A COMPARATIVE FEASIBILITY STUDY ON DEVELOPMENT OF NEW CEMENT INDUSTRIES IN TERAI NEPAL

(WITH SPECIAL REFERENCE TO PARSA AND RUPANDEHI DISTRICT)

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RECOMMENDATION

This is to certify that the thesis

Submitted by:

Shiv Shanker Thakur

Entitled:

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has been prepared as approved by this Department in the prescribed format of the Faculty of Management. This thesis is forwarded for examination.

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and found the thesis to be the original work of the student and written according to the prescribed format. We recommend the thesis to be accepted as partial fulfillment of the requirement for

Master Degree in Business Studies (M.B.S.)

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DECLARATION

I hereby declare that the work reported in the thesis entitled "***A COMPARATIVE FEASIBILITY STUDY ON DEVELOPMENT OF NEW CEMENT INDUSTRY IN TERAI OF NEPAL* "(In comparative study of Parsa and Rupandehi of Nepal.)"** submitted to Bhairahawa Multiple Campus,Bhairahawa, Faculty of Management, Tribhuvan University is my original work done in the form of partial fulfillment of the requirement of the Degree of Master of Business Studies (M.B.S.) under the guidance and supervision of Mr.Ramraj Sharma, Lecturer of Bhairahawa Multiple Campus, Tribhuvan University.

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I have tried to cover all the possible matters that I felt, important to sum up the “A Feasibility Study on Development of New Cement Industry in Tareai of Nepal” In Comparatively place Parsa and Rupandehi District of Nepal. I am hopeful that this task will be helpful to the students of business studies & to those who want to make further researchers under this topic and the entire industrialist who wants to establish new cement industry in Nepal.

SHIV SHANKER THAKUR

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ABBRIVIATION

BEP =Break Even Point

NPV=Net Present Value

IRR =Internal Rate of Return

P/V Ratio =Profit volume ratio

CHAPTER ONE
INTRODUCTION

1.1 Background of the study

Cement is a major material for construction any building or infrastructure from very begning.It is made of clinker, flyash and calcineclay. Benign a developing country there is very high growth of construction works that leads to increase in demand of cement day to day and it will be very high in future .Similarly increase in demand of cement in current market of Nepal also leads to development of new cement industry .Feasibility analysis of any proposed industries is very important because success of organization mostly depends on good research before launching the products. And because of largely investment project, feasibility analysis is very important.

Throughout the history of cementing material it has very important role in the ancient world. The Egyptians were used to use clacined gypsum as cement. Similarly the Greek and Romans used lime made by heating limestone and added sand to make mortar, with coarser stones for concrete. And the Romans found that cement could be made which set under water and this was used for the construction of harbors. . It was made by adding crushed volcanic ash to lime and was later called”pozzolanic" cement, named after the village of Pozzuoli near Vesuvius.

1.1.1 Concept of Cement Industry

Cement is the major product of modern Nepal and all the industry which are fully involved in production and supply of cement are called cement industries. Twenty eight cement industries are currently available in Nepal out of which three are government cement industry and remaining are private industries all over the Nepal .Out of three government industries one is complete closed due to political and environment pollution i.e.Himal Cement which was first and best Zerman Technology based cement industry. However remaining cement industries have total capacity to produce cement 14,300 Mt. per day out of which 70% are daily produced which are 60% of supply of daily market

demand. Therefore about 40% of Nepalese cement market is covered by Indian Cement i.e.ACC, Prism etc and third countries i.e. Indonesia, Korea, Japan.

Followings are the some cement industries which are currently involved in production and supply of cement in Nepal.

Name of Cement Industries	IndustrialArea	Capacity/Day(Ton)
Jagdamba Cement Ind. Pvt.Ltd.	Bhairahawa	900
Brij Cement Ind.Pvt.Ltd.	Bhairahawa	1500
Siddhartha Cement Ind.Pvt.Ltd.	Bhairahawa	1000
Suprim Cement Ind.Pvt.Ltd.	Bhairahawa	500
Agni Cement Ind.Pvt.Ltd.	Bhairahawa	400
Dynesty Cement Ind.Pvt.Ltd.	Krishnanagar	400
Kailash Cement Ind.Pvt.Ltd.	Bhairahawa	150
Nepal Ambuja Cement Ind.Pvt.Ltd.	Bhairahawa	400
Nirman Cement Ind.Pvt.Ltd.	Sunwal	500
Maruti Cement Ind.Pvt.Ltd.	Mirchaiya(Janakapur)	400
Tej Cement Ind.Pvt.Ltd.	Naktajhil (Janakapur)	200
Kalash Cement Ind.Pvt.Ltd.	Birgunj(Parwanipur)	200
RMC Cement Ind.Pvt.Ltd.	Birgunj(Simra)	200
Vishwakarma Cement Ind.Pvt.Ltd.	Birgunj(Gandak)	750
Udaupur Cement Industry	Udaypur	800
Hetauda Cement Industry	Hetauda	750

Out of total capacity per day of cement production 9050 tons produced by above and remaining by others cement industries. Except above at present about 5000 Mt per day production capacity are in under construction and proposed in future to establish at different places of Nepal.

1.1.2 Need of Cement Industry

Development of new cement industry is very important in Nepal because it is developing country which will be continued up to next 3 decades. It is not only the source of fulfillment of demand of cement but also play a vital role to contribute in national income. About more than 6000 people including both Nepalese and Indian are directly employed in present cement industries of Nepal which are 20% of total employed under cement product in Nepal. So the economic growth of modern Nepal largely depends upon the development and continuity of Cement Industry in Nepa**l.**

1.2 **Statement of the problem**

Though there are numbers of the cement industries currently operated in Nepal however their supplies badly fails to fulfill the current demand or cement even the exports growth of cement is very high . So it is essential to establish new cement industry in Nepal. And being a new investor in this sector it very difficult to determine the chief and proper place for industry and to estimate the require investment amount in new industry establishment. Following are the related problem for establishment or development of the new cement industries:-

- Selection of suitable place for Industry Establishment.
- Determination of amount of Investment to be needed.
- To find the profitability of the project.
- To find the future growth of cement and cement industries in Nepal.
- Finding the sources of Raw materials.
- Study of Legal compliance of the cement industry.
- Study of government barriers and abstract as well as economic facilities provided to the industries that will operated in remote area.

Proper place for any industry is very important for its economic growth, if we select the place of the proposed cement industry then about 60% work of our study will complete. The place of the Factory effects from the Landing cost of materials to sending cost of finished goods.

Similarly investment amount of any proposed project is very important which is another big problem of the study .It helps us to how much capital should we invest for certain capacity cement industry.

As we know honey without money is impossible similarly business without growth is nothing so it's needs the growth for both investor and government of the county and estate. Therefore future growth and development with maximum profit is very important of project which another great problem of the study.

Running of any industry dose not only depends upon demand for required product but also depends upon the availability raw materials and man powers which are another

problem of the study .Similarly the study of legal aspect of the any proposed project is very important because any negligence of the investor on legal study may create unnecessary burden in future. It includes from the government facilities to barriers for the cement industries in developed and remote area.

1.3 Objectives of the Study

As we know that a man without objective is nothing in everywhere, similarly a project study without specific objective is meaningless so following are the main objective of the study:-

- To establishment of new cement industry and fulfillment of cement demand in Nepalese market so that the current import ratios of cement will reduce.
- To select the proper place for establishment of industry.
- To find out the amount of investment to be required for development of new cement industry.
- To find out the different available sources of supplies of raw materials.
- To determine the profitability of the project.
- To be sure about the future growth and stability of the cement industries in Nepal.
- To know all the legal aspect of local government for establishment of new cement industry.

1.4 Limitation of the Study

The study is done for establishing of new cement industry in Parsa and Rupandehi district due to this it is limited to cement industry only. It has been confined by taking abstract from different cement industries, website, and income tax act and from other related sources. The study has been predominantly based on primary and secondary information data collected through a questionnaire survey of limited number individuals and industries. Therefore, the findings of this study are affected to some extent by the small size of the sample. And the

study will base on 200 Mt capacity cementing mill per day at both Parsa and Rupandehi District of Nepal.

1.5 Significance of the Study

Actually every activities have their own importance on according to their use , similarly feasibility of development of new cement industry in Nepal has their own importance for those who are proposed investor in this types of industry and following are the significance or importance of the study:-

- Importance for that investor who are going to invest in cement industries by which they can easily select their place and agree to invest.
- Importance for the government to develop the new cement industries in the country by using the available resources.
- Importance for reducing the outflow of domestic currency in foreign country by establishing new cement industry and reducing import ratios of cement.

Thus feasibility study for development of new cement industry is very important in generating national income and development of infrastructure in Nepal because of only feasibility study will make possibility to establish the industry**.**

1.6 Organization of the Study

In order to conducting the study it is divided into following chapters:-

Chapter-I: Introduction :-This is the first chapter of this study which deals with the study of background ,concept of cement industry, needs of cement industry , statement of problem , Objective of the study , Significance of the study and limitation of the study .

Chapter-II : Review of Literature :-This chapter deals with the available literature review which includes theoretical review ,study of local environment , legal application study ,demand and supply study and study of competitors 'position in the market .

Chapter-III: Research Methodology :-This chapter includes the research design ,nature and sources of data , population and sample ,data analysis and organization of the study.

Chapter-IV: Data Presentation and analysis :-This chapter of the study includes the collection and presentation of data ,use various accounting ,financial tools and statistical tools to finding the result.

Chapter-V: Summary, Conclusion and Recommendation :-This chapter is the last chapter of the study which gives suggestion by providing summary result of findings ,conclusion of the study and recommendations.

Bibliography & appendixes have been included at the end of the study.

CHAPTER TWO
REVIEW OF LITURATURE

2.1 Intoduction

Review of the literature is supported to revise the eminent literature relating to the study various books, articles, journals, bulletins, reports, news, paper and theses etc.

2.2 Theoretical Review

In this chapter, the researcher aims to shed light on the relevant theoretical background of the study being under taken. It comprises the conceptual framework about the cement industries which are currently running in Nepal. This study concerned with the movement of existing cement industry and their demand and supply in Nepal .in this connection, the researcher has reviewed the history of cement industry in internate.

2.3 Review of Previous Studies

In this chapter review the various previous studies in the related matters such as :-

- A study is done on 'Minerals, Mines and Mining Activities in Nepal' by Geologist Krishna Prasad Kafle.The study is done in 2066-067. He has mainly focused on his study about the use of natural available mines in Nepal .He has also stated that in year 2066/67 the available cement industry in Nepal only can fulfill the about 40 to 50 percent of total demand and remaining demand are fulfilled from the third country including India,Japan,Indonesia,Koria etc..He wrote that Nepal has billions tones of lime stone which is major raw materials for clinker based plant(cement plant having clinker plant) in Dhankuta, Khotang, Udayapur, Sindhuli, Dolakha, Kavre, Kathmandu, Makwanpur, Dhadhing, Syangja, Palpa, Baglung, Gulmi, Arghakhanchi, Dang, Pyuthan, Sallyan, Rolpa, Rukum, Jajarkot, Surkhet, Dailekh, Jumla, Achham, Doti, Bajhang,

Bajura, Baitadi and Darchula districts in the Lesser Himalayan and in some parts of Higher Himalayan region.

Thus from the study of his study the researcher come to know that his study only encourage to those investor or industry which are clinker based industry which causes the large amount investment and required long time. For small size industry like only for cement plant nothing has been stated, therefore this is the limitation of the study.

- A study is done on 'Process of Cement Production in Nepal' by Preshraj Pandey and Narayan Baskota which is the bulletin of the department of Geology,Tribhuvan University ,Kathmandu,Nepal in 2008.And the researchers have mainly focused on their study about the production process of cement i.e. how it is produced. Also stated that in year 2008 available domestic cement industry of Nepal only can fulfill the about 35 percent of total demand. Their study also focused on lime stone based industry i.e. clinker based cement plan.

  Overall it is found that this study is also limited to Large Scale and Clinker based plant and production process of cement. Nothing has been stated about cement plant establishment feasibility.

2.4 Study of Local Environment of Parsa and Rupandehi

Basically study of local environment deals with the study of activities, attitude, behavior and political study at local level of local people on the establishment and operating of industry.

The people of Parsa District basically at industrial area have been mostly involve in criminal activities .They are badly used to touché the Industrialist and demanding money for their rangdari.Due to this reason most of the industrialist have been left the this area who do not have agree with their demand. Day to day robbery, murder, kidnapping, chiting as well as blackmailing are increasing in this area.

In comparison of Parsa District, Rupandehi is so far from robbery, Kidnapping, chitin as blackmailing .Therefore according to local environment Rupandehi District is much better for the Development of New cement Industry.

2.5 Study of Legal Aspect of for the Project in Parsa and Rupandehi

By studying the legal application about development of Industry in both district it is found that no any new industry can be developed surrounding 20 KM distance from Lumbini area at Rupandehi District because Lumbini is major source of development of Tourism Industry of Nepal and development of Industry will increase the additional pollution which may cause to decrease the arriving of tourist. But there is no any such kind of legal application in Parsa District.

2.6 Study of availability of infrastructure in Parsa and Rupandehi

The infrastructure like,electricity,transportation,communication etc. are easily available in both area .

2.7 Study of availability of raw materials in Parsa and Rupandehi

Though both area are famous for industrial area of Nepal however basically for cement industry we can easily manage raw material at cheap rate in Rupandehi District than Parsa .And it is practical that those industrialist who buy raw material at least price not only can supply the goods at cheap rate but also can maintain quality of product.

The main raw material of cement industry are clinker,flyash and Gypsum .And as we know that most of the industry of Nepal totally depends upon India for raw material. Now a day clinker which is major raw material for cement industry are produced by Nepalese Industry but these industry fails to fulfill the current demand of clinker at low cost. The main availability of these raw material in Uttar Pradesh, Madhya Pradesh, Rajasthan of India for example Gypsum is available in Rajasthan ,Flyash from UP and Clinker from UP,MP and Rajasthan and all these place is near of Rupandehi District than Parsa so the transportation cost of raw materials is very least at Rupandehi than Parsa.

2.8 Study of competitors' position in the market

Though there are numbers of competitors in the market of cement industry however I have found one demand is not affected by other supply in the current Nepalese market because of aggregate demand of cement of is greater than supply i.e. what they produce in quantity all are directly sold in the market and they donot have the time to store finished goods.

However competitors position study is very importance in the case of market and their supply .And I found that Cement Industry of Rupandehi District have major market Western,Mid.Western ,Far Western and Kathmandu and now a days in Purwanchal area also similarly Cement industry of Parsa District have demand in Purwanchal,Mid.Development,Western ,Midwestern supply market. So the industry of both are have sufficient demand of cement. And due to high demand of cement in the market the establishment new cement industry ratio is also increased day by day in Nepal.

2.9 Study of market trend of Demand and Supply of Cement

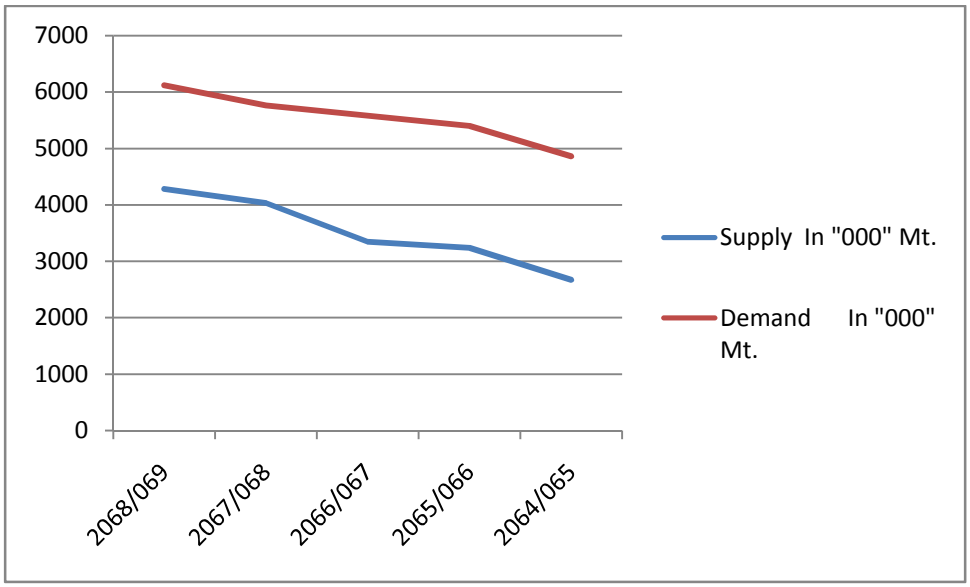
There is great major gap in between demand and supply of cement in the current Nepalese market for which I study last five year demand and supply and found following result :-

Demand & Supply of Cement of Last five

Year (Table No.-1)

Year	Supply In "000" Mt.	Demand In "000" Mt.
2068/069	4284	6120
2067/068	4032	5760
2066/067	3348	5580
2065/066	3240	5400
2064/065	2673	4860

Figure No.1,Diagramatical Presentation



As the demand of cement increases in year by year in past the supply of cement also increases however the gap is still continued which leads to establish new cement industry in Nepal.

CHAPTER THREE
RESEARCH METHODOLOGY

3.1 Introduction

The term ‘research’ is believed to be derived from the French word ‘Researcher’ meaning to search again. The research work is undertaken following a systematic way, which is called Research Methodology. As per Kother, it is the way to solve systematically about the research problem.

This chapter refers to the overall research method comprising the theoretical aspect to the collection and analysis of data. This study covers quantitative methodology in a greater extent and also cases the descriptive part based on both technical aspect and logical aspect. This study has been conducted for selection of place and for development of new cement industry comparatively in Parsa and Rupandeh district of Nepal .It includes from selection of place to measurement of profit and loss . The Research Methodology includes research design, data collection procedures and research variable and tools used.

3.2 Research design

It is complete framework or plan for conducting the study that helps to provide guideline for presentation and analysis of data, as per Kerlinger. Research design is the plan, structure and strategy of investigation conceived so as to obtain answers to research questions and control variance. This study is done for feasibility study to develop new cement industry in terai are of Nepal comparatively in Parsa and Rupandehi for evaluation of demand and supply , determining of project cost and working capital and it’s profitability ratio etc..

3.3 Nature and Sources of Data

This study mostly depends upon secondary data however primer data has been collected after visiting and discussing with different educative staffs of related field in both areas. And secondary data has been collected from internate .

3.4 Population and Sample

As this study has been conducted for feasibility study for development of new cement industry in Terai of Nepal for which two major industrial districts of Terai Nepal i.e.Rupandehi and Parsa has been taken as sample for this study.

3.5 Data analysis Tools

For the analysis and presentation of data both financial and statistical tools are used. Therefore, the data have been collected accordingly and managed, analyzed and presented in suitable tables, formats, diagrams, graphs and charts. Such presentation have been interpreted and explained wherever necessary. Financial, Accounting, Mathematical and Statistical tools are used to analyze. The presented data, which includes Ratio analysis, Percentage, Correlation coefficient, Mean, Standard deviation, Coefficient of Variance etc. analysis.

CHAPTER FOUR

DATA PRESENTATION AND ANALYSIS

4.1 Introduction

This chapter deals with the systematic presentation, Analysis, and interpretation of data; as it is major part of the research work. This is key chapter as it deals with the objectives specified in the first chapter.

As we analyze different factors regarding the project it is necessary to present the data and find the cost of capital investment and project profitability . We use accounting and financial tools to analysis the project i.e. Payback Period,NPV,IRR ,Financial ratio analysis .ta presents in systematic way in tabular forms and graphs charts and data are analyzed using statistical tool such as mean, standard deviation coefficient of variance, correlation of coefficient and Time series and budgetary tool such as ratio analysis.

4.2 Resources Mobilization

For the successes of any project total depends upon the resources mobilisation and for this project following resources are used :-

a) Equity Investment
b) Raising Loan /Bank Loan

   Out of total project investment cost 30% are collected from equity and remaining 70% of the project investment cost are collected from the bank at current rate of interest.

4.3 Capital Budgeting and Financial Analysis in Parsa and Rupandehi

The Capital Budgeting is the decision making process regarding the long term investment project weather it is profitable or not through the calculation of:-

- Pay Back Period
- NPV(Net Present Value)
- IRR (Internal Rate of Return

Pay Back Period :- It refers period of return of capital investment in year .It is one of the decision criteria of capital budgeting of any fixed investment . In comparison two or more than two project ,payback period having lower will be selected .

NPV(Net Present Value) :-It refers the present value of future income or return and it is another most effective and important criteria for decision making under capital budgeting .The project having Greater the value at present of future return will be selected under this criteria.

IRR :-Internal Rate of Return is the another important accounting tools to measure the project profitability . It means rate of return on Equity and Investment and the project having high IRR will be selected.

Under Financial Analysis of the project following financial tools will be used :-

- BEP (Break Event Point) Analysis
- Return on Capital Employed
- Return on Equity
- Net Profit Ratio
- Return on Net worth
- Debt to Total Capital Employed
- Debt to Net worth

BEP:-It is the point of no profit no loss of any project and the project having low BEP can maximised the profit . It can be calculated by using following formula :-

BEP Sales in Rs. =Fixed Cost /(P/V ratio)

Where P/V Ratio=S-V/S and S=Sales and V= Variable Cost

Return on Capital Employed :-It is ratio between net profit after tax before interest and Total Capital Employed. It can be calculated by using following formula :-

Return on Capital Employed:-Net profit after tax before Interest/Total Capital Employed (TCE)

Where TCE=Net Worth + Total Debt

Net Worth =Equity Share + Retain Earnings

TotalDebts=TermLoan+(CurrentAssets-Current Liabilities}

Return on Equity :-It is the rate of return on equity capital . In other words it is the ratio between equity share capital and net profit after tax. It can be computed by using following formula :-

ROE(Return on Equity)=Net Profit after tax/Equity share capital

Net Profit Ratio :-It deals the relationship in between Net profit before tax and Sales Revenue. Therefore it can be computed by using following formula:-

Net Profit Ratio :-Net Profit before Tax/Sales Revenue

Return on Net Worth:-It deals the relationship in between net profit after tax and total capital employed and be calculated by using following formula :-

Return on Net Worth:-Net Profit after Tax /Total Capital Employed

Debt to Total Capital Employed :-It deals the relationship in between total debt and total capital employed and can be calculated as follows :-

Debt to Total Capital Employed:-Total Debts /Total Capital Employed

Debt to Net Worth :- It deals the relationship in between Total Debt and Net Worth can be calculated by using following formula :-

Debt to Net Worth :-Total Debt /Net Worth

4.4 Performance Evaluation

Under this we evaluate the calculation of the project which helps us to make perfect decision about selection of project and it can be evaluated as follows :-

4.4.1 Accounting and financial analysis base evaluation

Table No.2

Statement of Performance Evaluation

Calculated	In Parsa (x)		In Rupandehi (y)		Acceptance
	Findings	**Sources**	**Findings**	**Sources**	
Pay Back Period	2 Years	Appendix-12	2 Years	Appendix-26	Both
NPV at 10%	404,011,787.10	Appendix-14	494,929,840.00	Appendix-28	y
IRR on Equity	174.30%	Appendix-14	209.12%	Appendix-28	y
IRR on Total Investment	60.25%	Appendix-14	71.50%	Appendix-28	y
BEP	25.54%	Appendix-06-2	22.43%	Appendix-20-2	y
Return on Capital Employed %	20.01	Appendix-13-2	20.93	Appendix-27-2	y
Return on Equity %	170.69	Appendix-13-2	206.91	Appendix-27-2	y
Net Profit Ratio %	18.01	Appendix-13-2	21.19	Appendix-27-2	y
Return on Networth %	17.41	Appendix-13-2	18.61	Appendix-27-2	y
Debt to Total Capital Employed %	19.75	Appendix-13-2	17.58	Appendix-27-2	y
Debt/Net Worth %	0.31	Appendix-13-2	0.26	Appendix-27-2	y

According to the accounting and financial analysis of the project in both Rupandehi and Parsa District we find that the pay back period of the project in both area is equal i.e.2 Years however the Performance of Rupandehi District Project is greater than the Parsa District in the measurement of of NPV , IRR on Equity, on Investment,BEP,Return on Capital Employed,Equity,Net profit Ratio,Return on Net worth ,Debt to Total Capital Employed and Debt to Net Worth.

4.4.2 Statistical Analysis base Evaluation

Table No.3

For Parsa

Following are the expenditure (Say E) and annual cash flow after tax (Say A) for statistical analysis for 10 Years

Year	1	2	3	4	5	6	7	8	9	10
Expenditure Rs. In "000000" E	351.78	403.71	455.14	506.57	505.18	503.78	502.39	501.16	500.64	500.64
CFAT Rs.In "000000" A	53.33	66.85	80.78	94.69	95.81	96.93	98.04	99.02	99.44	99.44

Calculation,

Table No.4

Calculation of Mean, Standard Deviation , Variance and Correlation Coefficient

Year	E	A	x=(E-Ē)	y=(E-Ē)2	(A-Ā)	(A-Ā)2	Xy
1	351.78	53.33	-121.319	14718.30	-35.10	1232.2206	4258.66
2	403.71	66.85	-69.389	4814.83	-21.58	465.82589	1497.62
3	455.14	80.78	-17.959	322.53	-7.65	58.568409	137.44
4	506.57	94.69	33.471	1120.31	6.26	39.150049	209.428
5	505.18	95.81	32.081	1029.19	7.38	54.420129	236.662
6	503.78	96.93	30.681	941.32	8.50	72.199009	260.696
7	502.39	98.04	29.291	857.96	9.61	92.294449	281.399
8	501.16	99.02	28.061	787.42	10.59	112.08457	297.082
9	500.64	99.44	27.541	758.51	11.01	121.15405	303.144
10	500.64	99.44	27.541	758.51	11.01	121.15405	303.144
N=10	∑E=4730.99	∑A=884.33		∑(E-Ē)2= 26108.88		∑(A-Ā)2= 2369.07	∑xy= 7785.28

Now,
Mean of
Expenditure(Ē)= ∑E/N
= 4730.99/10
= 473.099

i.e.in RS. = 473,099,000.00

Mean of Income
(Ā) =∑A/N
= 884.33/10
= 88.433
i.e.in Rs. = 88,433,000.00

For
Standard Deviation and Variance Calculation

Stabdard Devuation of Expenditure(б)e = $\sqrt{\sum(E-\bar{E})2/N}$
= $\sqrt{26108.88/10}$
= 51.1

Variance (б)2 = 51.1x51.1
= 2611.21

Standard Deviation of Income (б)a $\sqrt{\sum(A-\bar{A})2/N}$
= $\sqrt{2369.07/10}$
= 15.39

Variance (б)2 = 15.39x15.39
= 236.85

For Calculation of Correlation Coefficient between income and expenditure
By using Actual Mean Method
Coefficient of Correlation (R)xy = $\sum xy/\sqrt{\sum(E-\bar{E})2}\sqrt{\sum(A-\bar{A})2}$
= 7785.28/√26108.88*√2369.07
= 7785.28/(168.58*48.67)
= 7785.28/8204.79
= 0.95

The coefficient of correlation between expenditure and income in Parsa District is positivie i.e.Net profit of the project 95% depends up on the expenditure in Parsa and remaining by others factors.

Rupandehi

Table No.5

Following are the expenditure (Say E) and annual cash flow after tax (Say A) for statistical analysis for 10 Years

Year	1	2	3	4	5	6	7	8	9	10
Expenditure Rs. In "000000" E	338.48	388.27	437.55	486.85	485.49	484.13	482.77	481.58	481.07	481.07
CFAT Rs.In "000000" A	63.97	79.21	94.84	110.47	111.56	112.65	113.73	114.69	115.09	115.09

Calculation, Table No.6

Calculation of Mean, Standard Deviation , Variance and Correlation Coefficient

Year	E	A	x=(E-Ē)	y=(E-Ē)2	(A-Ā)	(A-Ā)2	Xy
1	338.48	63.97	-134.619	18122.28	-24.46	598.4384	3293
2	388.27	79.21	-84.829	7195.96	-9.22	85.06373	782.4
3	437.55	94.84	-35.549	1263.73	6.41	41.04965	-227.8
4	486.85	110.47	13.751	189.09	22.04	485.6294	303
5	485.49	111.56	12.391	153.54	23.13	534.8581	286.6
6	484.13	112.65	11.031	121.68	24.22	586.4631	267.1
7	482.77	113.73	9.671	93.53	25.30	639.9382	244.6
8	481.58	114.69	8.481	71.93	26.26	689.43	222.7
9	481.07	115.09	7.971	63.54	26.66	710.5956	212.5
10	481.07	115.09	7.971	63.54	26.66	710.5956	212.5
N=10	∑E=4547.26	∑A=1031.3		∑(E-Ē)2= 27338.80		∑(A-Ā)2= 5082.06	∑xy= 5597

Mean of Expenditure(Ē)= ∑E/N

= 4547.26/10

= 454.726

i.e.in RS. = 454,726,000.00

Mean of Income (Ā) ∑A/N

=

= 1031.3/10

= 103.13

i.e.in

Rs. = 103,130,000.00

For

Standard Deviation and Variance Calculation

Standard Deviation of Expenditure(б) e = $\sqrt{\sum(E-\bar{E})2/N}$

= $\sqrt{27338.80/10}$

= 52.29

Variance (б)2 = 52.29x52.29

= 2734.24

Standard Deviation of Income (б) a $\sqrt{\sum(A-\bar{A})2/N}$

= $\sqrt{5082.06/10}$

= 22.54

Variance (б)2 = 22.54x22.54

= 508.05

For Calculation of Correlation Coefficient between income and expenditure

By using Actual Mean Method

Coefficient of Correlation (R)xy = $\sum xy/\sqrt{\sum(E-\bar{E})2\sqrt{\sum(A-\bar{A})2}$

= 5596.83/√27338.80*√5082.06

= 7785.28/(165.34*71.29)

= 7785.28/11787.09

= 0.66

Since there is positive correlation coefficient in between expenditure and income in Rupandehi.i.e. 66% income of the project affected by expenditure and remaining by other factors.

So, according to the statistical analysis of the project in both areas Rupandehi is better than Parsa because dependency income on expenditure in Parsa is very high.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMANDATION

The last chapter of this study is summary, conclusions and recommendations developed from the comparative analysis of various aspects of the profit planning of the project in two areas of Terai of Nepal. After completing the basic analysis required for the study the final and the most important tasks of the researcher is to be summarized the study and recommended for the further importance. This would be meaningful to the proposed investor in cement industry in Nepal and get the determined goal of the project.

5.1 Project at a Glance

In Parsa

Name of Project	Development of New Cement Industries				
Proposed	Clinker,Gypsum,Flyas/Slag	Input	:	73,440	MT
	Cement	Output	:	72,000	MT
	Average Selling Rate	Per Bag	:	Rs. 478.00	Cement
Plant Location	Place		:	Birgunj Industrial Area	
	District		:	Parsa	
	Zone		:	Narayani	

Principal raw materials required, source and landed cost	**Material**	**Source**	**Landed Cost (Rs./MT)**
	Clinker	From India(MP,Rajasthan)	8,500.00

	Gypsum	From India(Rajasthan)	3,300.00
	Slag	From India(MP,Rajasthan)	3,300.00
	Empty Bags	Procured in Nepal (Per Bag)	18.00
Land Requirement	Land	: 60	Kattha
Power	500	: K VA	
Water Requirement	500 m^3/day	…….	
Human Resources	Total Man Power	: 42	Nos.
Process	Dry process single Rotary Kiln		
Project Implementation Period	.	Six months	
Key Assumptions made for financial analysis	Debt Equity Ratio (LTL)	70%	30%
	Debt Equity Ratio (STL)	70%	30%
	Interest Rate (LTL)	12%	p.a.
	Interest Rate (STL)	12.5%	p.a.
	Effective Construction Period	6	Months
	Loan Repayment Period	8	Years

	Corporate Tax rate	20.00%
Fixed Investment	**Description**	**Cost (Rs.)**
	LAND & LAND DEVELOPMENT	24,500,000
	BUILDING & OTHER CIVIL WORKS	18,000,000
	PLANTS, MACHINERY & EQUIPMENTS	70,560,000
	FURNITURES, FIXTURES AND OFFICE EQUIPMENT	240,000
	VEHICLES	2,000,000
	PRE-OPERATING EXPENSES	1,000,000
	Total Project cost	**116,300,000**
	Say (Rs. Crores)	12
Financing Structure	The financing of the project has been considered on the basis of Debt: Equity ratio 70:30 to be met as under:	
	Description	**Amount (Rs.)**
	· Equity	49,253,546
	· Debt	114,924,940
	GRAND TOTAL	**164,178,485**

Discounted cash analysis	The discounted cash flow analysis for the proposed project reveals the following:		
	IRR on total investment	60.25%	
	IRR on Equity	174.30%	
	Payback period considering total investment	2.00	
	Net present value (at 10% discount rate)	404,011,787	
	Benefit cost ratio	447.39%	
	Average Debt service coverage ratio (DSCR)	10.92	
	Project Breakeven %	25.54	
	Cash Breakeven %	34.83	
Sensitivity Analysis	Sensitivity analysis has been carried out to assess the impact of certain conditions on breakeven points		
	The parameters considered and breakeven points are summarized below:		
	Description	**Project**	**Cash**
	10% increase in Variable Cost	74.94	41.83
	10% increase in Fixed Cost	68.63	41.06
	10% decrease in sales revenue	85.17	47.54

	10% increase in Variable & Fixed Cost and 10% decrease in sales revenue	121.45	72.67
Conclusion	Based on findings in various chapters of the report and the financial analysis carried out, the proposed project is technically feasible and financially viable		
Recommendations	**In view of the aforesaid details, the proposed project found to be very prosperous and lucrative. Hence the speedy implementation of the proposed project is being recommended along with the requisite action points being enumerated in various chapters of this report.**		

In Rupandehi

Name of Project	Development of New Cement Industries in Terai of Nepal				
Proposed	Clinker,Gypsum,Flyas/Slag	Input	:	73,440	MT
	Cement	Output	:	72,000	MT
	Average Selling Rate	Per Bag	:	Rs. 478.00	Cement
Plant Location	Place		:	Bhairahawa	
	District		:	Rupandehi	
	Zone		:	Lumbini	

Principal raw materials required, source and landed cost	**Material**	**Source**	**Landed Cost (Rs./MT)**
	Clinker	From India(MP,Rajasthan)	8,000.00

	Gypsum	From India(Rajasthan)	3,200.00
	Slag	From India(MP,Rajasthan)	3,200.00
	Empty Bags	Procured in Nepal (Per Bag)	18.00
Land Requirement	Land	: 60	Kattha
Power	500	:	KVA
Water Requirement	500 m^3/day	…….	
Human Resources	Total Man Power	: 42	Nos.
Process	Dry process single Rotary Kiln		
Project Implementation Period	.	Six months	
Key Assumptions made for financial analysis	Debt Equity Ratio (LTL)	70%	30%
	Debt Equity Ratio (STL)	70%	30%
	Interest Rate (LTL)	12%	p.a.
	Interest Rate (STL)	12.5%	p.a.
	Effective Construction Period	6	months
	Loan Repayment Period	8	Years

	Corporate Tax rate	20.00%
Fixed Investment	**Description**	**Cost (Rs.)**
	LAND & LAND DEVELOPMENT	21,500,000
	BUILDING & OTHER CIVIL WORKS	18,000,000
	PLANTS, MACHINERY & EQUIPMENTS	70,560,000
	FURNITURES, FIXTURES AND OFFICE EQUIPMENT	240,000
	VEHICLES	2,000,000
	PRE-OPERATING EXPENSES	1,000,000
	Total Project cost	**113,300,000**
	Say (Rs. Crores)	11
Financing Structure	The financing of the project has been considered on the basis of Debt: Equity ratio 70:30 to be met as under:	
	Description	**Amount (Rs.)**
	· Equity	47,735,945
	· Debt	111,383,871
	GRAND TOTAL	**159,119,815**

Discounted cash analysis	The discounted cash flow analysis for the proposed project reveals the following:		
	IRR on total investment	71.50%	
	IRR on Equity	209.12%	
	Payback period considering total investment	2.00	
	Net present value (at 10% discount rate)	494,929,840	
	Benefit cost ratio	536.83%	
	Average Debt service coverage ratio (DSCR)	13.00	
	Project Breakeven %	22.43	
	Cash Breakeven %	34.83	
Sensitivity Analysis	Sensitivity analysis has been carried out to assess the impact of certain conditions on breakeven points		
	The parameters considered and breakeven points are summarized below:		
	Description	**Project**	**Cash**
	10% increase in Variable Cost	74.94	41.83
	10% increase in Fixed Cost	68.63	41.06
	10% decrease in sales revenue	85.17	47.54

	10% increase in Variable & Fixed Cost and 10% decrease in sales revenue	121.45	72.67
Conclusion	Based on findings in various chapters of the report and the financial analysis carried out, the proposed project is technically feasible and financially viable		
Recommendations	**In view of the aforesaid details, the proposed project found to be very prosperous and lucrative. Hence the speedy implementation of the proposed project is being recommended along with the requisite action points being enumerated in various chapters of this report.**		

5.2 Summary:

The prosperity of every developing country can only be ensured by its economic growth. And Nepal benign a developing country the development of cement industry plays vital role in economic growth of the country. So the study not only covers the selection of place in Nepal for establishment of new cement industry but also covers the profit planning aspect of the project.

This study tries to say to select the Rupandehi District of Nepal for developing of new cement industry because of environment of the area , location of the area, landing cost of the raw materials purchased from India and the profit planning of the project. It also deals the demand and supply of the cement in past five years and their gap i.e demand of people of cement in Nepal always greater than supply of Nepalese cement due to that growth of cement industry in Nepal is very high as per increase in year .Similarly as the demand is greater than supply there is less competition in between competitors.

Both commercial bank and financial banks are ready to finance for cement project. Because payback period of the project is very low i.e. 2 years in both area similarly capacity of repayment of loan by the project is also favourable so in all cases the project is profitable not only for those who are proposed investors but also for those who are existing investor of the project in Nepal and for

government of Nepal to generate their National income through excise, vat ,TDS and income tax.

This study has tried to cover the various aspects of Budgeting and profit planning of the cement project in two area of Nepal to developed new cement industries therefore this study basically focus on selection of place for development of new cement in Terai of Nepal.

The study is based on secondary as well as primary data. So various books, annual reports of the existing cement industry through different sources. Internet and websites have used to collect the secondary data and telephonic talk, visiting to the staffs and by doing work primary data has been collected.

5.3 Conclusion

The effective management of any project is the major reason for success of the project and new development of new cement industry in Nepal ultimately helps in economic growth of the country. Though both areas are famous for industrial area of Nepal however according to comparative study of the project we find Rupandehi is much better for development of new cement industry.

The following conclusions can be drawn on the basis of the study on development of new cement industry in terai of Nepal.

- The existing industry has low supply than the demand of cement in the Nepalese market.
- The project requires about 116 millions as fixed investment capital and 47.8 millions as working capital.
- The financing structure of the project is 30 % from equity and remaining 70 from loan financing.
- The raw materials for the project easily available in both India and Nepal. And Rupandehi is near of production place of raw material than Parsa.
- The return of project is very high because pay back period of the project is 2 two years only.

- The Net profit of the project in Parsa mostly depends up on expenditure than in Rupandehi.
- According to demand and supply of existing cement in Nepal it has good growth in future.
- Though in Rupandehi there is government restriction for development of any industry which can create air pollution surrounding 20 km of Lumbini but there is no government restriction in Parsa.
- According to financial analysis it is carried out that the proposed project is technically feasibility.

5.4 Recommendation

Recommendations are the final output of the whole study. It helps to convey positive information and proper way of improvement to concern industries. Following suggestion and recommendation can be advanced to overcome weakness, inefficiency and satisfactory for development and operation of new cement industry.

In the internal management and personal part:

- Level wise specific job description and responsibility assignment should be mentioned clearly in any industry.
- The proposed investor should follow the instruction of government regarding industry development.
- The require raw material can be purchased from Nepal and India but they should only consider the price but also consider the quality of raw materials.
- There is no labor union problem in such type of industry.
- The management should follow the incentive wage management.
- They should continually maintain the quality of cement .

In the business part:

- They should develop channel of finished goods distribution**.**

- Time to time different kinds of scheme should be imposed in the market to the dealer.
- They should be watch dog for their competitors in the market to see their policy and market trend.
- They should make good relationship with their dealer.
- Attractive and effective advertising policy should follow not to sale the cement but to give the information to public about the product.

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Cement Production Process

The production process of cement divided into five steps and they are as follows :-

Cement Production Process

Step :-1 Raw Materials Stocking

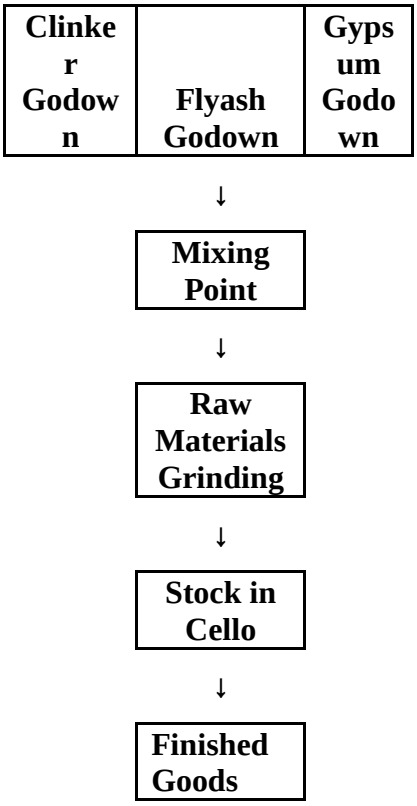
Step :-2 Raw Materials Mixing

Step :-3 Raw Materials Grinding

Step :-4 Cement Stock in Cello

Step :-5 Finished Goods

Figure No.2, Production Process Chart



Appendix