A STUDY ON COST BENEFIT ANALYSIS ON MAKE OR BUY DECISIONS ON PROCUREMENT OF RAW MATERIALS & CAPITAL EQUIPMENTS IN LAFARGE CONCRETE & AGGREGATES INDIA PVT LTD,COIMBATORE

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KUMARAGURU COLLEGE OF TECHNOLOGY

COIMBATORE.

A PROJECT REPORT

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for the award of the degree of

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KCT BUSINESS SCHOOL

DEPARTMENT OF MANAGEMENT STUDIES

KUMARAGURU COLLEGE OF TECHNOLOGY

COIMBATORE.

BONAFIDE CERTIFICATE

Certified that this project entitled **'A STUDY ON COST BENEFIT ANALYSIS ON MAKE OR BUY DECISIONS ON PROCUREMENT OF RAW MATERIALS AND CAPITAL EQUIPMENTS IN LAFARGE CONCRETE & AGGREGATES INDIA PVT LTD, COIMBATORE'** is a bonafide work of **Mr. K.Manikandan (Reg No: 0820400023),** who carried out this research under my supervision. Certified further, that to the best of my knowledge the work reported herein was not from part of any other project report or dissertation on the basis of which a degree or award was conferred on an earlier occasion on this or any other candidate.

PROJECT GUIDE

Sr.Lecturer.Ms.S.Sangeetha.

DIRECTOR

Dr.S.V.Devanathan Ph.D.

Evaluated and Viva-Voce held on.....

EXTERNAL EXAMINER

INTERNAL EXAMINER

Declaration

DECLARATION

I, hereby declare that this project report entitled as **"A STUDY ON COST BENEFIT ANALYSIS ON MAKE OR BUY DECISIONS ON PROCUREMENT OF RAW MATERIALS AND CAPITAL EQUIPMENTS IN LAFARGE CONCRETE & AGGREGATES INDIA PVT LTD, COIMBATORE"**, has undertaken for academic purpose submitted to Anna University in partial fulfilment of requirement for the award of the degree of Master of Business Administration. The Project report is the record of the original work done by me under the guidance of **Sr.Lecturer. Ms.S.Sangeetha**, during the academic year 2009 - 2010.

I, also declare hereby, that the information given in this report is correct to the best of my knowledge and belief.

Place: COIMBATORE

Date: 14-06-10

(K.MANIKANDAN)

EXECUTIVE SUMMARY

Lafarge Aggregates & Concrete India Pvt,Ltd, Coimbatore is a Ready-Mix Concrete Producing company. where the raw materials are Cement , River Sand, Stone Aggregates, Water, Transit Mixer for Delivery. The Researcher found that the Lafarge company is investing much higher amount in Raw Materials Procurement. The Researcher took Water and Transit Mixer for his Cost-Benefit Analysis to reduce the Cost incurred while Procuring the Raw Materials. By doing the Analytical and Cost-Benefit Analysis study the Researcher found the difference between Hiring and Purchasing of the Transit Mixer and the difference between the Purchase of Water from Suppliers and the Owning of Desalination Plant in the Company itself. The Analysis inferred that Transit Mixer will PayBack the initial Investment cost within 6 years and the Desalination Plant will PayBack the initial Investment cost within 3 years. The Researcher found that by installing these Two Machineries in their plant they will save Rs.1 lakhs every month. This study suggested that the company will definitely get the profit by installing the machineries. The Researcher said that it is better to install the Desalination Plant in the 1st year and purchase a Transit Mixer at the end of third year

Acknowledgement

ACKNOWLEDGEMENT:

First I thank the almighty **God**, without whom nothing is made possible in this universe. It is only by his blessings I have crossed the difficulties easily in my path and reached the goal of success. Then I thank my parents who are the backbone in shaping my future.

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I acknowledge my sincere thanks to all staff members and my friends for their various ideas and kind cooperation.

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Introduction

CHAPTER 1

INTRODUCTION

.1 BACKGROUND OF STUDY

Background research refers to accessing the collection of previously published and nnpublished information about a site, region, or particular topic of interest and it is the first step f all good archaeological investigations, as well as that of all writers of any kind of research aper.

Background research may include some combination of conducting a review of the rchaeological literature, obtaining copies of current topographic maps and aerial photos, btaining copies of historic maps and plats of the region, and interviewing archaeologists who ave conducted work in the area, local landowners and historians, and members of indigenous ribes who may have knowledge about your area.

Cement and concrete products comprise the largest share of construction materials worldwide. The widespread usage of cement and concrete in construction can be attributed to their abundance, durability, and relatively low price. Demand for these products has grown in tandem with world population and development. The annual concrete production worldwide is estimated at 6 billion tons, or more than 1 tonne per person. An increasing population density over the years has generated a greater demand more infrastructure and inputs necessary for its construction such as cement and concrete

EFINITION

Cost-benefit analysis is a term that refers both to:

- helping to appraise, or assess, the case for a project or proposal, which itself is a process known as project appraisal; and
- an informal approach to making economic decisions of any kind.

Benefits and costs are often expressed in money terms, and are adjusted for the time value of money, so that all flows of benefits and flows of project costs over time (which tend to occur at different points in time) are expressed on a common basis in terms of their "present value." Closely related, but slightly [different, formal techniques include cost-effectiveness analysis, economic impact analysis, fiscal impact analysis and Social Return On Investment (SROI) analysis. The latter builds upon the logic of cost-benefit analysis, but differs in that it is explicitly designed to inform the practical decision-making of enterprise managers and investors focused on optimizing their social and environmental impacts. Cost-benefit Analysis is also used in Decision Architecture to justify investment decisions.

Principles of Cost Benefit Analysis

- There Must Be a Common Unit of Measurement
- CBA Valuations Should Represent Consumers or Producers
- Valuations As Revealed by Their Actual Behavior Benefits Are Usually Measured by Market Choices
- Gross Benefits of an Increase in Consumption is an Area Under the Demand curve
- Some Measurements of Benefits Require the Valuation of Human Life
- The Analysis of a Project Should Involve a *With* Versus *Without* Comparison
- Cost Benefit Analysis Involves a Particular Study Area
- Decision Criteria for Projects

2. REVIEW OF LITERATURE

[1]" Matthew Civil inferred that Transpower has undertaken an economic assessment of ıe development options for Pole 1 of the HVDC link. This economic analysis is to be consistent ʏith the Grid Investment Test as required for investment proposals submitted to the Electricity ɔommission under Grid Upgrade and Investment provisions of Part F of the Electricity ɡovernance Rules. All the analysis was carried out by Transpower personnel with specific inputs ɾom planning and asset engineering groups. The results of these analyses will form the basis of ɐcommendation to Transpower Board and for grid upgrade plans."

[2] Donna M. Booker, Andrea R. Drake, Dan L. Heitger are found that The development of ıew products that satisfy customer needs in a costeffective manner is key to survival for many ɔrganizations. The role that cost information plays in new product development (NPD), such as ts effect on designers' focus and crucial NPD performance measures, is unclear. This ɐxperimental study extends existing accounting NPD research by investigating the effect of two ɐvels of cost information precision (specific versus relative) and new products (radical versus ncremental) on designers' focus and two common NPD performance measures: product cost and ɔroduct features. The results indicate that compared to relative cost information, specific cost ınformation increases designers' focus on cost minimization for incremental but not radical ɔroducts. However, providing designers with specific cost information results in moıe cost-ɐffective designs for both types of products. In addition, contrary to expectations, more cost-ɐffective designs do not come at the expense of reduced product features. The results show that the role played by cost information in NPD is more complex than has been suggested in prior literature.

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[1]Matthew Civil, HVDC Inter-Island Link Upgrade Project Investment Proposal Cost Benefit Analysis, Review of HVDC Upgrade Proposal, 8 July 2005,p1-33.

[2]Donna M. Booker *University of Cincinnat* ,Andrea R. Drake *University of Cincinnat,* Dan L. Heitger *Miami Universit,* New Product Development: How Cost Information Precision Affects Designer Focus and Behavior in a Multiple Objective Setting, *BEHAVIORAL RESEARCH IN ACCOUNTING* Volume 19, 2007,p. 19–41

[3] RAJIV KUMAR SHARMA, DINESH KUMAR and PRADEEP KUMAR are inferred that The aper aims to describe a structured framework to implement, sustain and manage a quality-osting program in a process industry. After briefing about the advantages and disadvantages of arious cost accounting approaches practiced by the industries, the authors described the need for ttaching fuzziness to the notion of 'quality'. The proposed approach is discussed with the help f a case from paper industry. After obtaining expert elicitation, the imprecise, vague, and omplex information related to quality cost items (under four key cost segments, i.e. prevention P], appraisal [A], Internal failure [IF], and external failure [EF]) is synthesized using well-stablished principles of fuzzy set theory. To help the management in successful implementation f quality cost accounting system (QCAS) five alternatives for each cost category were onsidered. By obtaining the priority values with respect to various alternatives the mplementation program was revived. The comparative analysis carried out after collecting the nformation under PAF cost segments showed a progressive and significant change in quality osts.

[4] Eva Labro, Mario Vanhoucke analyze that Cost accounting systems provide accurate osts only under stringent conditions. However, we know little about the nature, level, and bias of costing errors. This paper reports the results of a simulation study of two-stage cost allocation ystems that provide the following main insights: (1) partial improvement in the costing system sually increases the overall accuracy of reported product costs except in specific cases dentified in this paper where errors have an offsetting effect, most notably when there is aggregation error in the activity cost pools and measurement error in the resource drivers; (2) the impact of Stage II costing errors on overall accuracy is stronger than that of Stage I errors, so system refinements should focus on Stage II; and (3) the presence of aggregation and measurement errors usually results in relatively more products being under- than over-costed, with large amounts of over-costing for a few ''big-ticket'' (in dollar terms) products, and small amounts of under-costing for a larger number of less expensive products.

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[3]RAJIV KUMAR SHARMA*, DINESH KUMAR and PRADEEP KUMAR Quality costing in process industries through QCAS: International Journal of Production Research, Vol. 45, No. 15, 1 August 2007, p3381–3403

[4]Eva Labro, Mario Vanhoucke , A Simulation Analysis of Interactions among Errors in Costing Systems, *THEACCOUNTING REVIEW* Vol. 82, No. 4 2007 pp. 939–962

[5] James E. Prieger found that Increases in costs may have interesting, non-obvious effects n industry entry and exit. Three cases are possible when costs rise: the competitor neutral case, n which entry decreases and exit increases, entrant favoring, in which entry and exit both ncrease, and incumbent favoring, in which entry and exit both decrease. The model places estrictions on which outcomes are possible given which costs rise (marginal or fixed). The nodel can be used to examine the impacts of cost increasing regulation or exogenous process nnovation on industry entry and exit.

[6] ROBERT W. STONE, DAVID J. GOOD AND LORI BAKER-EVELETH are inferred that The perceived impacts of information technology use on firm marketing organization performance are examined. A theoretical model is presented linking organizational and end user traits, information quality, system/service quality, industry traits, and tasks performed using a system to perceptions of organizational performance impacts through ease of system use, perceived individual performance impacts (i.e. perceived usefulness), attitudes toward using the system, and system use. The empirical examination uses a mail survey of US marketing executives to collect the data. The quantitative technique used is structural equation modeling. The results indicate that measures of organizational traits, individual traits, information quality, system/service quality, and tasks performed using the system impact perceived performance of the marketing organization mediated individual performance impacts (i.e. perceived usefulness), attitudes toward using the system, and system use. Managerial implications and conclusions are presented based upon these results.

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[5]James E. Prieger, The Impact of Cost Changes on Industry Entry and Exit, Received March 2, 2006; revised version received September 11, 2006 Published online: May 14, 2007 @Springer-Verlag 2007, Vol. 91 (2007), No. 3, pp. 211–243 DOI 10.1007/s00712-007-0245-7

[6] ROBERT W. STONE, DAVID J. GOOD and LORI BAKER-EVELETH, The impact of information technology on individual and firm marketing performance, Behaviour & Information Technology, Vol. 26, No. 6, November – December 2007, 465 – 482

[7]Bob Scarlett explains the concept of life-cycle costing and discusses its applications in ivestment decision-making and financial control. The idea behind life-cycle costing (LCC) is mple enough. When calculating the cost of some activity - for example, developing a new roduct or installing a new IT system - it's important to consider not only the initial cost but also ie total cost to be incurred over the lifetime of that product or system. The lifetime cost is likely) include equipment maintenance, the replacement of parts, staff training, system upgrades and) on. The cost of doing anything is rarely a one off, up-front expenditure. More commonly. ndertaking some action involves a continuing commitment over the whole life of the action and ts outcome

[8] H. WAGNER, A. DAINTY, R. HAGUE, C. TUCK and M. H.ONG are analyze that Rapid manufacturing (RM) is an emerging technology that is set to revolutionize how products re manufactured. Past research has centred on processes, materials and costing, neglecting the vital issue of how the implementation of this new technology will affect the skills of workers. This work aims to evaluate how the skills of professionals working in the field of prosthetics are likely to be affected by the introduction of RM. Currently a highly skilled, manual process, this paper explores the hypothesis that the manufacture of prosthetic sockets would change fundamentally with the introduction of RM technology. This was evaluated through the use of the job characteristics model, which assesses the skills change and job satisfaction implications of applying new technology to traditional manufacturing processes. Conclusions showed that RM would have a significant impact on job roles in the prosthetics industry. Analysis found a positive outlook for the prosthetist, with the new technology increasing computer-based skills, and traditional prosthetic skills continuing to be used. The prosthetic technician bears the major impact, deskilled by the loss of many of the craft skills. However, the new role may appeal to the younger generation, and lowered skill requirements may help increase prosthetics services worldwide.

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[7], Bob Scarlett "Life-cycle costing – activity based costing examined", *Management Accounting,* June 1994. *Life Cycle Costing,* The Office of Government Commerce, vol.4,p1-20.

[8] H. WAGNER, A. DAINTY, R. HAGUE, C. TUCK and M. H. ONG Rapid Manufacturing Research Group, Wolfson School of Mechanical and Manufacturing Engineering, Loughborough University, Loughborough, LE11 3TU, UK Department of Civil and Building Engineering, Loughborough University, The effects of new technology adoption on employee skills in the prosthetics profession, International Journal of Production Research, Vol. 46, No. 22, 15 November 2008, 6461–6478

[9] TOM MCLEAN & THOMAS TYSON are inferred that As information becomes more widely ccessible, the value from the use of the information increases, and the demand for new insights ises. Eventually, most organizations will work to align the data with performance measurement nd compensation systems. When this occurs, the bank is able to more fully align decision-naking around a single source of the truth; discussion shifts quickly from arguing about the ccuracy and consistency of the information, to learning what the information *means* and how it an be used in decision-making. When value is created through costing initiatives, it is critical hat the value be measured. Often, teams identify potential savings or profit improvement pportunities but fail to implement them. Only when decisions are actually made and results ccur can true value actually accrue to the organization. As is often said, what gets measured gets done.

[10] ROBERT W. STONE, DAVID J. GOOD and LORI BAKER-EVELETH are found that The perceived impacts of information technology use on firm marketing organization performance are examined. A theoretical model is presented linking organizational and end user traits, information quality, system/service quality, industry traits, and tasks performed using a system to perceptions of organizational performance impacts through ease of system use, perceived individual performance impacts (i.e. perceived usefulness), attitudes toward using the system, and system use. The empirical examination uses a mail survey of US marketing executives to collect the data. The quantitative technique used is structural equation modeling. The results indicate that measures of organizational traits, individual traits, information quality, system/service quality, and tasks performed using the system impact perceived performance of the marketing organization mediated individual performance impacts (i.e. perceived usefulness), attitudes toward using the system, and system use. Managerial implications and conclusions are presented based upon these results.

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[9] TOM MCLEAN & THOMAS TYSON, Standard Costs, Standard Costing and the Introduction of Scientific Management, Accounting, Business & Financial History,Vol. 16, No. 3, 389–417, November 2006

[10] ROBERT W. STONE, DAVID J. GOOD and LORI BAKER-EVELETH, The impact of information technology on individual and firm marketing performance, Behaviour & Information Technology, Vol. 26, No. 6, November – December 2007, 465 – 482

.3 OBJETIVES OF THE STUDY

- To study the Cost Benefit Analysis on Make or Buy Decision on Procurement of Raw Materials and Capital Equipments in Lafarge Concrete & Aggregates India pvt ltd, Coimbatore
- To make the Alternative Decisions that deliver the best value to the company to reduce the Cost incurred in Hiring the Machineries

.4 STATEMENT OF THE PROBLEM

In this study the researcher has taken the raw materials consumption of Lafarge Concrete & Aggregates India pvt ltd, Coimbatore For the period of 1 year from January 2009 to December 2009. The Researcher found that the company is spending more amounts while consuming the raw materials. Their important raw materials are,

. Cement

. River Sand

. Stone Aggregates

. Water

. Transit Mixer for Delivery

The company invest more amounts in Water and Transit Mixer while producing and delivering the Ready-Mix Concrete. So, the researcher decide to reduce the raw material cost by conducting an analytical and cost-benefit analysis on the raw material procurement and capital equipments

.5 SCOPE OF THE STUDY

- The scope of the study gives better ideas to the researcher to analyze the cost benefit analysis of the company
- The analytical study lead the researcher to analyze the financial performance for the company
- From the study the researcher will provide suggestion to the company to reduce the raw material costs

.6 RESEARCH METHODOLOGY

) TYPE OF THE STUDY

The type of study considered for the research work is exploratory and analytical tudy. In analytical research, the researcher has to use facts or information already available, and nalyze these to make a critical evaluation of the material. This is an Analytical study.

) SOURCE OF DATA COLLECTION

Secondary data- the Financial details and the Raw material Procurement Details collected hrough the Financial Reports, Websites n etc. So, The data collection method is a secondary data collection

Primary data – the Maintenance cost of the Transit Mixer is not available anywhere. That has been collected through having the personal discussion with transit Mixer suppliers. So, It is considered as Primary Data

c) PERIOD OF STUDY

The period of study of the project work is January 2009-december 2009

d) TOOLS USED

- Cost benefit analysis
- Net present value
- Payback period

ost-Benefit Analysis

Cost-benefit analysis is used for determining which alternative is likely to provide the reatest return for a proposed investment. Sometimes referred to as cost-effectiveness analysis, it s relevant to businesses as well as to not-for-profit entities and governmental units.

A business might find it helpful to use cost-benefit analysis to determine if additional unds should be invested in a facility in the home country or in another country. A community ıot-for profit organization that provides a variety of programs for children might use cost-benefit ınalysis to assist management in determining which activities will provide the most services for he costs specified. A federal governmental agency might use cost-benefit analysis to determine which of several projects planned for the national parks is likely to be most used, given the costs, by interested citizens.

Because resources such as money and time are limited, an organization usually cannot undertake every project proposed. To decide whether to undertake a project, decision makers weigh the benefits from the project against the cost of the resources it requires, normally approving a project when its benefits exceed its costs. Cost-benefit analysis provides the structure and support for making such decisions.

Benefits increase the welfare of the organization. Some benefits are monetary benefits, such as the dollar amount of cash inflows from additional sales of a product or the saving in cash outflows that a project enables. Other benefits are important but harder to quantify. For example, a project may increase customer satisfaction; increased customer satisfaction may increase future sales, but the exact relationship between sales and satisfaction is often hard to specify.

Costs are the outlays or expenditures made in order to obtain a benefit. Many costs are measured monetarily, such as the cost of buying a new machine or of hiring an additional employee.

Net Present Value (NPV)

In finance, the net present value (NPV) or net present worth (NPW) of a time series of cash flows, both incoming and outgoing, is defined as the sum of the present values (PVs) of the individual cash flows. In case when all future cash flows are incoming (such as coupons and principal of a bond) and the only outflow of cash is the purchase price, the NPV is simply the PV of future cash flows minus the purchase price (which is its own PV). NPV is a central tool in discounted cash flow (DCF) analysis, and is a standard method for using the time value of money to appraise long-term projects. Used for capital budgeting, and widely throughout economics, finance, and accounting, it measures the excess or shortfall of cash flows, in present value terms, once financing charges are met.

The NPV of a sequence of cash flows takes as input the cash flows and a discount rate or discount curve and outputting a price; the converse process in DCF analysis, taking as input a sequence of cash flows and a price and inferring as output a discount rate (the discount rate which would yield the given price as NPV) is called the yield, and is more widely used in bond trading.

ormula

Each cash inflow/outflow is discounted back to its present value (PV). Then they are ummed. Therefore NPV is the sum of all terms,

$$\frac{R_t}{(1+i)^t},$$

vhere

t - the time of the cash flow

i - the discount rate (the rate of return that could be earned on an investment in the financial markets with similar risk.)

R_t - the net cash flow (the amount of cash, inflow minus outflow) at time t (for educational purposes, R_0 is commonly placed to the left of the sum to emphasize its role as (minus the) investment.

The result of this formula if multiplied with the Annual Net cash in-flows and reduced by Initial Cash outlay will be the present value but in case where the cash flows are not equal in amount then the previous formula will be used to determine the present value of each cash flow separately. Any cash flow within 12 months will not be discounted for NPV purpose.

NPV is an indicator of how much value an investment or project adds to the firm. With a particular project, if R_t is a positive value, the project is in the status of discounted cash inflow in the time of t. If R_t is a negative value, the project is in the status of discounted cash outflow in the time of t. Appropriately risked projects with a positive NPV could be accepted. This does not necessarily mean that they should be undertaken since NPV at the cost of capital may not account for opportunity cost, *i.e.* comparison with other available investments. In financial theory, if there is a choice between two mutually exclusive alternatives, the one yielding the higher NPV should be selected. The following sums up the NPVs in various situations.

If...	**It means...**	**Then...**
NPV>0	the investment would add value to the firm	The project may be accepted
NPV<0	the investment would subtract value from the firm	The project should be rejected
NPV=0	the investment would neither gain nor lose value for the firm	We should be indifferent in the decision whether to accept or reject the project. This project adds no monetary value. Decision should be based on other criteria, e.g. strategic positioning or other factors not explicitly included in the calculation.

PAYBACK PERIOD

Payback period in capital budgeting refers to the period of time required for the return on n investment to "repay" the sum of the original investment. For example, a $1000 investment vhich returned $500 per year would have a two year payback period. The time value of money is ıot taken into account. Payback period intuitively measures how long something takes to "pay or itself." All else being equal, shorter payback periods are preferable to longer payback periods. Payback period is widely used due to its ease of use despite recognized limitations, described below. The term is also widely used in other types of investment areas, often with respect to energy efficiency technologies, maintenance, upgrades, or other changes. For example, a compact fluorescent light bulb may be described of having a payback period of a certain number of years or operating hours, assuming certain costs. Here, the return to the investment consists of reduced operating costs. Although primarily a financial term, the concept of a payback period is occasionally extended to other uses, such as energy payback period (the period of time over which the energy savings of a project equal the amount of energy expended since project inception); these other terms may not be standardized or widely used. Payback period as a tool of analysis is often used because it is easy to apply and easy to understand for most individuals, regardless of academic training or field of endeavour. When used carefully or to compare similar investments, it can be quite useful. As a stand-alone tool to compare an investment with "doing nothing," payback period has no explicit criteria for decision-making (except, perhaps, that the payback period should be less than infinity).

The payback period is considered a method of analysis with serious limitations and qualifications for its use, because it does not properly account for the time value of money, risk, financing or other important considerations, such as the opportunity cost. Whilst the time value of money can be rectified by applying a weight average cost of capital discount, it is generally agreed that this tool for investment decisions should not be used in isolation. Alternative measures of "return" preferred by economists are net present value and internal rate of return. An implicit assumption in the use of payback period is that returns to the investment continue after the payback period. Payback period does not specify any required comparison to other investments or even to not making an investment

There is no formula to calculate the payback period, excepting the simple and non-ealistic case of the initial cash outlay and further constant cash inflows or constant growing cash nflows. To calculate the payback period an algorithm is needed. It is easily applied in preadsheets. The typical algorithm reduces to the calculation of cumulative cash flow and the noment in which it turns to positive from negative.

Additional complexity arises when the cash flow changes sign several times, that is it ontains outflows in the midst or at the end of the project lifetime. The modified payback period lgorithm may be applied then. Firstly, the sum of all of the cash flows is calculated. Then the umulative positive cash flows are determined for each period. The modified payback period is alculated as the moment in which the cumulative positive cash flow exceeds the total cash outflow

The Payback Period (PP) is perhaps the simplest method of looking at one or more investment projects or ideas. The Payback Period method focuses on recovering the cost of investments. PP represents the amount of time that it takes for a capital budgeting project to recover its initial cost.

$$PP = \frac{\text{The Costs of Project / Investment}}{\text{Annual Cash Inflows}}$$

PP certainly has the virtue of being easy to compu te and easy to understand. But that very simplicity carries weaknesses with it. There are al least two major problems associated with the Payback Period model:

1) PP ignores any benefits that occur after the Payback Period, and so does not measure total incomes
2) PP ignores the the time value of money

.7 LIMITATIONS OF THE STUDY

- There are 10 RMC (Ready-Mix Concrete) plants in Tamilnadu. Due to time constraint only Coimbatore RMC plant was taken to study

- Analysis was carried with the help of data over a period of only 1 year of January 2009 to December 2009

- There are many raw materials are included in the process. Due to some technical reason only the Water and Transit Mixer(delivery) was taken to study

Organization Profile

CHAPTER 2

. ORGANIZATION PROFILE

Particulars	LAFARGE
Type	Société Anonyme (Euronext: LG)
Industry	Construction
Founded	1833
Headquarters	Paris, france
Key people	Bruno Lafont (Chairman and CEO)
Products	Cement, construction aggregates, asphalt production and paving, concrete and gypsum wallboard
Revenue	€15.88 billion (2009)
Operating income	€2.250 billion (2009)
Profit	€736 million (2009)
Employees	78,000(2009)
Website	www.lafarge.com

.1 COMPANY HISTORY:

Lafarge Corporation, a U.S. holding company, is the largest construction materials ompany in North America. With more than 500 facilities in 44 states and all provinces of anada, the company's three operating groups produce and distribute products ranging from ements and fly ash to concrete pipes and bricks to gypsum wallboard. A Lafarge subsidiary, ystech Environmental Corporation, supplies fuel-quality waste for burning in cement kilns and lternative raw materials used in producing cement. Paris-based Lafarge S.A. owns pproximately 52 percent of Lafarge Corporation.

At a global level, Lafarge is:

- No 1 in Cement,
- No 2 in Aggregates,
- No 3 in Concrete,
- No3 in Gypsum.

2.2 GRAND STRATEGY

Mergers in Canada: 1909--70

In the early part of the century the cement business in Canada was fiercely competitive, with companies producing more cement than was needed. In 1909 Max Aitken, a businessman, suggested that ten companies merge to try to stabilize the industry. The result was the Canada Cement Company. Based in Montreal, the new enterprise went on to dominate the Canadian market, manufacturing and selling cement. Cement, a fine powder, was first processed in 1824. It got the name portland cement because it looked like the gray stone found on the island of Portland off the coast of England. Cement was a critical ingredient in the making of concrete, used in residential and commercial buildings as well as roads, dams, and other public works.

All cement contained four elements: calcium, silica, aluminum, and iron. To make its cement, Canada Cement Company quarried stone, usually limestone because it had a lot of calcium, and crushed it into pieces no bigger than two inches in size. Those pieces were blended with sand, bauxite, or other additives to get the correct mixture of elements, ground more finely, and cooked in a kiln, using coal or coke to reach temperatures of up to 2700 degrees Fahrenheit. In the kiln, small cement pellets called "clinker" formed, which, after cooling, were ground into fine cement powder.

Depending on the properties needed for the concrete it would be used to make, fly ash or gypsum might be added to the cement. It was then shipped out to the buyer, who combined it with water and aggregates (crushed stone, sand, and gravel) to make ready-mix concrete. In 1956, nearly 50 years after Canada Cement was formed, Ciments Lafarge, a French company founded in 1833, came to Canada. It built a cement plant near Vancouver, British Columbia, and formed Lafarge Cement North America. In 1970 the Lafarge operation merged with Canada Cement (still the largest cement producer in the country), creating Canada Cement Lafarge Ltd. (CCL), with 11 plants coast-to-coast.

Entering the U.S. Market: 1971--82

In addition to its cement business, the new company was increasingly producing and supplying its own ready-mix concrete and aggregates. The year 1972 saw the creation of a new subsidiary, Canfarge Ltd., to oversee its concrete-related, construction materials business. In 1973 CCL moved south into the U.S. market. With Lone Star Industries Inc., a U.S. company based in Texas, CCL established Citadel Cement Corporation, a joint venture to distribute cement in the southeastern part of the United States. Citadel began operations in January 1974, in Atlanta, Georgia. When the joint venture dissolved in 1977, CCL kept Citadel and two cement plants in the southern United States, incorporating the wholly owned subsidiary as Citadel Cement Corporation of Maryland. The 1982 recession in the United States slowed housing and other construction activity to a 20-year low, and CCL reported a net loss of $25 million on revenues of $900 million. Despite the difficult times, CCL borrowed money to buy General Portland Inc., the second largest U.S. cement producer, for $326 million. The Dallas-based company, with ten plants and the capacity to make six million tons of cement a year, traced its roots to the Southwestern States Portland Cement Company, established in 1907.

Lafarge Corporation: 1983--85

In 1983 CCL underwent a major reorganization. In February, Citadel's name was changed to Lafarge Corporation, and in April, Lafarge Coppée, the company's French parent, made it a U.S. holding company. What had been a CCL subsidiary was now CCL's parent, having received 69 percent of CCL in a stock exchange with Lafarge Coppée and five French banks. The move was made primarily to make it easier for the company to raise money in U.S. equity markets. "We just couldn't raise enough equity in Canada," Lafarge's vice-president of investor relations told *Fortune* in a 1984 article.

The new company, the largest cement manufacturer in North America, was headquartered in Dallas, with General Portland and CCL becoming wholly owned subsidiaries. Later that fall, Lafarge Corporation issued common and convertible stock in a $44 million offering. The money raised was used to refinance some of the debt incurred in the General Portland purchase. The construction economy began improving in the United States during 1983, with a slower recovery in Canada. Lafarge Corporation benefited from the increased cement consumption and stabilization of cement prices, although it still operated at a net loss of $13.1 million for the year. The reason for the price stabilization, and one of the domestic cement industry's biggest problems, was that as construction picked up, foreign producers poured concrete into the U.S. market, taking advantage of the high dollar and low shipping rates to get rid of an excess overseas. The company sold some of its nonessential properties in both Canada and the United States as it began taking cost-cutting measures. "We realized that we had entered a new world in which pricing patterns were going to be different than in the past," the company's chief financial officer reflected in a 1988 *Washington Post* article.

It also began cutting labor costs, which led to a six-month strike during 1984. At the end of the year it operated 19 cement manufacturing plants with an annual capacity of some 13 million tons of cement. In Canada, where the company also manufactured ready-mix concrete and concrete products, its markets spread across the country. In the United States, the company's markets were primarily across the South and Southwest. By 1985 the company was again operating in the black, with net sales of $944.5 million. In Canada, cement consumption grew by 13 percent during the year, evidence of a strong construction recovery. In the United States, the company saw its cement shipments increase by ten percent and operating income grew despite lower cement prices due to more imports. That year Lafarge Corporation opened a new research and technical center in Montreal, the largest private laboratory in the North American cement industry.

cquisitions, Restructuring, and a Move: 1986--87

During the latter part of the decade, Lafarge Corporation began buying other companies. n 1986 its U.S. subsidiary, General Portland, bought East Texas Stone Co. That acquisition ncreased Lafarge's aggregates resources in the United States, which then included operations in ouisiana, New York, and Washington. Later that year Lafarge Corporation bought Systech nvironmental Corporation, a company that processed industrial waste to fuel cement kilns, 14 ement distribution terminals along the Great Lakes, and a closed cement plant in Alpena, Aichigan, which it reopened a few months later. The Systech purchase was an important factor n the company's attempt to cut its fuel expenses. Cement makers began testing the burning of azardous waste in their kilns during the 1960s, and Systech first began supplying Lafarge Corporation (then CCL) in 1979. The fuels were the byproducts of plants, producing items such s paints, inks, cosmetics, and electronics, as well as auto and truck assembly operations. During he mid-1980s the alternative fuel business boomed; Systech's sales grew from $1.8 million gallons in 1980 to approximately 51 million gallons in 1988. Early in 1987 Lafarge Corporation reorganized its operations, combining the activities of CCL and General Portland under a single management, and creating four regional operating groups covering cement manufacturing and marketing in both the United States and Canada and a fifth unit responsible for other construction materials products. Bertrand Collomb, who had been the head of General Portland and, previously, president and CEO of Ciments Lafarge France, became vice-chairman and chief executive officer. Robert Murdoch, formerly head of Canada Cement Lafarge, was named president and chief operating officer. In a company press release, Collomb explained the move, "This restructuring will permit us to take a more integrated perspective to our overall North American operations and their development opportunities."

In the fall of 1987 the company moved to Reston, Virginia, outside Washington, D.C., to e closer to its Canadian offices and French parent and more central to its markets. The company ecorated the halls of its new corporate offices with framed cement bags, presenting an honor oll of small companies that were now part of Lafarge. Effective January 1988, CCL changed its ame to Lafarge Canada Inc. in recognition of the growth of its construction materials business s well as its cement operations, and General Portland was merged into the company. The move nd the reorganization occurred as the company was undergoing "a remarkable turnaround," ccording to the *Washington Post.* For 1987, Lafarge Corporation reported profits of $75 million n sales of $1.22 billion, a 27 percent increase over 1986 sales. Cement accounted for 55 percent f 1987 sales, with the remaining 45 percent coming from construction materials. Canadian perations contributed 57 percent of sales and 78 percent of the company's operating income.

'ertical Integration: 1988--92

In 1987 the Federal Trade Commission (FTC) issued a new ruling permitting vertical ıtegration in the construction materials industries. The FTC decision overturned an 18-year-old ıling in a move that would quickly change the face of the cement industry in the United States nd make it more similar to overseas cement industries. Lafarge Corporation, which held ıinority stakes in two ready-mix concrete companies, soon increased its shares to full ›wnership. The acquisitions added Bryco Inc., a Texas ready-mix concrete company and its 12 ılants and 75 ready-mix trucks, and Jimco, a large ready-mix concrete company in New Orleans. Later in 1988, Lafarge bought Centurion Products Co., a small Pennsylvania company specializing in producing pre-blended colored masonry cement and colored portland cement. Business was continuing to improve, and Lafarge Coppée had no interest in selling its North American subsidiary, despite an unsolicited bid by a group of anonymous stockholders of $1.47 billion in cash. At the end of 1988 Bertrand Collomb assumed new duties with Lafarge Coppée in Paris and Robert Murdoch, a former summer intern and the current president and COO, was appointed president and CEO The company continued to buy, diversifying both vertically and horizontally. In 1989 it acquired seven subsidiaries of the Standard Slag Holding Company, becoming one of the largest aggregate producers in the United States. The next year, it purchased National Minerals Co., a fly ash company in Wisconsin, and Beyer's Cement Inc., a wholesale cement distributor in North Dakota, acquiring terminals in key cities as well as a fleet of 170 trailers and semi-trailers. In 1991, despite a downturn in the construction industry, Lafarge Corporation added the Missouri Portland Cement Company and Davenport Cement Company, expanding Lafarge's presence along the Mississippi River. The purchases included three cement plants, 15 terminals, two quarries, and more than 30 ready-mix, aggregate, and concrete paving operations, and increased Lafarge's clinker capacity by nearly one-quarter. As part of the transaction, the company also acquired ProChem Technology Inc., a chemical admixture firm based in Denver. In mid-1992 Robert Murdoch resigned, and Michel Rose, a Lafarge Coppée executive, assumed the positions of president and CEO.

An Improving Market and Gypsum Wallboard: 1993--96

By 1993, demand for cement was slowing, having fallen more than 11 percent since its peak in 1987. Things were better for domestic producers, after U.S. companies shut out low-priced imports with the implementation, in 1990, of antidumping trade actions against international firms. Lafarge Corporation reorganized again in 1993, consolidating its operations into three cement regions and three construction materials regions, and began selling off its assets in Texas and Alabama. The plants there were considered too far from their markets and unable to meet profitability objectives, even though two were the company's lowest cost manufacturing plants. However, selling its assets was not the only way Lafarge Corporation regained its profitability. By 1994 nearly all of its 15 full-production cement plants were increasingly recycling industrial byproducts to use as raw materials in making their cement. One plant in British Columbia, for example, used mill scale from a local manufacturer for 90 percent of its iron requirements. The mill scale cost $2 (Canadian) per metric ton, whereas magnetite, which the plant used to use, cost $40 per metric ton. Other alternative materials included glass bottles for silica; waste calcium carbonate, which provided pure lime, from pulp mills; sand from foundries; and fly ash from coal-burning power plants. By mid-1994 the company's sales were up more than seven percent, and net income had risen 71 percent. In 1995 Lafarge bought National Portland Cement's cement grinding plant in Florida, followed, in 1996, by the acquisitions of Tews Company, Wisconsin's largest ready-mix concrete producer, and two gypsum wallboard plants from Georgia Pacific. With the latter purchase, the company established Lafarge Gypsum to produce and distribute wallboard and related products. Also in 1996, president and CEO Michel Rose returned to France for a new position with Lafarge S.A., and John Piecuch, who joined Lafarge Corporation in 1987, was appointed president and CEO.

997 to the Present

Lafarge Corporation continued to make acquisitions, including 125 North American perations that were part of Lafarge S.A.'s purchase of the British construction materials ompany Redland PLC. These increased the company's annual aggregates sales by 75 percent nd its ready-mix concrete sales volume by one-third and added more than six million tons of sphalt sales annually. Through its Canadian subsidiary, the company purchased another vallboard manufacturing plant and gypsum quarry, a manufacturer of joint compounds, and, in anuary 1999, announced it would build a fourth wallboard plant, a $90 million facility in Kentucky. The company continued construction of two state-of-the-art cement plants, replacing older plants in Kansas City, Missouri, and Richmond, British Columbia, and acquired a cement plant in Seattle, Washington.

The company's 1998 acquisitions, combined with the strong construction economy, boosted net income of 29 percent over the previous year, and revenues of 33 percent to $2.45 billion, a new high for Lafarge Corporation. In the United States, low interest rates were expected to support high levels of building activity. That situation, along with the 1998 federal highway bill, and its six-year, $215 billion in transportation funding, could expect to keep Lafarge Corporation busy producing its cement, aggregates, concrete-related materials, and gypsum wallboard.

.3 EXPANSIONS

950

Incorporation of Malayan Cement Berhad (now known as Lafarge Malayan Cement 3hd) as a subsidiary of Blue Circle Industries PLC, United Kingdom.

1953

Establishment of Rawang Works, Malaysia's first cement plant. (Rawang Kiln No. 1 - 110,000 tonnes per annum).

1958

Commissioning of Rawang Kiln No. 2 (190,000 tonnes per annum).

1964

Opening of Kanthan Works by Pan Malaysia Cement Works Bhd (PMCW).

1965

Commissioning of Kanthan Kiln No. 2 (190,000 tonnes per annum). Opening of a grinding plant in Singapore by Pan Malaysia Cement Works Singapore (PMCWS).

1967

Merger of cement operations with PMCW and the formation of Associated Pan Malaysia Cement Sdn Bhd (APMC). Also acquired 50% stake in PMCWS.

1980

Commissioning of Rawang Kiln No. 3 (1,200,000 tonnes per annum). Incorporation of Supermix Concrete Pte Ltd (SPMS).

1983

Incorporation of Supermix Concrete (Malaysia) Sdn Bhd (SPMM).

984

Kedah Cement Sdn Bhd (now known as Lafarge Cement Sdn Bhd) commissioned angkawi Plant.

985

Commissioning of Kanthan Kiln No. 3 (800,000 tonnes per annum).

989

The company launches its first differentiated bulk product, Mascrete.

992-1993

Upgrading of Rawang kiln No.3 and Kanthan Kiln No.3 to 1.5 and 1.0 million tonnes per annum respectively.

1995

Rawang Plant becomes the first location within the Group and the first cement plant in Malaysia to be awarded the ISO 9002 (now changed to ISO 9001:2000) certification. Kanthan Plant received the same certification about three months later.

1997

Southern Cement Industries Sdn Bhd (SCI) commissioned its grinding plant with a rated capacity of 770,000 tonnes per annum in Pasir Gudang, Johor. Commissioning of Bulk Import Terminal with silo capacity of 55,000 tonnes in Jurong Port, Singapore to replace PMCWS grinding facility.

Launching of the company's Schools Project, which provides Bursaries and Excellence Awards to students from schools in the vicinity of our plants in Rawang, Kanthan, Langkawi and Pasir Gudang.

998

Commissioning of Kanthan Kiln No. 4 (1,800,000 tonnes per annum) Acquisition of the emaining 50% stake in APMC.

Rawang and Kanthan Plants were awarded the ISO 14001 certification, making us the first ement company in Malaysia to achieve this certification.

999

Acquisition of Kedah Cement and merger between APMC and Kedah Cement.

2000

Opening of a dry-mix cementitious product plant in Tuas, Singapore.

We become the first cement company to be awarded the OHSAS 18001 certification when Rawang Plant receives the certification on 8 December 2000 closely followed by Kanthan Plant on 15 December 2000.

2001

Becoming part of Lafarge Group following Lafarge's acquisition of Blue Circle. SPMM acquired Pengkalan Concrete and spread its wings to East Malaysia.

The company celebrated the launch of the first fly ash bag cement, Phoenix.

2002

Malayan Cement launched a new corporate identity which reflects its membership in the Lafarge Group.

003

Company name officially changed from Malayan Cement Berhad to Lafarge Malayan Cement Berhad to better reflect its corporate identity as a member of the Lafarge Group.

2005

Launch of the company's first differentiated bag product, Avancrete.

We secured a long-term contract with Tanjung Bin power plant for the exclusive supply of all their fly ash production.

Launch of the Logistics Safety Conference with the objective of increasing awareness on road safety amongst the company's transporters and drivers towards achieving zero accident in loading and transportation.

Launch of the Lafarge Young Engineers Programme where fresh graduates from local universities are recruited and enrolled annually in a cement professional development programme to nurture them into skilled engineers.

2006

Launch of a new differentiated bulk product, Mascrete Pro.

Opening of the residential housing area, Desa Kuala Garing, built and contributed by Lafarge Malayan Cement to relocate 124 squatters in Rawang and allow the diversion of Sungai Rawang in order to curb flood problems which had affected the safety of the squatters as well as the company's quarry.

Launch of the Industrial Safety Conference to instil greater safety awareness amongst the company's contractors to work towards achieving zero accident at Lafarge Malayan Cement.

2007

A record annual production of 3 million tonnes of clinker by Kanthan Plant. Pasir Gudang Plant launched its first Pulverised Fly Ash (PFA) blended cement.

2008

Pasir Gudang Plant won 1st placing, Lafarge Performance & Excellence Awards, for achieving Best Time Without Loss Time Injury (LTI), Grinding Station (employees & contractors) since April 2001.

Lafarge Malayan Cement was honoured with the Industry Excellence Award (Construction) and Merdeka Corporate Award by Malaysia 1000, Malaysia's top corporate directory.

Lafarge Malayan Cement was selected as one of the top five public-listed companies in Malaysia for the Workplace and Marketplace Awards for demonstrating outstanding Corporate Responsibility practices.

4 LAFARGE GROUP

VORLD LEADER IN BUILDING MATERIALS

The Lafarge Group's journey began more than 175 years ago...

In 1864, the Lafarge Group signed its first major international contract to help build the Suez Canal. From this historic milestone, the company has spread its reach to over 76 countries, and over the decades has stood strong in its continuous focus on quality and social commitment. The Lafarge Group ethos encompasses both an approach to business, and an approach to life. Lafarge's growth strategy has always been driven by technological expertise on one hand; and an emphasis on employee care, environment protection, a respect for the local cultures and society in which it operates, on the other. Its core values of safety, ethical practices and, a deep-rooted and long-term commitment to sustainability have made it the only company in the construction materials sector to be featured amongst the 2008 '100 Global Most Sustainable Corporations in the World'.

.5 LAFARGE - MILESTONES IN TIME

1833 - Lafarge is born in southeastern France

1864 - Lafarge signs its first major international contract to supply lime for the construction of ıe Suez Canal

1887 - Lafarge opens its first central laboratory at Le Teil in the south of France, beginning a ıew era in R&D.

1990 - Lafarge Research Centre (LRC), the world's largest building materials

esearch facility, is established at L'Isle d'Abeau, near Lyon.

• **1999** - Lafarge enters the Indian market with the acquisition of Tata Steel's cement business

• **2000** - Lafarge signs a voluntary environmental conservation partnership agreement with WWF

• **2001** - Lafarge becomes the world's leading cement producer after acquiring Blue Circle Cement

• **2007** - Lafarge acquires Orascom cement, reinforcing its presence in the Middle East and Mediterranean basin

• **2008** - Lafarge acquires L&T Concrete in India, making it the leader in the

2.6 LAFARGE'S BUSINESS SEGMENTS

Cement

Wide range of cements, hydraulic binders and lime for construction, renovation and civil engineering markets

Aggregates & Concrete

Aggregates, ready-mix concrete, precast concrete, value-added products, asphalt and paving for engineering structures, roads and buildings

Gypsum

Plasterboard systems, gypsum blocks and sprayable plaster for finishing work, new buildings and renovation

The Lafarge Way

From a company to a group; from country specific to global; from a few people to thousands – Lafarge has grown exponentially over the years. But its core philosophy, built on the three tenets of 'The Lafarge Way', has remained constant.

- Making its employees successful by enabling the professional and personal growth of its people through policies of motivation, training and development.
- Delivering continuous performance improvement by setting measurable benchmarks that are used to continually track and upgrade performance.
- Creating a multi-local organization by building a truly global ethos that is driven by local knowledge of the countries in which the Group operates.

Top: LAFARGE TEAM AT MILAKI PLANT, Greece

Centre: GRAVEL PIT, Ostrowite, Poland

Bottom: MOMBASSA CEMENT PLANT, Africa

7 Lafarge India

New frontiers of excellence The acquisition of 2 cement plants in Sonadih Chhattisgarh) and Jojobera (Jharkhand) in 1999, marked Lafarge's entry into India. Its ıternational expertise and experience in global markets combined with its ability to understand nd develop products according to local needs has enabled the Company to establish a significant resence in India in a short period of time Lafarge has embraced India's unique blend of tradition nd modernity resulting in a two-way flow of resources and skill between the Group and India. The Company brings to the table international technology and business practices that adhere to afarge's environmental standards while absorbing and training India's talent, and making vailable international career opportunities to them.

afarge's Vision for India

To be a world-class cement company in India by:

Embracing safety as a way of life

Generating value for our customers through innovation and continuous improvement

Being a responsible citizen and **ensuring sustainable development** thereby contributing to building a better world for our communities

Being **committed to the highest standards of corporate governance** and conducting our business with integrity, honesty and transparency

Fostering a performance culture in an environment of learning that encourages mutual trust and respect, teamwork, customer orientation and sharing of best practices – which makes us a preferred employer

A GROWING PRESENCE IN INDIA

Building a strong presence in the country, the Company has rapidly grown and today has four established plants in India. These include its facilities at Sonadih (Chhattisgarh), Jojobera (Jharkhand), Arasmeta (Chhattisgarh) and Mejia (West Bengal). With a cement production capacity of 6.5 million tones and a significant market share in the eastern region, Lafarge India has charted plans to expand its presence nationally in the coming years. In addition to capacity expansions at Sonadih and Jojobera, the Company is building on the success of its regional development models and is in the process of starting projects in Rajasthan, Karnataka, Meghalaya and Himachal Pradesh. Lafarge India's growth is built on uncompromising standards. The Company's stringent systems for quality control and environment protection through monitoring of emissions, discharges and a strong focus on Health and Safety have earned it ISO 9001, ISO 14001 and OHSAS18001 accreditations. Managed by efficient and skilled teams, the plants have high reliability rates for its kilns and mills and cement/clinker ratio higher than the industry average.

AFARGE AGGREGATES & CONCRETE INDIA PVT. LTD.

NEW PLATFORM FOR GROWTH

The acquisition of L&T concrete gave Lafarge India a solid platform to expand its ggregates & concrete business, and established it as a leader in the Indian concrete ready-mix narket. With the acquisition of 66 highly efficient concrete plants across India, Lafarge Aggregates & Concrete has a clearly defined strategy for growth in India.

.8 RESEARCH & DEVELOPMENT

Global expertise, local insight To develop value-added products; to remain a step ahead by increasing research activity; to provide new solutions for sustainable construction: these are Lafarge's innovation and research ambitions More than 1300 people in R&D and around 170 million euros are invested annually in research, development of innovative products and improvement of industrial processes at Lafarge's Central Research Laboratory in Lyon, France, and its network of Technical Centres around the world. Lafarge has 4 Technical Centres for Cement located in:

- Cement Technical Centre, Vienna, Austria
- Technical Centre Europe and Africa , L'Isle d'Abeau, France
- Corporate Technical Services,Montreal, Canada
- Asian Technical Centre, Kuala Lumpur, Malaysia

Lafarge India recognises that understanding its customers is the first step in creating a truly customized product, formulated especially for local building practices and the environment. Lafarge's research projects are built around 3 main themes:

- **End-customer performance**, whether in terms of product finish (quality, aesthetics, new functions,etc.) or product implementation (ease of use, productivity, etc.)
- **Industrial performance**, notably the improvement of production processes and environmental performance
- **Preparation for the future** – saving energy and limiting CO2 emissions are major sustainable development imperatives The exchange of global technological improvements and local knowledge between the Group's R&D centres and Lafarge India has enabled the Company to develop truly innovative products for the Indian market.

afarge's R&D division works to develop cement with differentiating qualities and haracteristics, offering high added value for customers. This strategy responds to **3 industrial mperatives:**

- **Improving the consistency and qualities of cement**, for example, the setting time and trength during the first hours following the pour

- **Increasing the use of cement additives** (slag, fly ash, pozzolan) in the context of an industrial-environmental approach to save non-renewable resources and limit CO2 emissions

- **Identifying and implementing different approaches to reducing CO2**, particularly in industrial processes

9 PRODUCTS & SERVICES

Delivering quality consistently Each bag of cement produced by Lafarge India is special. very stage of the production process – from choosing the raw material, to manufacturing the roduct, to packaging and logistics – is carefully monitored to meet customer expectations on uality, consistency and reliability.

CONCRETO

"Cement mein Champion"

Lafarge India's Concreto - the progeny of the Company's global expertise and local knowledge - is a premium cement of international standard with superior structural strength and enhanced durability.

Concreto's Qualities

- **Best in Strength:** Superior strength that stands the test of time

- **Best in Finishing:** A smoother finish to make houses aesthetically unique

- **Best in Freshness:** A new international tamper resistant packaging

DURAGUARD

"Bahar Strong, Andar Strong, Tabhi to Chale Sabse Long" Created on the principle that true durability results not only from an outward appearance of strength but also from the internal granular composition of cement, Lafarge DuraGuard has a unique particle size distribution of cement that reduces water demand and makes denser concrete, which prevents porosity and water ingress. The high quality of cementitious material used facilitates the conversion of free lime to cement, reduces the development of cracks and the deterioration of reinforcement bars in concrete.

HEALTH & SAFETY

Where people come first At Lafarge, safety is not just a priority, it is a core value – priorities change, core values do not. Safety is the cornerstone of the Group's performance culture and long-standing people-centric tradition. All Lafarge plants in India have an innate culture of safety consciousness and assured bestin-class safety standards. Lafarge India operates in accordance with recognized world-class Health & Safety standards, not only complying with existing legislation but going beyond compliance with its safety initiatives. 'Actions speak louder than words' is a common adage, put in practice by Lafarge India's Visible Felt Leadership (VFL) workshop, one of its many initiatives to promote its core value - safety. Open to all Lafarge India employees, from senior management to factory workers, this workshop trains them in not only preaching the Company's safety tenets but also practicing them in their workplace and homes.

CARDINAL NORMS ON SAFETY

Lafarge India's Cardinal Norms on Safety outline issues such as energy isolation, safety on conveyor belts, confined space entry, working at heights, lifting operations, road safety, management of change, accident investigation and the use of Personal Protection Equipments (PPEs). The Company has resolved to halve its lost-time injury rate and work towards the objective of zero fatality.

PROJECT HEALTH & SAFETY

Lafarge India has initiated a comprehensive health program for all its employees, ensuring that they receive regular access to medical check-ups and hospital care. It has also established health check up camps, mobile dispensaries, HIVAIDS awareness camps, blood donation camps, and domestic safety drives in villages and towns around its plants. Lafarge India has always been committed to providing aid during times of natural disasters. It has extended support for relief operations during the tsunami and Bihar floods by contributing towards essential materials, rehabilitation and reconstruction initiatives for the displaced people.

.10 HUMAN RESOURCES

'EOPLE – A CORE STRENGTH

Lafarge India believes that people are an organisation's strongest competitive advantage n the global market today. The Company recognises that constant nurturing of its people in an environment that facilitates team spirit and provides opportunities for development is a prerequisite to retain its competitive edge. Therefore, the Company's strategy for its human resources, its key asset, is simple – recruit, develop and retain talented people. At Lafarge India, training across different levels is viewed as an investment in the future. The Lafarge India team is trained to cultivate team spirit, encourage initiative, foster innovation, endorse accountability and promote integrity. The Company provides a platform for growth and advancement through systemic initiatives, that include structured training processes, knowledge sharing and the adoption of best practices from across the globe.

.11 CORPORATE SOCIAL RESPONSIBILITY

'OUCHING LIVES, CHANGING LIFESTYLES

Lafarge India has remained firm in its belief that sustained economic growth cannot ›ccur without social progress, environmental protection and respect for local communities.

Project Employability

'Teach a man to fish and he will never starve' - this is the maxim that Lafarge India's Project Employability is built on. Through this initiative, the Company collaborates with the Indian Institute of Engineers to conduct training courses for masons to improve their construction skills and implement safe construction practices. While masons are made aware of safety issues and good practices, the Company has partnered with Life Insurance Corporation to offer a special insurance cover for masons against accidents and fatalities. Certificates are awarded on completion, to enable them to secure better jobs. Further, to promote financial independence for women, Lafarge India has introduced sewing & knitting classes for girls in and around its project sites. Project Education Statistics show that a nation's development is directly proportionate to the percentage of its literate population, especially women. Lafarge India is championing the cause of women's education by facilitating computer training for girls in government schools. Understanding Stakeholders With an objective to get an insight into the aspirations and perspectives of local communities in and around project sites and to actively assist in improving the quality of life in these areas, the Company conducted Socioeconomic Surveys, Need Assessment Studies and Stakeholder Mapping, collaborating with leading social sector partners in this endeavour. This initiative enabled Lafarge India to evolve a novel and scientific model for effective "Stakeholder Relationships".

2.12 SUSTAINABLE DEVELOPMENT

Lafarge has renewed its commitment to sustainable development with the launch of its **Sustainability Ambitions 2012**. This road map puts people and the environment at the heart of the Group's concerns.

• Cementitious materials like fly ash and slag, by-products of the power and steel industries, are used in cement manufacture to decrease CO2 emissions, reduce the quantity of natural resources used and facilitate the disposal of industrial wastes. Lafarge India makes the optimal use of cementitious products to have one of the highest cement/clinker ratios in the industry.

• Lafarge screens all its quarries and has introduced a biodiversity plan for all its sites. The quarry restoration program in India has led to the planting of over 1.5 million trees.

• Lafarge's stringent systems for quality control and environment protection through monitoring of emissions, discharges and a strong focus on Health and Safety have earned it ISO 9001, ISO 14001 and OHSAS18001 accreditations.

• Lafarge, along with WWF International, has signed a voluntary agreement to reduce its greenhouse emissions by 20% of CO2 per tonne of cement worldwide by 2010, and is well on its way to achieving this target.

afarge acquires L&T Concrete to become the leader in Indian Ready-Mix Concrete egment

n line with its strategy to develop its Aggregates & Concrete business in emerging markets, afarge today announced the acquisition of L&T Concrete for an enterprise value of INR 14.8 illion (USD 349 million). Lafarge will be acquiring 66 highly efficient concrete plants located cross India, in key markets such as Delhi, Kolkata, Mumbai and Bangalore, with total estimated olumes of 4.1Mm3 in 2008 and a market share of approximately 25%. The acquisition will be ccretive to Lafarge earnings per share from 2009. With this acquisition, Lafarge establishes tself as the leader in the Indian readymix concrete market.

The readymix concrete market is still in an early stage of its development in India, but offers strong growth and value creation potential. The Indian construction market is developing to meet significant demand for new housing, urbanization and infrastructure.

This acquisition marks an important step in Lafarge's strategy to develop its Aggregates & Concrete business in emerging markets. It will provide the Group with an excellent platform to develop further its Aggregates & Concrete business in the fast-growing Indian market, along with a very experienced team. India offers strong potential for introducing innovative products. Lafarge boasts the world's leading research facility in building materials and has developed innovative, value-added concrete products over the last ten years which contribute to improving construction methods and working conditions on building sites. One of Lafarge's key strategic focuses today is innovation in concrete, which translates into an accelerated roll-out of value-added concrete products in both developed and emerging markets. Lafarge will be aiming to offer the Indian market its most advanced and value creative solutions for construction.

LAFARGE CHAIRMAN AND CEO, BRUNO LAFONT, DECLARED:

"Lafarge was the first in its industry to move into Aggregates and Concrete in a significant way, over 10 years ago, and to develop a unique expertise in creating value in the Concrete business. With this acquisition, we are taking a pioneering step in the emerging Indian market."

This acquisition follows the recent start-up of operations at Lafarge's first Greenfield ready-mix concrete plant in Raipur, in the state of Chhattisgarh and marks a decisive step in Lafarge's strategy to grow its presence in the Indian ready-mix market.

Lafarge is already present in India in its other businesses and is investing to develop its Indian operations, in order to accompany market growth. In cement, Lafarge has emerged as a major player in the eastern region of India, with a cement production capacity of 5.5 million tons and a strategic plan to more than double its presence in the next five years through Greenfield projects in several regions. In Gypsum, Lafarge is already supplying the Indian market and is currently building a plasterboard plant near New Delhi, Rajasthan, with an annual capacity of around 10 million m^2.

To be a leading cement company in India by:

- Sustained growth that creates value for our shareholders and doubles our turnover every 4 years.
- Building strong brands that meet consumer needs and aspirations.
- Embracing safety as a way of life.
- Being a responsible citizen and ensuring sustainable development.
- Being committed to the highest standards of corporate governance by conducting our business with integrity, honesty and transparency.
- Fostering a performance culture in an environment of learning that encourages mutual trust and respect, teamwork, customer orientation and sharing of best practices - which makes us a preferred employer.

2.13 PLANTS AND OPERATIONS

Lafarge India's current cement operation comprises a modern split location cement facility located at Sonadih (District Raipur, Chhattisgarh) , at Jojobera (District Singhbhum, Jharkhand), at Mejia(District Bankura,West Bengal) and an integrated cement facility located at Arasmeta (District Janjgir-Champa, Chhattisgarh).

All plants are ISO 9001 and 14001 certified.

A brief description of Lafarge India's existing facilities is as below:

Location	Facilities	Rated Capacities & Product Range (as of 2009)
Sonadih	Clinkerisation unit	1.4 MTPA of Clinker
	Cement Grinding unit	0.55 MTPA of Cement Portland Pozzolana Cement (PPC)
Jojobera	Cement Grinding unit with separate circuits for clinker and slag grinding	3.4 MTPA of Cement Portland Slag Cement (PSC) & Portland Pozzolana Cement (PPC)
Arasmeta	Clinkerisation unit	1.6 MTPA of Clinker
	Cement Grinding unit	1.6 MTPA of Cement Portland Pozzolana Cement (PPC)
Mejia	Cement Grinding unit	1.0 MTPA of Cement Portland Pozzolana Cement (PPC)

14 AWARDS & CERTIFICATES

- Ibstock win more at Brick Awards
- Global Stone nominated for local business award
- Crossling win best distributor award
- Lafarge Plasterboard in Willmot Dixon supply award
- Thompsons md wins entrepreneur award
- Sentry gets the green light
- Cemco names Hanson as supplier of the year
- Lafarge rail project wins award
- Crittall Windows wins Queen Award
- Paint producer shortlisted for sustainability awards
- EXCLUSIVE: NBG focuses on future
- Kent Blaxill receives trading standards approval
- Baxi's Ecogen wins Green Innovation Award
- Travis Perkins wins Supplier of the Year award
- Graham and Jewson win safety awards
- Cemco rewards suppliers
- JP Corry wins NI builders merchant award
- Lafarge Cement scoops Buildbase Scotland's Supplier of the Year
- Excalibur Screwbolts wins top award

- Lafarge Cement named 2009 Sustainability Champion
- Marshalls site gains second green award
- Lafarge Aggregates wins safety award
- Guardsman pick up safety award
- Marshalls' Chris Harrop named green guru
- Peter and the Prince
- Burdens chairman awarded OBE
- Brick association supports CRASH
- Lafarge Cement win EA award for water saving
- Kingspan voted 'most admired company'
- Exclusive: Lafarge Cement score hatrick plus one at NBG awards
- Lafarge Cement win Eco Efficency award

Analysis and Interpretations

CHAPTER 3

DATA ANALYSIS, INTERPRETATION & INFERENCE

3.1 INTRODUCTION

In this study the researcher has taken the raw materials consumption of Lafarge Concrete & Aggregates India pvt ltd, Coimbatore For the period of 1 year from January 2009 to December 2009. The Researcher found that the company is spending more amounts while consuming the raw materials. Their important Raw Materials are,

1. Cement
2. River Sand
3. Stone Aggregates
4. Water
5. Transit Mixer for Delivery

In this study the Researcher has taken the Water and Transit Mixer for his cost benefit analysis on make or buy decisions of procuring the Raw Materials and the Capital Equipments. This study mainly deal with the comparative analysis between the cost occurred in hiring the Transit Mixer and purchasing (owning) the Transit Mixer and the comparative analysis between the purchasing the Water from outside suppliers and the cost incurred for establish and maintain the water purification plant.

The analysis is mainly based on the costs like

1. Existing cost
2. Purchasing cost
3. Installation cost
4. Maintenance cost

3.2.1 TRANSIT MIXER HIRING EXPENSES

TRANSIT MIXER

Contract hiring cost - 2000*58 = 116000

No of Transit Mixer- 6

Hiring cost per month - 6*116000 = 696000

Contract detail

The contract between Transit Mixer supplier and the company is that for every month they have to pay Rs.58/Km for the 2000 Kms

Note:

Hiring cost – 2000*58 = 116000

More than 2000 Kms - excess Kms * Rs.34

Less than 2000 Kms – remaining Kms * Rs.27

OWNING A TRANSIT MIXER

Vehicle price – Rs.27,00,000

Monthly maintenance – Rs.5,000

Maintenance For a year - Rs.5,000 * 12 = Rs.60,000

Diesel consumption - Rs.45,000/month

Diesel cost For a year - Rs.45,000 * 12 = Rs.5,40,000

Yearly FC - Rs.50,000

Wages - Rs.15,000/month (Driver + Cleaner)

Wages for a year - Rs.15,000 * 12 = Rs.1,80,000

Tyre retreading

(after 1 year) - Rs.7,500/ set of tyres

Total tyres - 10

Retreading - Rs.7,500 * 5 = 37,500

Toal maintenance cost for a vehicle

Maintenance For a year - Rs.5,000 * 12 = Rs.60,000

Wages for a year - Rs.15,000 * 12 = Rs.1,80,000

Diesel cost For a year - Rs.45,000 * 12 = Rs.5,40,000

Yearly FC = Rs.50,000

Tyre Retreading - Rs.7,500 * 5 = Rs. 37,500

Total cost = Rs.8,67,500/year

.2.2 COMPARISON BETWEEN THE HIRING AND OWNING THE TRANSIT MIXER

Toal Maintenance cost for a month – Rs.8,67,000/12 = Rs.72,250

Hiring charge for a month - Rs.1,16,000

Maintenance cost for a month - Rs. 72,250

Savings = Rs. 44,750/month

Total savings for a year - Rs.44,750 * 12 = Rs.5,37,000

Cost Benefit Analysis for purchasing the Transit Mixer

Costs:	
Yearly Maintenance	Rs. 60,000
Diesel Expenses for a year	Rs.5,40,000
Yearly FC	Rs. 50,000
Wages	Rs. 1,80,000
Tyre Retreading	Rs. 37,500
Total Maintenance cost per year/vehicle(A)	Rs.8,67,000
Benefits:	
Hiring cost per year/vehicle(B)	Rs.13,92,000
Profit = (B – A)	Rs.5,25,000

Interpretation

From the table it is inferred that the Maintenance cost is Rs.8,67,000 and the Hiring cost Rs.13,92,000 for a Single Transit Mixer. The difference Between the Maintenance cost and the hiring cost is Rs.5,25,000

Inference

It is inferred that the Maintenance cost is comparatively less than the hiring cost

.2.1 Comparative Analysis of Hiring Cost and the Owning Cost of Transit Mixer

Transit mixer			
Hiring cost		Owning cost	
ulars	Amount	Particulars	Amount
l cost	Nil	**Initial cost** Cost of machinery	Rs.27,00,000
ly maintenance	Nil	Maintenance For a year - Rs.5,000 * 12	Rs.60,000
f transit mixer	6		
ract Km/transit er	2000 Kms	Labour cost for a year - Rs.15,000 * 12	Rs.1,80,000
ng cost/Km	Rs.58	Diesel cost For a year - Rs.45,000 * 12	Rs.5,40,000
ng cost-	2000*Rs.58	Yearly FC	Rs.50,000
e than 2000 Kms	>kms*Rs.34	Tyre Retreading - Rs.7,500 * 5	Rs. 37,500
s than 2000 Kms	<kms*Rs.27		
al hiring cost/vehicle	Rs.1,16,000/month	Total maintenance cost/vehicle	Rs.72,250/month
tal hiring cost/year	**Rs.13,92,000/vehicle**	**Total maintenance cost/year**	**Rs.8,67,500/year**
		Salvage value	Rs.15,00,000

INTERPRETATION

From the table it is inferred that that the initial and yearly maintenance cost in both hiring and purchasing option

INFERENCE

The above table inferred that the initial investment for purchasing the Transit Mixeris Rs.2700000 whereas there is no initial cost for hiring the transit mixer.

Yearly hiring cost is Rs.13,92,000/vehicle where the yearly maintenance cost is Rs.8,67,000/vehicle.

The researcher found that the purchasing option is affordable for the company. So,the following analysis have done for purchasing option

1. Net Present Value (NPV)

2. Payback Period

or the Analysis the researcher carried out the following procedure to analyze the purchasing ption of the Transit Mixer

- Calculation of depreciation of the Transit Mixerunder the written down value method with the depreciation rate of 10%
- Calculation of annual installment payments for repaying the loan with the interest of 13% with the repayment period of 10 years
- Calculation of tax advantage on interest and depreciation with the corporate tax rate of 35%
- Calculation of total present value with the assumption of 10% present value factor
- Calculation of net present value by finding the difference between the cash inflow and the cash outflow
- Calculation of payback period with the savings from the transit mixer

3.2.2 Calculation of Depreciation under WRITTEN DOWN VALUE method at 10%

Year	Depreciation at 10%
1	270000
2	243000
3	218700
4	196830
5	177147
6	159432
7	143489
8	129140
9	116226
10	104604

INTERPRETATION

This table shows the depreciation value of Transit Mixerfor the next 10 years which is calculated under written down value method at 10%

Cost of machinery = Rs.2700000
Depreciation = Rs. 1755568

Book value = Rs.944432

Salvage value calculation

Salvage value after 10 years = Rs.15, 00,000
Present value of salvage value = Rs.15, 00,000*0.386
= Rs.5, 79,000

Loss on sale of Machinery calculation
Book value = Rs.944432
Salvage value = Rs. 579000

= Rs. 365432

INFERENCE

Tax advantage on
Loss on sale of machinery = Rs.365432*0.35
= Rs.1,27,90

3.2.3 CALCULATION OF INTEREST & PRINCIPAL AMOUNT

Table showing the Calculation of interest value and the principal amount

Year	Installments	loan at beginning	interest at 13%	principal amount	loan at ending
1	497604	2700000	351000	146604	2553396
2	497604	2553396	331941	165663	2387733
3	497604	2387733	310405	187199	2200534
4	497604	2200534	286069	211535	1988999
5	497604	1988999	258570	239034	1749965
6	497604	1749965	227495	270109	1479856
7	497604	1479856	192381	305223	1174633
8	497604	1174633	152702	344902	829731
9	497604	829731	107865	389739	439992
10	497604	439992	57612*	439992	0

Note:

*Adjusted interest value = Installment amount – loan outstanding at 9th year
= Rs. 497604- Rs.439992
= Rs. 57612

The annuity value has taken for 13% interest rate with the period of 10 years installments as 5.426 for the loan amount that has been received to install a new machinery. The loan amount for the 10 years has been calculated as,

$$\text{Installment cost} = \text{Rs. } \frac{2700000}{5.426}$$

= Rs 4,97,604/year

INTERPRETATION

From the above table the researcher found the installment amounts and principal amount for the loan payment with the 13% loan interest

INFERENCE

It is inferred that the interest rate of loan payment getting reduced gradually year by year

2.4 NET PRESENT VALUE CALCULATION

able showing total present value

	Installments	Interest at 13%	Depreciation at 10%	Tax advantages on Interest & Dep at 35%	Present value at 10%	Total present Value
	497604	351000	270000	217350	0.909	197571
	497604	331941	243000	201229	0.826	166215
	497604	310405	218700	185187	0.751	139075
	497604	286069	196830	169015	0.683	115437
	497604	258570	177147	152501	0.621	94703
	497604	227495	159432	135424	0.564	86011
	497604	192381	143489	117555	0.513	66301
	497604	152702	129140	98645	0.467	46067
	497604	107865	116226	78432	0.427	33255
	497604	57612	104604	56776	0.386	21916
					Total present value	966551

INTERPRETATION

From the table the researcher inferred the interest rate,depreciation,tax advantage and the total present value

INFERENCE

The tax advantage value is getting reduced year by year since because of the interest value and the depreciation value.

So, the total present value also getting reduced year by year and the total present value is Rs.966551

NET PRESENT VALUE CALCULATION

Total Present value	=Rs.9,66,551
(-)	
Capital Loss	= Rs.1,27,901
Present Value of Salvage Value	= Rs.5,79,000
Net Present Value	= Rs.2,59,650

Interpretation

From the calculation it is inferred that the Net Present value is Rs.2,59,650

Inference

It is inferred that The Net Present Value is Rs.2,59,650(NPV>0)

So, The project can be accepted

3.2.5 CALCULATION OF PAYBACK PERIOD

Year	CFAT	cumulative CFAT	payback period
1	351000	351000	
2	386100	737100	
3	424710	1161810	
4	467181	1628991	
5	513899	2142890	
6	565289	2708179	*
7	621818	3329997	
8	683999	4013996	
9	752400	4766396	
10	827640	5594036	

PAYBACK PERIOD CALCULATION

$$= 5+\frac{557110}{565289}$$

= 5 years 11 months and 24 days

INTERPRETATION

From the table it is inferred that initial investment amount Rs.27,00,000 has crossed at the end of 6th year

INFERENCE

From the calculation above it is inferred that the payback period is 5 years 11 months and 24 days

Cost Benefit Analysis for Owning a Desalination Plant

Costs:	
Yearly Maintenance Cost	Rs.36,000
Electricity cost	Rs.84,000
Total Maintenance Cost/year	Rs.1,20,000
Benefits:	
Purchasing cost of water/year	Rs.5,00,000
Cost-Benefit	Rs.(5,00,000-1,20,000) = 3,80,000

Interpretation

From the table it is found that the Maintenance cost is Rs.1,20,000/annum for the Desalination Plant and the Purchasing cost is Rs.5,00,000/annum. The Difference between the Maintenance cost and the Purchasing cost is Rs.3,80,000/annum

Inference

It is inferred that the Maintenance cost of the desalination Plant is comparatively very lesser than the Purchasing cost of the Water from the Outside Suppliers

3.1 Calculation of Depreciation under WRITTEN DOWN VALUE method at 20%

Year	Depreciation at 20%
1	200000
2	160000
3	128000
4	102400
5	81920
6	65536
7	52429
8	41943
9	3354
10	2683

INTERPRETATION

This table shows the depreciation value of Transit Mixerfor the next 10 years which is calculated under written down value method at 10%

Cost of machinery = Rs.1000000
Depreciation = Rs. 838265

Book value = Rs. 161735

Salvage value calculation

Salvage value after 10 years = Rs.1,00,000
Present value of salvage value = Rs.1,00,000*0.386
= Rs.38,600

Loss on sale of Machinery calculation
Book value = Rs.1,61,735
Salvage value = Rs. 38,600

= Rs.1,21,135

INFERENCE

Tax advantage on
Loss on sale of machinery = Rs.121135*0.35
= Rs.43097

3.3.2 CALCULATION OF INTEREST & PRINCIPAL AMOUNT

The table showing the calculation of interest & principal amount

Year	installments	loan at beginning	interest at 13%	principal amount	loan at ending
1	184298	1000000	130000	54298	945702
2	184298	945702	122941	61357	884345
3	184298	884345	114965	69333	815012
4	184298	815012	105952	78346	736666
5	184298	736666	95767	88531	648135
6	184298	648135	84258	100040	548095
7	184298	548095	71252	113046	435049
8	184298	435049	56556	127742	307307
9	184298	307307	39950	144348	162959
10	184298	162959	21339*	162959	0

Note:

*Adjusted interest value = Installment amount – loan outstanding at 9th year
= Rs. 184298 - Rs.162959
= Rs. 21339

The annuity value has taken for 13% interest rate with the period of 10 years installments as 5.426 for the loan amount that has been received to install a new machinery. The loan amount for the 10 years has been calculated as,

$$\text{Installment cost} = \text{Rs. } \frac{1000000}{5.426}$$

= Rs 1,84,298/year

INTERPRETATION

From the above table the researcher found the installment amounts and principal amount for the loan payment with the 13% loan interest

INFERENCE

It is inferred that the interest rate of loan payment getting reduced gradually year by year

3.3 NET PRESENT VALUE CALCULATION

Table showing total present value

Year	installments	interest at 13%	Depreciation at 20%	tax advantage on interest & depreciation	present value at 10%	total present value
	184298	130000	200000	115500	0.909	104990
2	184298	122941	160000	99029	0.826	81798
3	184298	114965	128000	85038	0.751	63864
4	184298	105952	102400	72923	0.683	49806
5	184298	95767	81920	62190	0.621	38619
6	184298	84258	65536	52428	0.564	29569
7	184298	71252	52429	43288	0.513	22207
8	184298	56556	41943	34475	0.467	16100
9	184298	39950	3354	15156	0.427	6472
10	184298	21339	2683	8408	0.386	2741
					Total present value	416166

INTERPRETATION

From the table the researcher inferred the interest rate,depreciation,tax advantage and the total present value

INFERENCE

The tax advantage value is getting reduced year by year since because of the interest value and the depreciation value.

So, the total present value also getting reduced year by year and the total present value is Rs.4,16,166

ET PRESENT VALUE CALCULATION

Total Present value	=Rs.4,16,166
(-)	
Capital Loss	= Rs.56,607
Present Value of Salvage Value	= Rs.3,86,000
Net Present Value	= Rs.3,20,959

Interpretation

From the calculation it is inferred that the Net Present value is Rs.3,20,959

Inference

It is inferred that The Net Present Value is Rs.3,20,959(NPV>0)

So, The project can be accepted

.3.4 CALCULATION OF PAYBACK PERIOD

Year	CFAT	cumulative CFAT	payback period
1	327600	327600	
2	360360	687960	
3	396396	1084356	*
4	436036	1520392	
5	479639	2000031	
6	527603	2527634	
7	580363	3107997	
8	683400	3791397	
9	702240	4493637	
10	772464	5266101	

PAYBACK PERIOD CALCULATION

$$= 2+\frac{312040}{396396}$$

= 2 years 9 months and 14 days

INTERPRETATION

From the table it is inferred that initial investment amount Rs.27,00,000 has crossed at the end of 6^{th} year

INFERENCE

From the calculation above it is inferred that the payback period is 2 years 9 months and 14 days

Findlings

CHAPTER 4

FINDINGS

- The Cost of Procuring the Raw Materials & Capital Equipments are found to be considerably very high for Lafarge Aggregates & Concrete India pvt ltd.
- The Maintenance cost is Rs.8,67,000/annum is found to be comparatively lesser than the Hiring cost of Transit Mixer Rs.13,92,000/annum
- The Normal considerable PayBack Period for Transit Mixer is 5 years 11 months and 24 days
- By Owning of a single Transit Mixer the company can save Rs.5,00,000 every year
- The Normal considerable PayBack Period for The Desalination Plant is 2 years 9 months and 14 days
- The Maintenance cost of the Desalination Plant is Rs.1,20,000/annum is found to be comparatively lesser than the purchasing cost of Water from the outside Suppliers Rs.13,92,000/annum
- By owning The Desalination Plant makes the company can save Rs.5,00,000 every year
- Both Transit Mixer and the Desalination Plant makes the company to save Rs.1 lakh every month

Suggestions

CHAPTER 5

UGGESTIONS

- The Researcher found that the Hiring cost of the Transit Mixer is higher than the Maintenance cost of the Transit Mixer and the Researcher suggest the company to its better them to Buy a Transit Mixer instead of Hiring the Transit Mixer
- From the Cost-Benefit Analysis study the Researcher found that by having a Desalination Plant with them make the company can save Rs.45,000 every month instead of purchasing the Water from the suppliers. So, the Researcher suggest the Company to have the Desalination Plant with them
- The company can Commission the Desalination Plant at the 1st year and they will get the initial investment cost after 2years 9 months and 14 days
- The company can go for the purchase of Transit Mixer after 3 years. Then they will get back the initial investment cost after 5 years 11 months and 24 days
- By installing these two machineries the company will save Rs.1 lakhs every month

Conclusion

CHAPTER 6

CONCLUSION

- By reducing the Raw Materials & The Capital Equipments Procurement Cost the Company can Obtain the optimum Cost
- Commissioning of Desalination Plant and Purchasing of a Transit Mixer makes the Company to Save Rs.10,00,000 every year
- So, The company can go for purchase of Transit Mixer and Desalination Plant Commission

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