

A

Project Report

On

**TO STUDY THE PROCESS OF CAPITAL BUDGETING WITH SPECIAL REFERNCE
TO DR. REDDY'S LABORTORIES**

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DECLARATION

I , BAHUMOL BABASAHEB AWATADE ,of MBA-2 : Seat No- 2019101 hereby declare that the project work titled which has been submitted to University of Pune, is an original work of the undersigned and has not been reproduced from any other source. I further declare that the material obtained from other sources has been duly acknowledged in the report.

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Name:

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**TO STUDY THE PROCESS OF CAPITAL
BUDGETING WITH SPECIAL
REFERANCE TO DR. REDDY'S
LABORATORIES**

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CHAPTER 1-
INTRODUCTION

INTRODUCTION-

Capital budgeting is an essential part of every company's financial management.

Capital budgeting is a required managerial tool. One duty of financial manager is to choose investment with satisfactory cash flows with high returns. Therefore a financial manager must be able to decide whether an investment is worth undertaking and able to decide and be able to choose intelligently between two or more alternatives.

Capital budgeting involves the planning and control of capital expenditure. It is the process of deciding whether or not to commit resources to a particular long term project whose benefits are to be realized over a period of time.

A capital budgeting decision is defined as the firm's decision to invest its current funds efficiently in the long-term assets in anticipation of an expected flow of benefits over a series of years. The firm's investment decisions would generally include expansion, acquisition, modernization, and replacement of the long-term assets. They are the assessment of future events, which are difficult to predict. It is really complex problem to estimate the future cash flow of an investment.

The investment decision of a firm is generally known as Capital Budgeting or Capital Expenditure Decision. Capital budgeting is also known as "Investment Decision Making", "Capital Expenditure Decisions", "Planning Capital Expenditure" and "Analysis of Capital Expenditure."

Capital budgeting is finance terminology for the process of deciding whether or not to undertake an investment project.

Capital expenditure management or capital budgeting is concerned with planning and control of capital expenditure. Capital budgeting is defined as the acquisition of durable productive facilities in the expectations of future gains. To win the competitive edge, every organization is much construction on the financial aspect of development. It involves the current outlay of cash in return for an anticipated flow of future benefits and these benefits are available in the long run. Therefore, capital budgeting refers to a longrange investment programmes and is translated into annual budget outlay and may relate to National Five Year Plans.

Capital budgeting is a crucial financial decision of a firm. It relates to the

selection of an asset or investment proposal for the lifetime of the project. Capital budgeting is the allocation of available resources of the organization to the various investment proposals, as the demand on resources is almost always higher than the availability of resources.

Capital budgeting decisions are related to allocation of investible funds to different long-term assets. They have long-term implications and affect the future growth and profitability of the firm. For example: the decision to acquire special equipment may require a large immediate outlay of funds. It also commits the company to the maintenance and operations of the equipment for a long period of time.

Organization is frequently faced with capital budgeting decision. Any decisions that require the use of resources or course of action whose benefits are likely to be available in future over the lifetime of the project. Capital budgeting is more or less a continuous process in any growing concern. Some of the decisions may directly affect the profit of the firms whereas some other decisions may directly affect the profit by influencing the operating costs. However, in all cases, the decisions have a long-term impact on the performance of the organization.

Given the importance of capital budgeting, the decision regarding investment, management faces the challenging task of allocating the limited available resources in a matter that would maximize the profits or the objectives of the organization.

INDUSTRY PROFILE-

The Pharmaceutical Industry develops, produces and markets drugs licensed for use as medications. Pharmaceutical companies can deal in generic and/or brand medications. They are subject to a variety of laws and regulations regarding the patenting, testing and marketing of drugs. The main aim of a particular Pharmaceutical Industry is to develop research and distribute drugs in order to provide health care for the people in the society. The Pharmaceutical Industry like other industries is subjected to follow certain rules and regulations.

“The Indian Pharmaceutical Industry is a success story providing employment for millions and ensuring that essential drugs at affordable prices are available to the vast population of the sub-continent”

Richard Gerster

The Pharmaceutical Industry needs to follow rules about patent, marketing as well as testing of drugs that are scheduled to come to the market as medicines. Since the inauguration of the Pharmaceutical Industry in the 19th century, it has covered a long way and now it has become one of the most influential and successful industry in the world with both controversy and praise on its part.

Pharmaceutical Industry is very much dependent upon the developments and discoveries that are made to search new types of drugs and also to search for new kind of medicines. One can also differences within the industry regarding the same drug or report and different companies within the Pharmaceutical Industry look to follow different paths for the same thing. Drug Discovery and Drug Innovation are two very aspects in the Pharmaceutical Industry

ABOUT THE COMPANY

Dr. Reddy's laboratories was founded by Dr. Anji Reddy, entrepreneur-scientist, in 1984 the DNA of the company; is drawn from its founder and his vision to establish India's first discovery led global pharmaceutical company .in, fact, it is this spirit of entrepreneurship that has shaped the company to become what it is today. The company is focused on creating and delivering innovative and quality products to help people lead healthier lives.

Dr. Reddy's is the research based company with vertically integrated operations. The company develops, manufactures and markets a wide range of pharmaceutical products India and overseas. Dr. Reddy's produces finished dosage forms, active pharmaceutical ingredients, diagnostic, kits, critical care and biotechnology products. The basic research program of Dr. Reddy's focused on cancer diabetes, bacterial infections and pain.

Since its inception in 1984, Dr. Reddy's has chosen to walk the path of discovery and innovation in health sciences Reddy's has been a quest to sustain and improve the quality of life, and they; heaves had nearly two decades of creating safe pharmaceutical Solutions with the ultimate purpose of making the world a healthier place. Dr. Reddy's create and deliver innovative pharmaceutical health care solutions that people enjoy longer, healthier and more productive lives. Reddy's generic formulations have also become very popular in quality-conscious regulated markets such as the US and Europe. We are all set to spread pure wings further and touch more lives across the globe

In 1973, after gaining six years of experience in the manufacturing and implementation of new technologies in bulk drugs from public sector company IDPL, Hyderabad. Dr Reddy's decided to start up basic drugs unit at that time there were few other players in the private sector at that end of the pharmaceutical value chain.

In 1975, Dr. Reddy's started the construction of uniloids of which he was the founder-managing director it was here that they made a move that was to become the hallmark of the group in the years to come.

This move was first to construct and start R&D laboratory ever before commencing

the construction of the plant. Based on the work done in these laboratories he constructed a plant in 1976 to manufacture, for the first time in India, drug called 'metrodinazole' for the treatment of amoebic dysentery the drug became a hit.

In 1981, as managing director of standard organics Ltd; Dr. Reddy's aim was to develop and manufacture a wide spectrum of bulk drugs to enable the pharmaceutical industry to launch their formulations. Unfettered. There were only a couple of – pharmaceutical company's at that time with the capacity to develop newer drugs but they would not sell the bulk to other formulators. Here, Dr. Reddy's played a major role in pioneering the technology and production of 'sulphamethonazole 'an anti bacterial in India. Another dream was to do it on his own, because that was the time that his second experiment with partnership was also crumbling. He realizes his dream shortly thereafter, then the established Dr. Reddy's laboratories in 1984. The process and production of methyldopa was the ultimate challenge.

The company has several distinctions to its credit. Being the first pharmaceutical company from Asia Pacific (outside Japan) to be listed on the New York Stock Exchange (on April 11, 2001) is only one among them. And as always, Dr. Reddy's chose to do it in the most difficult of circumstances against widespread skepticism. Dr. Reddy's came up trumps not only having its stock oversubscribed but also becoming the best performing IPO that year.

Dr. Anji Reddy's is well known for his passion for research and drug discovery. Dr Reddy's started its drug discovery programmed in 1993 and within three years it achieved its first break through by out licensing an anti –diabetes molecule to Novo Nor disk in March 1997/ With this very small but significant step, the Indian industry went through a paradigm shift in its image from being known as just 'copycats' to 'innovators'! Through its success, Dr. Reddy's pioneered drug discovery in India. There are several such inflections points in the company's evolution from a bulk drug (API) manufacturer into a vertically integrated global pharmaceutical company today.

Today , the company manufactures and markets API(Bulk Actives), Finished Dosages and Biologics in over 100 countries worldwide, in addition to having a very

promising Drug Discovery Pipeline. When Dr. Reddy's started its first big move in 1986 from manufacturing and marketing bulk actives to the domestic (Indian) market to Manufacturing and exporting difficult-to-manufacture bulk actives such as Methyl dopa to highly regulated overseas markets, it had to not only overcome regulatory and legal hurdles but also battle deeply entrenched mind-set issues of Indian Pharma being seen as producers of 'cheap' and therefore 'low quality' pharmaceuticals.

Today, the Indian pharma industry, in stark contrast, is known globally for its proven high quality-low cost advantage in delivering safe effective pharmaceuticals. This transition, a tough and often-perilous one, was made possible thanks to the pioneering efforts of companies such as Dr. Reddy's Laboratories.

Dr. Reddy's is a global, vertically integrated pharmaceutical company with a presence across the value chain, producing and delivering safe, innovative, and high quality finished dosage forms, active pharmaceutical ingredients and biological products. Our products are marketed across the globe, with an emphasis on North America, Europe, India, Russia and other emerging markets. We conduct NCE drug discovery research in the areas of metabolic disorders and cardiovascular indications at our research facilities in Atlanta (USA) and Hyderabad (India). Through our Custom Pharmaceutical Services business unit, we provide drug substance and drug product development and manufacturing services on a proprietary basis.

Today, Dr. Reddy's continues its journey. Leveraging on its 'Low Cost, High Intellect' advantage. Foraying into new markets and new businesses. Taking on new challenges and growing stronger and more capable. Each failure and each success renewing the sense of purpose and helping the company evolve with over 950 scientists working across the globe, around the clock, the company continues its relentless march forward to discover and deliver a breakthrough medicine to address an unmet medical need and make a difference to people's lives worldwide. And when it does that, it would only be the beginning and yet it would be the most important step. As Lao Tzu wrote a long time ago, 'Even 1000 mile journey starts with a single step.'

CHAPTER 2 –
LITERATURE REVIEW

LITERATURE REVIEW-

Capital budgeting refers to the financial assessment of the capital investment proposals of a company (Al-Mutairi et al., 2018). In other words, capital budgeting involves assessing whether the future cash flows resulting from a suggested investment justify whether it should be made, considering the risks and uncertainties (Leon et al., 2008).

Budgeting is considered as one of the most important decisions faced by the financial manager (Ryan & Ryan, 2002). The efficiency of the capital budgeting process of an organization and the respective financial analysis methods depend, ultimately, on how it influences the behavior of the managers to allocate scarce resources across competing investment alternatives (Pike, 1988; Pike & Ooi, 1988).

When making investment decisions, the managers make a series of subjective calls (Pike, 1983). Also, the profile of the managers is considered as a factor that may influence capital budgeting practices used by the companies (Andrés et al., 2015). In addition, different organizations use different decision-makers to adopt the decisions related to the referred budgeting (Brijlal & Quesada, 2009).

Firstly, the capital investment decision significantly influences the growth rate of an organization; making a wrong decision may ruin the company. Secondly, such decisions require large amounts of funds. Finally, they are amongst the most complex decisions in terms of uncertainties in relation to future cash flow estimations, as well as in relation to the social, technological, economic and political impacts on the estimations, which increases their complexity (Egbide et al., 2013).

Assessing the capital budgeting proposals is part of the decision to make investments (Arnold & Hatzopoulos, 2000). Within that context, the financial management and the capital investment decision-making are fundamental for the survival and success of the company in the long term (Bennouna et al., 2010).

Additionally, capital budgeting covers the most fundamental financial decision of any organization, whether it is a small, medium or large-sized company, since it determines its profitability and success ([Egbide et al., 2013](#)). Such relevance justifies why different organizations use different capital budgeting practices and procedures and how they operate complex interdependence networks among the budgeting variables ([Pike, 1986](#)).

Considering that there are different ways in which the efficiency of the decisions may be improved (for example, qualification, recruiting incentives, etc.), the capital budgeting techniques and procedures are seen as important aspects in that sense ([Pike, 1989](#)).

Capital budgeting has been a subject of growing theoretical and empirical research in the finance literature ([Al-Mutairi et al., 2018](#)). The central issue in this literature is to explore the most frequently used practices and the reason behind using some techniques more frequently than others ([Block, 1997](#); [Ryan & Ryan, 2002](#); [Markovics, 2016](#)).

Empirical research provided inconclusive evidence regarding the capital budgeting practices among practitioners; while several researches showed the payback period (PP) as the most popular technique employed in evaluating projects, other investigations demonstrated that discounted cash-flows practices are the most frequently used capital budgeting techniques (for example [Sandahl & Sjögren, 2003](#); [Hall & Mutshutshu, 2013](#); [Andrés et al., 2015](#)).

CHAPTER 3-
RESEARCH METHODOLOGY

RESEARCH METHODOLOGY

1. DATA TYPE

The data is collected from Dr. Reddy's Laboratory with the help of Secondary sources. This sources containing data that have been collected and compiled for another purpose. The secondary sources consist of readily available compendia and already compiled statistical statements and reports whose data may be used by researches for their studies, e.g., census reports, annual reports and financial statements of companies, Statistical statements, Reports of Government Departments, Annual Reports on currency and finance and Financial Journals, newspapers, etc.

Secondary sources consist of not only published records and reports, but also unpublished records. The latter category includes various records and registers maintained by firms and organisations, e.g., accounting and financial records, personnel records, register of members, minutes of meetings, inventory records, etc.

2. RESEARCH TOOLS

1. Payback period
2. Accounting Rate of Return
3. Profitability Index
4. Net Present Value
5. Internal Rate of Return

3.OBJECTIVES OF THE STUDY

(i)To understand the concept of Capital Budgeting

(ii)To know the important differences, that can arise in evaluating projects when using Net Present Value (NPV), Internal Rate of Returns (IRR), Profitability Index(PI).

(iii) To analyze and understand the Capital Budgeting process in Dr. Reddy's Laboratories Ltd, which gives mean exposure to practical implication of theory knowledge.

4.SCOPE OF THE STUDY

“Preparation of capital budgeting is an important tool for efficient and effective managerial decisions.”

So in every organization they have to examine the capital budgeting process, therefore the financial manager must be able to decide whether an investment is worth undertaking and able to decide and be able to choose intelligently between two or more alternatives.

1.The process by which company’s appraise investment decision, in particular by which capital resources are allocated to specific projects.

2.Capital budgeting requires firms to account for the time value of money and project risk, using a variety of more or less formal techniques.

3.Capital budgeting decisions affect the profitability in terms of interest of the firm. They also have a bearing on the competitive position of the enterprise. It’s a diversification burden

4.Capital investment involves cost and the majority of the firms have scarce capital resources.

5.Capital budgeting is a complex process as it involves decisions relating to the investment of huge resources for the benefit of achievement in future as it is always uncertain.

6.Understanding the importance of the capital budgeting in Dr. Reddy’s Laboratories Ltd.

5..LIMITATION OF THE STUDY

1.The study is conducted in short period. The time period of study has been limited to less than 45days. The period is small to study the practical investment decision of a company like Dr. Reddy's Laboratories ltd.

2.It does not consider all the new unapproved schemes.

3.The study is conducted with the available data, gathered from annual reports of Dr. Reddy's Laboratories ltd.

4.The formula has been used according to the availability of the data.

5.All the techniques of capital budgeting presume that various investment proposals under considerations are mutually exclusive which may not practically be true in some particular circumstance.

6.Uncertainty and risk pose the biggest limitation to the technique of capital budgeting.

7.Since the procedures and policies of the company does not allow disclosing of all financial information and has to be completed with the available data collected with the maximum effort.

CHAPTER 4-

DATA ANALYSIS AND INTERPRETATION

DATA ANALYSIS TECHNIQUES:

1. Payback period

2. Accounting Rate of Return

3. Profitability Index

4. Net Present Value

5. Internal Rate of Return.

CAPITAL BUDGETING PROCESS

Capital budgeting is process of selecting best long-term investment project. Capital budgeting is long-term planning for making and financing proposed capital outlaying.

Steps for capital budgeting process as follows:

Identification involved in capital budgeting proposals.



Screening the Poposals



Evaluation of various proposals



Fixing the priorities



Final approval and planning the capital expenditure



Implementing the proposal



Performance review

The method of evaluation of capital expenditure proposal can be classified in to two broad categories:

- (A) Traditional or Non-Discounting Techniques.
- (B) Discounted Cash Flows or Time Adjusted Techniques.

TRADITIONAL AND NON-DISCOUNTING TECHNIQUES:

- (i) Pay Back Period Method.
- (ii) Post Pay Back Profitability Method.
- (iii) Pay back reciprocal Method.
- (iv) Rate of Return Method or Accounting Method (ARR)

DISCOUNTING CASH FLOWS OR TIME ADJUSTE TECHNIQUES:

- (i) Net Present Value Method (NPV).
- (ii) Internal Rate of Return Method (IRR).
- (iii) Profitability Index or benefit cost ration Method (PI).

TRADITIONAL AND NON-DISCOUNTING TECHNIQUES:

The traditional techniques do not discount the cash flows to find out their present worth. There are two such techniques available to find out. They are:

(i) PAY BACK PERIOD METHOD:

The pay back sometimes called as payout or pay off period method represents the length of period of cash proceeds produce by the investment to be equal to the original cash outlay, i.e. the time required for the project to pay for itself back within a certain period. This method is a traditional method of evaluation of capital budgeting decisions.

$$\text{PAY BACK PERIOD} = \frac{\text{INITIAL INVESTMENT}}{\text{ANNUAL CASH INFLOWS}}$$

It is the ratio of the initial fixed investment over the annual cash inflows for the recovery period.

ACCEPT – REJECT CRITERION:

The pay back method can be used as a decision criterion to accept or reject

investment proposal by the different alternatives. If single investment is being considered, as line annual pay back period is less than the pre-determined pay back period the project will be accepted, if not it would be rejected.

Projects are under consideration that they may be ranked regarding to the length of the pay back period. However, the different proposals are to be ranked in order to priority, and then the proposal with in shortest payback period will be first in the priority list.

(ii)POST PAY BACK PROFITABILITY METHOD:

One of the drawbacks of payback period is that it does not taken into account the cash inflows earned after one payback period and hence the true profitability of the project cannot be assessed. Hence, an improvement over this method can be made by taking into account the returns which are receivable beyond the payback period.

(iii)PAYBACK RECIPROCAL METHOD:

Sometimes, Payback Reciprocal Method is employed estimate the internal rate of return generated by a project. Payback Reciprocals can be calculated as:

(This can also be calculated in percentage by multiplying the above by 100.)

This method can be used under the following two conditions:

- Equal cash inflows are generated every year.
- The project under consideration has a long life which must be at least twice the payback period.

$$\text{POST PAY BACK PROFITABILITY INDEX} = \text{POST PAYBACK PROFITS} \times 100$$

INVESTMENT

$$\text{PAYBACK RECIPROCAL} = \frac{\text{ANNUAL CASH INFLOW}}{\text{TOTAL INVESTMENT}}$$

(iv)RATE OF RETURN METHOD:

This method takes into account the earnings expected from the investment over their whole life. It is known as average rate of return method because under this method the concept of accounting profit (Net Profits after tax and depreciation) is used rather than cash inflows. The project with high rate of is selected as compared to the one with lower rate of return.

The return on investment method can be used in several ways as follows:

AVERAGE RATE OF RETURN OR ACCOUNTING RATE OF RETURN(ARR):

Under this method average profit after tax and deprecation is calculated and then it is divided by the total capital outlay or total investment in the project. In other words it establishes the relationship between average annual profits to total investment.

$$\text{ARR} = \frac{\text{AVERAGE ANNUAL PROFIT AFTER TAX} \times 100}{\text{AVERAGE INVESTMENT IN THE PROJECT}}$$

(v)RATE PER UNIT OF INVESTMENT METHOD:

This method is small variation of the average rate of return method. In this method the profit after tax and deprecation is divided by the total investment.

$$\text{RETURN PER UNIT OF INVESTMENT} = \frac{\text{TOTAL PROFIT (PADT)}}{\text{NET INVESTMENT IN THE PROJECT}} \times 100$$

(vi)RETURN ON AVERAGE INVESTMENT METHOD:

In this method the return on average investment is calculated. Using of average investment for the purpose of return on investment is preferred because the original investment is recovered over the life of the asset on account of deprecation charges.

(vii) AVERAGE RETURN ON AVERAGE INVESTMENT METHOD:

This is the most appropriate method of rate of return on investment. Under this method, average profit after depreciation and taxes is divided by the average amount of investment.

$$\text{AVERAGE RATE ON} = \frac{\text{AVERAGE ANNUAL AFTER DEPRECIATION AND TAXES}}{\text{AVERAGE INVESTMENT}} \times 100$$

ACCEPT OR REJECT CRITERIA:

The actual rate of return is compared with pre-determined or minimum required rate of return or cut off rate. If the actual average rate of return is higher than the minimum desired average rate of return, then the proposal is to be accepted otherwise rejected. If more than one alternative proposal is under consideration, the average rate of return may be arranged in descending order of magnitude starting with the proposal with the highest average of return.

The above-mentioned methods has to be used along with the discounted cash flow method

(i.e., NPV, IRR) in order to take a right decision.

DISCOUNTING CASH FLOWS OR TIME ADJUSTE TECHNIQUES:

The distinguishing characteristic of the discounted cash flow capital budgeting techniques is that they have taken into consideration the time value of money while evaluating the cost and benefits of the project.

(viii) NET PRESENT VALUE (NPV) METHOD:

The NPV method is a modern method of evaluating investment proposals. This method takes into consideration the time value of money and attempts to calculate the return on investment by introducing time element.

It may be defined as the summation of the present value of the cash proceeds in each year minus the summation of the present values of net cash outflows in each year. The NPV of all inflows and outflows of cash during the entire life of the project is determined separately for each year by discounting these flows by the firm's cost of capital.

$$NPV = \frac{CF_1}{(1 + K)^1} + \frac{CF_2}{(1 + K)^2} + \dots + \frac{CF_N}{(1 + K)^N} - \frac{e}{(1 + K)^T}$$

Where CF = Cash Flow for corresponding year.

K = Cost of capital

N = number of years.

THE STEPS TO BE FOLLOWED FOR ADOPTING THE NPV METHOD

- (i) Determine an appropriate rate of interest that should be selected and a minimum rate of return are known as cut off rate.
- (ii) Compute the present value of cash outflows at the above determined discount rate.
- (iii) Compute the present value of cash inflows at the predetermined rate.
- (iv) Calculate the NPV of the project by subtracting the present value of cash outflows from present value of cash inflow.

The present value of rupee 1 due in any number of years can be found by using the following formula:

$$PRESENT VALUE (PV) = \frac{1}{(1 + r)^n}$$

Where

PV = Present Value

R = Rate of interest or discount rate

N = Number of years.

ACCEPT OR REJECT CRITERION:

If NPV is positive the project should be accepted and if NPV is negative the project should be rejected i.e.

If NPV > Zero (ACCEPT).

If NPV < Zero (REJECT).

In case of a number of projects or more than one project select the project with greatest NPV if there is more than one project giving positive NPV

(ix)INTERNAL RATE OF RETURN (IRR) METHOD:

IRR is a modern technique of capital budgeting that takes into account the time value of money. It is also known as time-adjusted rate of return, discounted rate of return or yield method. In this method, the cash flows of the project are discounted at return as a suitable rate by hit and trail method, which equates the NPV so calculated to the amount of investment. Under this method, since the discount rate is discounted internally, it is called as internal rate of return method.

It is defined as the discount rate, which equates the aggregate present value, i.e., net cash inflows after tax (CFAT) with the aggregation present value of cash outflow of a project.

$$C = A_1 + \frac{A_2}{(1+R)} + \frac{A_3}{(1+R)^2} + \dots + \frac{A_N}{(1+R)^N}$$

Where

C = Initial cash outlay at time Zero.

A1, A2, A3--- Future net cash flows at different periods.

1, 2, 3.... N number of years.

R= Rate of discount or internal rate of return.

THE STEPS TO BE FOLLOWED FOR ADOPTING THE IRR METHOD:

(i) Prepare the cash flow table using an arbitrary assumed rate to discount the net cash flow to the present value.

(ii) Find out the NPV by deducting from the present value of total cash flows calculated in above the initial cost of investment.

(iii) If the higher discount rate still gives a positive NPV increases the discount rate further until the NPV becomes negative.

If the NPV is negative at this higher rate, the IRR must be between the approximately taken discount rates.

The actual IRR is determined by interpolation. This can be calculated using the formula:

$$\text{IRR} = \text{Ri} + \frac{\text{PV of CF at Ri} - \text{PV of COF}}{\text{PV of CF at Ri} - \text{PV of CF Rh}} \times (\text{Rh} - \text{Ri})$$

$$\text{PV of CF at Ri} - \text{PV of CF Rh}$$

Where

Ri = Rate of interest which is Lower.

Rh = Rate of interest which is Higher.

PV = Present Value.

CF = Cash Flow.

COF = Cash Out Flow.

ACCEPT OR REJECT CRITERION:

Accept the proposal if the IRR is higher than or equal to minimum required rate i.e., the discount or cut off otherwise reject.

If $\text{IRR} > K$ (ACCEPT). If $\text{IRR} < K$ (REJECT). Where $K = \text{Cost of Capital}$.

In case of alternative proposals, one which higher IRR has to be accepted as long as the IRR is greater than the discount rate.

(x) PROFITABILITY INDEX METHOD (OR) BENEFIT-COST RATIO:

It is also a time – adjusted method of evaluating the investment proposals. Profitability Index is also called a Benefit- Cost Ratio or Desirability Factor is the relationship between the present values of cash inflow at the required rate of return to the initial cash outlay of the investment. The formula to calculate Benefit – Cost Ratio or Profitability Index as follow:

$$\text{PROFITABILITY INDEX (PI)} = \frac{\text{PV OF CASH INFLOWS}}{\text{INITIAL CASH OUTLAY}}$$

ACCEPT OR REJECT CRITERION:

If $PI > 1$ (ACCEPT). If $PI < 1$ (REJECT).

In case of the alternative proposal, the project with higher PI has to be accepted.

CAPITAL BUDGETING PREPARATION AT DR.REDDY LABS:

Dr. Reddy’s lab limited has been in business for 50 years. Over these years it has diversified organically and inorganically. The Company has the advantage of its good distribution network. It walks with an objective – *by providing world class products and services in explosives, initiating systems, mining and infrastructure projects with special emphasis on safety events to total customer satisfaction.*

To achieve this objective, “Preparation of capital budgeting is a key as it is the roadmap to the financial success and independence of an organization. It also helps in managerial decisions to an investment appraisal in a company and also in financial decisions to earning their goals”.

The organization prepares a “Capital budgeting” for every financial year April 1st – March 31st, before the commencement of the next financial year. The capital budgeting is prepared by using the methods (PBP, NPV, ARR, PI, IRR).

Preface-

In Dr. Reddy's lab a number of new projects are going on. Out of which 4 projects are selected for the study. Some of the essential aspects of the projects are Depreciation Rate, Corporate Income Tax Rate and The Discounting Factor. In this Dr. Reddy's lab the Depreciation rate is 4.75% as their given, the Corporate Income Tax Rate is 34% (approximately) and the Discounting Factor is 15% which is normally followed by the corporate houses. The following table gives the abstract for these projects of the company.

SR NO.	PROJECT NAME	BUDGET ESTIMATES	DEPRECIATION	TAX	PV FACTOR
1.	Pharma Atrtone	60 Lakhs	4.75%	34%	15%
2.	Pharma Calmagzine	25 Lakhs	4.75%	34%	15%
3.	Pharmacokinetic Drug Interaction	20 Lakhs	4.75%	34%	15%
4.	Chronic Diseases General Management	10 Lakhs	4.75%	34%	15%

1.Phaarma Atrotone**(Estimated Budget of Rs. 60 lakhs)****Calculation of Cash After Tax(CFAT)**

YEAR	1	2	3	4	5	TOTAL
PBDT	35.00	38.02	40.00	42.50	42.50	198.20
LESS: DEP @ 4.75%	2.85	2.85	2.85	2.85	2.85	14.25
PBT	32.15	35.35	37.15	39.65	39.65	183.95
LESS: TAX @ 34%	10.93	12.02	12.65	13.48	13.48	62.64
PAT	21.22	23.33	24.52	26.17	26.17	121.41
ADD: DEP	2.85	2.85	2.85	2.85	2.85	14.25
CFAT	24.07	26.18	27.37	29.02	29.02	135.66
CCFAT	24.07	50.25	77.62	106.64	135.65	

Calculation of pay back period:

The pay back period lies between 2 and 3 years. Therefore the exact pay back period will be as follows:

Pay back period = Base year + required CFAT

Next year CFAT

Exact pay back period = $2 + 60 - 50.25$

27.37

= $2 + 0.35$

= 2.35

PBP = 2.35

Calculation of ARR:

**ARR = AVERAGE ANNUAL PAT × 100/
AVERAGE INVESTMENT**

= 24.282×100

30

= 80.94%

ARR = 80.94%

Calculation Of NPV

YEAR	Cash Flow	PV@ 15%	PV of Cash Flows
0	(60)	1.00	(60)
1	24.07	0.870	20.94
2	26.18	0.756	19.79
3	27.37	0.658	18.01
4	29.02	0.572	16.59
5	29.02	0.497	14.42

Total Cash flow= 89.75

NPV =29.75

NPV= PV OF CASH INFLOW- PV OF CASH OUTFLOW

PV of cash flow @ 15% = 89.75

Cash Out Flow = 60.00

Therefore to decrease the cash flow we increase the rate. Let the new rate be 18%

i.e. Total cashflow @18%= 83.48

NPV = 23.48

Calculation of IRR & IR:

The IRR is usually the rate of return that a project earns. PI measures the present value of returns per rupee invested.

$$\text{IRR} = \text{Ri} + \frac{\text{PV of CF at Ri} - \text{PV of COF} \times (\text{Rh} - \text{Ri})}{\text{PV of CF at Ri} - \text{PV of CF at Rh}}$$

$$= 15 + \frac{89.75 - 60 \times (18 - 15)}{89.75 - 83.48}$$

$$= 29.2$$

$$= 29.2$$

$$\text{IRR} = 29.2\%$$

$$\text{PROFITABILITY INDEX (PI)} = \frac{\text{PV OF CASH INFLOWS}}{\text{INITIAL CASH OUTLAY}}$$

$$= \frac{89.75}{60}$$

$$= 1.49$$

$$= 1.49$$

$$\text{Profitability Index (PI)} = 1.49 \text{ times}$$

2. Pharma Calmagzine

(Estimated Budget Rs. 25 Lakhs)

Calculation Of Cashflow after Tax (CFAT)

YEAR	1	2	3	4	5	TOTAL
PBDT	10.25	15.84	20.50	20.50	20.50	87.59
LESS:DEP @ 4.75%	1.875	1.875	1.875	1.875	1.875	5.9375
PBT	9.0625	14.6525	19.3125	19.3125	19.3125	81.6525
LESS: TAX @34%	3.08125	4.98185	6.56625	6.56625	6.56625	27.75385
PAT	5.98125	9.67065	12.74625	12.74625	12.74625	53.89065
ADD: DEP	1.1875	1.1875	1.1875	1.1875	1.1875	5.9375
CFAT	7.16875	10.85185	13.93375	13.93375	13.93375	59.8281
CCFAT	7.16875	18.0269	31.9606	45.89435	59.8281	

Calculation of pay back period:

The pay back period lies between 2 and 3 years. Therefore the exact pay back period will be as follows:

Pay back period = Base year + required CFAT

Next year CFAT

Exact pay back period = $2 + \frac{25.00 - 18.0269}{13.93375}$

= $2 + 0.5 = 2.5$

PBP = 2.5

Calculation of ARR:

ARR = $\frac{\text{AVERAGE ANNUAL PAT} \times 100}{\text{AVERAGE INVESTMENT}}$

= $\frac{10.77813 \times 100}{12.5}$

= 86.2%

ARR = 86.2%

Calculation Of NPV:

YEAR	CASH FLOWS	PV @ 15%	PV of Cashflows
0	(25.00)	1.00	(25.00)
1	10.25	0.870	8.9175
2	15.84	0.756	11.97504
3	20.50	0.658	13.489
4	20.50	0.572	11.726
5	20.50	0.497	10.1885

Total Cashflow = Rs 56.2904

NPV = 31.29604

NPV = PV OF CASH INFLOW- PV OF CASH OUTFLOW

PV OF CASH FLOW @15 %=31.29064

CASHOUTFLOW= 25.00

THEREFORE, to decrease be 18%se the cash flow we increase the rate . Let the new rate be 18%

Total cash flow =52.07857

NPV = 21.07587

Calculation of IRR & IR:

The IRR is usually the rate of return that a project earns. PI measures the present value of returns per rupee invested.

$$\text{IRR} = \text{Ri} + \frac{\text{PV of CF at Ri} - \text{PV of COF}}{\text{Ri} - \text{Rh}}$$

$$\text{PV of CF at Ri} - \text{PV of CF at Rh}$$

$$= 15 + 56.29604 - 25.00 \times (18 - 15)$$

$$56.29604 - 52.07587$$

$$= 37.23$$

$$\text{IRR} = 37.23\%$$

$$\text{PROFITABILITY INDEX (PI)} = \frac{\text{PV OF CASH INFLOWS}}{\text{INITIAL CASH OUTLAY}}$$

$$= \frac{56.29604}{25}$$

$$2.25$$

$$\text{Profitability Index (PI)} = 2.25 \text{ times}$$

3. Pharmacokinetic Drug Interaction

(Estimated Budget Rs. 20 lakhs)

Calculation of Cashflow After Tax (CFAT)

YEAR	1	2	3	4	5	TOTAL
PBDT	7.83	13.42	19.00	20.03	20.03	80.31
LESS DEP @4.75%	0.95	0.95	0.95	0.95	0.95	4.75
PBT	6.88	12.47	18.05	19.08	19.08	75.56
LESS TAX @ 34%	2.3392	4.2398	6.137	6.4872	6.4872	25.6904
PAT	4.5408	8.2302	11.913	12.5928	12.5928	49.8696
ADD DEP	0.95	0.95	0.95	0.95	0.95	4.75
CFAT	5.4908	9.1802	12.863	13.5428	13.5428	54.6196
CCFAT	5.4908	14.671	27.534	54.6196	54.6196	

Calculation of pay back period:

The pay back period lies between 2 and 3 years. Therefore the exact pay back period will be as follows:

Pay back period = Base year + required CFAT

Next year CFAT

$$\text{Exact pay back period} = 2 + \frac{20 - 14.671}{12.863}$$

$$= 2 + 0.4$$

$$= 2.04$$

PBP = 2.04

Calculation of ARR

ARR = AVERAGE ANNUAL PAT × 100
AVERAGE INVESTMENT

$$= 9.97392 \times 100$$

$$10$$

$$= 99.73\%$$

ARR = 99.73%

Calculation Of NPV:

YEAR	CASHFLOWS	PV@15%	PV OF CASHFLOWS
0	(20.00)	1.00	(20.00)
1	7.83	0.870	6.8121
2	13.42	0.756	10.14552
3	19.00	0.658	12.502
4	20.03	0.572	11.45716
5	20.03	0.497	9.95491

TOTAL CASHFLOW= 50.87169

NPV=30.87169

NPV = PV OF CASH INFLOW – PV OF CASH OUTFLOW

PV of cash flow @ 15% = 30.87169

Therefore to decrease the cash flow we increase the rate. Let the new rate be 18%

Calculation of IRR & IR:

The IRR is usually the rate of return that a project earns. PI measures the present value of

returns per rupee invested.

$$\text{IRR} = \text{Ri} + \frac{\text{PV of CF at Ri} - \text{PV of COF} \times (\text{Rh} - \text{Ri})}{\text{PV of CF at Ri} - \text{PV of CF at Rh}}$$

$$= 15 + \frac{50.87169 - 20.00 \times (18 - 15)}{50.87169 - 46.92716}$$

$$= 15 + \frac{50.87169 - 60.00}{50.87169 - 46.92716}$$

$$= 15 + \frac{-9.12831}{3.94453}$$

$$= 15 - 2.314$$

$$\text{IRR} = 12.686\%$$

$$\text{PROFITABILITY INDEX (PI)} = \frac{\text{PV OF CASH INFLOWS}}{\text{INITIAL CASH OUTLAY}}$$

$$= \frac{50.87169}{20}$$

$$= 2.54358$$

$$\text{Profitability Index (PI)} = 2.5 \text{ times}$$

4. Chronic Diseases General Management:

(Estimated Budget Rs 20 lakhs)

Calculation of Cash Flow after Tax (CFAT)

YEAR	1	2	3	4	5	TOTAL
PBDT	0.50	1.83	2.05	2.05	2.05	9.38
LESS DEP @ 4.75%	0.475	0.475	0.475	0.475	0.475	2.375
PBT	0.025	1.355	1.575	1.575	1.575	6.105
LESS TAX @34%	0.0085	0.4607	0.5355	0.5355	0.5355	0.5355
PAT	0.0165	0.8943	1.0395	1.0395	1.0395	4.0293
ADD DEP	0.475	0.475	0.475	0.475	0.475	2.375
CFAT	0.4915	1.3693	1.5145	1.5145	1.5145	6.4043
CCFAT	0.4915	1.8608	3.3753	4.8898	6.4043	

Calculation of pay back period:

As the cumulative cash flows are less than initial investments of Rs. 10 lakhs, therefore the cash flows are not recoverable in the project duration. For this project, the discounted pay back period is not existed

Calculation of ARR:

$$\text{ARR} = \frac{\text{AVERAGE ANNUAL PAT} \times 100}{\text{AVERAGE INVESTMENT}}$$

$$= \frac{0.80586 \times 100}{5}$$

5

$$\text{ARR} = 16.11\%$$

Calculation Of NPV

YEAR	CASH FLOW	PV @15 %	PV OF CASHFLOW
0	(10.00)	1.00	(10.00)
1	0.50	0.870	0.435
2	1.83	0.756	1.38348
3	2.05	0.658	1.3489
4	2.00	0.572	1.144
5	3.00	0.497	1.491

TOTAL CASH FLOW = 4.4189

NPV= (5.5811)

As the total cash flows, are less than the out flows. The NPV is also negative. In this situation, the company earning or internal rate of returns also negative. Even if calculated IRR it will become an interactive and complicated process. It can better solved by the MIRR method.

Calculation of IR:

**PROFITABILITY INDEX (PI) = PV OF CASH INFLOWS /
INITIAL CASH OUTLAY**

= 4.4189/

10

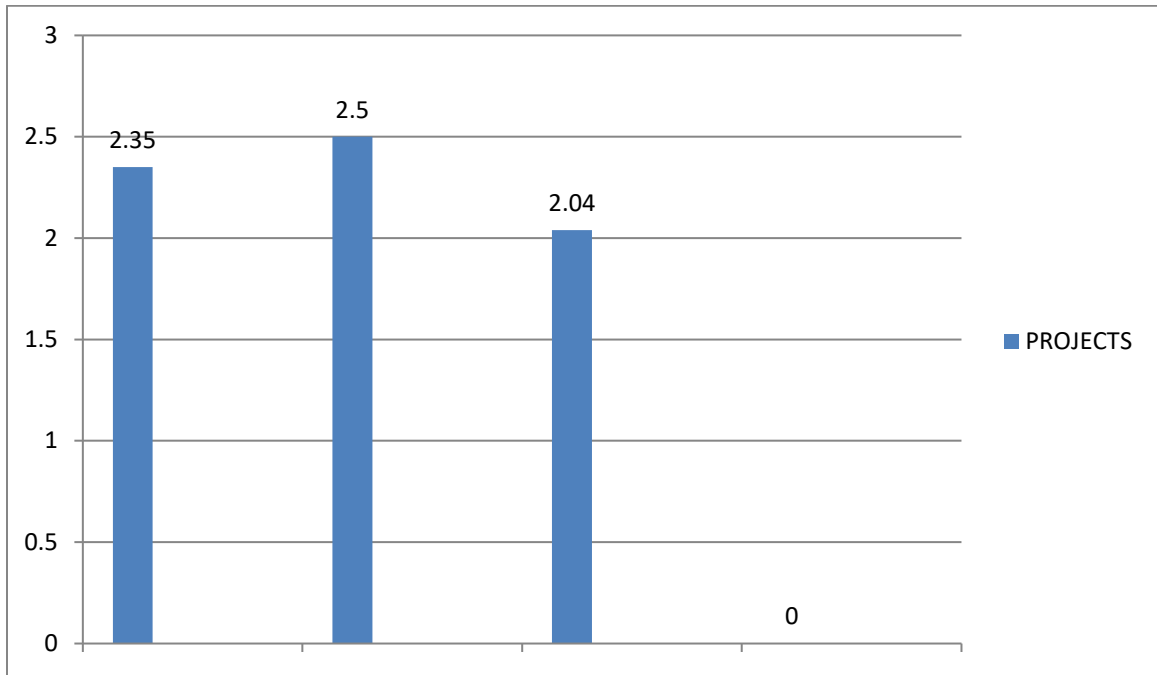
= 0.44

Profitability Index (PI) = 0.44 times

Comparative Analysis of all the 4 projects

PROJECT NAMES	DISCOUNTD PBP (years)	ARR (%)	NPV (Rs.In lakhs)	PI (TIMES)	IRR(%)
Pharma Atrotone	2.35	80.94	29.75	1.49	29.2
PharmaCalmazine	2.5	86.2	31.29604	2.25	37.23
3 .Pharmacokinetic Drug Interaction	2.04	99.73	30.87169	2.5	38.47
4.Chronic Diseases General Management	-	16.11	(5.5811)	0.44	-

1. PROJECT DISCOUNTED PAY-BACK PERIOD



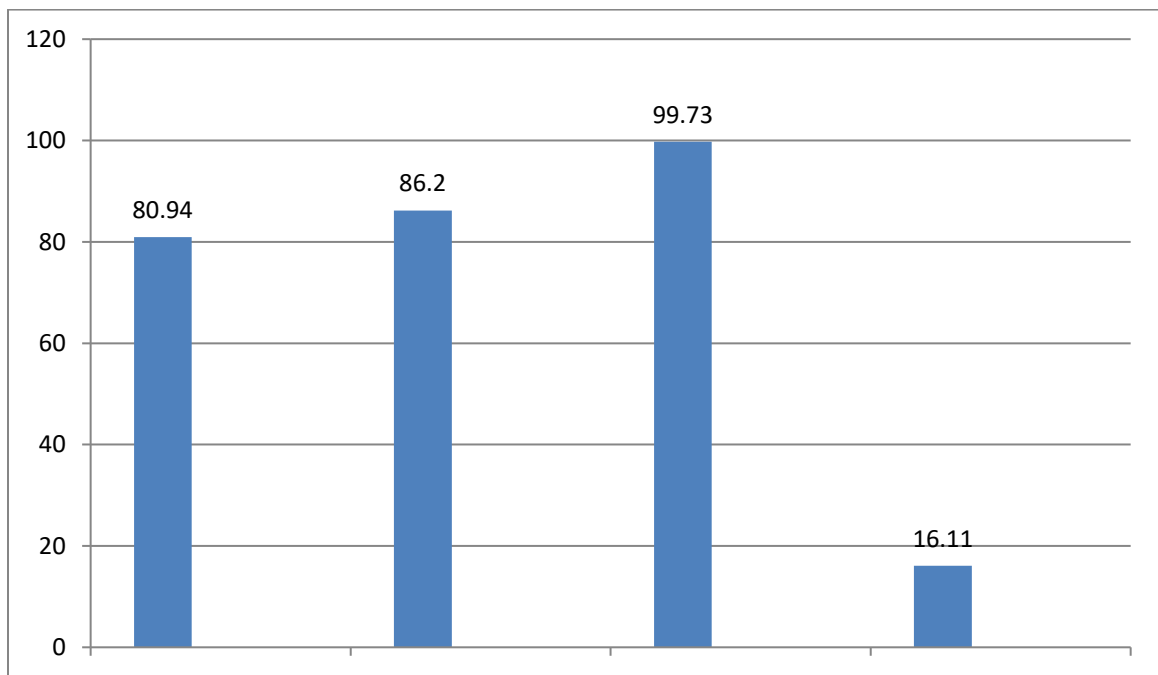
INTERPRETATION:

When compare to all the 4 projects except the 4TH PROJECT does not have the PBP, because the project investment is not recover in the present cash flows, it shows negative cashflows, therefore the project should be rejected. Other 3 projects are showing the positive values, therefore the projects are accepted.

In project 3 we can recover the investment within a short period of time i.e., 2.04 years, when compare with the other projects

2. PROJECT ARR

ARR(%)



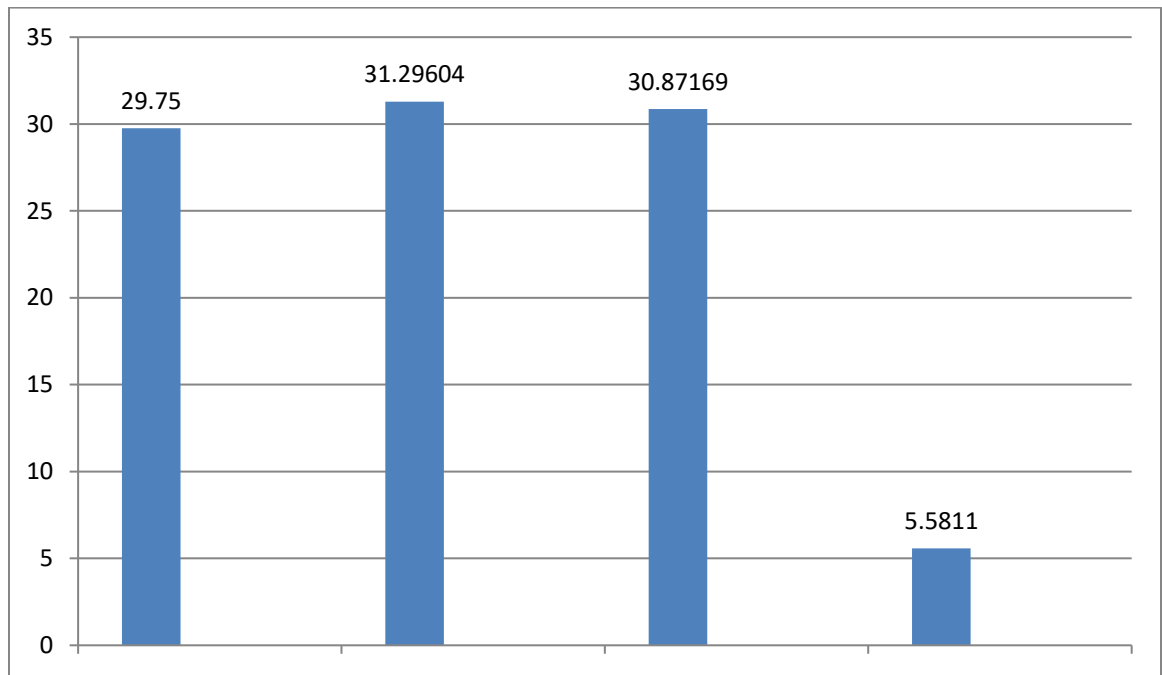
INTERPRETATION:

When compare to all the projects of ARR, in the 3 project i.e Pharmacokinetic Drug Interaction the ARR % is 99.73%, so in this project the average rate of return is more.

When compare to all projects expects the Chronic Diseases General Management i.e. Project 4 is less than the companies minimum required rate of return

3.PROJECT NPV

NPV (Rs. In lakhs)



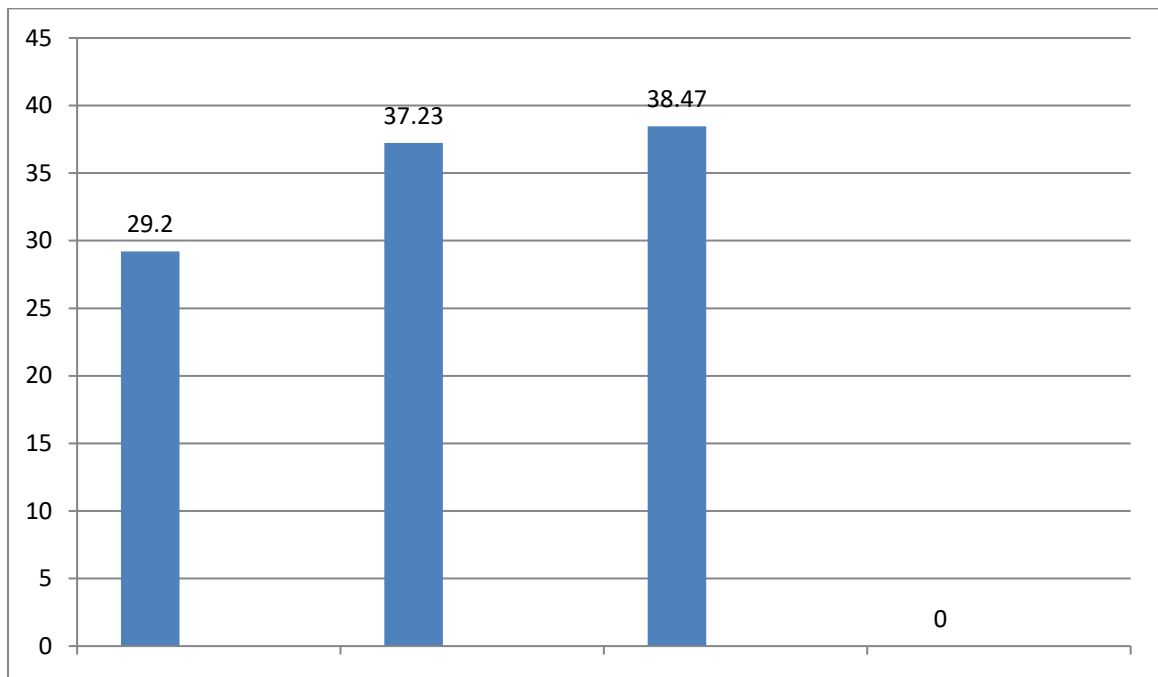
INTERPRETATION:

The NPV should be greater than the cash outflow then only the project should be accepted. Except 4th project all projects are showing the positive values only. In the 4th project , the NPV is less than the cash outflow therefore the project should be rejected. It shows the negative value of the project.

When compare to all the projects the NPV value is more in 3rd project Pharmacokinetic Drug Interaction i.e. 30.87169

4.PROJECT IRR

IRR(%)



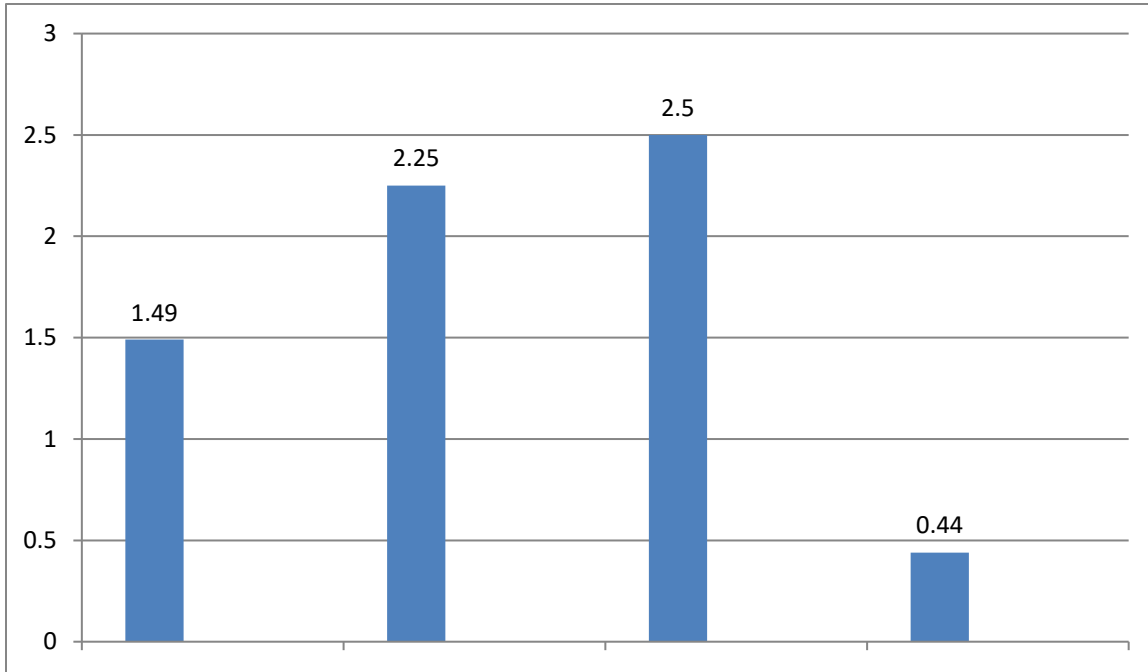
INTERPRETATION:

In the 4th project we cannot calculate the IRR because the NPV is less than the project investment.

When compare to all the projects the IRR percentage is more in 3rd project Pharmacokinetic Drug Interaction i.e., 38.47, better we can choose the 3rd project

5.PROFITABILITY INDEX

PI



INTERPRETATION:

The above projects Profitability Index are more than 1 but in the 4th project it fails to earn profit of 0.44 at rupee of investment.

When compare to all the projects the Profitability Index is more in 3rd project i.e., 2.5 times. But we can choose the project 1, because we can recover over investment with short period in this project i.e., 1.49 times.

NOTE: Here the profitability index is more than 1 other wise the project should be rejected.

CHAPTER 5-
FINDINGS

FINDINGS

The following points were observed from the capital budgeting is as follows:

1. The first project i.e., Pharma Atrotone is generating unequal cash flows for 5 years. The initial investment is Rs. 60 lakhs.

2. The ARR is 80.94% which is greater than the company's rate of return.

3. The discounted pay back period is 2.35 years.

4. NPV and IRR are positive for the proposal.

5. The Profitability Index (PI) is $1.49 > 1$.

6. Pharma Calmagzine for 1 stage crimping shops bldgs is experiencing the unequal cash flows and the initial investment is Rs. 25 lakhs.

7. The ARR is 86.2% more than required rate of return. Therefore, accept on ARR basis (traditional method).

8. NPV is positive for the project and the $IRR > ARR$

9. The discounted pay back period is 2.5 years.

10. The Profitability of the project on every one rupee of its investment is 2.25 times.

11. The 3rd project is Pharmacokinetic Drug Interaction is also generating unequal cash flows for 5 years. The initial investment is Rs. 20 lakhs.

12.The ARR is 99.73% which is greater than the required rate of return.

13.The discounted pay back period is 2.04years.

14.NPV and IRR are positive for the proposal.

15.The Profitability Index (PI) is 2.5 times which is higher among all projects. As its returns are high, the project is also risky.

16.Chronic Diseases general mangement is the 4th project generating unequal cash flows for 5 years. The initial investment is 10 lakhs. But in this the investment will not recoverable in the project duration.

17.The ARR is 16.11% which is less than the required rate of return.

18.We cannot calculate the discount pay back period because in this project the investment is not recoverable.

19.NPV negative. If NPV negative then the project is not worthy or in other words at present the company will not get profits if it invest now.

20.The Profitability Index (PI) is 0.4 which is less than 1 ($0.4 < 1$), which is not good sign.

CHAPTER 6-
CONCLUSION

CONCLUSION

.When an organization is setting up a capital budgeting for the business, they are planning for the outcome of the month. How involved the project budgeting is individual will be depends on their investment decisions in a business.

.When making the capital budgeting decision, the financial manager effectively analyzed the long term investment programmes, so that it will improve the business over all.

.Many businesses ignore or forget the other half of the budgeting. Capital budgeting are too often proposed, discussed and accepted. It can be used to influence managerial action for long-term implications and affect the future growth and profitability of the firm. Good management looks at what that difference means to the business.

.Remember to keep the records that have been created. The company should have capital budgeting records of the projects always on file, so that it gives the future course of action for the investment proposal for long-term period.

.Organizations must make sure that, more attention should be paid upon the investment proposal or course of action whose benefits are likely to be available in future over the lifetime of the project, as the demand on resources is almost always higher than the availability of resources.

CHAPTER 7-
SUGGESTIONS

SUGGESTIONS AND RECOMMENDATIONS

Few of my suggestions are based on the results observed in four of the projects which were as follows:

1. In 1st project i.e., Pharma Atrotne is having a high Accounting Profit (ARR) no 80.94%, NPV, IRR and PI are also positive. This is risky project as its returns are also high. Therefore, the project is accepted.

2. Pharma Calmagzinc for 1 stage crimping shops bldgs is profitable in all contexts. PBP, ARR, NPV, IRR and PI are positive. As its returns are positive, accept the project.

3. The 3rd project is Pharmacokinetic Drug Interaction is having a high Accounting Profit (ARR) no 99.73% and remaining all techniques are positive, but this is a risky project as its returns are high. Therefore, the project is accepted.

4. Chronic Diseases General Management is not profitable project, it is generating losses at present. Therefore the project is rejected.

CHAPTER 8-
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