. Any project is rated out of 1000 with 70 points least that can be scored. A PDRI rating that is derived from feasibility study can cover more points regarding project aspects and will increase the success percentage of project by identifying hidden risks involved.

The PDRI sheet for infrastructure project is derived by the work done by CII construction industry institute. A good PDRI score sheet can help in forecasting the completion rate, risks involved, attracting investors. Conducting a PDRI study which is derived from feasibility study have many advantages which will help in completion of any project with minimum problems.

### II. METHODOLOGY

The Methodology implemented to derive PDRI from feasibility study to develop a score sheet containing a total of 3 sections

- 1). BASIS OF PROJECT DESIGN
- 2). BASIS OF DESIGN
- 3). EXECUTION APPROACH

Section 1 contains five sub sections, section 2 contains four subsections and Section 3 contains four subsections.

Score card is prepared by rating these elements after studying the feasibility report and analyzing the report arranging all data given in feasibility report accordingly to the elements mentioned in score sheet. If the data is irrelevant or not corresponding to the project then it may be rated as NA= Not Applicable. There are 5 definition levels according to which rating is given starting from 1 to 5.

Definition levels are defined as

N/A= Not Applicable

1 = Complete Definition

2 = Minor Deficiencies

3 = Some Deficiencies

4 = Major Deficiencies

5 = Incomplete or Poor Definition

After allotting respective definitions to all the 68 elements final score is calculated any score less than 300 is acceptable. But lesser the score more feasible the project will be.

### SECTION I. BASIS OF PROJECT DECISION

#### A. Project Strategy

A.1 Need & Purpose Documentation

A.2 Investment Studies & Alternatives Assessments

A.3 Key Team Member Coordination

A.4 Public Involvement

#### B. Owner/Operator Philosophies

B.1 Design Philosophy

- B.2 Operating Philosophy
- B.3 Maintenance Philosophy
- B.4 Future Expansion & Alteration Considerations

**C. Project Funding and Timing**

- C.1 Funding & Programming
- C.2 Preliminary Project Schedule
- C.3 Contingencies

**D. Project Requirements**

- D.1 Project Objectives Statement
- D.2 Functional Classification & Use
- D.3 Evaluation of Compliance Requirements
- D.4 Existing Environmental Conditions
- D.5 Site Characteristics Available vs. Required
- D.6 Dismantling & Demolition Requirements
- D.7 Determination of Utility Impacts
- D.8 Lead/Discipline Scope of Work

**E. Value Analysis**

- E.1 Value Engineering Procedures
- E.2 Design Simplification
- E.3 Material Alternatives Considered
- E.4 Constructability Procedures

**SECTION II. BASIS OF DESIGN**

**F. Site Information**

- F.1 Geotechnical Characteristics
- F.2 Hydrological Characteristics
- F.3 Surveys & Mapping
- F.4 Permitting Requirements
- F.5 Environmental Documentation
- F.6 Environmental Commitments & Mitigation
- F.7 Property Descriptions
- F.8 Right-of-Way Mapping & Site Issues

**G. Location and Geometry**

- G.1 Schematic Layouts
- G.2 Horizontal & Vertical Alignment
- G.3 Cross-Sectional Elements
- G.4 Control of Access

**H. Associated Structures and Equipment**

- H.1 Support Structures
- H.2 Hydraulic Structures
- H.3 Miscellaneous Elements
- H.4 Equipment List
- H.5 Equipment Utility Requirements

**I. Project Design Parameters**

- I.1 Capacity
- I.2 Safety & Hazards
- I.3 Civil/Structural
- I.4 Mechanical/Equipment
- I.5 Electrical/Controls
- I.6 Operations/Maintenance

**SECTION III. EXECUTION APPROACH**

**J. Land Acquisition Strategy**

- J.1 Local Public Agencies Contracts & Agreements
- J.2 Long-Lead Parcel & Utility Adjustment Identification & Acquisition
- J.3 Utility Agreement & Joint-Use Contracts

- J.4 Land Appraisal Requirements
- J.5 Advance Land Acquisition Requirements

**K. Procurement Strategy**

- K.1 Project Delivery Method & Contracting Strategies
- K.2 Long-Lead/Critical Equipment & Materials Identification
- K.3 Procurement Procedures & Plans
- K.4 Procurement Responsibility Matrix

**L. Project Control**

- L.1 Right-of-Way & Utilities Cost Estimates
- L.2 Design & Construction Cost Estimates
- L.3 Project Cost Control
- L.4 Project Schedule Control
- L.5 Project Quality Assurance & Control

**M. Project Execution Plan**

- M.1 Safety Procedures
- M.2 Owner Approval Requirements
- M.3 Documentation/Deliverables
- M.4 Computing & CADD/Model Requirements
- M.5 Design/Construction Plan & Approach
- M.6 Intercompany & Interagency Coordination & agreements
- M.7 Work Zone and Transportation Plan
- M.8 Project Completion Requirements

These are the total 68 elements which will be rated from 0 to 5. Some elements which are irrelevant can be omitted from the score sheet and new elements can be created according to relevance with feasibility study or elements that are better suited.

There is a cut off given of 200 points according to which percentage can be mentioned.

Performance	Parameter	PDRI Score	
		< 200	> 200
Cost	Over Budget	1%	6%
Schedule	Behind Schedule	2%	12%
Change Order	Total Cost	7%	10%

Calculation can be done accordingly about cost, schedule and change order. Pre-Planning can be done before hand keeping in mind such parameters. There are some key elements out of 68 elements which can influence the PDRI score more than other elements. It should be noted that these elements are given more preference while not only rating these elements but also while doing feasibility study.

**CONCLUSION**

The investigation carried out proved that the PDRI score card combined with feasibility report showed better success rate then PDRI and feasibility study done separately. Study was carried out on Intermodal transit hub, Bangalore, India. Even

though there were some problems regarding revenue generation from the project PDRI with feasibility report combined were able to generate some strong result.

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