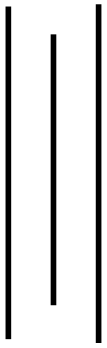
CAPITAL BUDGETING PRACTICES IN HYDROPOWER COMPANIES OF NEPAL

By
BASU CHAPAGAIN
Shanker Dev Campus
Campus Roll No: 163/062
T.U. Regd. No: 5-1-37-585-99
2nd Year Exam Symbol No.: 4424

A Thesis Submitted to:
Office of the Dean
Faculty of Management
Tribhuvan University



In partial fulfillment of the requirement for the degree of
Master of Business Studies (MBS)

Kathmandu, Nepal
November 2011

RECOMMENDATION

This is to certify that the thesis

Submitted by:

BASU CHAPAGAIN

Entitled:

CAPITAL BUDGETING PRACTICES IN HYDROPOWER COMPANIES OF NEPAL

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

……..……..……	.....……..……..…..……	……..……..
Asso. Prof. Achyut Raj Bhattarai	**Prof. Bishweshor Man Shrestha**	**Prof. Dr. Kamal Deep Dhakal**
(Thesis Supervisor)	**(Head, Research Department)**	**(Campus Chief)**

……..……..……..

Rashmee Rajkarnikar

(Thesis Supervisor)

VIVA-VOCE SHEET

We have conducted the viva –voce of the thesis presented

By

BASU CHAPAGAIN

Entitled:

CAPITAL BUDGETING PRACTICES IN HYDROPOWER COMPANIES OF NEPAL

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

Master of Business Studies (MBS)

Viva-Voce Committee

Head, Research Department ……..……

Member (Thesis Supervisor) ……..……

Member (Thesis Supervisor) ……..……

Member (External Expert) ……..……

DECLARATION

I hereby declare that the work reported in this thesis entitled "**Capital Budgeting Practices in Hydropower Companies of Nepal**" submitted to Office of the Dean, Faculty of Management, Tribhuvan University, is my original work done in the form of partial fulfillment of the requirement for the degree of Master of Business Studies (MBS) under the supervision of **Asso. Prof. Achyut Raj Bhattarai** and **Lecturer Rashmee Rajkarnikar** of Shanker Dev Campus, T.U.

……

Basu Chapagain
Shanker Dev Campus
Campus Roll No: 163/062
T.U. Regd. No: 5-1-37-585-99
2nd Year Exam Symbol No.: 4424

ACKNOWLEDGEMENT

The thesis entitles "*Capital Budgeting Practices In Hydropower Companies of Nepal*" has been prepared under the valuable supervision of Associate Prof. Achyut Raj Bhattarai and Lecturer Rashmee Rajkarnikar of Shankar Dev Campus. It is my privilege of getting helps and co-operation from all the persons who related to this research behind the curtain but not the possible to take the name all of them. However, it will be matter of injustice if I not take the name of the persons from whose valuable suggestion and support me completed my research.

Firstly, I would like to extend my sincere gratitude to my thesis supervisors. Asso. Prof. Achyut Raj Bhattarai and Lecturer Rashmee Rajkarnikar of Shankar Dev Campus who guided throughout research work with providing valuable guidance as well as co-operation in completing the research. Without their remarkable guidance and suggestion, I would not been able to complete it in this form.

I would like to express big thank to all the companies' staffs for their remarkable support to conduct necessary survey and complete the study; it would have not been possible to complete the study without their support. All the authors& writers are most valuable guidance whose books, reports and thesis I have been consulted during this research work.

Lastly, I also owe deep gratitude to all family members, my friends, colleagues, well wishers and various organizations & institutes extended their generous support to complete this thesis work.

Basu Chapagain

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURS

ABBREVIATIONS

ABB	Activity Based Budgeting
AD	Anno Domini
ARR	Accounting Rate of Return
BEP/BEA	Break Even Point/ Break Even Analysis
BKPC	Bhote Koshi Power Company
BPC	Butwal Power Company
BS	Bikram Sambat
CEC	Certainty Equivalent Coefficient
CFAT	Cash Flow After Tax
CHCL	Chilime Hydropower Company Limited
CIMA	Chartered Institute of Management Accountants
CV	Coefficient of Variation
CVP	Cost Volume Profit
DCF	Discounted Cash Flow
DPBP	Discounted Pay Back Period
DT	Decision Tree
E	East
FB	Flexible Budget
FVCF	Future Value of Cash Flows
GDP	Gross Domestic Product
HLM	High Low Method
HPP	Himalayan Power Partner
IO	Initial Cash Outlay
IRR	Internal Rate of Return
LBPN	Laughing Buddha Power Nepal
MA	Management Accounting
MAIS	Management Accounting Information System
MCS	Management Control System

MIRR	Modified Internal Rate of Return
MW	Mega Watt
N	North
NEA	Nepal Electricity Authority
NPV	Net Present Value
PBP	Pay Back Period
PI	Profitability Index
PPC	Profit Planning and Control
RAD	Risk Adjusted Discount Rate
ROI	Return on Investment
SD	Standard Deviation
Sq.Km	Square Kilometer
WACC	Weighted Average Cost of Capital.
WTO	World Trade Organization
ZBB	Zero Based Budgeting

CHAPTER- I
INTRODUCTION

1.1 Background of the Study

In terms of economic development, Nepal ranks low. Yet, despite poverty, unstable government and ten years of insurgency, a few initiatives in Nepal's energy sector are showing how thinking small can bring big results. While Nepal's planned mega dam projects have stalled, there micro counterparts have been successful, with some financial local development. Solar power is illuminating remote regions. And since 1992, a small non-governmental organization has improved rural livelihood while reducing greenhouse gas emissions by using cattle dung to create fuel.

For any country, its energy supply is a limiting factor. Energy is expensive, generates pollution but is absolutely necessary. Many developing countries face the conundrum of possessing natural resources that could potentially supply large amount of energy, but lacking the funds, resources and infrastructure to exploit them.

Nepal is perched high up among the Himalayan Mountains. Among the nation's greatest resources are its fast-flowing rivers, which hydropower plants could harness to generate electricity. According to the Nepal Electric Authority, the country's total hydropower potential is up to 45,000 megawatts, 45 times what is needed to power a US city the size of Seattle. Gigantic dams could control flood, irrigate fields and generate electricity- not only for Nepal but potentially for India too. But the costs involved are prohibitive and no Nepali government has yet dared lunch such projects, which would mean flooding valleys and potentially moving populations.

It is 'micro' hydropower plants, built on small rivers that have been most successful. Already, 2,000 of these produce nearly one-sixth of the total electricity produced by hydroelectric plants in Nepal. Such plant was set up on a small tributary of the Arun River five years ago by Hari Dahal, a former member of parliament, and business partners. Something nagged Dahal's conscience, and he is now working with colleges in his native town Khandbari to set up a trust that will renovate a 250- kilowatt plant destroyed by Maoist rebels few years ago.

The plan is to sell the power to the national grid and pump the profits into higher education in the district. If successful, this model could replicated all over Nepal. In the world energy consumption record, hydroelectricity has contributed only 2.3 % in 2010. Only 6 countries in the world viz. Brazil, Canada, Norway, Paraguay, Switzerland and Venezuela meet majority of the energy need from hydroelectric power. Looking into the utilization of hydro potentiality, Norway is on the top and other countries are focusing on harnessing hydro potentiality for reducing the percentage of consumption of energy from other sources.

Nepal is located between two fast growing big economics, china and India. China is the largest hydroelectric power generator in the world, which generated 652.05TWh energy from around 200000 MW, installed capacity in 2009. In the same year, India ranking as the seventh largest hydroelectric power generator in the world, which generated 115.6TWh energy from around 34000 MW, installed capacity. China and India has utilized 22.25% and 15.80% hydroelectric potential respectively. However, there is energy deficit in India and is growing further.

Nepal started hydroelectric generation in 1911 AD but till date has been able to harness only about 2% of the techno-commercial hydroelectric potential. The country is facing energy crisis and the electrified consumers face load shedding to the extent of 18 hours per day during winter season. Accelerated development of hydropower is required not only to meet the energy deficit but to fuel the economic growth of the country. The utilization of hydropower potential complemented by the energy deficit in the neighboring countries can propel the economic growth multifold (http. www.nea.org.np).

Capital budgeting as the decision making is the process by which firms evaluate the purchase of major fixed assets including building machinery and equipment. It is also covers decision to acquire other firms either thought the purchase of their common stock or groups of assets that can be used to conduct an ongoing business. Capital budgeting is of paramount importance as a framework of future development, and as a major determinant of efficiency and competitive power of firm. It is relates to fixed or long-term asset, which are defined as assets that are in operation and yield returns over a period of time. It therefore, involves a current outlay in return for a series of anticipated future benefits.

The main exercise involved in capital budgeting is to relate the benefits to costs in some reasonable manner, which would be consistent with the value maximizing objectives of the business. Capital budgeting decision is the most important area of managerial decision as it involves more extended estimation and prediction of things to come requiring a high order of intellectual ability of their economic analysis. Heavy spending on capital assets since Second World War has stimulated a genuine and lively interest on the part of the economists' financial analysis, and accountants in managerial approaches to capital budgeting decisions.

Capital budgeting consists in planning for development of available capital for the purpose of maximizing the long term profitability (return on investment) of the firm. It has long term planning for making and financing proposed to capital outlay. On the basis of the above definitions, it can be said the capital budgeting is related to fixed assets. It is a long term planning. It is an exchange of current fund with future benefits and benefits will occurs over a series of years. It can not only be taken as the budget process but also as a tool for making various investment decisions *(Horngren & Garry; 2001).*

1.2 Historical Perspectives on Power Development in Nepal

A study of available articles and literature suggest that the history of power development in Nepal can be compressed to the following three periods:

1.2.1 Rana Regime

The history of electricity in Nepal is dated back to 1911 A.D. on May 22 of this year, world of electricity. No wonder Nepal's system now is based on tradition left behind by the early British experts. The 50 HZ frequency, 11KV\230 V distribution voltage world of electricity. No wonder Nepal's system now is based on tradition left behind by the early British experts. The 50 HZ frequency, 11KV\230 V distribution voltage level adopted in Nepal very much speak for the British influence in Nepal's power system. Nepalese socio-political environment then was very much agrarian and feudalistic in nature. Only those close to the ruling class enjoyed the benefits the electricity.

1.2.2 Panchayat Regime

Under the Soviet Union grant, Panauti (2.4 MW) (2002 BS) was the first hydro power station built the during the panchayat era. A stride was taken when Trishuli (24.5 MW) was built and commissioned in 2023 BS (1967 AD) with Indian cooperation. Sunkoshi Hydropower station (10MW) was built under the Chinese grant in 2029 BS (1972 AD). Subsequently, at Pokhara, Dhankuta, Surkhet, Doti, Jhomsom, Jumla ans Phidim small hydropower stations were built and commissioned. With these developments,electricity became easily available to the general public and also paved the way for industrialization in the country. Kulekhani-1 (60MW) built and commissioned in 1982 AD with Japanese assistance, became the first ever high dam power station of Nepal. In a cascading structure, Kulekhani-2 power station (32 MW) came into line in 1986 AD. Marsyangdi with a capacity of 69MW was built and commissioned in 1989. Thus, Nepal could reach a position of boosting a respectable figure of few hundred MW of installed capacity during this era.

1.2.3 Democracy Regime

Formulation of the policies in line with the changed scenario was the foremost task before the first government of democracy era. The promulgation of laws and policies like industrial enterprises act, electricity development policy, industrial policy, foreign investment and technology transfer act (1992) etc heralded the era of private participation in power sector of Nepal.

The first power station to come in line after restoration of multiparty democracy was the multi fuel power plant with a capacity of 26 MW. Andhikhola and Jhimruk both owned by Butwal Power Company were commissioned in 1991 and 1994 respectively. But these additions were not enough to satisfy the rising demand. country was banking on Arun-III too meet the power needs, which torpedoed by the World Bank scrapping of the project. Unfortunately, the political turmoil of the 1989-90 and the so called no-option trap allegedly contrived by the proponents of Arun-III project led to a situation whereby there was no ready alternative plan for meeting the power demand in the event of cancellation of Arun –III. Consequently, the post 1990 period saw unprecedented power crises.

The situation entailed that Khimti-1 and Bhotekoshi the only power project ready for takeoff is speeded up. Power Purchase Agreements were concluded for the development of Khimti-1 and Bhotekoshi hydropower projects. The first unit of Khimti-1 delivered on chaitra 10, 2056 (March 3, 2000) and Bhotekoshi was commissioned on Poush 19, 2057. This greatly facilitated in balancing the supply demand equation. However, the peak time continued to see the deficit.

In March 13, 2000 (Falgun 30, 2056) Puwa Khola Hydropower project undertaken by NEA was synchronized for the first time. Prior to this commissioning of Tanakpur-lalpur 132 KV line in Dec 3, 1999 (2056\08\17) enabled Nepal to receive 70 million unit of annual free energy from India. In the meanwhile, in 1997, second phase of multifuel Plan in Duhabi was commissioned and 13 MW of power was added to the system.

The first unit of Kali Gandaki-A (144 MW) is planned to be commissioned in March 22, 2002(Chaitra 9, 2058). With this 48 MW will be added to the system and the existing deficit of about 20MW will be served. Under German grant, Middle Marsyangdi (70) is under construction and is stated to be completed in 2004. Chilime power project being promoted as a model project in terms of use of ingenious capital, management and technology is expected to start generation from the end of 2002. On the private sector, a good number of PPAs have already been signed. So Nepal is all set to make a major stride in power development within few years. After the commissioning of all units of kaligandaki "A" the total capacity of NEA system will be 558.2 MW including 113.4 MW of capacity of IPP. The first period is characterized by private sector initiatives. The main thrust of hydropower development in Nepal during the Panchayat period is mostly confined to public sector effort and is characterized by, as per Mr. S.B. Pun, bilateralism and Multilateralism (Pun, 1999). Liberalization and privatization is major change that took place in post democracy era in power development, attracting foreign as well as local investors to this sector. Mr. S.B. Pun commented the following with reference to the history of power development in Nepal ***(Pun; 1998).***

Those private sector initiatives in the Nepalese power sector are dead and forgotten chapters. Very few have memories about them, which I now believe, was Nepal's real golden period in the power sector. This was an era where domestic capital mobilization and indigenous capability building that was so much talk about now, really took place."

"The charm of bilateralism had a magnetic apple; roads, powerhouses and transmission line being built free on grants. Yes, they were a few political pills to swallows but we generally believed ourselves as Zamindars, to be fed free lunches. Most of us, engineers, unwittingly became glorified clerks acting as were liaison officers of projects and signing on the dotted line. We totally failed to read the writing on the wall, that on the wall, that one day we got to pay heavily for these free lunches. Multilateralism definitely has its charm; hundreds of millions of denominated loans, a grace period of about 8 years, a comfortable maturity period varying from 23 to 40 years, a nominal service charge not exceeding 10% plus a commitment charge of about 0.5% Nepal felt that this was a manna from heaven not to be questioned at all with a strong multilateral donor in the lead other benefit accrued like grants and soft loans from other bilateral donors. Nepal really fell in live with this mechanism. But after three decades of operation in the power sector with the likes of Kulekhani, Marsyangdi and the aborted Arun-II, the honeymoon phase was over and things looked a bit sour. First the donors were unhappy. They complained that despite pouring in billions of dollars there were hardly any trickledown effect to the real poor people, there was no impact on poverty alleviation as manifested by the start 32% of the population wallowing below the poverty line, also there was no progress in making transparent dealings but instead an increase in rampant corruption fueled by political chaos. As the recipient, Nepal was equally unhappy: its power sector in shambles with actuates load shedding, extremely high tariff and belated realization of the impact of the strings of conditional ties it happily put its signature on, the donors' total grip on the country's macro-economic activities and the regular prescription in the form of structural adjustment programs. In our honeymoon fervor, Nepal forgot the virtues of domestic capital mobilization and the domestic capability building. It is in fact the donors not us who wanted our attention to be focused on those forgotten virtues. This made someone recite the Nepalese proverb "A women is not a women unless she has given birth to a child, and a man is not man unless he has built a house"

in the Nepalese power sector there was no single "man" – a man of the likes of Pada Sundar Mall and OD Hoftun".

In four decades, Nepal has completed a full circle and come back to where it had started the private sector 1939. It's not only the utilities but the countries themselves that are cash stapped. Our objective of deregulation is to create an environment whereby the Independent Power Procedures (IPPs) will bring in his precious private resources for developing the power sector. The Asian and Latin American economies are booming though some hiccups are being felt with the Asian meltdown. Our load growths are continually in the double digits. It is this load growth and it is this job opportunities that the IPPs, mushrooming in the developed western countries, are eyeing in the vast emerging markets of China, India, Brazil and even Nepal. The evolving role of the multilateral institutions from that of the leaders to public enterprises to that of the facilitators to private investment is a recent happening. The World Bank's power development fund is the new mantra for Nepal. Acts and regulations were and are being rewritten to attract the private sector. The hard realities of attracting the foreign investors are that repayment to attract the private sector. The hard realities of attracting the foreign investors are that repayment will have to be dollar dominated, tariff suitably escalated and non-payment of dues fully counter guaranteed by the government.

1.3 Statement of the Problem

The problem towards which study is directed identifies the long-term investment decision in hydropower sector. Hydropower sector is major competitive power of energy sector. In the present situation, the world has been facing energy problem. Hydropower is the best alternative source of the energy increasing demand of electricity is nearly 8.5% per year. In Nepal it can be said that the people should built habit to live without Light/ Electricity. In summer season for nearly six month we are facing unexpected load shedding problem about 10 to 18 hours. Theoretically Nepal has 83000 MW hydropower potential, out of which about 43000MW is technically and economically exploitable. Unstable Government, lack of long-term vision, political interferes in projects and commission and corruption made lightless Nepal.

As a leader of the country's power sector Nepal Electricity Authority, NEA has the prime responsibility of taking necessary steps towards achieving this goals but political interfere make NEA disable. Considering NEA's limited resources for capital investment, financial resources available in the local market should be tapped for the equity contribution.

The problem towards which this study is directed to identify and analyze the long term investment decision in hydropower companies of Nepal. These companies are not performing well as is evident from their annual reports. Poor performance is the outcome if poor planning, controlling and decision making. This has raised the question whether Nepalese managers are competent enough? Do they practice management accounting tools and techniques particularly capital budgeting to carryout planning, decision making and controlling functions?

The main purpose of budget is to ensure the planned profit of the company. So, it is considered as a tool of planning and controlling the profit. One of the primary objectives of an annual budget is to measure the profit expectation for the next financial year with regarded to all the circumstances favorable and unfavorable that can influence the trading prospect.

Besides, the study attempts to seek answers of the following questions.

- Whether or not Nepalese Hydropower companies are practicing Capital Budgeting tools?
- How the hydropower companies can apply capital budgeting tools to improve the competitiveness of the Nepalese companies?
- Which of the capital budgeting tools are mostly practiced and which aren't practiced till now?
- What are the major difficulties in the application of Capital Budgeting?
- What types of contemporary steps are essential for performance important of Nepalese companies?

1.4 Objectives of the Study

The main objectives of this research are to examine and study the capital budgeting practices in Hydropower companies of Nepal. The specific objectives of the study are as follows:-

- To see the present practices of capital budgeting tools in the hydropower companies of Nepal.
- To identify the difficulties in applying capital budgeting tools in Nepalese hydropower companies.
- To make recommendations to overcome the difficulties in applying capital budgeting tools in Nepalese companies.

1.5 Significance of the Study

The present research work is the study of the practices of capital budgeting tools in hydropower companies of Nepal. Analysis of financial position and statement is a curial part of financial decision making process of a business enterprise. Poor financial management affects adversely on liquidity turnover and profitability. It is required to measure the financial position of the business periodically in order to ensure smooth functioning of a business, big or small.

Nepal as a least developed country needs more and more new energy sources to meet the over-increasing demand for socio-economic development and industrialization of the country. In this backdrop, hydropower is the only resource available abundantly in all hilly and mountainous part of the country. Access to electricity promotes new economic activities, empowers women by reducing domestic drudgery in firewood's collection, improves health and education services and provides a cleaner and healthier home environment.

This study attempts to provide information and draw the attention of private and non governmental agencies that are willing to invest in hydropower projects in Nepal. As well the study examines the application of capital budgeting tools, explores the problems and potentialities of the selected companies, provides information on the application of the tools under different circumstances through which it encourage the use of capital budgeting tools in decision making to those companies who have yet

not used any tools, provides literature to researcher who wants to carry on further research in this field.

1.6 Limitation of the Study

The limitations of the study are as follows:

- The study is concerned with Capital Budgeting. It does not consider the economic aspects of the companies.
- The study is focused on the selected hydropower companies so the findings might not be applicable to other companies.
- The study mainly depends on questionnaire/ primary dates. The information's are based as perceived by the financial executive/ account officers of respective companies. In this context the actual practices and the perceived practices might be different.
- The study gives attention to the practices of capital budgeting only; it does not consider the implementation aspects of the tools.
- Only few financial and statistical tools are used in the analysis.

1.7 Organization of the Study

The aim of the dissertation is to explain the financial position of Nepalese hydropower companies. The study has been divided into five chapters. Each chapter is devoted to some aspects of the study.

Chapter I- Introduction

This chapter deals with a view to explain the aspect of hydropower development. It focused on the statement of the problem, importance, objective, limitations and organization of the study.

Chapter II- Review of Literature

This chapter reviews available literature regarding findings and recommendation and the conceptual framework.

Chapter III- Research Methodology

This chapter includes research design, types and sources of data, data collection procedures, Methods of analysis and analytical tools used.

Chapter IV- Presentation and Analysis of Data

This chapter analyze based on facts and figures gathered by different methods i.e. CFAT, NPV, IRR, and PI Ratio. It consists analysis of questionnaires, analysis of open end opinions and major findings.

Chapter V- Summary, Conclusion and Recommendation

Ultimately the last chapter of the study covers Summary, Conclusions of the study and recommendations and suggestions for the further improvement.

CHAPTER - II
REVIEW OF LITERATURE

The Way to enlights what other researches in the area stated problem has uncovered, is Review of Literature. It establishes a point of departure for future research, reveals areas of needed research, avoids needless duplication of costly effort and mainly it provides foundation for present study. It helps an adequate feedback to broaden the information and to base the inputs of the study. The review of literature is the gateway to researchers to know how and what research has been done over subject, what theories have been advanced the approach taken by other researchers and highlight the gaps to fill through the proposed research.

In this chapter, the focus has been made on the review of literature relating to the practices capital budgeting of Hydroelectric Projects. This chapter reviews the available literature relating to hydropower sector and views expressed by various scholars and researchers. A little bit study/research has been made in aspects of hydropower companies especially in financial performance, performance evaluation and capital budgeting. There are some books, articles, journals and other studies done related with capital budgeting practices of hydropower companies. Some of the relevant studies, literature on capital budgeting practices are reviewed below. Every study is very much based on past knowledge which is the key of present knowledge. Therefore, the review of literature has its own importance.

2.1 Conceptual Frameworks

The objective of including this chapter is to clarify the concept of capital budgeting decision of hydropower companies. The tools of capital budgeting decision like Cash flow estimation, payback period, accounting rate of return, net present value, profitability index and internal rate of return has been reviewed with the help of related text books, reference book and articles etc.

2.1.1 Introduction of Capital Budgeting

The term "Capital" refers to long term assets used in production, while a budget is a plan which details projected inflows and outflows during some future period. Hence, capital budgeting can be said as a process of planning and controlling the strategic i.e. long term and tactical i.e. short term expenditure on fixed assets such as land and building and machinery, furniture & fixtures, vehicles, major renovations and patents. The service life of these assets is more than one year. Hence, capital budgeting can be referred as long term planning. It is also known as investment decision making, capital expenditure decision.

"Capital Budgeting refers to the total process of generating, evaluating, selecting and following up on capital expenditure alternatives"*(Gitman; 1998:290).*

"Long term planning for making and financing proposed capital outlay" *(Horngren, 2002).*

"Capital budgeting consists a planning for development of available capital for the purpose of maximizing the long term profitability (return on investment) of the firm" *(Lynch; 2003:428).*

It has long term planning for making and financing proposed to capital outlay. The term capital budgeting is used to describe those actions relating to the planning and financing outlays. Capital budgeting decisions are a key factor in the long-run profitability of a firm. There are at least two reasons why this is true. First, funds available for investment are usually limited but investment opportunities may be almost limitless. Therefore, the manager must somehow spread his limited investment funds among many computing opportunities, and do so in a way that will provide the greatest possible return to his firm. And second, most investment opportunities are long-term in nature. Once a firm has made a decision to invest in a particular project, it may become locked into that decision for many years into the future even if it later turns out to be less profitable than another would have been. Because of these factors, capital budgeting decisions are made only after a thorough evaluation of the relative merits of every known alternative *(Garrison; 1976: 456).*

Capital Budgeting is of paramount importance as a framework of future development, and as a major determinant of efficiency and competitive power of a firm. It relates to fixed or long-term assets, which are defined as assets that are in operation and yield returns over a period of time. It, therefore involves a current outlay in return for a series of anticipated future benefits *(Khan and Jain; 2003).*

Capital Budgeting is the process of planning and controlling the strategic (long-term) and tactical (short-term) expenditure for expansion and contraction of investment in operating (fixed) assets *(Welsch, Hilton and Gordon; 1992).*

Capital Budgeting process involves the following three major stages:

- Estimating the project's net cash flows
- Measurement of benefit of the investment
- Evaluation of risks associated with the investment

In conclusion, it can be said that capital budgeting is related to fixed assets. It is a long term planning. It is an exchange of current fund with future benefit and benefits will occurs over a series of years. It can not only be taken as the budget process but also as a tool for making various investment decisions.

The term of capital refers to long term asset used in production, while a budget is a plan which details projected inflows and outflows during some future period. Capital budgeting is the process of planning and controlling the strategic (Long term) and tactical (Short term) expenditure on fixed assets such as land and building, plant and machinery, furniture and fixtures, vehicle, major renovations and patents. Typically, capital expenditure project tied up large amount of cash, other resource and debt for the long period.

Capital budgeting is a decision making process for an investment on fixed assets. It can be defined as the firm's decision to invest its current funds most efficiently in the long term assets in anticipation of on expected flows of benefits over a series of years. It concentrates on the allocation of scarce resources between alternative used in order to obtain best objectives.

Capital budgeting is the process of planning and controlling the strategic (long term) and tactical (short term) expenditure for expansion and contraction of investment in operating (fixed) asset.Capital Budgeting is concerned with the capital expenditure decision. A capital expenditure is defined as an expenditure that benefits of which are expected to be received over a period of time exceeding one year. The expenditure on fixed assets such as land & building, plant & machinery, furniture & Fixtures, Vehicles etc is called capital budgeting. The service life of these assets is more than one year. Hence, capital budgeting can be referred as long term planning. Capital budgeting is also known as investment decision making capital expenditure decision.
Capital budgeting pertains to fixed / long term assets which by definition refer to assets which are in operation, and yield a return ,over a period of time, usually, exceeding one year. It, therefore, involves a current outlay or rises of outlays of cash resources in return for an anticipated flow of future benefits. In other words, the system of capital budgeting is employed to plan expenditure which involve current outlays but are likely to produce benefits over a period of time longer than one year. These benefits may be either in the form of increased revenues or reduced costs. Capital expenditure planning, therefore, includes addition, disposition, modification and replacement of fixed assets. From the proceeding discussion may be deducted the following basic features of capital budgeting (i) potentially large anticipated benefits ;(ii) a relatively high degree of risk; and (iii) a relatively long time period between the initial outlay and the anticipated returns. The term capital budgeting is used interchangeably which with capital expenditure decision, capital expenditure management, long-term investment decision, management of fixed assets; and so on *(Khan & Jain; 2000:17.1).*

The term capital budgeting is used to describe those actions relating to the planning and financing of capital outlays. Capital budgeting decisions are a key factor in the long-run profitability of a firm. There are at least two reasons why this is true. First, funds available for investment are usually limited but investment opportunities may be almost limitless. Therefore, the manager must somehow spread his limited investment funds among many computing opportunities, and do so in a way that will provide the greatest possible return to his firm. And second, most investment opportunities are long term in nature. Once a firm has made a decision to invest in a particular project, it may become locked into that decision for many years into the

future even if it later turns out to be less profitable than another would have been. Because of these factors, capital budgeting decisions are made only after a thorough evaluation of the relative merits of every known alternative. [Garrison, 1976:456]

A capital investment decision also known as capital budgeting decision is related to the concerned organization's long term bulk expenditure. It involves process of planning future net cash flows over the life of the project and of selecting the best course of action that yield positive net present value. Capital investment decision means evaluating business opportunity that involves a current outlet, but that are likely to produce benefit over a period of time. A capital budgeting should have the following characteristics:

- **Long term investment**

Purchasing inventories is not dealt with under capital budgeting decision because the life cycle (inventory-account receivable – cash) is not of more than a year. A decision to start a new production line or to buy a new machine is a capital budgeting decision because its life cycle is of more than a year.

- **Bulk amount of investment**

Purchasing a calculator does not come under capital budgeting decision because the amount is not so material even if the life cycle is of more than a year (*Bajracharya; 2005:782)*.

Capital budgeting is importance because capital budgeting decisions impact the firm for several years, they must be carefully planned. A bad decision can have a significant effect on the firm's future operations. In addition, the timing of the decisions is important. Many capital budgeting projects take years to implement. If firms do not plan accordingly, they might find that the timing of the capital budgeting decision is too late, thus costly with respect to competition. Decisions that are made too early can also be problematic because capital budgeting projects generally are very large investments, thus early decisions might generate unnecessary costs for the firm.

The ideas for capital budgeting projects usually are generated by employees, customers, suppliers and so forth, and are based on the needs and experiences of the

firm and of these groups. For example, a sales representative might continue to hear from some of his or her customers that there is a need for products with particular characteristics that the firm's existing products do not possess. The sales representative presents the idea to management, who in turn evaluates the viability of the idea by consulting with engineers, production personnel, and perhaps by conducting a feasibility study. After the idea is confirmed to be viable in the sense it is saleable to customers, the financial manager must conduct a capital budgeting analysis to ensure the project will be beneficial to the firm with respect to its value. *(Richard; 1983)*.

2.1.2 Limitations of Capital Budgeting

Capital Budgeting can be a useful tool in the analysis of large projects. However, there are serious limitations that must be considered when evaluating the results of these projects. These limitations can be used to manipulate the results of an otherwise unfavorable project and make it appear to have a large return than it actually has. While the weaknesses in these sample projects are obvious, they can be effectively hidden in larger projects where the descriptions and financial data can run into hundreds of pages. Modern accounting and finance textbooks spend significant time to discussing the techniques of capital budgeting calculations but are woefully inadequate in terms of the shortcomings of the various methods. Numerous misconceptions and limitations exist and misunderstanding of these limitations can cause incorrect decisions to be made.

For those methods that do use present value techniques it is necessary to either have a predetermined discount rate of to calculate one. This discount rate goes by many names:

- Hurdle rate- implying this is an amount you must exceed to make this a suitable project.
- Cost of capital- implying that this is what it cost to obtain the required capital and that the projects return must equal or exceed this.
- Required rate of return- an indication that this is the minimum amount the project can return.

The company usually sets this rate, often without a clear understanding of what it really means. The rate is usually a minimum amount and it is then adjusted upward for risk. A company might classify projects as B, B or C with C being the riskiest project. Projects classified "A" might have nothing added to the discount rate while "B" projects would have a certain amount added with an even larger amount added for the "C" projects. Companies generally assumes they are actually earning the discount rate if they achieve a NPV of zero or greater *(Lawrence; 1997)*.

2.1.3 Tools and techniques of Capital Budgeting

More purposes for project are at the threshold of the business firm comparing to its ability and wiliness to finance some proposals good, other are different and at others poor. A screening has to be devised for finding out the real content of such proposal. Methods of differentiating them should be developed *(Goyal & Man Mohan; 1997).*

For this purpose, numerous methods of measuring the economic value of an investment can be found. The methods of appraising capital expenditure proposals can be classified into two categories:

- **Nsophisticated or traditional methods**

This is the traditional methods and conceptually less satisfactory because they ignore two basic financial principles i.e. the time value of money and total benefits. The following two techniques are applied under this method.

a) Payback period

The payback period is the traditional method of capital budgeting. It is the simplest and perhaps the most widely employed quantitative method for appraising capital expenditure decisions. This method answers the questions; how many years will it take for the cash benefit to pay the original cost of an investment normally disregarding salvage value? Cash benefit here represents Cash Flow After Tax, CFAT, ignoring interest payment. Thus, Pay Back Period, PBP measures the number of years required for CFAT it pay back the original outlay required in an investment proposal.

There are two ways of calculating PBP. The first method can be applied when the cash flow stream is in the form of annuity for each years of the project's life i.e. CFAT are uniform. In such a situation the initial cost of the investment is divided by the constant annual cash flow:

$$\text{PBP} = \frac{Investment}{Constant\ annual\ cash\ flow}$$

The second method is used when a project's cash flows are not equal but vary from year to year. In such a situation, PBP is calculated by the process of cumulating cash flow till the time when cumulative cash flows become equal to the original investment outlay.

$$PBP = Minimum\ required\ period + \frac{\text{Amount require to recover Investment}}{\text{Next Year's CFAT}}$$

One of the most commonly used methods of capital budgeting is payback period technique. This method poses the question: "How long will it take to recover the investment?"

Payback determines how early an investment can be recovered. The payback period answers the questions of; how long does it take the project to pay back its initial investment? *(Bhajracharya, Ojha, Goet & Sharma; 2005).*

Payback period =number of years to recover initial costs

Decision Rule

The shorter payback period is the more attractive the investment. The reasons are that: the earlier the investment is recovered, the sooner the cash funds can be used for other purpose. The risk of loss from obsolesced and changed economic conditions are less in a shorter payback period.

Independent projects: lower payback period than standard payback period should be accepted.

Mutually exclusive projects: lower payback period should be accepted.

The advantages and disadvantages of PBP are:

Advantages:

- Easy to understand
- Simple to compute

- Provides some information on the risk of the investment
- Provides a cute measure of liquidity

Disadvantages:

- Ignores the time value of money
- Ignores cash flows after the payback period
- Biased against long –term projects
- Required an arbitrary acceptance criteria
- An accepted project based on the payback criteria may not have a positive NPV

b) Accounting Rate of Return (ARR)

The accounting rate of return method of evaluating a proposed capital expenditure is also known as average rate of return method. It is based upon accounting information rather than on cash flow. There is no unanimity regarding the definition of the rate of return. There are a numbers of alternatives methods for calculating the ARR. Accounting rate of return indicating to the profitability of the projects instead of net cash flows considers profitability rather than liquidity. According to this method, the project with higher rate of return is considered better projects than the lower rate of return. It is computed by average the income after tax over the life of a project and then dividing the average annual cash flow by the initial investment outlay.

$$\text{Average rate of return} = \frac{\text{Average Net Income After tax}}{\text{Average Investment}}$$

Decision Rule

With the help of ARR the financial decision maker can decided whether to accept or reject a investment proposal. According to the ARR, as an accept-reject criteria, the actual ARR will be compared with predetermined or a minimum required rate of return or cut off rate. A project will qualify to be accepted if the actual ARR is higher than the minimum desired ARR. Otherwise; it is liable to be rejected. Alternatively, the ranking method can be used to select or reject proposal. Thus the alternative proposals under consideration may be arranged in the descending order of magnitude, starting with the proposal with the highest ARR and ending with the proposal having

lowest ARR. Obviously, projects having the higher ARR would be preferred to projects, which have a lower ARR *(Khan & Jain; 1996).*

This is an average rate of return because we have used the average book investment. The book rate of return for each return will be different because the average book investment in the project will change with each year's depreciation. The ARR method most often mis-states the IRR because it ignores the timing of the cash flows and therefore the time value of money. This fault makes it an unsatisfactory method of capital budgeting.

Independent projects: Higher average rate of return than standard average rate of return should be accepted.

Mutually exclusive projects: higher average rate of return should be accepted.

- **Sophisticated or Time Adjusted Methods**

The discounted cash flow methods are theoretically superior to the traditional methods. Their superiority to the traditional methods. Their superiority is the use of time value of money. Before evaluation any project under this method the future cash flow must be converted into present value. Under this method the future cash flow must be converted into present value. Under this method, following techniques are used to evaluate the projects.

a) Net Present Value (NPV)

The net present value (NPV) method is a discounted cash flow, DCF approach to capital budgeting that discounts all expected future cash flows to the present using a minimum desired rate of return. To apply the NPV method to a proposed investment project, a manager first determines some minimum desire rate of return. The rate depends on the risk of a proposed project. The higher the risk the higher the minimum desired rate of return. The minimum rate is based on the cost of capital what the firm pays to acquire rate of return, hurdle rate or discount rate. Managers then determine the present values of all expected cash flows from the project, using this minimum desires rate. If the sum of the present values of the cash flows is positive, the project is desirable. If the sum is negative, it is undesirable. Why? A positive NPV means that

accepting the projects will increase the value project's cash inflow exceeds the present value of its cash outflows (if by some chance, the NPV is exactly zero, a decision maker would be indifferent between accepting and rejecting the project). When choosing among several investments, the one with the greatest net present value is the most desirable *(Horngern, Sunder & Stratton; 1998:415).*

The net present value method requires that all cash flows associated with new investment proposals be discounted at a predetermined weighted average cost of capital

$$.NPV = \sum_{t=1}^{n} \frac{CFt}{(1+k)^t} + \frac{S_n+W_n}{(1+k)^t} - \sum_{t=1}^{n} \frac{CO_t}{(1+k)^t}$$

Where,

CF1= Cash inflows after taxes in year 1 to n (CFAT)

S_n= Salvage value (net of removal cost) in the terminal year

W_n= working capital recovered in the terminal year

CO_t= cash outflows required for investment

K= Weighted average cost of capital

Decision Rule

Decision rule for a project under NPV is to accept the project if the NPV is positive and reject if it is negative. However, in practice, it is rare that such a project is accepted as such a situation simply implies that only the original investment has been recovered. As a decision criterion this methods can also be used to make a choice between mutually exclusive projects. On the basis of the NPV method, the various proposals are be ranked in the orders of the net present values. The project with the highest NPV will be assigned the first rank, followed by others in the descending order *(Khan & Jain; 1996).*

Accept if NPV>0

Reject if NPV<0

Independent projects: Positive NPV should be accepted and negative NPV should be rejected.

Mutually exclusive projects: Higher positive NPV should be chosen.

The advantages and disadvantages of NPV are as follows:

Advantages:

- Computes true interest rate
- Tells whether the investment will increase the firm's value
- Considers all the time value of money
- Considers all cash flows
- Considers the risk of future cash flows
- Easy to apply because it does not require trial and error approach

Disadvantages:

- The target or minimum rate of is difficult to determine
- Does not provide the true rate of return on investment
- Assumes that all net cash inflows from an investment are immediately reinvested at the target rate selected for discounting.

b) Internal Rate of Return (IRR)

The internal rate of return (IRR) is an alternative technique for use in making capital investment decisions that also takes into account the time value of money. The internal rate of return represents the true interest rate earned on and investment over the course of its economic life. This measure is sometimes renewed to as the discounted rate of return. The internal rate is the interest rate K that when used to discount all cash flows resulting from an investment, will equate the present value of the cash outlays. In other words, it is the discount rate that will cause the net present value of an investment to be zero. Alternatively, the internal rate of return can be described as the maximum cost of capital that can be applied to finance a project without causing harm to the shareholders *(Drury; 2000: 462-463)*.

The IRR is usually the rate of return that a project earns. It is defined as the discount rate, which equates the aggregate present value of the net cash inflows (CFAT) with the aggregate present value of the outflow of a project. In other words, it is that rate which keeps the project NPV zero *(Khan & Jain; 1996).*

The project will be accepted only if IRR(r) exceeds the cost of capital (k).

The IRR is computing two method i.e. trial and error method of interpolation which formula is following under.

For Trial and Error Method

PV of cash inflows = PV of initial investment

Or,

$$\frac{\mathrm{CF}_1}{(1+\mathrm{k})^1}+\frac{\mathrm{CF}_2}{(1+\mathrm{k})^2}+\ldots\ldots+\frac{\mathrm{CF}_\mathrm{n}}{(1+\mathrm{k})^\mathrm{n}}-\mathrm{I}_0=0$$

Methods of Interpolation

$$IRR = Lr + \frac{\mathrm{NPV_{LR}}}{\mathrm{NPV_{LR}} - \mathrm{NPV_{HR}}} \times (\mathrm{HR} - \mathrm{LR})$$

Where,

LR = Lower Rate

HR = Higher Rate

NPV_{LR} = Net Present Value of Lower Rate

NPV_{HR} = Net Present Value of Higher Rate

The IRR is of a project is the rate of discount, which produces a zero NPV.

Decision Rule

The IRR decision rule is that only project with IRR greater than or equal to some predetermine cut-off rate should be accepted. All other investment opportunity should be rejected. The market interest rate reflects the opportunity cost of capital involved. Thus to be acceptable, a project must generate a return at least equal to the return available elsewhere in the capital market *(Khan & Jain; 1996).*

Accept if IRR ≥ Required Rate of Return

Reject if IRR < Required Rate of Return

Independent projects: if the IRR is greater than cost of capital, the value of the firm increase and the project should be accepted. If it is equal to cost of capital, the firm breaks even and if IRR is less than cost of capital, the project should be rejected.

Mutually exclusive projects: the projects one with the higher IRR should be accepted.

The Advantages and Disadvantages of the IRR can be pointed out as follows:

Advantages:

- Properly adjusts for time value of money
- Uses cash flows rather than earning
- Accounts for all cash flows
- Considers the risk of future cash flows
- Tells whether an investment increases the firms value

Disadvantages:

- It is complex when periodic net cash flows are unequal
- It is difficult to use risk and sensitivity analysis
- It requires an estimate of the cost of capital in order to make a decision
- It may not give the value maximization decision when used to compare mutually exclusive projects
- It cannot use in situations in which the sign of the cash flows of a project change more than once during the projects life
- In case of multiple IRR, there is no real solutions

c) Profitability Index (PI)

The profitability index or benefit cost ratio is a time adjusted capital budgeting technique. It is similar to the NPV approach. The PI approach measures the present value of return per rupee invested, while the NPV is based on the difference between the present value of future cash flows and the present value of cash outlays. Profitability index may be defined as a ratio, which is obtained by dividing the present value of future cash inflows by the present value of cash outlays.

An index that attempts to identify the relationship between the costs and benefits of a proposed project through the use of a ratio calculated as:

$$Profitability\ Index = \frac{Total\ Present\ Value(TPV)}{Net\ Cash\ Outlay(NCO)}$$

This method is also known as the benefit- coat ratio because the numerator measures benefits and the denominator costs.

Decision Rule

If the PI value exceeds one, the proposal is worth accepting. When profitability indeed equals one, the firm is indifferent to the projects. When the profitability index is greater, equals to, or less than one, the net present value is greater, equal or less than zero respectively. In other words NPV will be positive when the profitability index is greater than one; and will be negative when the profitability index is less than one. Thus, the NPV and profitability index approaches give the same results regarding the investments proposals *(Bajracharya, Ojha, Goet & Sharma; 2005)*.

Accept if PI ≥ 1
Reject if PI< 1

Independent projects: PI greater than I should be accepted.
Mutually exclusive projects: PI greater than I should be accepted.

The Advantages and Disadvantages of PI can be as follows:

Advantages:

- May be useful when available investment funds are limited
- Easy to understand and communicate
- Correct decision when evaluating independence projects

Disadvantages:

- Problems with mutually exclusive investments

d) Modified Internal Rate of Return (MIRR)

Modified internal rate of return (MIRR) is a variant of IRR that assumes that cash generated is re-invested at the cost of capital (usually the WACC). This is preferable because:

- Any series of cash flows has a single MIRR.
- It takes account of the rate at which cash generated is re- invested.

Consider the returns at the end of the life time of a project, including returns on cash generated and re-invested elsewhere. For the IRR to equal the total return the project has generated at that time, the cash inflows must be re-invested at the same rate as the IRR. This is unrealistic.

The MIRR does suffer from some of the other drawbacks of IRR. Relying on it can lead to an incorrect choice between mutually exclusive investments.

To calculate the MIRR, first find the total future value of the cash flows at the re-investment rate, and then apply the formula:

$$MIRR = \sqrt[N]{\frac{FVCF}{IO}} - 1$$

Where,

FVCF = future value of cash flows

IO = initial cash outlay

N = life of the project

The following points give the idea about the **Pros and Cons of MIRR:**

Advantages:

- Tells whether an investment increase the firms value
- Considers all cash flows of the project
- Considers the time value of the project
- Considers the risk of future cash flows through the cost of capital in the decision rule

Disadvantages:

- Requires an estimates of the cost of capital in order to make a decision
- May not give the value maximizing decision when used to compare mutually exclusive projects
- May not give the value maximizing decision when used to choose projects when there is capital rationing.

e) Discounted Pay Back Period (DPBP)

Payback period does not consider time value of money when providing an answer whereas with Discounted Payback Period we get to see the real value of cash inflows when they are measured in today' amount of money as these are discounted at an interest rate called the discount rate. We get to see the number of years required to recoup the initial cash outlay or our Investment.

The advantages and disadvantaged of the DPBP are as:

Advantages:

- Considers the time value of money
- Considers the risk of the projects cash flows through the cost of capital

Disadvantages:

- The discounted payback period solves the time value problem, but it still ignores the cash flows beyond the payback period.
- Therefore, you may reject projects that have large cash flows in the outlaying years that makes it very profitable
- In other words, any measure of payback can lead to a focus on short- run profits at the expenses of larger long-term profits

2.1.4 Capital Budgeting Under Risks and Uncertainty

A capital budgeting decision is based on the benefits derived from the project. These benefits are measured in terms of cash flows. The estimation of future returns is done on the basis of various assumptions. The actual return in terms of cash inflows depends on a variety of factors such as price, sales volume, and effectiveness of the advertisement campaign, competition, cost of raw materials, manufacturing costs and so on; each of these in turn depends on other variables like the states of the economy, rate of inflation, etc. the accuracy of the estimates of the future returns and therefore the reliability of the investment decision would largely depend upon the precision with which these factors are forecast. Whatsoever techniques are followed for forecasting precisely actual returns can never tally to the estimations? As a result actual results vary from the estimation. This variation is technically referred to as a risk. The term risk with an investment can therefore be defined as the variability in the

actual returns emanating from a project in future over its working life in relation to the estimated return as forecast at the time of initial capital budgeting decision *(Horngren, Foster & Datar;1999).*

The decision situations with reference to risk analysis in capital budgeting decisions can be broken up into three categories.

- Uncertainty
- Risk
- Certainty

The risk situation with is one in which the probability of a particular events occurring are known. These probabilities are not known under the situation of uncertainty. The different between risk and uncertainty therefore lies in the fact that the variability is less than in uncertainty.

In reality, risk generally is incorporated into capital budgeting decisions somewhat arbitrarily. The firm generally uses its normal of average, required rate of return to evaluate projects that have average risk, a few percentage points are added to the average required rate of return to evaluate projects that have above-average risk, and a few percentage points are subtracted from the average required rate of return to evaluate projects that have below-average risk. It is important that a project's risk be considered in capital budgeting analysis, because incorrect decisions might be made if risk is not considered. For example, if the firm's average rate of return is used to evaluate all capital budgeting projects, regardless of their risk, then projects with little(great) risk might be rejected(accepted)when they should be accepted(rejected).
Whenever we analyze a capital project, we must consider unique factors. A discussion of all of these factors is beyond the scope of this course. However, three common factors to consider are:

- Compensating for different levels of risks between projects.
- Recognizing risks that are specific to foreign projects.
- Making adjustments to capital budgeting analysis by looking at the actual results.

Capital budgeting analysis that incorporates consideration of risk may do so either traditional techniques or statistical techniques. They are described as follows:

1. Traditional Techniques

Under these techniques, risk adjusted discount rate; certainty equivalent coefficient and sensitivity analysis are doing for analysis of risk.

a) Risk Adjusted Discount Rate

The risk adjusted discount rate (RAD) is one of the simplest and most widely used methods for incorporating risk into the capital budgeting decision. generally, under this method the riskiness of the project depends upon the discount rate. If the discount rate is high, that project is considered as highly risky project and if the discount rate is low that project is considered as a lower risky project. A risk premium rate may be added to risk free discount rate to find out the present value of future return from risky investment proposal.

Decision Rule

- **NPV** should be positive by using the risk adjusted rates for acceptance of proposal.
- **IRR** should be greater than the risk adjusted rate of return for acceptance of proposal.

b) Certainty Equivalent Co-Efficient(CEC)

The certainty equivalent approach is an alternative to the risk adjusted rate method to incorporate risk in evaluating investment projects. Under the risk adjusted discount rate method; the risk of the project is taken into consideration by adjusting expected cash flows and not the discount rate. These methods eliminate the problem arising out of the inclusion of risk premium in the discounting process *(Khan & Jain; 1993)*.

$$\text{CFC} = \frac{Riskless\ Cash\ Flow}{Risky\ Cash\ Flow}$$

Decision Rule

Higher the certainty equivalent coefficient denotes lower risk and lower the certainty equivalent coefficient denotes higher risk. The NPV of risk less cash flows should be positive and IRR of risk less cash flows should be greater than risk free rate of return.

c) Sensitivity Analysis

Sensitivity analysis provides information as to how responsive the estimated project cash flows the discount rate and the project life are to estimation errors. An analysis on these lines is important as the future is always uncertain and there will always be estimation errors. Sensitivity analysis takes care of estimation errors by using a numbers of possible outcomes in evaluating a project. The method adopted under sensitivity analysis is to evaluate a project using a number of estimated cash flows to provide to the decision maker an insight into variability of the outcomes.

The sensitivity analysis provides different cash flow estimates under these assumptions.

The best (i.e. the most optimistic)
The normal (i.e. the most likely/ moderate)
The worst (i.e. the most pessimistic)

The large in the difference between the pessimistic and optimistic cash flow is considered as riskier is projects depend upon the attitude of decision maker towards the risk.

2. Statistical Techniques

Under this technique, assignments of probabilities, standard deviation, and coefficient of variation and decision tree are doing for analysis of risk.

a) Assignment of Probabilities

The concept of probability for incorporating risk in evaluating capital budgeting proposal. The probability distribution of each flows overtime provides information about the expected value of return and the dispersion or the probability distribution of possible returns. On the basis of the information on accept-reject decision can be taken.

The application of this theory is analyzing risk in capital budgeting depends upon the behavior of the cash flows from the point of view of behavioral cash being (a) Independent (b) dependent. The assumption that cash flows are independent over time signifies that future cash flows are not affected by the cash flows in the proceeding or following year.

Decision Rule

- **NPV** must be positive to accept the project.
- **IRR** must be greater than cost of capital to accept projects.

b) Standard Deviation

Standard deviation that measures of the tightness, or variability of a set of outcomes. Standard deviation is defined as square roots of the mean of the square deviation where is the difference between an outcomes and the expected value of all outcomes. Greater the standard deviation is said the higher degree of risk and lower the standard deviation is said the lower degree of risk. The project, which has higher degree of standard deviation, is not generally accepted and vice- versa *(Gyawali, Fago, Subed; 2006:12.35-12.36).*

c) Co-Efficient Variance

Co-efficient of variance (C.V.) standardized measure of the risk per unit of return, calculated as the standard deviation divided by the expected return.

$$\text{C.V} = \frac{Standard\ Deviation}{Expected\ Cash\ Flow}$$

Higher the co-efficient of variation is considered as the higher degree of risk and lower the co-efficient of variation is considered as the lowest degree of risk *(Weston; 1996:190).*

d) Decision Tree

The Decision Tree (DT) approach is another useful alternative for evaluating risky investment proposals. The outstanding feature of this method is that it takes into account the impact of all probabilistic estimates of potential outcomes. In other words,

every possible outcome is weighted in probabilistic terms and then evaluated. The DT approach is especially useful for situations in which decisions at one point of time also affect the decisions of the firm at some later date. Another useful application of DT approach is for projects which require decisions to be made in sequential parts *(Gyawali, Fago & Subedi; 2006: 12.84)*.

A decision tree is a pictorial representation in tree from which indicates the magnitude, probability and inter relationship of a possible outcomes. The format of the exercise of the investment decision has an appearance of a tree with branches and, therefore, this method is deferred to be the decision-tree method. A decision tree shows the sequential cash flows and the NPV of the proposed project under different circumstances *(Bajracharya, Ojha, Goet & Sharma; 2005).*

At last, another way to adjust for risk is to understand the impact of risk on outcomes. Sensitivity Analysis and Simulation can be used to measure how changes to a project affect the outcome. Sensitivity analysis is used to determine the change in Net Present Value given a change in a specific variable, such as estimated project revenues. Simulation allows us to simulate the results of a project for a given distribution of variables. Both sensitivity analysis and simulation require a definition of all relevant variables associated with the project. It should be noted that sensitivity analysis is much easier to implement since sophisticated computer models are usually required for simulation.

2.1.5 Review of Management Accounting Tools

Management accounting is an activity that is interwoven in the management processes of all organizations. Management accounting refers to that part of the management process which is focused on adding value to organizations by attaining the effective use of resources by people, in dynamic and competitive contexts. The functions of management accounting may be said to include all activities connected with collecting, processing, interpreting and presenting information to management. The management accounting satisfies the various needs of management for arriving of appropriate business decisions. Short reviews of management accounting tools are below.

2.1.5.1 Cost Segregation

Mixed cost should be separated into variable and fixed components before entering into financial planning, decision making and controlling. Mixed cost separation method are such as graphic method, high low method, analytical method, average method and least square method which are described as follows:

- **Graphic Methods**

The graphical method of dividing mixed cost into their fixed and various components makes use of all relevant use of all relevant past data pertaining to cost volume relationship. The data are plotted in a scatter graph. Each point in a chart represents cost for a particular months/ days in relation to number of units produced or level of activity *(Khan & Jain; 2000)*.

- **High Low Method**

High-Low Method (HLM) is an algebraic procedure that estimates the constant (fixed cost element) and slope (variable rate per unit of X) of an equation by using only the highest and lowest pairs of the sample data. As Mixed Cost necessarily includes elements of both fixed and variable cost, the HLM analysis takes the mathematical form of the linear equation Y = a+bX, (similar to Least Square Method, also called as Cost Formula).

The difference in cost between highest and lowest level of activities are divided by the difference in activity or output. The result of division is variable cost per unit. This method assumes that fixed cost trends remain constant and if there is any changes are only in variable cost *(Dangol & Prajapati; 2001)*.

- **Analytical Method**

This method also known as "Degree of variability" techniques because the genesis of this method lies in measuring the extent of variability of costs on a careful analysis of each item to determine how far the cost varies with volume, variable overheads under this method computed as follows:

Variable Overhead= Budgeted Mixed Overhead × Degree of Variability

- **Least Square Method**

Least Square is a procedure, requiring just some calculus and liner algebra, to determine what the "best fit" line is to the data. It follows regression equation to segregate mixed cost into variable. It is an accurate and trusted method of segregation fixed and variable cost from mixed cost. In this method, first of all, variable cost per unit is calculated. Then fixed cost is calculated *(Dangol & Prajapati; 2001)*.

2.1.5.2 Cost-Volume- Profit Analysis (CVP Analysis)

Cost- Volume- Profit analysis (CVP), or break-even analysis, is used to compute the volume level at which total revenues are equal to total costs. When total costs and total revenues are equal, the business organization is said to be "breaking even." The analysis is based on a set of linear equations for a straight line and the separation of variable and fixed costs. The financial information required for CVP analysis is for internal use and is usually available only to managers inside the firm: information about variable and fixed costs is not available to the general public.CVP analysis is good as a general guide for one product within the relevant range. If the company has more than one product, then the contribution margins from all products must be averaged together.

2.1.5.3 Standard Costing

The standard cost is a predetermined cost which determines in advance what each product or service should cost under given circumstances. In the words of Fregmen (1976) "Standard cost is the amount the firm thinks a product or the operation of the process for a period of time should cost, based upon certain assumed conditions of efficiency, economic conditions and other factors."

The CIMA, London has defined standard cost as "a predetermined cost which is calculated from management's standards of efficient operations and the relevant necessary expenditure." They are the predetermined costs on technical estimate of material labor and overhead for a selected period of time and for a prescribed set of working conditions. In other words, a standard cost is a planned cost for a unit of product or service rendered.

Standard costing is a system of cost ascertainment and control in which predetermined standard costs and income for products and operations are set and periodically compared with actual costs incurred and income generated in order to establish any variances. Standard costing is a management control technique for every activity. It is not only useful for cost control purpose but is also helpful in production planning and policy formulation. It allows management by exception. Standard costing is preparation of standard costs and applying them to measure the variations from standard costs and analyzing the causes of variations with a view to maintain maximum efficiency in production. This technique is complementary to the actual costing can be historical costing system. The system of standard costing can be used in all types of industries but if more commonly used in industries is producing standardized products, which are repetitive nature *(Jain & Narang; 2000)*.

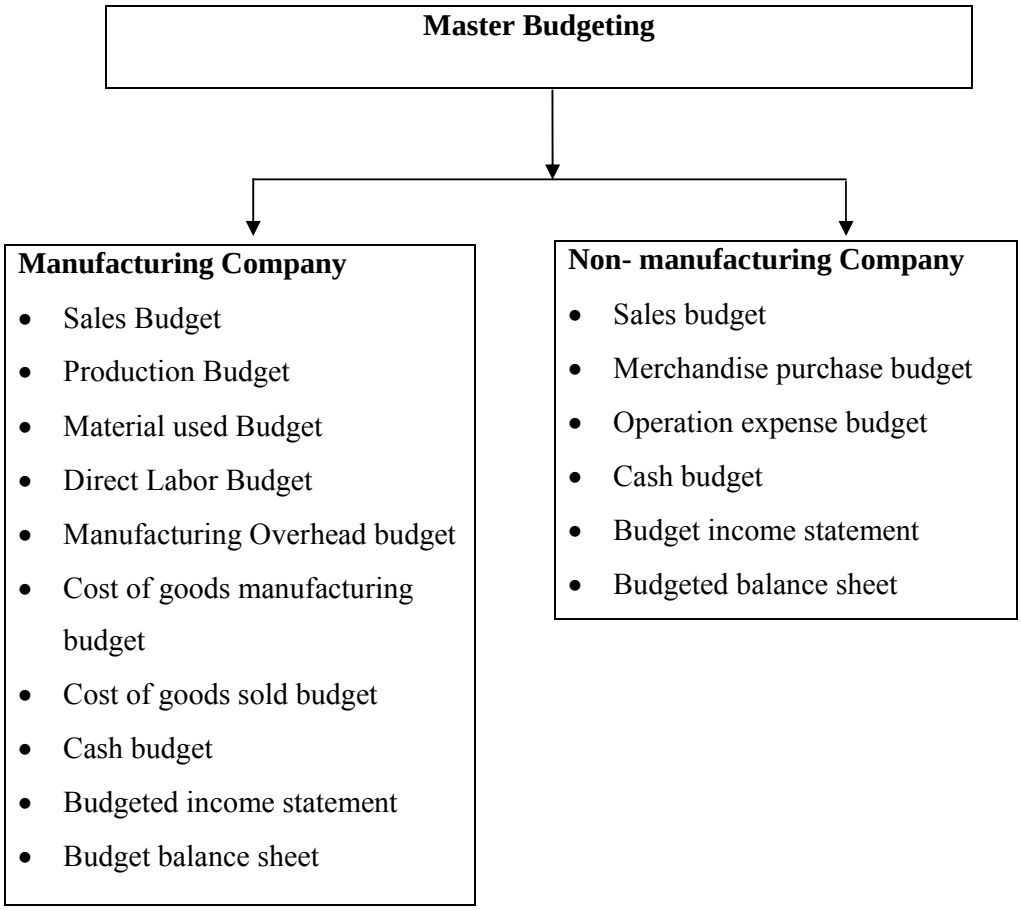
Standard costing system are very expensive to develop and maintain; they were also designed for traditional manufacturing systems in which direct labor and direst materials are the most important costs. Recent years have seen a decline in the use of such system as companies become less labor intensive.

2.1.5.4 Master Budget

The master budget is a summary of company's plans that sets specific targets for sales, production, distribution and financing activities. It generally culminates in a cash budget, a budget income statement, and a budgeted balance sheet. In short, this budget represents a comprehensive expression of management's plans for future and how these plans are to be accomplished.

It usually consists of a number of separate but interdependent budgets. One budget may be necessary before the other can be initiated. More one budget estimate affects other budget estimates because the figure of one budget is usually used in the preparation of other budget.

The usual master budget for a manufacturing and non- manufacturing company has the following components.



However a master budget can be divided into two groups. That is operational budget and financial budget.

2.1.5.5 Zero Base Budgets

Zero based budgeting is a method of budgeting in which all expenses must be justified for each new period. A zero based budgeting in which all expenses must be justified for each new period. A zero based budgeting starts from a "zero base" and every function within an organization is analyzed for its needs and costs. Budgets are then built around what is needed for the upcoming period, regardless of whether the budget is higher or lower than the budgeting process by tying them to specific functional areas of the organization, where costs can be first grouped, then measured against previous results and current expectations.

2.1.5.6 Activity Based Budgeting

Activity based budgeting is a method of budgeting in which the activities that incurs costs in every functional area of an organization are recorded and their relationship are defined and analyzed. Activities are then tied to strategic goals, after which the costs of the activities needed are used to create the budget. Activity based budgeting stands in contrast to traditional; cost- based budgeting practices in which a prior period's budget is simply adjusted to account for inflation or revenue growth. As such, ABB provides opportunities to align activities with objectives streamline costs and improve business practices.

2.1.5.7 Flexible Budget

A flexible budget is an alternative that has some compelling advantages. It relates anticipated expenses to observed revenue. To illustrate, if a business greatly exceeded the sales goal, it is reasonable to expect costs to also exceed planned levels. After all, some items like cost of sales, sales commissions, and shipping costs are directly related to volume. How ridiculous would it be to fault the manager of the business for having cost overruns? Conversely, failing to meet sales goals should be accompanied by a reduction in variable costs. Certainly it would make no sense to congratulate a manager for holding costs down in this case. A flexible budget is one that reflects expected costs as a function of business volume; when sales raise so do certain budgeted costs, and vice-versa.

The flexible budget responds to change in activity, and may provide a better tool for performance evaluation. It is driven by the expected cost behavior. Fixed factory overhead is the same no matter the activity level, and variable costs are a direct function of observed activity. When performance evaluation is based on a static budget, there is little incentive to drive sales and production above anticipated levels because increases in volume tend to produce more costs and unfavorable variances. The flexible budget-based performance evaluation provides a remedy for this phenomenon.

2.1.5.8 Ratio Analysis

Ratio analysis is a tool used by individuals to conduct a quantitative analysis of information in a company's financial statements. Ratios are calculated from current

year numbers and are then compared to previous years, other companies, the industry, or even the economy to judge the performance of the company. Ratio analysis is predominately used by proponents of fundamental analysis. There are many ratios that can be calculated from the financial statements pertaining to a company's performance, activity, financing and liquidity. Some common ratios include the price-earning ratio, debt- equity ratio, earning per share, assets turnover and working capital.

The financial ratios can be categorized into the following ways:

- Liquidity Ratios
- Leverage Ratios
- Activity Ratios
- Profitability Ratios

2.1.5.9 Breakeven Analysis

Breakeven is that point where the company just recovers all of its costs or there is no profit or loss. In other words, where the total cost equals the total revenue is called the breakeven revenue.

It will just be able to recover its cost. To put breakeven point in other words, that is point at which a company breaks the loss (minus) zone and enters into profit zone. Break even analysis is the managerial tools that shows the relationship between cost and profit with sales volume i.e. revenue in banks. Breakeven analysis helps the management to know which revenue level will only recover its cost and after which it starts giving profit. Therefore, it can provide management some insight into decision making *(Goet, Gautam & Bhattarai; 2006)*.

2.1.5.10 Cash Flow Analysis

All business activities are carried with cash and all profitable activities must result in net inflows of cash. It is therefore useful to establish activities must result in a net inflow of cash. The quantum of the flows of cash into business is as a result of operation and other transactions. It should be remembered that cash inflow and profit

are often different. It is possible that in a business suffering a loss, there may be still an increase in cash because of trading operation *(Goyal & Mohan; 1997)*.

Cash flow is determined by looking at three components by which cash enters and leaves a company: core operations, investing and financing. Cash flow analysis is done through preparing cash budget. Cash as important current asset should be managed carefully. Though it is zero earning assets, it is held by the firm with difference purposes such as: transaction motive precautionary motive, speculative motive.

2.1.5.11 Management Control Systems and Responsibility Accounting

Management control Systems (MCS) theory is a useful integrative tool for organizing, explaining and understanding the jargon and concepts of performance measurement. Management consists of the basic functions of planning decision-making and control. Control is the function of the management that ensures the proper implementation of plans and policies to achieve the organizational objectives. Management control systems focuses on motivating managers for the sake of enhancing total profitability of the organization. A management control system is logical integration of techniques to gather and use information to make planning and control decisions, to motivate employee behavior and to evaluate performance.

Responsibility management is an underlying concept of accounting performance measurement systems. The basic idea is that large diversified organizations are difficult, if not impossible to manage as a single segment, thus they must be decentralized or separated into manageable parts. These parts or segments are referred to as responsibility centers that include: 1) revenue centers, 2) cost centers, 3) profit centers and 4) investment centers. This approach allows responsibility to be assigned to the segment managers that have the greatest amount of influence over the key elements to be managed. These elements includes revenue for a revenue center (a segment that mainly generates revenue with relatively little costs),costs for a cost center (a segment that generates costs, but no revenue), a measure of profitability for a profit center (a segment that generates both revenue and costs) and return on investment (ROI) for an investment center (a segment such as a division of a

company where the manager controls the acquisition and utilization of assets, as well as revenue and costs) *(Munankarmi;2002)*.

2.2 A Review of Related Journals /Articles

Hydropower development has always been a vital issue for lots of Nepalese writers and researchers. This section is devoted to the review of some major articles published in newspapers, journals, reports and magazines and articles circulated in websites concerning state and problems of hydropower development in the country and, financial performance of IPPs or NEA.

Phuyal,(2001), in his article *" Home-financed Chilime Hydel Project to go Public"* has said the Chilime power cost is cheaper by at least 60 per cent compared to the price of the power which stands at over Rs 5 currently generated by similar foreign-developed and financed projects like the 60 MW Khimti and the 36MW Bhotekoshi power projects. Hydropower experts and officials closely following the developments expressed happiness and welcomed the Chilime-type initiative which, to quote them, "would save the nation from bankruptcy and lead towards self dependency and prosperity". Referring to chartered accountant-cum-energy expert Ratna Sansar Shrestha, the article adds that, the per unit price of locally-developed Chilime would climb to Rs 8 or 10 while the cost of Khimti and Bhotekoshi supplied power would shoot up to a whopping Rs 42- more than five times that of Chilime –by 2016.

Maharjan, (2002) in his article, *"Hydropower Development-Targeting the Poor"*, has said that the projects run by foreign parties are not benefiting the country in real terms. The PPAs reached with them have far-reaching and long-term implications. The electricity tariff of the country is among the highest in the world. Moreover, donors also imposed high tariffs as a precondition for financing hydel projects. Foreign aid, which is invested in hydel projects, often comes along with harsh conditions. There is no transparency, accountability, effective monitoring mechanism and financial discipline in such projects. Rather, corruption and maladministration would rule the roost.

Maharjan has added that there is often delay in hydel projects and the cost also tends to shoot up vis-à-vis contract amounts. Nepalese rupee devaluation, additional works and the likes are cited as causes for high costs. Such arguments do not hold water since the contracts undertaken by competent and experienced foreign parties already take into account all such factors as may influence the projects. Viewed thus, only sight price adjustments may crop up. In contrast, small and medium-scale hydel projects are suitable for the country. Since low capital and indigenous expertise suffice to operate such projects.

Besides, these projects also answer the needs of local people and enlist their participation for quality services.

As the reports say that the generating cost of the project is a mere Rs.2.19 per unit, and selling that to Nepal Electricity Authority (NEA) at Rs. 5 per unit as the Power Purchase Agreement (PPA) still slackens Chilime company with good profit, the editorial of "New Business Age- Cheap Chilime?" inscribes that if all the power projects were like Chilime, the country's power bill would have been significantly lower than what it is today. However, the editorial points out that hydroelectricity projects, unlike their thermal counterparts, are location specific, causing additional transmission cost both in terms of initial capital cost as well as the recurring operational cost. In the present context, they are also more vulnerable from security point of view.

The editorial also includes that Chilime power is likely to be costlier in few years than Khimti and Bhotekoshi as the rate of annual increment in the price is higher in case if the PPA that NEA has signed with Chilime. Equally important are the reports that many costs incurred in Chilime are not support provided from NEA. Next is the cost of transmission line stretched specially for Chilime from its project site to Trishuli. Finally, it is also doubted whether the project's insurance cost and the revenue loss of two years are accounted for. It would be better for the Chilime Company to clarify those concerns before issuing to the general people.

Nepal, (2005) in his article *"Managing Nepalese Waters"* has presented two logics to verify the impossibility for Nepal alone to harness water for hydropower in a large

scale. First, it has been estimated that the cost for the production of Nepal's capacity of 42,000 MW would come roughly to US$ 80 billion and for 25,000 MW; it would be around US$ 50,000 billion. And second, Nepal's Fiscal Budget for 2004/2005 was just nearly US$ 1.6 billion. He has also mentioned that due to poor motivation of the local investors, Nepal's cheapest projects like Upper Tamakoshi have been wasted. The Norwegian Feasibility Study reveals that nearly US$ 300 million is necessary for the project including 65 KM road black topping, 33 KM if which is to be newly constructed to connect the site. The cost per unit thus comes nearly 89 paisa. Money can be allocated from: the remittances of the Nepalese workers abroad, banks, provident fund reserves, etc, if the government has zeal (B.H. Nepal, 8 April/ June 2005, South Asian Journal).

Pokharel (2006), in his article, *"Nepal's Hydropower Dream; Are We Prepared for Nightmares'?"* has criticized that electricity is expensive, but it is not because of high production cost, instead it is because of various policy and regulatory failures. Government controlled NEA has sole authority on transmission and distribution of electricity in Nepal. In spite of selling most expensive electricity in the region to its consumers, in 2006 alone, the NEA has suffered a loss of Rs2.47 billion which cumulative loss of Rs 7 billion by this year.

Pokharel has further said that the Government of Nepal lacks financial capacity to fulfill ever increasing energy demand. There is a need to promote Nepalese private sector investment in hydropower sector by creating conductive investment environment-not to forget the increasing foreign remittance which accounts for approx 12% of GDP, if only could be canalized in construction of micro, small, medium hydropower to meet electricity demand and promotion of end-use will stimulate national economy. Healthy domestic corporate-cooperative partnership could be sought to realize equitable water resource use benefits without surrendering the control of valuable natural resources to the foreign forces.

Pradhan, in his article *"Challenges and Issues on the Domestic Hydropower Projects and Prospective on Export Oriented Hydropower Projects"*, has said that the challenges lie in developing cheap and reliable hydropower projects so as to keep the tariff within the reach of everyone. The basic infrastructure is not well developed;

often includes infrastructures such as log approach roads, transmission lines and so on. The majority of equipment and materials also have to be imported, which requires foreign currency and transportation overload for a long distance from the port. The fact that major share of the financing is from external loans and investments which are to be paid back in foreign currency; escalates the tariff further.

Prdhan has added that the cost of developing of hydropower projects could be reduced substantially only with the effort of national technicians, local manufacturers and contractors. The government policy should be formulated to encourage national technician and contractors by reducing the role of expatriate consultants and contractors.

Local financing institutions should be mobilized for financing small and medium scale hydropower projects. Foreign consultants' input should be minimized in small and medium analysis.

2.3 Review of the Previous Thesis

Researches on the area of capital budgeting practices in Nepalese context are not made in remarkable number. Many researches were in the area of profit planning and control in Nepalese context. As profit planning and control covers some of the aspects of capital budgeting, researchers made on these areas are taken into consideration for the sake of review to examine the position of profit planning and control practice in Nepalese company. An attempt is made here to review some of the researches, which have been submitted in profit planning and control in the context of Nepal.

Shrestha,(2003), in his thesis, *"Financing Power Development in Nepal- A Case Study of NEA"* points out that the power is a capital intensive sector for country like Nepal but there is no clear-cut policy for its development and its financing prior to the era of economic development. The general objectives of the study are to assess the financing of power sector with the following specific objectives.

- To assess the financing on power development in historical prospective under different plan period.
- To examine the capital structure of NEA and its sources of financing.

- To identify problems of financing on power development.
- To draw some policy implications on financing power development.
- To make an attempt to put forward some viable solution to overcome the existing problems of financing power development.

Analysis and Major Findings of his thesis:-

Energy is a vital necessity which is directly linked with energy resources, but it lies among the least developed groups in terms of energy consumption. According to world development report, 1994, the consumption of commercial energy in Nepal is 20 kg of oil equivalent (KOE) and its per capita energy consumption is 14 Gj according to the WEOS report of 1994.

The general energy scenario of Nepal reveals its greater dependency on traditional sources of energy i.e. 92.30% in 1993/94, of which the share of fuel wood, agriculture residue and animal dung is 69.12%, 14.8% and 8.21% respectively. In the same year, the commercial sources constitute 5.96% of petroleum product, 0.94% of coal and 0.9% of electricity. The commercial consumption of alternative sources of energy is still very low.

The energy consumption in total by different sector in 1999/94, reflects that the shares of domestic, industrial, commercial, transport, agriculture, other and non-energy sector constitute 91.5, 4.30, 1.32, 2.47, 0.67, 0.01 and 0.08 percent respectively.

Since all the commercial sources of energy, e.g. oil, coal, gas etc. Except electricity has to be imported. They are affecting a great pressure on the balance of payment situation.

The topographical condition is highly favorable for the generation of hydropower in Nepal and its power potentiality, i.e. 2.27% of the world, occupies the second place after Brazil.

Nepal Electricity Authority (NEA) is the principle producer and supplier of power in Nepal established in August 1985 (B.S.2042 Bhadra 1) for the proper, management of

electricity supply by making the production, transmission and distribution of electricity capable, dependable and accessible to all.

The main source of revenue of NEA is the net sale of electricity, but for some year (1989-1993) it fails to cover the operation and maintenance expenses. On the expenditure side, the operation and maintenance and general expenses are the main. The increasing expenses on power purchase show the deficiency of NEA's power production.

Bhattrai (2007) has submitted his research work on the topic of *"A Study on Management of Income and Expenditure of Butwal Power Company Limited"***.** This research of Bhattarai is highlight to the management of income and expenditure. In this research Bhattarai has concluded some objectives, finding and recommendation as under.

Objectives of the study

The primary objectives of the study, is to study the management side of the financial budget and special emphasis will be given to income and expenditure. Apart from primary objective following are the other objectives of proposed study.

- To study of sales budget and its achievements of BPC.
- To analysis on income and expenditure of BPC.
- To shows the relationship between income and expenditure with profit
- To recommendation and suggestion for improving the profit plan.

Major Finding of the Study

Butwal Power Company is running in profit because of the BOD, management and staff of the company of their dedication and contribution to the company. BPC's production capacity is stable and demand of electricity is high in Nepal. First priority gives BPC to sale electricity to local consumers then remaining sale to NEA. So, BPC is not necessary to make comprehensive sales and production budgets. From the power loss situation BPC is not reach the targeted sales. However, BPC get success to earn profit because the good management of the company. The major findings of the study on the basis of collected and analysis of data are presented as below:-

- BPC's sales budget is fixed or stable and sales budget and sales performance is satisfactory.
- The sales achievement percent of amount is 79.2%, 95.0, 84.54, 84.69, and 96.9% in FY 2058/59,059/60, 060/61, 061/62 and 062/63 respectively. The achievement percentage of sales revenue is fluctuating during the study period.BPC did not get achieve the targeted sales due to the leakage and power loss situation.
- There is positive and perfect correlation between budgeted and actual sales. It means actual sales change in same direction with budgeted sales.
- BPC's actual sales are increasing trend during study period besides FY 2059/60. It was Rs.236279,Rs. 96364, Rs. 283167, Rs.323134 and Rs. 358419 in thousand in FY 058/59,059/60, 060/61, 061/62 and 062/63 respectively. Due to the Maoist attack on Jhimruk Hydropower Plant in FY 2059/60 was decrease the sales.
- From the analysis of the chapter IV it can conclude that in every year more space is occupying by other sources. In FY 2060/61 is displaying very high space on total income of company by other sources rather than electricity and consultancy services sources due to dividend received from extra investment in other sectors. In the same way this category captures its impact on other nest years as before in the generation of total income of the company.
- Amount of expenditure of BPC is fluctuating during the study period. It was Rs.152619,Rs. 153088,Rs.279371, Rs.197459 and Rs. 201822 in thousand as well Administrative expenses is also in fluctuating trend which was Rs.15249, Rs.25066, Rs.38371, Rs.41201 and Rs.36438 in FY 058/59,059/60, 060/61, 061/62 and 062/63 respectively.
- Amount of selling and distribution is in increasing trend but in FY 2059/60 and 2060/61 amount remains same.
- The weight of power plant expenses in total expenditure are 26.1, 28.55, 16.96, 30.18 and 28.6 percent and the weight of consultancy services in total expenditure is 12.97, 9.8, 3.92, 7.55 and 6.78 percent similarly the weight of other expenditure, in total expenditure is 31.49, 27.54, 55.67, 26.06 and 31.14 percent respectively in FY 2058/59 to 2062/63.

- BPC has running full capacity but the reason of power loss situation BPC did not have to meet sales planning.
- BPC provides electricity to customer in cheap price than NEA.
- BPC prepared income statement systematically and net profit after tax was Rs.142626,Rs.235418.Rs.197761,Rs.288419 in thousand in FY 2058/59, 2060/61, 2061/62 and 2062/63 in respectively. In FY 2059/60 had got loss Rs.44944 in thousand.

Recommendations base on the above study, the following suggestions and recommendations are outlined to improve the formulation and implementation of profit planning and controlling system.

- BPC should control the leakage of electricity to achievement the sales target.
- Loss of the electricity should be controlled. Meter reading and meter joining system should be improved and transmission and distribution line should be refurbished and modernized to control the leakage.
- BPC should prepared income and expenditure budget to present the actual financial condition of the company.
- BPC should try to minimize its overall expenditure to maximize profit
- BPC should clearly classify the costs as fixed, variable and semi-variable to assist to plan production and its operation.
- BPC should maintain its periodic performance reports systematically and also should take correction action if necessary.
- To increase the profit the sales of electricity to local consumer should extent rather than NEA. Because the selling price per unit of local consumer is higher than NEA.
- The management should give training and take carrot and stick strategy for good performance.
- To increase the production of electricity BPC should upgrade the Andhikhola hydropower.
- It is suggested that BPC should invest in other hydro projects to increase the production and profit.
- BPC should controlled the frequently line cut off used by new and modernized machine.

- In BPC, planning should be communicated to lower level management and coordination among them should them should be established.

Goet (1999) had conducted a research on the topic of *"Revenue Planning in Management in Nepal: A Case Study of Nepal Electricity Authority."* some remarkable findings pointed out by Jogindar Goet is as follows:

- NEA has not considered major demand determinants of electricity such as family income, price of electricity, connection charges, cost of alternative, and cost of auto generation and reliability of NEA's services.
- No plan and program have been made about possible consumption of electricity in agricultural sector.
- Target growth is sales revenue was never achieved except in the year 1995/96. This shows that NEA has failed to convert sales unit into sales revenue.
- There is absence of actual meter reading by dint of which, the charged bills are very low and non reconciliations have been made between units and units billed as well.
- Revenue and not recognized on accrual basis.

Some of the Recommendations made by him are as follows:

- NEA should consider demand determinants such as family income, price of electricity, connection charges, cost of alternative available, cost of self generating of electricity and reliability of NEA service while forecasting demand.
- NEA should prepare programs and plans for agricultural sector which is capable of massive consumption of electricity.
- NEA should introduce programs and action plan for the reduction of transmission loss, both technical and non technical. NEA can improve its efficiency in the meter device instantly either by changing old meters or utilizing only efficient meter readers or by improving its transmission system. Non technical loss can be reduced by adopting effective managerial, social, legal and other measures.
- Billing should be based on actual matter reading or reasonable estimates of past consumption in the absence of actual meter reading.

- Revenue should be recognized an accrual basis to comply with present accounting manual.

Khadka (2009), in his research *"Profit Planning in Hydropower Industry"*. Had examined how far the different functional budgets were being applied as tool for profit planning in BPC. The study reports that though yearly net earnings are satisfactory; BPC is suffering from high fixed costs, unsystematically classified overheads, poor interdepartmental coordination and lack of investment and tax planning. There is no definite target to distribute the yearly dividend to the shareholders. Human and financial performance system is not well developed. However, the strength of BPC is that it has plenty of funds available and, there are no loans and borrowings which indicate its sound financial condition.

While analyzing his thesis cover some of following points seems as;

- From the comparison of sales target and achievement it seems to be from 86.36 percent to 115.29 percent. Actual sales achievement is 95.08 percent on an average.

From the analysis of sales, the following points can be drawn:-

  - The target sales are highly ambitious so actual sales is less than target sales except two fiscal year.
  - The mean of target sales is higher than actual sales.
  - The actual sales are highly fluctuated
  - The S.D. of actual sales is less than target sales.
  - There is highly positive correlation between target and actual sales.
  - The correlation coefficient is less significant or the budgeted sales coefficient is more than actual sales.
  - Straight line trend shows positive sales figure for the future.
- To conclude the production budget of BPC following points can be stated:-
  - BPC prepare short term production budget in annual figure. It does not prepare the production budget by interim periods and it also does not prepare the long term production plan.
  - The production budget preparation is based on sales budget.

    - Percentage of production achievement is satisfactory with budgeted production.
    - The production budget is more variable than actual production.
    - Regression equation shows that there is positive relationship between budgeted production and actual production.
- CR of BPC is between 1.32 to 4.79.
- BPC has 1.18 to 4.68 quick ratios. It means company can easily meet the entire current claim.
- BPC has 29.19%, 35.38%, 15.47%, 15.15%, 18.07% 31.38%, 22.60%, 20.21% and 41.44% ratio from 2054/055 and 2062/63 respectively
- Gross profit margin on sales is varying from 72.67% to 20.49%.
- A low net profit margin has the opposite implications. Net profit margin range between fiscal year 2054/55 to 2062/63 is 79.84% to 41.62%.
- Return on shareholder's equity is between -3.28% to 23.84%.
- Greater EPS in favorable EPS is between -5.36% to 34.37% from FY 2054/055 to 2062/63.
- Owner's get greater dividend in case of greater DPS ratio. DPS range between 5% to 40% over the year.

Some of major findings:

With respect to the normal standard of quick ratio, later 3 years are slightly higher than the normal standard of 1:1. The inventory turnover of the company seems to be in increasing trend except in the year 2059/60 where a sale is affected in the years. Increased trend of the ratio indicates that inventory management of the company is being improved in the study period and is in the satisfactory condition.

Company utilized its fixed assets in better way in later years in comparison to previous years except in 2059/60. Increase meant in fixed assets turnover ratio indicates the improved work efficiency and financial condition. The total assets turnover ratio of BPC in the study period is not good. It shows the increment in ratio but increment is not satisfactory. The capital employed ratio BPC in the study period does not seems to access a good profit. The operating profit ratio of BPC seems to be

better. Generally a 40% ratio is supposed to be good and only in the year 2059/60 less than 40%. It is due to the external factor.

The net profit ratio of BPC seems to be better. The average standard net profit ratio is 12%. This reflects the Butwal Power Company is in better condition in its profitability with efficient management. The operating expenses ratio of BPC seems a bit high in the year 2056/57, 2057/58 and 2058/59. In these years the company sustained by its non operating income.

Khadka has recommended that the company should follow the practices of setting specific financial goals future activities and should develop major programs to accomplish the formulated objectives and goals. Participative management, profit planning manuals and discounted capital expenditure approach should be introduced and, communicated within the company. The company should also conduct SWOT analysis to improve capabilities.

2.4 Research Gap

Most of the prior research work conducted on accounting was on Profit Planning & control, Revenue planning and cost volume profit analysis. Those studies have pointed the similar findings and conclusions. Very few research works were done in the sector of capital budgeting practices in Hydropower. The study focused on the capital budgeting practices in Hydropower companies of Nepal. The main objective of the study was to find out how far the Nepalese Hydropower companies practices the capital budgeting tools and techniques to their business for better performance and results. This study also tries to find long term capital investment decision in Hydropower companies; the findings of these studies were based on primary data.

CHAPTER- III
RESEARCH METHODOLOGY

Research methodology is concerned with various methods and techniques, which are used in the process of research studies. It includes wide range of methods including quantitative technique for data analysis and presentation. It facilitates the research work and provides reliability and validity to it. The main objective of this study is to analyze, examine and interpret the uses of capital budgeting in hydropower companies of Nepal. The research methodology is followed to achieve the basic objectives and goals of research work. The major components of research methodology followed in this research study are discussed below.

3.1 Research Design

Research design is the plan, structure, and strategy of investigation conceived so as to obtain answer to research question and to control variance. The plan is the overall schemed or program of the research like the structure of research is more specific. It is the outline, the scheme, the paradigm of the operation of the variable and strategy implies how the research objective will be reached and how the problem encountered in the research will be tackled. Research design is an analytical as well as descriptive approach to achieve the objective. Thus research design is a plan to obtain the answer of research question through analysis of data.

This research design will follow a descriptive design that attempts to measure the uses of capital budgeting in hydropower companies of Nepal.

Descriptive design is a fact finding operation searching for adequate information. It is a type of study, which is generally conducted to assets the opinions, behaviors or characteristics of a given population and to describe the situation and events occurring at present. Descriptive research is a process of accumulating facts. It does not necessarily seek to explain relationship, test hypothesis, make prediction or get at meanings and implications of the study.

3.2 Source of Data

The data were collected mainly from the primary sources. Primary data were collected through questionnaire, interview and group discussion.

3.3 Population and Samples

For the objective to study the capital budgeting practices in hydropower companies of Nepal, the samples of the hydropower are taken by the judgment and convenient sampling method. It is difficult to study the population of hydropower companies. Hence, only five companies are chosen as the sample for the analysis, interpretation and representation of the population of the hydropower companies. The samples of five hydropower companies, which are judged for the convenience, are as follows:

- Butwal Power Company Ltd.
- Chilime Hydropower Company Ltd.
- Bhote Koshi Power Company Pvt. Ltd.
- Laughing Buddha Power Nepal (P) Ltd.
- Himalayan Power Partner Pvt. Ltd.

3.4 Data Collection Procedure

This study is mainly based on primary sources of data, information collected by developing a structured question. The main target respondents were the financial directors and accountants of the manufacturing companies. Altogether 11 questions were included in the questionnaire and analyzed for study.

3.5 Data Processing Procedure

This section consisted presentation and interpretation of available data. The data collected from questionnaire were in the form of raw. They were converted into table form according to questionnaire's objective. Simple arithmetical percentage tools were used for analysis and interpretation of data. Major findings are based on the analysis and the interpretation of data.

3.6 Research Variable

Simple percentages analyses were used to interpret data. The capital budgeting tools like NPV, IRR, PI, ARR, PBP, and MIRR were the major research variables.

Similarly the management accounting tools like Budgeting, Zero Base Budgeting, Capital Budgeting, Cost Volume Profit analysis, Ratio analysis, Cash Flow Analysis, Decision Making Procedure, and Preparation of financial documents, short term and long term planning were also the research variables.

CHAPTER - IV

DATA PRESENTATION AND ANALYSIS

4.1 Introduction

The main objective of this study is to examine the present practice of capital budgeting tools and techniques in Nepalese hydropower companies. The other objectives are to identify the areas where capital budgeting tools can be applied to strengthen the companies and to scrutinize the major difficulties in the application of capital budgeting tools in Nepalese hydropower companies. To make recommendations to overcome the difficulties in applying capital budgeting tools in Nepalese hydropower companies are the specific objectives of the research study this chapter included the data presentation and analysis

4.2 Tabulation and Graphical Presentation of Uses of Capital Budgeting Tools

In this part, it has been attempted to analyze the data collected through questionnaire. The data are presented in table and pie chart/ bar diagram.

4.2.1 System of Uses of Budgeting in Hydropower Companies of Nepal

System of budgeting practices plays an important role in questioning, visualizing, analyzing and measuring implemented strategies. It also helps to manager in overall managerial activities by providing information and helping in planning, controlling and decision making. The following table and charts shows the current status of budgeting system practices of Nepalese hydropower companies.

Table 4.1

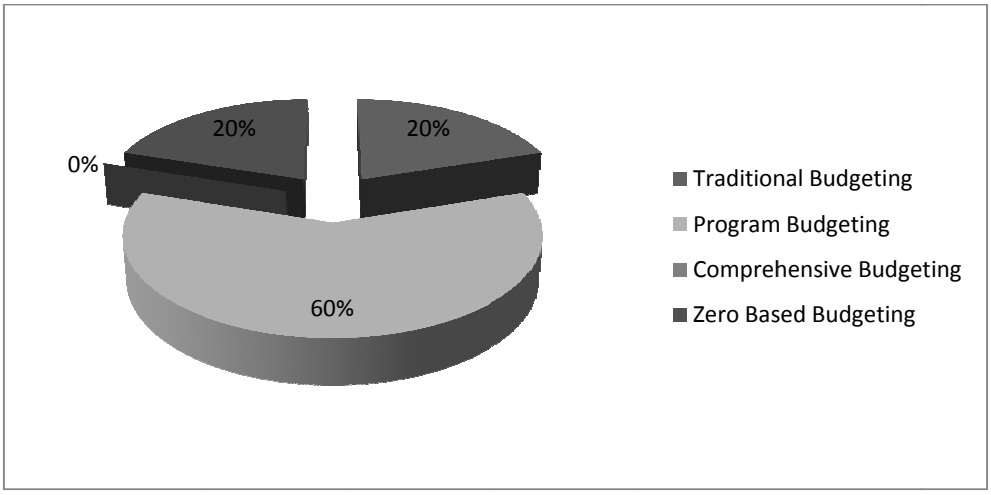
System of Budgeting Practices

Budgeting System	No of Companies	Practitioner	Percent
Traditional Budgeting	5	1	20
Program Budgeting	5	3	60
Comprehensive Budgeting	5	0	0
Zero Based Budgeting	5	1	20
Total	**5**	**5**	**100**

Source: Field Survey 2011

Figure 4.1

System of Budgeting Practices



The above table and figure exhibit the system of budgeting practice in hydropower companies of Nepal. Regarding the response of sample Nepalese organizations, there is significant practices of program budgeting i.e. 60 percent. 20 percent of the sample companies have been practicing traditional budgeting system and 20 percent have been using zero based budgeting. Although Comprehensive budgeting system of every activity in the budget, none of the sample hydropower companies has applied it. Bhote Koshi Power Company Pvt. Ltd., BKPC practice Zero based budgeting. Both Laughing Buddha and Chilime Hydropower practices Program Budgeting. Butwal Power Company, BPC practices both Traditional and Program Budgeting. But Himalayan Power partner do not practices any of budgeting system as per dates' provided by Accountant.

4.2.2 Basis of Budget Preparation

Budgeting summarized the estimated result of future transactions for the entire company in much the same manner as the accounting process records and summarizes the result of completed transactions. For assisting the management in the functions of planning and completed transactions. For assisting the management in the functions of planning and control budgeting techniques is applied budget can be used as benchmark that allows manager to compare actual performance with estimated or desired performance. The following table gives the hydropower companies response regarding the basis of budget preparation.

Table 4.2

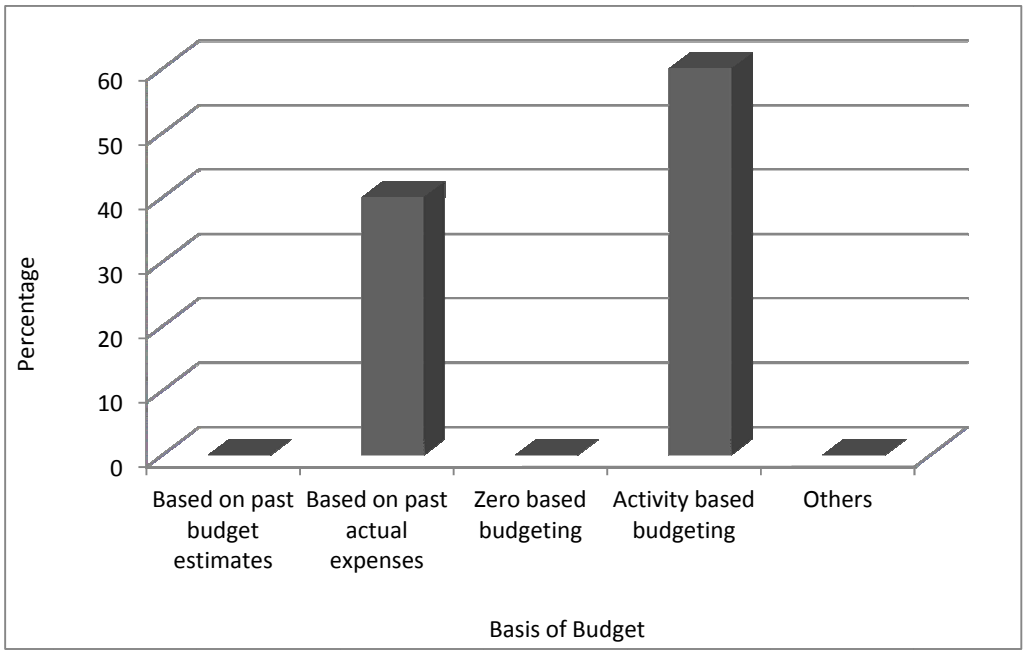
Basis of Budget Preparation

Basis of Preparing Budget	No of Companies	Practitioner	Percent
Based on past budget estimates	5	0	0
Based on past actual expenses	5	2	40
Zero based budgeting	5	0	0
Activity based budgeting	5	3	60
Others	5	0	0
Total	**5**	**5**	**100**

Source: Field Survey 2011

Figure 4.2

Basis of Budget Preparation



The above table and figure reflect the budget estimation technique practiced by sample hydropower companies. It is seen in the table and figure that 60 % of Nepalese hydropower companies have been preparing their budget on the basis of past budget estimates and 40 % companies have been preparing their budget based only on activity based budgeting. None of hydropower companies have been practiced modern useful technique zero based budgeting due to lack of time and manpower. It seems that, in Nepal most of the companies do not have trained manpower for budgeting and planning. Chilime, Laughing Buddha and Himalayan Power practices

Activity based budgeting. Base for budgeting of Butwal Power Company was both past actual expenses and Activity budgeting. Whereas Bhote Koshi prepare it's budgeting on the basis of past actual expenses.

4.2.3 Methods of investment Plan in Nepalese Hydropower Companies

Investment plan helps to get maximum return from the prospective investment for the hydropower companies. Systematic plan is necessary for capital fund management of the organization. On the basis of management perception different method of investment planning can be used. Following are the methods of analysis for investment plan undertaking by the sample manufacturing companies:

Table 4.3

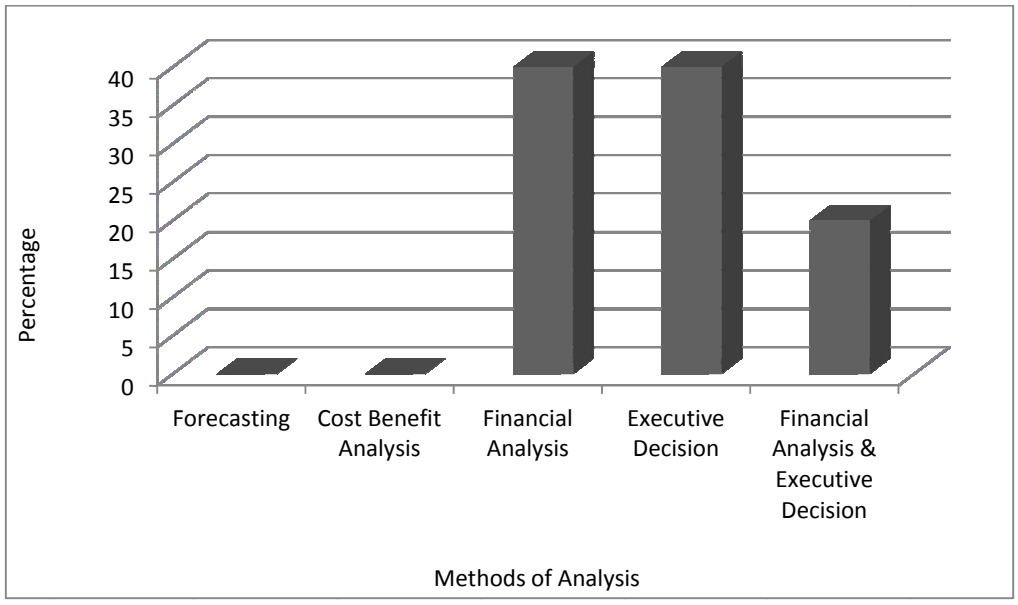
Method of Investment Plan Analysis

Methods	No of Companies	Practitioner	Percent
Forecasting	5	0	0
Cost Benefit Analysis	5	0	0
Financial Analysis	5	2	40
Executive Decision	5	2	40
Financial Analysis & Executive Decision	5	1	20
Total	**5**	**5**	**100**

Source: Field Survey 2011

Figure 4.3

Methods of Investment Plan Analysis



The above table and figure show the method of investment plan analysis by the sample Nepalese hydropower companies. 40% of the companies (Bhote Koshi and Himalayan Power) have been using Financial Analysis for investment plan analysis. Similarly 40 % of the companies (Butwal Power and Laughing Buddha) have been practicing Executive Decision for investment plan analysis. Among 5 companies Chilime Hydropower,(20%) using both financial analysis and executive decision. Although there are many effective techniques available to analyze investment plan, forecasting and cost benefit analysis is dominated in the Nepalese hydropower companies. It seems that in the Nepalese companies, there is still lack of practicing modern approach like participatory in decision making.

4.2.4 Sources of Fund for Investment Projects

A company has different sources available to raise fund to invest in projects. Raising fund involves additional cost for the company and has long term effect in the life of project. Company policy and financial structure & position play vital role in selecting source of fund. So, the below table attempts to find out the performance given by hydropower companies in selecting the sources of fund.

Table 4.4

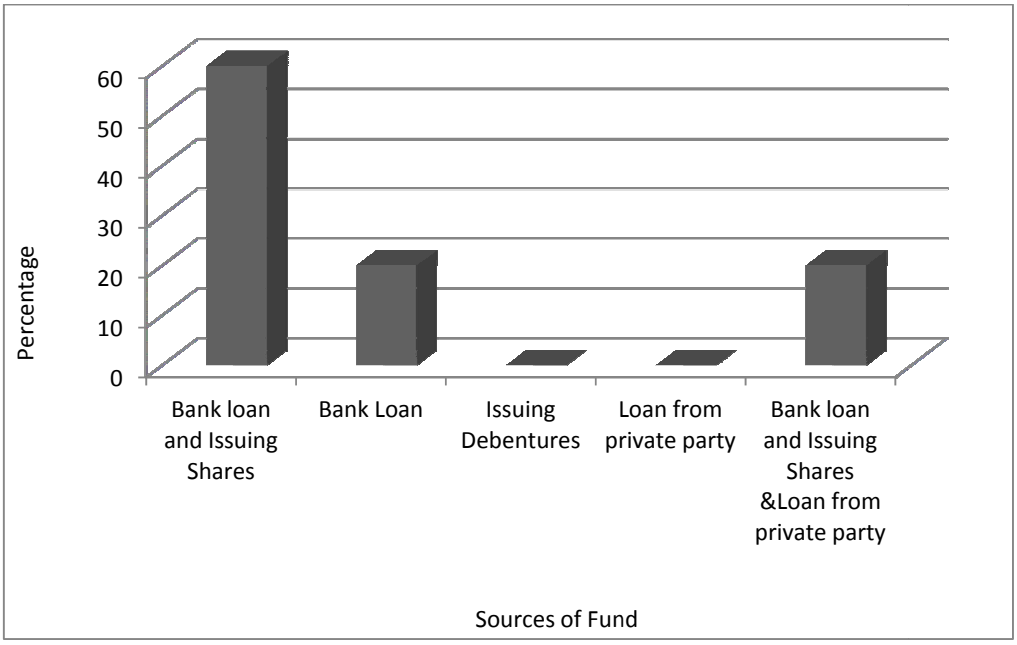
Sources of Fund for Investment Projects

Source of Fund	No of Companies	Practitioner	Percent
Bank loan and Issuing Shares	5	3	60
Bank Loan	5	1	20
Issuing Debentures	5	0	0
Loan from private party	5	0	0
Bank loan and Issuing Shares &Loan from private party	5	1	20
Total	**5**	**5**	**100**

Source: Field Survey 2011

Figure 4.4

Sources of Fund for Investment Projects



The above table and figure reveal the source of fund for investment projects by the sample Nepalese hydropower companies.20 % of the hydropower companies (Himalayan Power) have been collecting their funds from banks for their investment projects. Similarly 20 % of sample companies (Laughing Buddha) have been collecting their funds from bank loan, issuing shares & loan from private party. Both bank loan as well as issuing share was used for fund collection by 60% of the hydropower companies (Butwal Power, Chilime and Bhote Koshi). None of the companies have been issuing debentures and loan from private party for their fund collection. Collection of fund plays a major role in investment decision which determines the cost of project. Every organization requires choosing the optimal source of fund which minimizes the cost. Bank loan is the most common and economic source of fund which has been selecting by Nepalese companies.

4.2.5 Method Follows While Analyzing Investment Project

Selecting investment project is not an easy task. Investment project involves huge amount. So, it requires analysis by using different methods with the help of available information. There are different methods developed for analyzing the investment projects. The following table presents the responses acquired from the sample

Nepalese hydropower companies regarding the method follows while selecting investment project.

Table 4.5

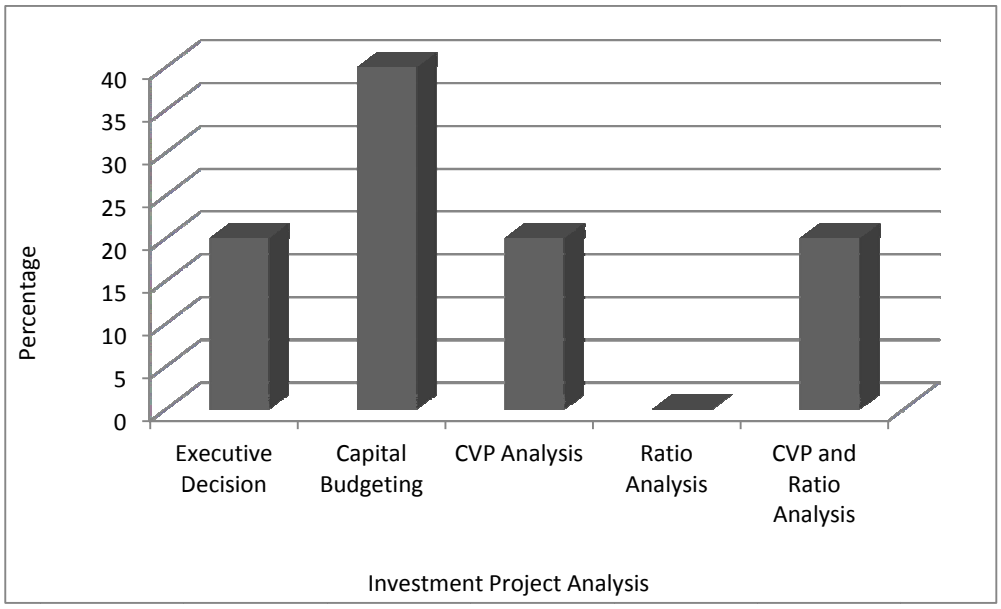
Investment Project Analysis Method

Methods	No of Companies	Practitioner	Percent
Executive Decision	5	1	20
Capital Budgeting	5	2	40
CVP Analysis	5	1	20
Ratio Analysis	5	0	0
CVP and Ratio Analysis	5	1	20
Total	**5**	**5**	**100**

Source: Field Survey 2011

Figure 4.5

Investment Project Analysis Method



The above and figure exhibit the methods of investment project analysis practicing by sample Nepalese hydropower companies. 40% of the companies (Chilime and Himalayan Power) have been practicing capital budgeting technique and 20% (Butwal Power Company) of them used executive decision and 20% (Bhote Koshi) used CVP analysis while analyzing investment projects. Similarly, 20 % of the company (Laughing Buddha) used both CVP and Ratio analysis. None of the hydropower companies have been practicing ratio analysis as an investment project analysis tool.

4.2.6 Capital Budgeting Practice

Capital budgeting as the decision making is the process by which firms evaluate the purchase of major fixed assets including building machinery and equipment. It is also covers decision to acquire other firms either thought the purchase of their common stock or groups of assets that can be used to conduct an ongoing business. So, the below table tries to find out the preference given by hydropower companies to the capital budgeting.

Table 4.6

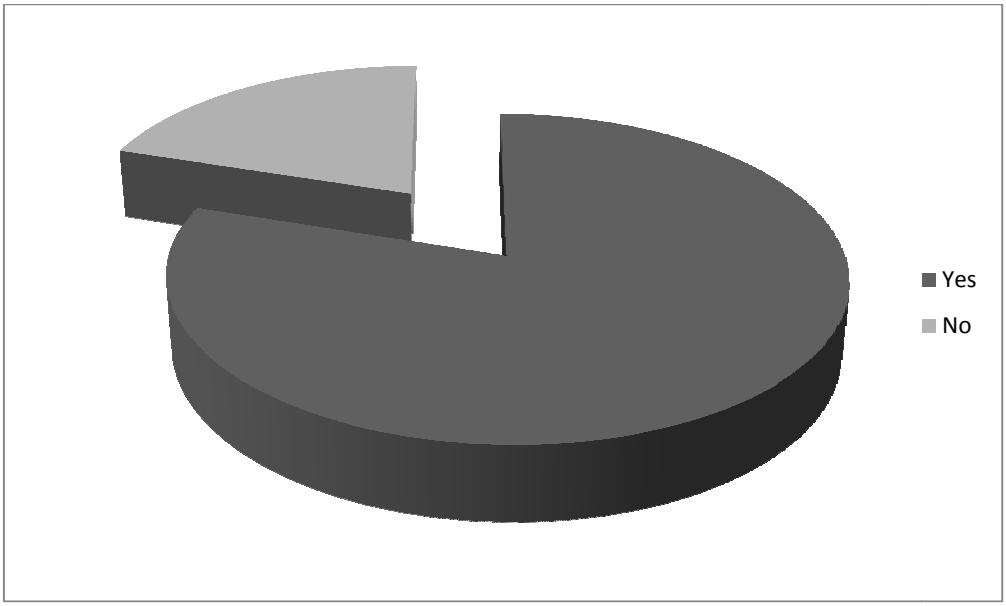
Capital Budgeting Practice

Response	Frequency	Percent
Yes	4	80
No	1	20
Total	**5**	**100**

Source: Field Survey 2011

Figure 4.6

Capital Budgeting Practice



According to the above table and figure 80% of sample Nepalese hydropower companies (Chilime, Bhote Koshi, Laughing Buddha and Himalayan Power) have been practicing capital budgeting for the long term investment project. Only 20% of sample companies (BPC) do not uses capital budgeting for the long term project. Capital budgeting is one of the most important and useful technique to evaluate investment project for each company. It minimizes the cost of the project.

4.2.7 Capital Budgeting Tools Practice in Nepalese Hydropower Companies

More purpose for project are at the threshold of the business firm comparing to its ability and wiliness to finance some proposals good, other are different and at others poor. A screening has to be devised for finding out the real content of such proposal. Methods of differentiating them should be developed. For this purpose, numerous methods of measuring the economic value of an investing can be found. The following table presents the responses acquires from the sample Nepalese hydropower companies regarding the capital budgeting tools practiced.

Table 4.7

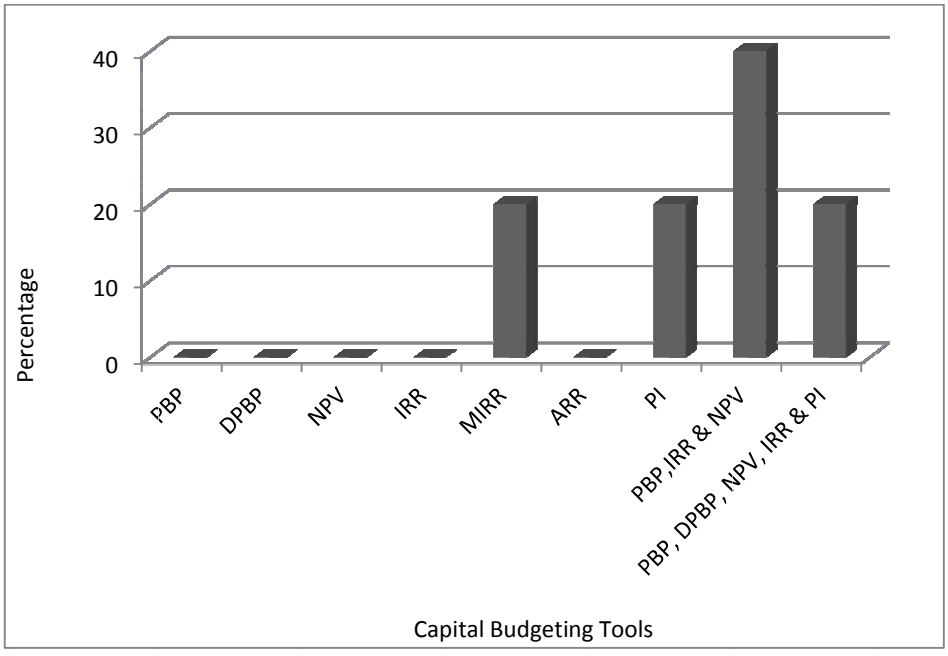
Capital Budgeting Tools Practice in Nepalese Hydropower Companies

Tools	Frequency	Percent
PBP	0	0
DPBP	0	0
NPV	0	0
IRR	0	0
MIRR	1	20
ARR	0	0
PI	1	20
PBP,IRR & NPV	2	40
PBP, DPBP, NPV, IRR & PI	1	20
Total	**5**	**100**

Source: Field Survey 2011

Figure 4.7

Capital Budgeting Tools Practice in Nepalese Hydropower Companies



The above table and figure shows the capital budgeting tools practiced by the Nepalese hydropower companies. Butwal Power Company, one of leading company does not uses any tools of capital budgeting. 20 -20 % of sample companies use MIRR (Bhote Koshi) and PI (Laughing Buddha). 40% of companies (Chilime) practiced all PBP, NPV & IRR. Similarly, 20% of the companies () have been practicing all PBP, DPBP, NPV, IRR & PI for long term investment project. None of company practice ARR for long term investment. Time value of money is also the important factor which should be considered in the calculation of expected cash flows. Every business houses need to considered this factor while making decision to minimize risk.

4.2.8 Major Difficulties for Practicing of Capital Budgeting

Capital budgeting is investment decision-making as to whether a project is worth undertaking. Capital budgeting is basically concerned with the justification of capital expenditures. Although, capital budgeting is an important decision making tool for investment project, some companies were not practicing it till now. The table below presents the difficulties in practicing capital budgeting by sample Nepalese hydropower companies.

Table 4.8

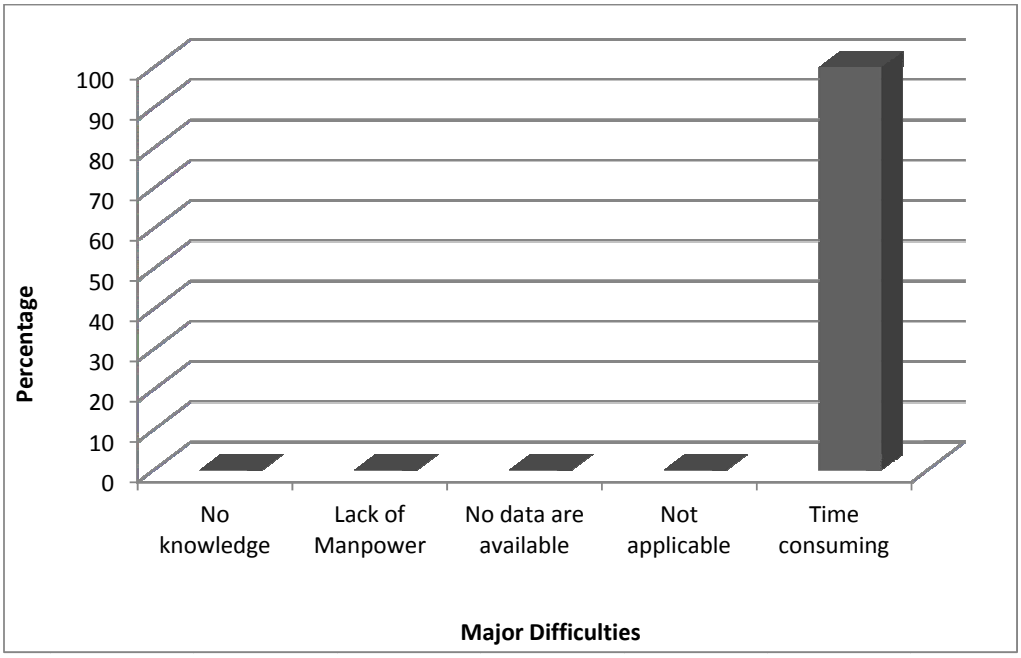
Difficulties for Practicing of Capital Budgeting

Reason	Frequency	Percent
No knowledge	0	0
Lack of Manpower	0	0
No data are available	0	0
Not applicable	0	0
Time consuming	5	100
Total	**5**	**100**

Source: Field Survey 2011

Figure 4.8

Difficulties for Practicing of Capital Budgeting



The above table and figure illustrate the major difficulties faced by sample hydropower companies is time consuming, while applying capital budgeting techniques. Although 80% of sample companies have mentioned that they are practicing capital budgeting to analyze investment project but there is lack of expertise and trained manpower.

4.2.9 Decision Body for Investment

Capital budgeting is an important managerial tool. Every company needs to take decision. Here the concerned is that who takes the decision to invest on project. To do this, a sound procedure to evaluate, compare and select projects is needed. It is crucial to select the investment project for each company which requires huge investment. Therefore, decision maker must be able to decide whether an investment is worth undertaking and be able to choose intelligently between two or more alternatives. There are modern approaches like participatory approach came into practice which includes all employees in decision making process. The approaches may save the cost for all organization and help to reach in the best alternative. The table below presents the state of decision taking body on capital investment.

Table 4.9

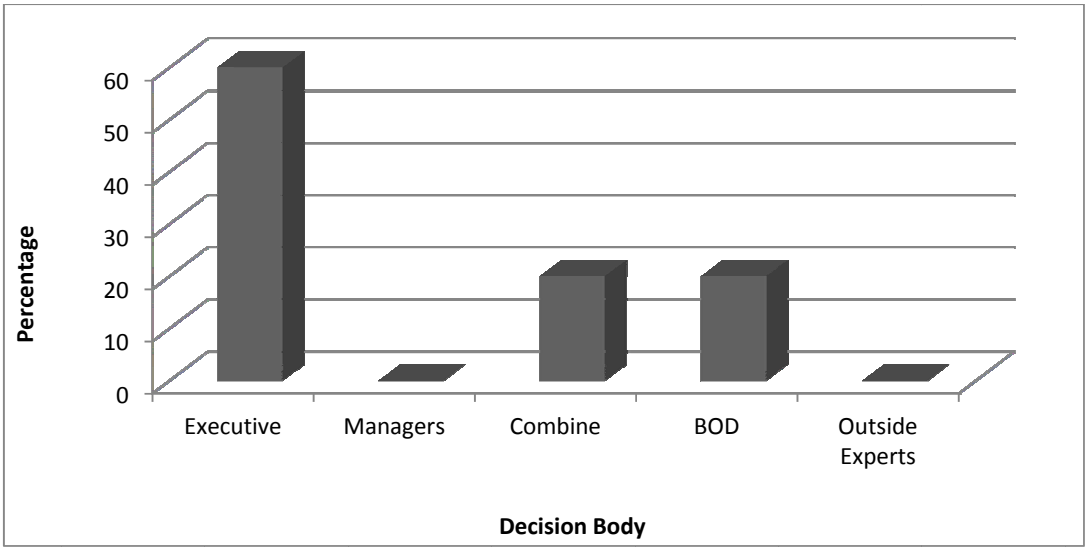
Decision Body on Investment

Decision Body	No of Companies	No of Practicing Company	Percent
Executive	5	3	60
Managers	5	0	0
Combine	5	1	20
BOD	5	1	20
Outside Experts	5	0	0
Total	**5**	**5**	**100**

Source: Field Survey 2011

Figure 4.9

Decision Body on Investment



The above table and figure illustrate the decision body on investment. In most of the hydropower companies (BPC, Laughing Buddha and Himalayan Power) i.e. 60 percent decision on investment projects are taken by executives. Only the 20 % of the companies' (Bhote Koshi) decisions are taken by combine (executive and managers) and BOD (Chilime) each. Although hiring outside experts to make decision is useful but it might be costly. Every production houses should train and develop their employees for analytical purpose while making decision. So, they should be focused on modern participatory approach in decision making process.

4.2.10 Method of Risk Adjustment While Evaluating Capital Investment

The capital budgeting decision is based on the benefits to be derived from the project in future. The benefits are measured in term of cash flows. The estimated future cash flows are based on various assumptions. The accuracy of the estimates of future return largely depends upon the accuracy with which these factors are forecast. The actual return will not precisely correspond to the estimate. In other words, the actual returns will vary from the estimate. This is technically referred to as risk. The firm generally uses its normal or average, required rate of return to evaluate projects that have average risk, a few percentage points are added to the average required rate of return to evaluate projects that have above- average risk, and a few percentage points are subtracted from the average required rate of return to evaluate projects that have below-average risk. It is important that a project's risk be considered in capital budgeting analysis, because incorrect decisions might be made if risk is not considered.

Table 4.10

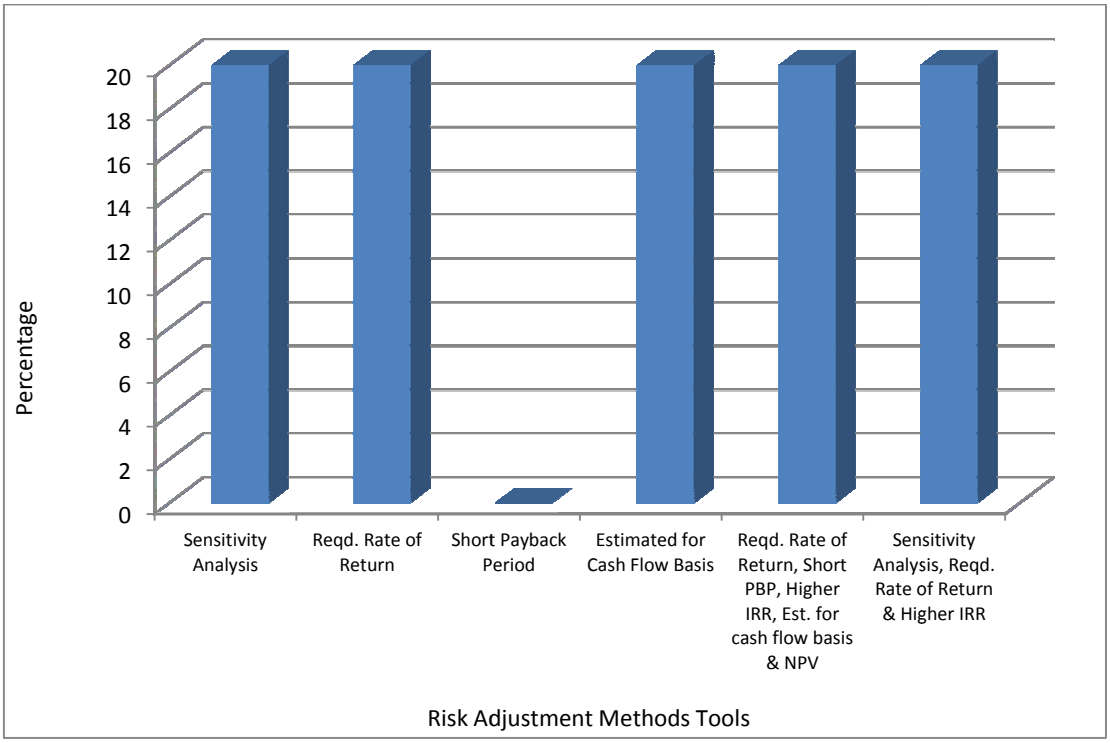
Method of Risk Adjustment While Evaluating Capital Investment

Method	No of Companies	Practitioners	Percent
Sensitivity Analysis	5	1	20
Req^{d}. Rate of Return	5	1	20
Short Payback Period	5	0	0
Estimated for Cash Flow Basis	5	1	20
Req^{d}. Rate of Return, Short PBP, Higher IRR, Est. for cash flow basis & NPV	5	1	20
Sensitivity Analysis, Req^{d}. Rate of Return & Higher IRR	5	1	20
Total	**5**	**5**	**100**

Source: Field Survey 2011

Figure 4.10

Method of Risk Adjustment While Evaluating Capital Investment



The above table and figure shows the risk adjustment tools while practicing capital budgeting.20% each of hydropower companies have been practicing sensitivity analysis, req^{d} rate of return (Bhote Koshi) and estimated for cash flow basis (Laughing Buddha). Similarly, 20 % of company (Chilime)uses all req^{d} rate of return, short PBP, Higher IRR, estimated for cash flow basis & NPV as well 20% of the company (Himalayan Power) uses sensitivity analysis, req^{d} rate of return and higher IRR which might be the biasness in answering questionnaire.

4.2.11 Management Accounting Tools Practices in Nepalese Hydropower Companies

Management accounting for hydropower companies has to contribute to focusing the process of strategic planning and provide information to facilitate decision making and financial control of the different business unit involved. Different management accounting tools are needed to be carried out for planning, controlling and decision making process. Management accounting tools are applied discipline used in various

industries. The following table presents the response acquired from the Nepalese hydropower companies regarding the management accounting tools practiced.

Table 4.11

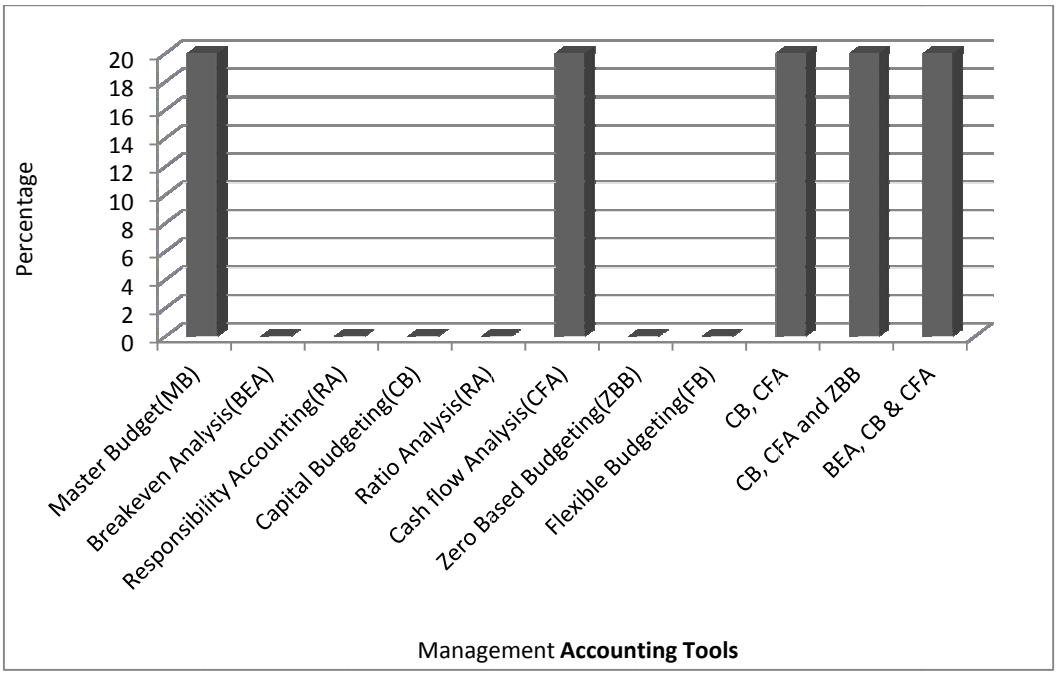
Practice of Management Accounting Tools

Tools	No of Companies	No of Practitioner	Percent
Master Budget(MB)	5	1	20
Breakeven Analysis(BEA)	5	0	0
Responsibility Accounting(RA)	5	0	0
Capital Budgeting(CB)	5	0	0
Ratio Analysis(RA)	5	0	0
Cash flow Analysis(CFA)	5	1	20
Zero Based Budgeting(ZBB)	5	0	0
Flexible Budgeting(FB)	5	0	0
CB, CFA	5	1	20
CB, CFA and ZBB	5	1	20
BEA, CB & CFA	5	1	20
Total	**5**	**5**	**100**

Source: Field Survey 2011

Figure 4.11

Practice of Management Accounting Tools



The above table and figure exhibit the practice of management accounting tools in sample hydropower companies of Nepal. Most of sample companies have been practicing more than one management accounting tools. 20% of respondents used master budget (BPC) & cash flow analysis (Laughing Buddha). Similarly capital budgeting and cash flow analysis (Chilime), capital budgeting, cash flow analysis and zero based budgeting (Bhote Koshi) as well breakeven analysis, capital budgeting and cash flow analysis (Himalayan Power) all these combinations were practiced by20 % of the hydropower companies. None of Nepalese sample hydropower uses responsibility accounting, flexible budgeting & ratio analysis.

Nepal is proceeding toward globalization; Nepalese companies should adopt themselves to the global environment in the context of accounting record keeping. Managers should think in a global perspective. Information should be updated. For better utilization of the limited resources and for achieving goals under the circumstances of ruthless competition, application of advanced managerial accounting tools can be of great help.

4.2.12 Comment

The study was done with an objective to study and examine the present practice of capital budgeting tools in the hydropower companies of Nepal, and to identify the areas where capital budgeting tools can be applied to strengthen the hydropower companies through saving cost.

Although universities and government have put greater effort on practices of capital budgeting for investment project but in some company there is lack of its practices. One of the respondent mentioned that it do not practices such accounting tools but most of the major decision are taken by executive body. So all these theoretical concept of capital budgeting does not fully implemented in practical scenario. This might represent the actual situation of capital budgeting practices.

4.3 Major Findings

On the basis of above analysis, examinations and information discussion the following key findings have been drawn.

- There is significant practices of capital budgeting.
- Regarding the response of Nepalese hydropower companies there is significant practices of program budgeting i.e. 60% and 20% of the companies are practicing traditional and zero based budgeting. None of the hydropower companies are applying comprehensive budgeting.
- 60% of Nepalese hydropower companies are preparing their budget on the basis of activity based budgeting. Similarly, 40% of them are preparing budget on the basis of past actual expenses. None of the hydropower companies are practicing modern useful tool zero based budgeting and based on past budget estimates.
- Most of the Nepalese hydropower companies are making investment plan through financial analysis (40 %) and executive decision (40 %) and the 20 % of the companies are practicing both financial analysis and executive decision to plan their investment. Forecasting and costs benefit analysis are dominated in planning investment among sample hydropower companies.
- All of manufacturing companies collect their fund from bank loan for their investment projects. 60% of the companies are using both bank loan and issuing shares to raise fund. 20% of the companies using bank loan, issuing shares and loan from private party to raise fund. None of the companies issued debentures to raise their fund.
- To evaluate project 40% of the companies are practicing capital budgeting technique and only 20% of each using executive decision and CVP analysis. 20% of the companies are using both CVP analysis and ratio analysis as an investment project analysis tools.
- 40% of the hydropower companies are practicing PBP, IRR & NPV as tools for long term investment project.20% each of the companies using MIRR and PI as tool. Similarly 20% of the sample company using the combination of PBP, DPBP, NPV, IRR & PI as tools for long term investment project. None of the companies are practicing ARR for long term investment.
- Most of the Nepalese hydropower companies are facing time consuming difficulty in using capital budgeting.
- 60% of the companies are deciding on investment through executives' decision. 20% of the companies decide by both combination of managers and executives

as well 20% of the hydropower companies make decision on investment through BOD for their project.

- 20% of the companies do not practice any of the methods of risk adjustment while evaluating capital investment.20% uses only required rate of return and estimated for cash flow basis.20% of the companies practice the combination of sensitivity analysis, required rate of return and higher IRR. Similarly, 20 % uses the combination of required rate of return, short PBP, higher IRR, estimated for cash flow basis and NPV as risk adjustment tool.
- Most of the hydropower companies are practicing more than one tools of management accounting. All the tools master budget; cash flow analysis; capital budgeting and cash flow analysis; breakeven analysis, capital budgeting and cash flow analysis; breakeven analysis, capital budgeting and zero based budgeting are practiced by 20/20 percent of the hydropower companies. None of the hydropower companies are practicing responsibility accounting, ratio analysis and flexible budgeting.

CHAPTER - V

SUMMARY, CONCLUSION AND RECOMMENDATION

5.1 Summary

Capital budgeting decisions are involved with the use of cash now and get back the investment over a period longer than a year. Evaluating such decisions requires determining the investment and its resulting cash flows. Investments provide future cash flows through additional revenues and costs, and through cost saving critical to capital budgeting is that most, if not all, of the numbers used in the analysis are estimates.

The company's circumstances in terms of available funds and investment opportunities should be considered before selecting a single capital budgeting technique for general use. Capital investments must earn returns on both working capital and plant investments. Investments that reduce inventories are especially desirable because the payoff is very high. Capital budgeting decisions involve many estimates, so managers perform sensitivity analysis to alert themselves to areas where they might face problems.

Capital budgeting decision requires recognizing the time value of money. The two most popular approaches, called discounted cash flow techniques, are the net present value (NPV) and the internal rate of return (IRR) methods. The traditional methods-payback period and accounting rate of return are often used, but are conceptually inferior because they fail to consider the time value of money. Yet, such methods, particularly payback, might be useful as rough screening devices. The source of financing a particular investment is not considered in it.

Risk is only one condition a decision maker may face. Uncertainty and risk describes the conditions most financial managers face. Probability and statistics provide useful methods for describing such situations. If only one outcome is possible, the situation can be described as certainty. If more than one outcome is possible but the probabilities of these states of nature are unknown, decisions are made under conditions of uncertainty.

Different decisions rules are followed in each decision situation. Decision making under risk is different from decision making that considers the degree of risk or uncertainty. Hydropower sector plays an important role in the economic development of the country.

The major capital budgeting tools are PBP, NPV, IRR, ARR, DPBP, MIRR & PI etc. The research was conducted to find out the facts that the Nepalese hydropower companies are getting benefits from using those capital budgeting tools or not?

The study was done with an objective to study and examine the present practice of capital budgeting tools in hydropower companies of Nepal and to identify the areas where capital budgeting tools can be applied to strengthen the hydropower companies through saving costs. And other objective is to find out the reasons for non practicing the capital budgeting tools and techniques and difficulties faced in the application of capital budgeting tools in hydropower companies in Nepal.

As per the nature and demand of the study, survey type research design was adopted with descriptive and analytical approach. The research is mostly based on primary source of information. Surveys of 5 hydropower companies of Nepal were made through questionnaires. All together 11 questionnaires were distributed and analyzed to get valuable information's and data. Information was tabulated, analyzed, interpreted as per the requirement of the study. Simple percentage tools have been applied to analyze and interpret the findings.

5.2 Conclusion

On the basis of the major findings of the study, some conclusion has drawn about the capital budgeting tools practice in hydropower companies of Nepal. Most of the hydropower companies adept the tools like PBP and NPV. The tools not in well practiced were ARR, MIRR and DPBP. It can also be concluded that the major difficulties applying for capital budgeting are time consuming process. Even though sample companies shows the major difficulties to applying capital budgeting is time consuming, there is lack of knowledge and manpower for implementing of capital budgeting.

Although universities and government has put greater effort on practices of capital budgeting for investment project but in some company there is lack of its practices. One of the respondents argues that in case of private limited company, most of the major decisions are taken by executive body. So, all these theoretical concept of capital budgeting does not fully implemented in practical scenario. This might represent the actual situation of capital budgeting practices.

Capital budgeting in Nepalese hydropower companies is still evolving and will continue to do so in the future. So far, they are trying to adopt such tools and techniques to cope with the future expected opportunities and challenges to be faced due to the accession of globalization.

5.3 Recommendation

In the light of the study following are the recommendation for the future managerial actions to the hydropower companies.

- Practice of development of invest plan for capital investment programme had to be developed by the business houses.
- For each investment in fixed asserts each and every company should develop the practice of feasibility analysis by using capital budgeting.
- For budget preparation, Nepalese hydropower companies have been practicing based on the basis of past actual expenses and activity based budgeting. The sample using traditional methods and cannot adjust the future uncertainty because past will not happen in future. So, it is recommended to use activity based budgeting as well zero based budgeting for budget preparation.
- Participatory system of decision making should be implemented for effective implementation and participation of all members affected by the decision. It helps to motivate the personnel of organization.
- To strengthen the competitiveness of Nepalese hydropower companies and to carry out the managerial activities, the use of management accounting tools is recommended.
- Academicians should put effort to bring management accounting tools into the light by the help of books, journals, articles and campaigns such as seminar, workshop and training. It is helpful to get more information about the tools and

techniques. Long term as well as short term training packages should be offered for the managers about the techniques of management accounting and to update the knowledge and skills.

- Hiring outsides experts to analyze the long term investment plan may increase the cost burden for the organization. So it is recommended to develop the expert internally by providing training and development programme.
- It is recommended to Nepalese hydropower for the risk adjustment while purchasing fixed assets or making long-term investment through the tools like shorter payback period and sensitivity analysis.
- Combine efforts of all Nepalese hydropower companies is recommended to stand in the global environment through providing training and development program to their staffs and make familiar about the tools and techniques not only of capital budgeting but also the on other modern management accounting tools.

BIBLIOGRAPHY

Books

Bajracharya, P., Ojha, K.P., Goet, J., & Sharma, S. (2005). *Managerial Accounting Nepalese Perspective*. Kathmandu: Asmita Book Publishers and Distributors.

Bromwich, P. & Bhimani, A. (1989). *Management Accounting: Evolution Not Revolution*. UK: CIMA Publications.

Belkaoui, A. (1980). *Conceptual Foundations of Management Accounting*. Canada: Wesley Publishing.

Correia, C., Flynn, D., Ulina, E, & Wormald, M. (2003). *Financial Management.* Juta: Cape Town.

Dangol, R.M. & Prajapati, K. (2001). *Accounting for Financial Analysis and Planning.* Kathmandu: Taleju Prakashan.

Dangol, R.M. (2001). *Accounting for Financial Analysis and Planning.* Kathmandu: Taleju Prakashan.

Dangol, R.M. & Dangol, J. (2007). *Management Accounting.* Kathmandu: Taleju Prakashan.

O'Neill, E. (1998). *Economic and Cost Analysis.* Washington DC.

Fago, G., Subedi, D. & Gyawali, A. (2006). *Management Accounting.* Kathmandu: Buddha Academic Publishers and Distributors Ltd.

Fox, R., Alison, K. & Keith, S. (1990). *Decision Making: A Managerial Accounting Perspective.* London: CIMA.

Fregmen, J.M. (1976). *Accounting for Managerial Analysis.* Illinois: Richard D Irwin Homewood.

Garrison, R.H., & Noreen, P.E. (19990. *Managerial Accounting.* Irwin: Mc Graw Hill.

Gitman, L.J. (1998). *Principles of Managerial Finance.* New York.

Goet, J., Gautam, A., & Bhattarai, I. (2006). *Budgeting: Profit Planning & Control.* Kathmandu: Asmita Book Publishers and Distributors.

Government of Nepal (2009). *Economic Survey*. Ministry of Finance.

Goyal, S.N. & Mohan, M. (1997). *Management Accounting.* Agra: Sahitya Bhawan Publication.

Gupta, S.P. (1995). *Managerial Accounting.* New Delhi: Prentice Hall of India Pvt. Ltd.

Gupta, S.P. (1997). *Managerial Accounting.* New Delhi: Prentice Hall of India Pvt. Ltd.

Hilton, R.W. (1997). *Managerial Accounting.* Irwin: McGraw-Hill.

Hilton, R.W. (2003). *Managerial Accounting.* Irwin: McGraw-Hill.

Horngren, C.T. & Garry, L.(2001). *Introduction to Management Accounting.* New Delhi: Prentice Hall of India Ltd.

Horngren, C.T., Foster, G. & Datar, S.M. (1999). *Cost Accounting: A Managerial Emphasis.* Prentice Hall, Upper Saddle River.

Jain, S.P. & Narang, K.L (2000). *Cost Accounting Principles and Practices.* New Delhi: Kalyani Publishers.

Khan, M.Y. & Jain, P.K. (1993). *Management Accounting.* New Delhi: Tata McGraw- Hill Publishing Co. Ltd.

Khan, M.Y. & Jain, P.K. (1996). *Management Accounting.* New Delhi: Tata McGraw- Hill Publishing Co. Ltd.

Khan, M.Y. & Jain, P.K. (2000). *Management Accounting.* New Delhi: Tata McGraw- Hill Publishing Co. Ltd.

Lawrence, G. (1997). *Principles of Managerial Finance.* Canada.

Munakarmi, S.P. (2002). *Management Accounting.* Kathmandu; Buddha Academic Publisher and Distributors.

Pandey, I.M. (1994). *Management Accounting (30ed.).* New Delhi: Vikash Publishing House Pvt. Ltd.

Pant, P.R. (2006). *Business Environment in Nepal.* Kathmandu: Buddha Academic Publishers and Distributors Pvt. Ltd.

Pant, Y.P. & Pant, G.P. (1999). *Some Aspects of Economic planning a Case Study of Nepal.* New Delhi. Vikash Publication.

Pant, Y.P. (1970). *Problems in Fiscal and Monetary Policy: A Case Study of Nepal.* Kathmandu: Kitab Mahal.

Pradhan, B. (1989). *SAARC & Its Future.* Kathmandu: Durga Devi Prakashan.

Pradhan, R.S. (1984). *Industrialization in Nepal.* New Delhi: Nbo Publishers Distributors.

Richard, P. (1983). *Study of Capital Budgeting Practices.* UK: West Jorkshire,.

Robert, D.R. (1998). *Study on Capital Budgeting.* The Brooking Institution.

Shrestha, B.P. (1967). *The Economy of Nepal.* Bombay: Vora & Co.

Welsch, G.A., Hilton, R.W & Gordon, P.N.(1992). *Budgeting Profit Planning and Control.* New Delhi; Prentice Hall of India.

Weston, J. Fred & Copeland, T.E. (1990). *Managerial Finance.* (9th ed.). New York: The Dryden Press.

Reports & Articles

Arya, R.C. (2001). *Revitalization Small Hydropower in Nepal.* The Kathmandu Post.

BPC (2010). *Annual Report.* Kathmandu: Butwal Power Company.

Cobb, I., Hillier, C. & Innes, J. (1995). *Management Accounting Change in a Bank.* Management Accounting Research, Vol 6.

Editorial (2003). *Cheap Chilime*. New Business Age.

Maharjan, U. (2002). Hydropower Development-Targeting the Poor.

Ministry of Water Resources (2058). *Electricity Development Policy*. Kathmandu: Ministry of Water Resources, Government of Nepal.

NEA (F/Y 2009/10). *Annual Report.* Kathmandu: Nepal Electricity Authority.

Nepal, B.H. Managing Nepalese Waters.

Ninth Five Year Plan. *National Planning Commission.* Government of Nepal.

Phuyal, S. (2001). *Home-financed Chilime Project to go Public.*

Pokharel, S. (2006). *Nepal's Hydropower Dream*; *Are We Prepared for Nightmares*?

Tenth Five Year Plan. *National Planning Commission*. Kathmandu: Government of Nepal.

Unpublished Master's Level Thesis

Acharya, N.P. (2006). *Management accounting Practice in Nepalese Public Enterprises.* Kathmandu: An Unpublished Master Degree Thesis Submitted to Faculty of Management, Shanker Dev Campus, TU.

Bhattrai, D. (2007). *A Study on Management of Income and Expenditure of Butwal Power Company Limited:* An Unpublished Master Degree Thesis Submitted to Faculty of Management, Shanker Dev Campus, TU.

G.C., R. (2008). *Performance Evaluation of Independent Power Producers of Nepal with Special Reference to Butwal Power Company Limited and Chilime Hydropower Company Limited):* An Unpublished Master Degree Thesis Submitted to Faculty of Management, Shanker Dev Campus, TU.

Goet, J. (1999). *Revenue Planning in Management in Nepal: A Case Study of Nepal Electricity Authority:* An Unpublished Master Degree Thesis Submitted to Faculty of Management, Shanker Dev Campus, TU.

Khadka, P.R. (2009). *Profit Planning in Hydropower Industry:* An Unpublished Master Degree Thesis Submitted to Faculty of Management, Shanker Dev Campus, TU.

Khatiwada, R.C. (2007). *Financial Performance Analysis of Butwal Power Company.* An Unpublished Master Degree Thesis Submitted to Faculty of Management, Central Department, Kirtipur, TU.

Shrestha, S.B. (2003). *Financing Power Development in Nepal- A Case Study of NEA.* An Unpublished Master Degree Thesis Submitted to Faculty of Management, Shanker Dev Campus, TU.

Thapa, G.S. (2006). *A Case Study of Profit Planning of NEA.* An Unpublished Master Degree Thesis Submitted to Faculty of Management, Shanker Dev Campus, TU.

Websites

http:// www.bkpc.com.np

http:// www.bpc.com.np

http:// www.google.com

http:// www.himalkhabar.com

http:// www.nea.org.np

http:// www.nepaldevelopment.com

http:// www.nepalitimes.com

http:// www.nepalnews.com.np

http:// www.powerpurchaseagreements.com

http:// www.ppi.worldbank.org

http:// www.realnepal.com.np

ANNEXURE

Questionnaire

The questionnaires are baseline to conduct a research work entitled "*Capital Budgeting Practices In Hydropower Companies of Nepal*". In partial fulfillment of the requirement for the masters Degree of business studies (MBS). All the alternatives are equally important.

Name :

Position :

Company :

Seal :

Please provide tick (√) mark for the alternative or alternatives you have chosen.

1. What system of budgeting do you practice in your company?

- Traditional budgeting [ ]
- Program budgeting [ ]
- Comprehensive budgeting [ ]
- Zero based budgeting [ ]
- Others…….. [ ]

2. What is the base for budgeting in your company?

- Based on past budget estimates. [ ]
- Based on past actual expenses. [ ]
- Zero based budgeting. [ ]
- Activity based budgeting. [ ]
- Others…… [ ]

3. How do you plan your investment in your company?

- Forecasting. [ ]
- Costs benefit analysis. [ ]

- Financial analysis. [ ]
- Executive decision. [ ]
- Others…… [ ]

4. What are the sources of fund in your company?

- Bank loan. [ ]
- Issuing shares. [ ]
- Issuing debentures. [ ]
- Loan from private party. [ ]

5. While selecting investment project, what practice do you follow?

- Executive decision. [ ]
- Capital budgeting. [ ]
- CVP analysis. [ ]
- Ratio analysis. [ ]

6. Do you practice capital budgeting?

- Yes. [ ]
- No. [ ]

7. If yes, what are the tools do you practice in capital Budgeting

- Pay Back Period. [ ]
- Discounted Payback Period. [ ]
- Net Present Value. [ ]
- Internal Rate of Return. [ ]
- Modified Internal Rate of Return. [ ]
- Accounting Rate of Return. [ ]
- Profitability Index. [ ]

8. Which of the following difficulties your company face in implementing capital budgeting?

- No Knowledge. [ ]
- Lack of Manpower. [ ]
- No data are available. [ ]
- Not applicable. [ ]
- Time consuming. [ ]

9. Who does the decision on investment in your company?

- Executive. [ ]
- Managers. [ ]
- Combine. [ ]
- Outside experts. [ ]
- Others…….. [ ]

10. Which methods your company follows risk adjustment while evaluating capital investment?

- Sensitivity analysis. [ ]
- Required rate of return. [ ]
- Short payback period. [ ]
- Higher IRR. [ ]
- Estimated for cash flow basis. [ ]

11. Which of the following management accounting tools do you practice in your company?

- Master Budget. [ ]
- Breakeven Analysis. [ ]
- Responsibility Accounting. [ ]
- Capital Budgeting. [ ]
- Ratio Analysis. [ ]

- Cash flow Analysis. [ ]
- Zero Based Budgeting. [ ]
- Flexible budgeting. [ ]

12. Any comment?

……

……

……