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FINANCIAL FEASIBILITY STUDY OF INFRASTRUCTURE PROJECTS

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Abstract

Indian economy has undergone fundamental changes over the last decade. The strong level of economic growth achieved in India in recent years has led to a demand for infrastructure services. With increasing investment, the share of private sector in total investment on infrastructure has also increased rapidly. The financial appraisal of such infrastructure projects involves a careful checking of the basic data, assumptions and methodology used in project preparation, an in-depth review of the work plan, cost estimates and proposed financing, This study is basically carried on to find the most viable and profit earning project out of the options available.

Key Words: *Infrastructure projects, feasibility study, project cost, Cost estimate, viable.*

Introduction

Financial Appraisal involves a careful checking of the basic data, assumptions and methodology used in project preparation, an in-depth review of the work plan, cost estimates and proposed financing, an assessment of the project's organizational and management aspects, and finally the validity of the financial, economic and social benefits expected from the project. The appraisal of the project follows the formulation stage. The objective of the appraisal process is not only to decide whether to accept or reject the investment proposal, but also to recommend the ways in which the project can be redesigned or reformulated so as to ensure better technical, financial, commercial and economic viabilities.

The investment in infrastructure in India has increased from 4.9 percentage of the gross domestic product (GDP) in 2002-03 to 7.18 percentages in 2008-09. It is expected to increase to 8.37 percentage in the final year of the 11th Plan and likely to touch 10 percentage of GDP in the 12th Five Year Plan (2012-2017). With increasing investment, the share of private sector in total investment on infrastructure has increased rapidly. The contribution of private sector in total infrastructure investment in each of the first two years of 11th Plan (2007-2012) was around 34 percentages. This is higher than the 11th Plan target of 30 percentages and 25 percentage achieved in 10th Plan period. It is expected to rise to percentage by end of 11^{th} Plan and 50 percentages during the 12th Plan (2012-2017).The Government initiatives including opening up a number of infrastructure sectors to private players, promoting investment in the sector by permitting FDI, huge spending on projects like the National Highway Development Project, National Maritime Development Programme, etc. have opened up significant opportunities for investors. The study is basically carried on to suggest the most viable and profit earning project out of the options available.

Objectives of the Study

- To study the financial feasibility of the projects
- To have a comparative study on the projects and prioritize the same on the basis of cost effectiveness and earning capacity

Methodology

The research methodology applied here is **Analytical research** where it involves use of information and facts available to analyze and critically evaluate the proposals. The data such as cash flow statement and method of assessment are studied from the reports at the company.

Data Analysis

Project.1

Pay Back Method

Refer Table.No.1

Initial Outflow – 2054
Pay Back Period – 3 + (2054 – 1955)/212
Pay Back period = 3.47 years

ARR Method

Refer Table.No.2

Original investment/2 = 1506/2 =753
ARR = Average annual net earnings / Average investment
ARR = 384.4/753
ARR = 0.51 *100
ARR =51 percentage

NPV Method

Refer.Table.No.3

Net Present Value = Rs.2601

IRR Method

Refer.Table.No.4

PV factor = Initial cost of project / Average annual cash inflow
Initial cost of project = 1506
Average annual cash inflow = 66+ 212+212+254+254+254+305+305+305+3286/10
Average annual cash inflow = 545.3
PV Factor = 1506/545.3
PV factor = 2.76 (In annuity table)
IRR = 30 percentage

Project 2

Pay Back Method

Refer Table.No.5

Initial Outflow – 2650
PBP = 0+2660/2938
PBP = 0.905 years

ARR Method

Refer Table.No.6

Original investment/2 = 2660/2 = 1330
ARR = Average annual net earnings / Average investment
ARR = 3838.8/1330
ARR = 0.29 *100
ARR =29 percentage

NPV Method

Refer Table.No.7

Net Present Value = Rs.1320

IRR Method

Refer Table.No.8

IRR
PV factor = Initial cost of project / Average annual cash inflow
Initial cost of project = 2660
Average annual cash inflow = 2938+46+47+48+49+50+51+52+53+54/10
Average annual cash inflow = 338.8
PV Factor = 2660/338.8
PV factor = 7.85(In annuity table)
IRR = 5 percentage

Project 3
Pay Back Method

Refer .Table.Nno.9
Initial Outflow – 14610

PBP = 1+(14610- 10997)/32259
PBP = 1.112 years

ARR Method

Refer .Table.Nno.10
Original investment/2 = 14610/2 = 7305
ARR = Average annual net earnings / Average investment
ARR = 9695/7305
ARR = 1.313 *100
ARR = 131 percentage

NPV Method

Refer .Table.Nno.11

Net Present Value = Rs.17601

IRR Method

Refer .Table.Nno.12

PV factor = Initial cost of project / Average annual cash inflow
Initial cost of project = 14610
Average annual cash inflow = (3256)+7562+7606+8376+442+444+445+448+450+453/10
Average annual cash inflow = 9695
PV Factor = 14610/9695
PV factor = 7.85(In annuity table)
IRR = 227.95 percentage

Interpretations

Refer.Table.No.13

- Since NPV and IRR are considered to be more accurate methods in project appraisal by the company, the interpretations were made preferably from NPV and IRR.
- The study states that **Project.3** is highly feasible project on a financial point of view
- Second feasible project is the project at **Project.1**
- The P**roject.2** is less feasible though it returns the outlay at the earliest through Payback method

Conclusion

On the basis of financial appraisal of various projects a judgement is reached as to whether the project is financially justified and viable. It helps to have a overview of project management, different stages in a project, slippages in projects, Project Cost: Project budgeting, time-cost trade-off, optimum compression of project duration, Project Resource: Resource aggregation, resource profile, resource smoothing, multiple resource scheduling, means of financing.

Table.No.1

Year	Cash Inflow	Cumulative CI
1	1506	1506
2	180	1686
3	269	1955
4	212	2167
5	254	2421
6	254	2675
7	254	2929
8	305	3234
9	305	3539
10	305	3844

Table.No.2

Year	Cash flow
1	1506
2	180
3	269
4	212
5	254
6	254
7	254
8	305
9	305
10	305
Average	**384.4**

Table.No.3

Year	Cash Inflows	Dis. @15 percentage	Present Value of Cash flows (Rs.)
1	(519)	1	(519)
2	(122)	0.93	(113)
3	173	0.81	141
4	160	0.71	113
5	174	0.61	106
6	172	0.53	91
7	160	0.46	74
8	191	0.40	77
9	189	0.35	66
10	188	0.30	56
	3286	0.30	1002
	Present Value of Cash Flows		**1095**
	Add: Cost of Land		**1506**
	Net Present Value		**2601**

Table.No.4

Net Project Inflows	PV factor @ 30 percentage	PV
-519	0.769	-399.111
-122	0.592	-72.224
173	0.455	78.715
160	0.35	56
174	0.269	46.806
172	0.207	35.604
160	0.159	25.44
191	0.123	23.493
189	0.094	17.766
188	0.073	13.724
3286	0.073	239.828
	IRR	**66.041**

Table .No.5

Year	Cash Inflow	Cumulative CI
1	2938	2938
2	46	2984
3	47	3031
4	48	3079
5	49	3128
6	50	3178
7	51	3229
8	52	3281
9	53	3334
10	54	3388

Table .No.6

Year	CI
1	2938
2	46
3	47
4	48
5	49
6	50
7	51
8	52
9	53
10	54
Average	**338.8**

Table .No.7

Year	Cash Inflows	Dis. @15 percentage	Present Value of Cash flows (Rs.)
1	1088	1	1088
2	46	0.87	40
3	47	0.76	35
4	48	0.66	31
5	49	0.57	28
6	50	0.50	25
7	51	0.43	22
8	52	0.38	19
9	53	0.33	17
10	54	0.28	15
	Net Present Value		**1320**

Table .No.8

Net Project Inflows	PV factor @ 5 percentage	PV
-519	0.952	1035.78
-122	0.907	41.72
173	0.864	4061
160	0.823	39.5
174	0.784	38.42
172	0.746	37.3
160	0.722	36.26
191	0.677	35.2
189	0.645	34.19
188	0.614	33.16
	IRR	1372.14

Table .No.9

Year	Cash Inflow	Cumulative CI
1	10997	10997
2	32259	43256
3	35330	78586
4	14300	92886
5	670	93556
6	672	94228
7	675	94903
8	678	95581
9	682	96263
10	687	96950

Table.No.10

Year	CI
1	10997
2	32259
3	35330
4	14300
5	670
6	672
7	675
8	678
9	682
10	687
Average	**9695**

Table .No.11

Year	Cash Inflows	Dis. @15 percentage	Present Value of Cash flows (Rs.)
1	(3256)	1	(3256)
2	7562	0.93	7052
3	7606	0.81	6168
4	8374	0.71	5906
5	442	0.61	271
6	444	0.53	237
7	445	0.46	207
8	448	0.40	180
9	450	0.35	158
10	453	0.30	138
	Net Present Value		**17601**

Table .No.12

Year	Net Project Flows
1	(3256)
2	7562
3	7606
4	8374
5	442
6	444
7	445
8	448
9	450
10	453

Consolidated Results - Table .No.13

Methods	Project.1	Project.2	Project.3
PBP	3.47 years	0.90 years	1.11 years
ARR	51 percentage	29 percentage	131 percentage
NPV	Rs.2601	Rs.1320	Rs.17601
IRR	30 percentage	5 percentage	227.95 percentage

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