

CHAPTER - 1

INTRODUCTION

1.1 Background

Profit Planning and Control (PPC) is an important approach, which is developed for providing effective performance of management system where, management means co-ordination of human effort for the accomplishment of an organization objective. PPC has broad application. It is used both by profit making and non-profit making organizations. It is also used both in manufacturing and non-manufacturing organizations. PPC is identified as a way of management sophistication for the organization, which requires high degree of management sophistication. Understanding of profit planning is essential to understand PPC.

It terms of Profit, it does not happen but profits are managed. Profit is one of the most important indications, which measures the success of an organization. Profit is necessary for any organization to continue business. Therefore the main objective of every firm is to maximize profit by providing goods and services. That's why profit plays vital role to achieve an organization goal. Move over planning, it is one of the major functions of management without proper planning management cannot achieve organization goals. Planning is a process of developing organization objective and selecting a future course of action to accomplish them. It is the quantitative and qualitative statement prepared by management for definite time period.

"PPC is used in a process designed to help management to show their effective performance, significant phases of the planning and control function. The PPC model involves, (a) development and application of board and long range objective of the firm, (b) specification of firm goal and objective, (c) development of strategic long term profit plan, (d) specification of a tactical short term profit plan detailed by given responsibilities [division, project], (e) establishment of a

system of specific performance reports, and (f) development of follow up producers." (Welsch, Hilton, Gordon, 1999:30)

Specially, profit planning and cost control is possible with the help of cost-volume-profit analysis. Cost Volume Profit analysis is an important tools of profit planning because it provides the information about the behavior or cost in relation to volume, production or sales where the business is at break-even, sensitivity of profit due to variation of output, amount of profit for a projected sales volume and quantity of production. Cost Volume Profit analysis is great helpful in managerial decision making. Profit planning is the fundamental part of the overall management function. Profit planning can be done only when the management has the information about the cost of the product and selling price of the product.

1.2 Cost Volume – Profit Analysis

Cost Volume Profit (CVP) analysis is the powerful tool of planning and controlling of management accounting. It shows the chain relationship among cost-volume and profit. Management can get various answers of different questions through CVP analysis. Management can estimate easily that what should be the required sales of the company to get desired profit. Similarly profit can be estimated in different expected sales volume. CVP is greatly helpful in managerial decision making especially cost control and profit planning. Profit is the basic thing to survive the organization. By a simple mistake the whole firm could reach to the failure. So, CVP analysis provides a lot of information about the alternative to have the strategies and utilization of resources. Therefore, it will be fruitful to know the role of CVP analysis in profit planning and control of manufacturing industries.

CVP analysis is the process of examining the relationship among revenues, costs and profits for a relevant range of activity and for a particular time frame. It is one of the most important and powerful tools that managers have at their command in

short-term planning. It helps managers understand the interrelationship between costs, volume and profit in an organization by focusing interaction between the following five elements.

- a. Price of product
- b. Volume/Sales of Activity
- c. Variable Cost
- d. Fixed Cost
- e. Sales Mix

CVP analysis is used to determine how changes in costs and volume affect a company's operating income and net income. In performing this analysis, there are several assumptions made, including:

- J Sales price per unit is constant.
- J Variable costs per unit are constant.
- J Total fixed costs are constant.
- J Everything produced is sold.
- J Costs are only affected because activity changes.
- J If a company sells more than one product, they are sold in the same mix.

CVP analysis requires that all the company's costs, including manufacturing, selling, and administrative costs, be identified as variable or fixed. The analysis of relationship between cost, volume and profit is known as cost volume-profit analysis. It is an analytical tool for studying relationship between volume, cost price and profit. Analysis that deals with how profits and costs change with a change in volume. More specifically, it looks at the effects on profits of changes in such factors as variable costs, fixed costs, selling prices, volume, and mix of products sold.

By studying the relationships of costs, sales, and net income, management is better able to cope with many planning decisions. For example, CVP analysis attempts to answer the following questions: (1) What sales volume is required to

break even? (2) What sales volume is necessary in order to earn a desired (target) profit? (3) What profit can be expected on a given sales volume? (4) How would changes in selling price, variable costs, fixed costs, and output affect profits? (5) How would a change in the mix of products sold affect the break-even and target volume and profit potential?

1.3 General Overview of IT Magazines

As a developing country, Nepal has availed of the opportunity to rapidly develop various sectors such as education, health, agriculture, tourism, trade, among others, using information technology. The extensive application of this technology will engender economic consolidation, development of democratic norms and values, proportional distribution of economic resources and means and enhancement of public awareness, thereby raising living standards and, most importantly, contribute significantly to poverty alleviation. The establishment of a vibrant information technology will mitigate some of the disadvantages Nepal faces on account of its geographical conditions. In the coming years, globally, there will be a significant difference between the economic conditions of countries with developed information technology and that of countries lagging behind in this field. The persistence of such disparities between countries will be difficult to accept even by the developed countries.

It is very possible that the international community will extend its support to developing countries in the development of information technology. Such assistance will certainly be significant for the national development of a least developed country like Nepal. Hence, an information technology policy is required to develop information technology in the shortest time possible for the sake of the national economy.

Information and Technology (IT) has emerged as one of the integral parts of modern technologies. It would be near to impossible to disseminate available

information and keep track of research, development of works and important events taking place around the world without the use of the IT.

Information and Technology is an aggregate of the following activities:

-) Gathering information
-) Securitizing and processing of the gathered information
-) Analyzing the information
-) Dissemination of information and
-) Development and usage of the technologies

Information and Technology concerns with following major activities:

-) To develop and upgrade machines that can speed up the activities as fast as possible and to enhance its capacity to a maximum level possible.
-) To develop scientific programs that can expedite the process of storing processing and analyzing information.
-) To develop scientific programs that help in dissemination of available information to general mass as quickly as possible.
-) To train users to use the machines and programs for their day to day as well as research activities.

It has been observed that IT field is the fastest growing field in today's globalization era. Due to despite the critical political and the economical environment of Nepal, this sector is still searching space of the development. The sophisticated political scenarios and the uncertainty in the governing bodies made the financial grown down to negative growth since last decade. None of significant achievements could be made in the field of IT but it is widely accepted as the backbone of development of nation in today's global world of IT.

Effective strategic management especially under conditions of changing markets, competition, technology and other environmental factors, appears to rely upon insights from experts. The use of information technologies, the fundamental tools

for the information age, could be expected to augment the access to experts and their insights and information and thereby enhance strategic decision making and strategy implementation. The purpose of the study is to identify the characteristics of the information technologies which are used during the various phases of the strategic management process and to determine the sufficiency of the information technologies in meeting the needs of strategic management activities. The development of a technology-strategic management model illustrates the manner in which information technologies currently support the activities which comprise strategic management. The model enables the researcher to highlight the characteristics about the information technologies and about the strategic management activities which they support.

With the increase in IT related activities in the country, the number of IT organizations and IT professionals are also rising in a significant manner. But their exact volume is not yet known. According to different web sites around 4860 IT professionals are estimated to be present in Nepal during 2007. This thesis focused on one of the major factor affecting the surviving of the IT magazines in Nepal. Though there are very low in quantity as well as in the form of the volume of the IT literacy in Nepal and so as IT Magazines. This thesis tried to conduct a deep study of the cost volume and profit structure of the IT Magazine.

The combination of infrastructure development, new technologies and peoples' wider access to these has accelerated the already pervasive influence of media to the extent that media has become a major factor in shaping one's ideas, values, concepts and behaviour. In Nepal, media witnessed a rapid development after the restoration of multi-party democracy in 1990. The number of national dailies (in the Nepali vernacular and English, as well), magazines, and commercial and community radio stations has increased significantly. A privately owned satellite TV channel, Channel Nepal, has been launched alongside the state channel, Nepal Television (NTV). Just a few months ago, the government also allowed the

installation and maintenance of independent TV channels. All these are the good example of the development of IT.

1.4 IT Development in Chronological Order

A) Earlier Period: Pre 1940 AD

-) Abacus as early as in 750 used by Babylonians
-) Slide rules based in Napier's logarithms by William Ought red in 1622 AD
-) The first mechanical calculator developed by Wilhelm Schickard in 1623 AD
-) Punch Card Technology, developed by Joseph-Marie Jacquard in 1801 AD
-) More limited types of mechanical gear computing (1800-1900AD)
-) First designs of programmable machines (1835-1900AD)
-) Analog computers (Pre 1940Ad)

B) Modern Period: Post 1940 AD

-) First generation computers: 1940s to early 1950s
-) Second generation computers: Late 1950s to early 1960s
-) Third generation computers: Late 1960s to 1971
-) Fourth generation computers: 1972-1984
-) Fifth generation computers: 1984-1990
-) Sixth generation 1990- (Based on Manual of Social and Professional issues in information and technology compiled by Roshan Chitrakar and Deepanhal Shrestha, 2005)

C) Coverage of Modern IT Activities

In an increasingly complex world, people involved in managerial activities must use computers to support decision-making and collect information necessary to perform their work. They must learn how to use new tools and techniques which

are developed in the field of management (Turban, 1998). These tools and techniques include applications designed for problem analysis and decision support.

Modern IT has also been expanding for several reasons: speed of computation, processing and storage capacity, cost effectiveness, quality support etc. This technology has evolved towards many forms: Decision Support Systems (DSS), Executive Information Systems (EIS), and Expert Systems (ES). Recent developments in technology are expected to provide better support to management activities. These technologies are: intelligent agents, neural networks, fuzzy logic, data mining and data warehousing. Recent support technology has appeared under the name Intelligent Systems.

It is a fact that business activities have become international and that the business world is facing rapid changes. As a consequence, managers are required to respond quickly to these changes in order to keep up with the competition. Despite the availability of large data sources, IT support and better management methods and tools, it seems that managers are not as effective and efficient as we would expect them to be. This fall-off in effectiveness and efficiency influences personal productivity as well as corporate performance. A number of studies point out that IT investments have rarely been contributing to an improvement in productivity. *(Source www.google.com)*

1.5 IT in Nepal

The practice of sending, receiving and intercepting information using different modes existed in Nepal since the ancients' times. Ordinary information or messages used to be and are still conveyed either through letters, use of messengers or telephonic conversation. Secret messages are delivered or received in the forms of codes, signs or passwords. But soon after Nepal was linked to the world through internet and e-mail, in the early 1990s modes of communication changed significantly. Nepalese started to communicate by sending message

thought e-mail and retrieved essential information from the internet. At present, there is hardly any middle class family in urban areas of the country who do not use e-mail or cell phones for communication purpose. Thus, the period in the early 90s could be called the beginning of the computer era in Nepali history.

1.5.1 Development of IT in Nepal

Till a decade ago, execution of almost all arithmetic operations, including keeping of account were done either manually or by using calculator. The first instance of use of large-scale computer in Nepali was in the year 1971 when tabulation of census data was made. For this purpose, IBM 1401 computer was hired from IBM Company of Calcutta, it took 20 months to process the entire data. In early 80s, National Computer Centre (NCC), was established and centre was entrusted with the task of processing governmental and institutional data. But due to lack of work, the centre has to limit its works in petty activities such as tabulating and publishing the results of S. L. C. (School Leaving Certificate) examination. The only large scale work that was performed by the centre was data entry, editing, coding and processing of 1991 census. The data entry was using 40 XT compatible micro computer terminals under the local area network environment. These data entry terminals were controlled through two 386 SX micro-computer servers. The overall processing of the census data tabulation was performed with the mini-computer Prime 4050 located at the centre. The entire process took 15 months to complete.

During early 90s, personal computer (PC) was introduced in the Nepalese market. This slowly attracted the attention of Nepalese. Fortran PC becomes very popular for computing and mathematical works and apple PC for documentation and secretarial purposes. Word perfect was the most common programs used these computers. Later PC based on the Microsoft word came into market. PC based on Microsoft Programmes became very popular among Nepalese and the technology become easier user friendly.

Private Banks and financial companies also started keeping record of financial transactions in computers. At present almost all offices, business houses, banks and middle class and high-class family use computer for their day to day activities. Thus, computer has become an integral part of Nepalese life. In this regard, it is worth mentioning that data entry of recent census, i.e. of 2001 was done using Pentium III and data analysis using Pentium IV.

1.5.2 IT Human Resource in Nepal

With the increase in IT related activities in the country, the number of IT organizations and IT professionals are rising in a significant manner. But their exact volume by type is not yet known. According to UNDP's web site, around 4860 IT professionals were estimated to be present in Nepal during 2007. However, their distribution by age, sex, occupational qualifications, types of jobs are not available. Computer Association of Nepal has published all Nepal IT Directory 2005. The directory includes 2005 institutions and 164 individuals who are institutional members of the association. But institutional list includes many trading houses (computer selling business organizations), cyber cafes (which provide e-mail and internet services) which have very direct connection to the status of ICT in the country. The directory also contains individual's list. But it includes names of many who are not IT professionals. Moreover, the list also does not include government and non-government organizations and final institutions, which employ substantial number of IT personals. In this situation, it would be mere speculation to speak of the volume of IT personals in Nepal.

Nepalese Information Technology (IT) industry and other organizations need IT professionals in abundance in many years to come. The supply of these resources is happening from various academic and nonacademic institutions within the country & outside the country. Four of the Nepalese universities are offering various IT related graduate courses such as B.E. in Computer Engineering, Bachelor in Computer Applications, Bachelor of Information System and many

other training institutes provide long term professional training in IT. Nepal receives IT graduates from various colleges & universities in India, Bangladesh, Thailand, Philippines, Singapore, Australia, Russia, Ukraine etc.

1.6 Brief Introduction of PC Info Pvt. Ltd.

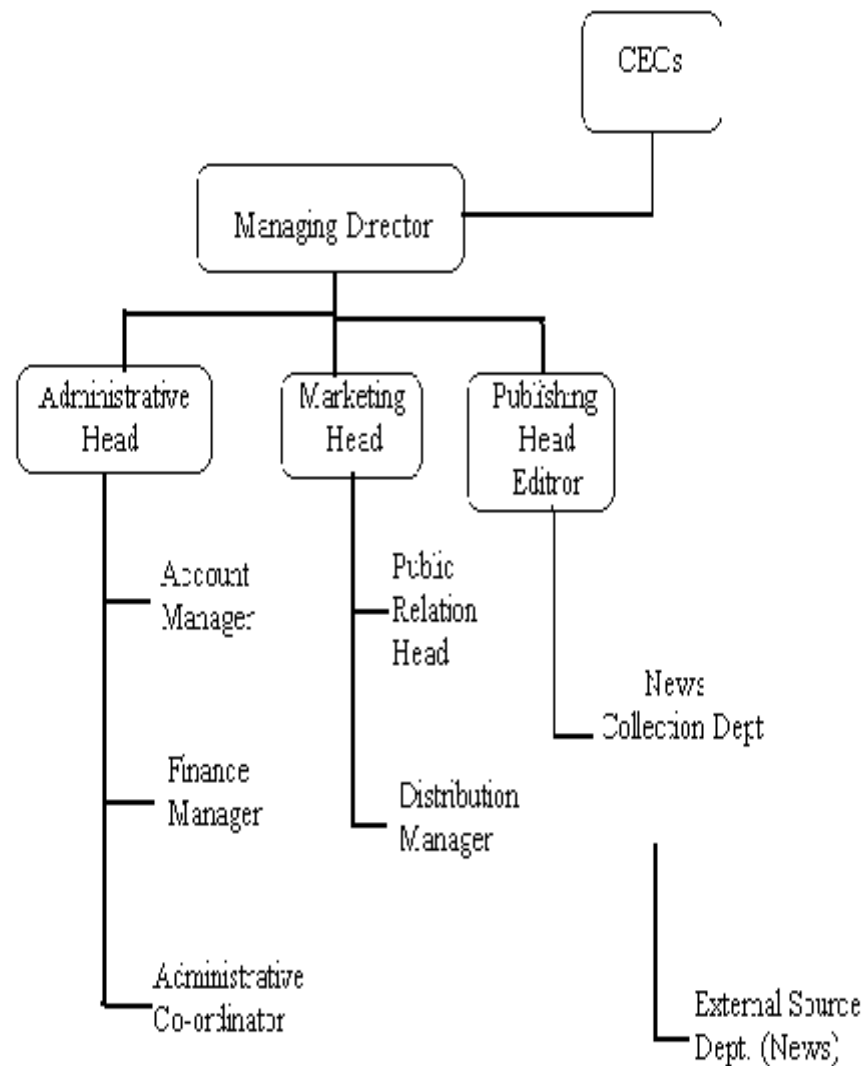
It was year 2000, when the IT was developing rapidly and the due to lack of proper mass communication medium that represents the entire IT field. Some of the energetic young IT lover tried their luck, willingness and knowledge toward the lack that the IT field is feeling in those days and decided to publish and IT magazine named as PC Info and under publication house PC-Info Pvt. Ltd.

Those energetic persons are Mr. Amrit Bajracharya, Mr. Shankar Lal Shrestha and Mr. Roshan Shrestha. They decided to publish an IT magazine and cover up the most of the IT news and the IT field that the current generation must know. In early days, it was decided that the publication must be monthly but due to some technical problem, later it was decided that magazine must be bi-monthly and published at least 7000 pieces in each of two months.

The magazine was under supervision of the editor Mr. Shyam Bajracharya and the marketing has controlled and supervised by Mr. Shankar Lal Shrestha himself, one of the owners of PC-Info Pvt. Ltd. As far as the IT field developed during those days, the first year must be considered as the golden year for IT magazine it terms of technical matters as well as the willingness of the IT lovers towards the articles those have been published in the magazine.

The name of the magazine also integrates the emerging most familiar word PC i.e. Personal Computer, so that the popularity comes from the mass as fast as possible and become one of the best selling IT magazine in Nepal. It has the privilege of being official magazine for many successive years until now and hope that it will continue in the years to come.

1.6.1 Organizational Structure of PC-Info Pvt. Ltd.



1.7 Focus of the Study

Analysis that deals with how profits and costs change with a change in volume. More specifically, it looks at the effects on profits of changes in such factors as variable costs, fixed costs, selling prices, volume, and mix of products sold. By studying the relationships of costs, sales, and net income, management is better able to cope with many planning decisions. Due to the sustention problem of IT magazine in Nepal this study focuses on the one of the most effective part of the

business that is CVP. This study defines the cost required for the publication and the volumes that required for the targeted profit level. It expected that, some remarkable finding can be obtained during the study that may suggest the IT Magazines that is now running in the market, how to sustain their business in the current market of recession. This study based on the Cost Volume and Profit structure of the IT Magazine publication so it could identify the micros factors those are affecting and essential for the growing ingredient of the business.

i. Cost

In Economics, Business, and Accounting, a cost is the value of money that has been used up to produce something, and hence is not available for use anymore. In business, the cost may be one of acquisition, in which case the amount of money expended to acquire it is counted as cost. In this case, money is the input that is gone in order to acquire the thing. This acquisition cost may be the sum of the cost of production as incurred by the original producer, and further costs of transaction as incurred by the acquirer over and above the price paid to the producer. Usually, the price also includes a mark-up for profit over the cost of production. Cost is the one of the most sophisticated element to study in an organization, which mostly influenced by the external environment. Literally, cost is the expenditure on goods or services required to carry out the operation of an organization. (Source: <http://em.wikipedia.org>)

ii. Volume

The level of sales in terms of units and Rupee value, that actually determines the activity level that the company is actually carrying out. Volume is literally the number of product or service those have been sold out to generate the revenue, which an organization expects to exceed the cost incurred.

iii. Profit

Profit generally is the making of gain in business activity for the benefit of the owners of the business. The word comes from Latin meaning "to make progress," is defined in two different ways, one for economics and one for accounting. Pure economic profit is the increase in wealth that an investor has

from making an investment, taking into consideration all costs associated with that investment including the opportunity cost of capital. Accounting profit is the difference between price and the costs of bringing to market whatever it is that is accounted as an enterprise (whether by harvest, extraction, manufacture, or purchase) in terms of the component costs of delivered goods and/or services and any operating or other expenses. A key difficulty in measuring either definition of profit is in defining costs. Pure economic monetary profits can be zero or negative even in competitive equilibrium when accounted monetized costs exceed monetized price. Generating profit required is a good deal of managerial capability and managerial talent.

(Source: <http://en.wikipedia.org/wiki/Profit>)

Combining the above three sophisticated elements of an organization, managerial desk could have many question and queries towards their planning and budgeting such as:

- a. What must be the sales volume for achieving the break even point?
- b. What must be the sales level to achieve the targeted profit at the given selling price per unit?
- c. What will be the expected profit level at the given sales level?
- d. What changes in selling price must be required to achieve the same profit level even if the cost per unit has been increase?
- e. And many more...

1.8 Statement of Problem

The problem towards which this study directs is the establishment of perfect relationship between the cost volume and the profit of the business as far as the IT magazine is concerned. Generally, the failure to establish a perfect analysis of the CVP/BEP the business will run as effective as it has to run for the achievement of the goal like Break Even Point (BEP) and ultimately the Profit. In every case study, there is a pragmatic limitation under which the study is to make. Theory and practical does not necessarily match always. Other working problems such as

time constrain, resources unavailability, study type and various official difficulties hinder in the necessary study.

1. What is the main cause for the low profitability even if there is almost no competitor in the market for the IT magazine?
2. What are the main loopholes in the cost utilization?
3. How the fixed cost has managed during last six years?

1.9 Objectives of the Study

Normally, the objectives mean the further plan of performing task. The general objective of this study is to evaluate the CVP Analysis of IT magazine Publication in Nepal. The major specific goals of this study are as follows:

- a) To analysis the trend of break even point
- b) To analysis the fixed cost utilization at the optimum level.
- c) To reduce cost by increasing the span of control since fewer supervisors are needed.
- d) To help the management for considering expected future trends and conditions.
- e) To suggest the management to give time and adequate attention to the effect of the expected trend of general business condition and recommend with the help of major findings

1.10 Signification of Study

Due to the sustention problem of the IT magazine in Nepal this study focuses on the one of the most effective part of the business that is CVP. This study defines the cost required for the publication and the volumes that required for the targeted profit level. It expected that, some remarkable finding can be obtained during the study that may suggest the IT Magazines that is now running in the market. How to sustain their business in the current market of recession? This study based on the cost, volume and profit structure of the IT Magazine publication so it could

identify the micro factors those are affecting and essential for the growing ingredient of business.

1.11 Limitation of Study

The study is the fundamentally based on the information provided by the company. There are some limitations of study given below.

1. Lack of sufficient literature in CVP Analysis practiced in IT Magazine Publishing House. The study lacks reviews of previous related studies in this area.
2. This study takes IT magazine publishing houses into consideration to draw a conclusion. So, the conclusion drawn are suggestive rather than prescriptive
3. It is an analytical study but not the comparative study.
4. This study is prepared in a limited period of time for the partial fulfillment of MBS and cannot be considered as masterpiece.

1.12 Chapter Plans

Cost, Volume and Profit are the three sophisticated elements of an organization managerial desk could have many question and queries towards their planning and budgeting such as:

Chapter one, I will try to introduce some of major factors about the IT and ITC revolution world wide and in the context of Nepal as well. It contents the evolution of the IT world and the technical and the other aspectual effect of IT development in Nepalese environment.

Chapter two, I will try making an overview of the theoretical aspect of CVP Analysis by the other researcher and the authors that has titled as the review of literature.

Chapter three, Research Methodology, I will try to develop a visual concepts and the brief introduction of the techniques and tools those have utilized in the data presentation and analysis.

Chapter four, Presentation and Data Analysis, this is the main study of the research. It contains the ingredients to fulfill the objectives of the study. It contains the data numerical and the other those have provided by the business firm and major findings.

Chapter five, I will try to present the summary of the study, conclusion and recommendations though that is appropriate to the study.

Besides this, a list of Bibliography and appendixes are attached at the end of this study.

CHAPTER - 2

REVIEW OF LITERATURE

Usually, Profit won't occur, profits are managed. When management plans profit performance it is known as profit plan. Before we can make an intelligent approach to the managerial process of profit planning, it is that we must understand the management concept of profit. The process of preparing and using budget to achieve management objective is called budgeting. In this chapter, the researcher has presented the various CVP analyses done by the various companies and the study that had done by the different magazine (business) and the business houses and the CVP definition those have presented in various book and the articles.

2.1 Fundamental Concepts of Profit Planning and Control (PPC)

PPC helps the management to perform its planning functions by developing a strategic (long run) and tactical (short run) profit plan. Both of these plans include monetary expectations for assets, liabilities, profit and return on investment. The foundation for the strategies profit plan includes the objectives, broad goals, planning premises and strategies of the enterprises as developed by top management. The tactical profit plan can actually be viewed as the first year of the strategic plan. If it is detailed plan for the enterprises and for each of its responsibility centers. PPC also helps management to perform its control function by providing realistic goals and standards that are then compared with actual results to measure performance. Under PPC this performance measurement extends from the top to the lowest organizational level in the enterprises.

Profit planning is simply the development of your operating plan for the coming period. Your plan is summarized in the form of an income statement that serves as your sales and profit objective and your budget for cost. Development of your

profit plan should usually begin with a forecast of your expected sales and gross profit for the coming year. The sales and gross profit must be considered together since they are so closely interrelated. Gross profit percentages are determined by pricing policy, which also affects expected sales volume. A decision to increase the expected gross profit percentage will usually tend to decrease expected sales, while reducing the expected gross profit percentage should increase sales. It is a systematic and formalized approach for starting and communicating the firm's expectation and accomplishing management in such a way as to maximize the use of a profit plan is to achieve the maximum benefit from the resources available to an organization over a particular span of time. It serves basically as a tool for management control. The maximum objective of PPC is to assist in systematic planning and in control the operation of the enterprises. In fact it is best source of communication & an important tool in the hand of management. The purpose of PPC may be summarized as follows.

- a. To state the firm's expectations (goals) in clearly formal terms to avoid confusion and facilitate their attainability.
- b. To communicate expectation to all concerned with the management of the firm so that they can understand, supports and implement.
- c. To provide a detailed plan of action for reducing uncertainty and for its proper direction of individual and group efforts to achieve goals.
- d. To co-ordinate the activities and efforts in such a way that the use of resources is maximized.
- e. To provide a means of measuring and controlling the performance of individuals and units and to supply information on the basis of which the corrective action can be taken.

The PPC Model includes:

- i. Development and application of broad & long range objective of the enterprise;
- ii. Specification of enterprise goal;

- iii. Development of enterprise goals;
- iv. Specification of a strategic long range profit plan detailed by assigned responsibilities.
- v. Establishment of a system of periodic performance reports detailed by assigned responsibilities;
- vi. Development of follow up procedure.

2.2 Cost Volume Profit Analysis (CVP) as a Tool of Profit Planning & Control

The analysis of relationship between cost, volume and profit is known as cost-volume-profit analysis. It is an analytical tool for studying relationship between volume, cost, price and profit. Cost-volume-profit analysis is great helpful in managerial decision-making. Specially, profit planning and cost control is possible with the help of cost-volume-profit analysis.

Cost volume profit analysis is an important tool of profit planning because it provides the information the information about the behavior of cost in relation to volume, production or sales where the business will break-even, sensitivity of profit due to variation of output, amount of profit for a projected sales volume and quantity of production and sales for a target profit level etc. CVP analysis is also defined as a managerial tool which shows the relationship between various ingredients of profit planning. CVP analysis is great helpful in managerial decision-making. Specially, profit planning & control is possible with the help of CVP analysis. Profit planning is the fundamental part of the overall management functions. Profit planning can be done only when the management has the information about the cost of the product and selling price of the product.

CVP analysis is the process of examining the relationship among revenues, cost and profit for a relevant range of activity and for a particular time frame. It is one of the most important and powerful tools that managers have at their command in

short-term planning it help managers to understand the interrelationship between cost, volume and profit in an organization. CVP analysis seeks to estimate the profit or loss at different activity level. The aim of cost-volume-profit analysis is to have a fair estimate of: (a) Total cost (b) Total revenue, and (c) profit at various sales volumes.

CVP analysis provides only on overview of the profit planning process. It provides management with a comprehensive overview of the effects on revenue and cost of all kind of short-run financial changes. It is related to profit, sales volume and cost.

2.3 Assumptions for CVP Analysis

- a) Changes in the level of revenues and cost arise only because of changes in the number of product (or services) unit produced and sold.
- b) Total costs can be divided into a fixed component and a component that is variable with respect to the level of output.
- c) When graphed, the behavior of total revenues and total costs is linear (straight-line) in relation to output units within the relevant range (and time period)
- d) The unit selling price, unit variable costs, and fixed costs are known as constant.
- e) The analysis either covers a single product or assumes that the sales mix when multiple products are sold will remain constant as the level of total units sold changes.
- f) All revenues and cost can be added and compared without taking into account the time value of money. (Source: www.google.com)

2.4 Cost and Its Classification

In economics, business, and accounting, a cost is the value of money that has been used up to produce something, and hence is not available for use anymore. In business, the cost may be one of acquisition, in which case the amount of money expended to acquire it is counted as cost. In this case, money is the input that is

gone in order to acquire the thing. This acquisition cost may be the sum of the cost of production as incurred by the original producer, and further costs of transaction as incurred by the acquirer over and above the price paid to the producer. Usually, the price also includes a mark-up for profit over the cost of production. Classification means to put a item or thing under a certain category.

In accounting, costs are the monetary value of expenditures for supplies, services, labor, products, equipment and other items purchased for use by a business or other accounting entity. It is the amount denoted on invoices as the price and recorded in bookkeeping records as an expense or asset cost basis.

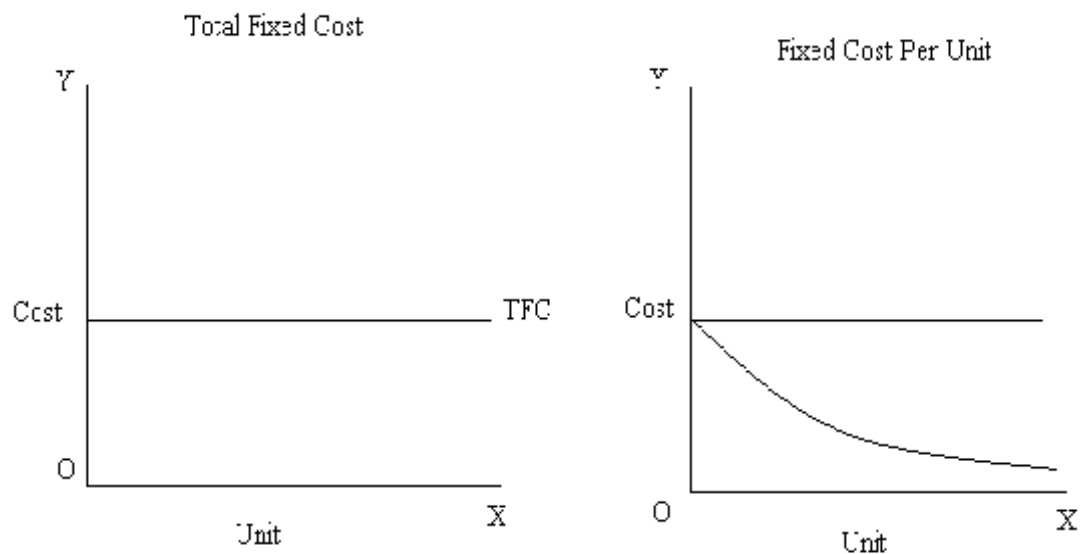
Costs are classified as either arising directly or indirectly. Indirect costs are ones that can be specifically related to the production of a particular good. Indirect costs are those that are not so specifically related. Classification of depends upon the purpose, methods, nature and so on. But this study needs classification of cost on the basis of cost behavior to meet the depth. So, it is described in this way:

Cost Behavior

The way a specific cost reacts to changes in activity levels is called **cost behavior**. Costs may stay the same or may change proportionately in response to a change in activity. Knowing how a cost reacts to a change in the level of activity makes it easier to create a budget, prepare a forecast, determine how much profit a new product will generate, and determine which of two alternatives should be selected. There exists a relationship between costs and the volume of activity relation between cost and activity is called cost behavior. In most of the organization, costs can be classified as fixed, variable and mixed.

- i) **Fixed costs:** Fixed costs are constant in total over the relevant range. Fixed costs per unit often cause difficulties because of the inverse relationship between fixed costs and increases in production. As production increases, total fixed costs stay the same within the relevant range, but since we are dividing a

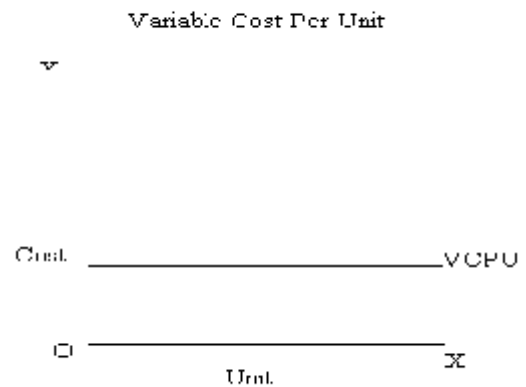
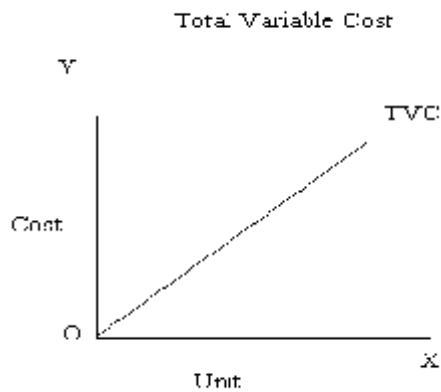
constant numerator [total fixed costs] by a progressively larger denominator [total production or sales], the resulting costs per unit become smaller and smaller. Fixed costs include things like rent, insurance premiums, salaries, depreciation and property taxes.



Some key features of fixed costs are as follows:

- Ñ Fixed costs remain constant in total
- Ñ Per unit fixed cost is variable
- Ñ Fixed costs are capacity costs, time costs or committed costs.
- Ñ Fixed costs are regulated and controllable under top management.
- Ñ Fixed costs cannot be controlled in short run.

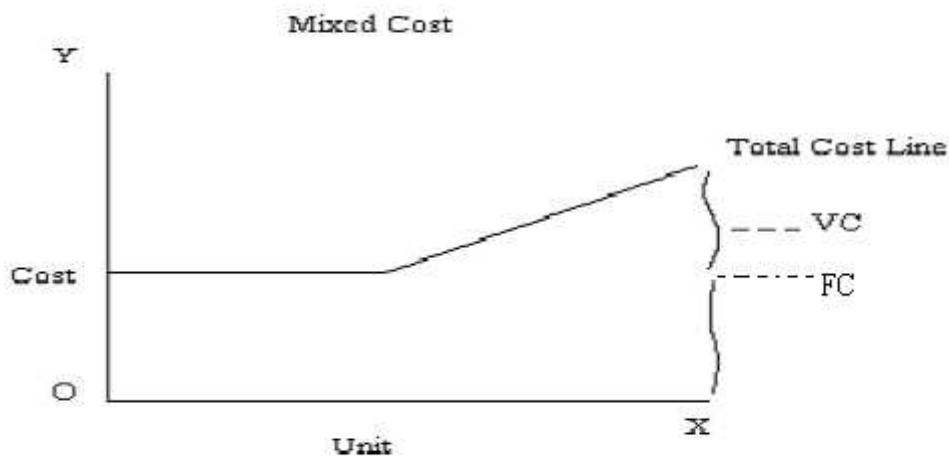
ii) **Variable costs:** Variable costs vary in total with volume, but are constant per unit within the relevant range. Total variable costs for a given situation are equal to the number of units multiplied by the variable cost per unit. Variable costs include things like labor and materials. Some overhead [indirect costs] such as indirect labor, supplies and some utilities are also variable.



Variable costs show following characteristics;

-) Proportionately related to activity
-) Per unit variable is fixed
-) Variable costs can be regulated and controlled in the same responsibility center and in the short-run as well.

iii) Mixed costs: A mixed costs contains both fixed and variable elements. There are a variety of procedures that can be employed to separate the fixed and variable components. Those expenses which increase or decrease as output or activity increases or decrease, but not in exact proportion to change in the activity both fixed and variable costs. It is neither fixed in total amount nor fixed per unit. Semi variable costs remain fixed to certain extent and there after these vary with the increase in output or activity levels.



For CVP Analysis, such mixed cost should segregate into variable and fixed b using following methods.

High-low method: The **high-low method** divides the change in costs for the highest and lowest levels of activity by the change in units for the highest and lowest levels of activity to estimate variable costs.

Least-squares regression analysis: The **least-squares regression analysis** is a statistical method used to calculate variable costs. It requires a computer spreadsheet program (for example, Excel) or calculator and uses all points of data instead of just two points like the high-low method.

By now you have probably figured out that the relationship between revenues, costs, and production or sales volumes can be an important element in understanding the economics of a business. These relationships are typically referred to as cost volume profit [CVP] relationships. Analysis of these relationships is usually called CVP analysis.

2.5 Application of Cost Volume Profit Analysis

Cost-volume-profit analysis is applied specially for break-even analysis and profit planning. Business organization is run to earn profit providing the service to its customers. Profit is the fundamental part of the overall management function. Profit planning can be done only when the management has the information about the cost of the product. Before we can see how CVP analysis works, we need to define an important concept:

- i) Contribution Margin Analysis
- ii) Break Even Analysis
- iii) Profit Volume Analysis

2.5.1 Contribution Margin Analysis

The contribution margin represents the amount of income or profit the company made before deducting its fixed costs. Said another way, it is the amount of

sales rupees available to cover (or contribute to) fixed costs. When calculated as a ratio, it is the percent of sales rupees available to cover fixed costs. Once fixed costs are covered, the next rupee of sales results in the company having income. Contribution margin is the excess of sales revenue over variable costs. So, contribution margin is the balance of sales revenue left after covering variable expenses, available to recover fixed expenses and then contribution to realize profit for the period. So, contribution margin is used first to cover the fixed expenses, and then whatever remains after the fixed expenses goes towards profit. If the contribution margin is not sufficient to cover the fixed expenses, and then a loss occurs for the period. Key calculations when using CVP analysis are the **contribution margin** and the **contribution margin ratio**. (Singh, Ojha and Acharya 2004:386)

So,

$$i) \quad \text{Contribution margin} = \text{Sales} - \text{Variable cost}$$

OR

$$ii) \quad \text{Contribution margin} = \text{Fixed cost} + \text{Profit}$$

Contribution margin usually expressed as a percentage of sales that is contribution margin ratio or profit volume ratio

Contribution margin ratio = I. Contribution Margin

Sales

OR

II. 1- Variable Cost

Selling Cost

OR

III. Difference in Profit

Difference in sales

OR

IV. 1- Difference in cost

Difference in sales

2.5.2 Break Even Analysis

A breakeven analysis is used to determine how much sales volume in business requires to start making a profit. The breakeven analysis is especially useful at the

time of developing a pricing strategy, either as part of a marketing plan or a business plan. The relations among cost, volume and profit can be found out clearly through break even analysis. Break even analysis is regarded as a sophisticated method or tool used in management. It is a part of cost volume-profit analysis. It is always taken as an important part of profit planning as it gives to the planner many insights into the data with which he or she is working. Profit planning of each firm begins with Break even analysis.

a) Break- Even Point: Break-Even Point is the level of activity where total cost is equal to total sales. It is a specific volume of sales, which breaks the revenues and cost evenly. It is a point of "no profit no loss". If the sales is higher than break-even volume, there will be profit. In the same way if the sales is less than break even volume, there will be a loss. It can be summarized in following way:

Conditions	Results
Actual sales equal to break even sales	No profit, No loss
Actual sales exceeds to break even sales	Profit
Actual sales is less than break even sales	Loss

(Dangol, Gurung & Dangol, 2061:466)

b) Computation of Break-Even Point: There are two types of methods which help computing the Break Even Point. They are as follows:

i) Formula Method: Break-even point can be determined by the use of formula. It is also termed as algebraic method. According to the definition of break even point it is such a level of sale or activity, where there is neither profit nor loss. It is that level of sales, where total cost is equal to total sales revenue. It can be presented in equation form in the following way:

$$\text{Sales Revenue} = \text{Total Cost}$$

Or, Sales Revenue = Fixed Cost + Variable Cost

For finding out sales revenue,

We have,

Sales Revenue = Selling Price per Unit x Sales Unit

Symbolically,

Sales Revenue = S x Q

For finding out Total Cost

We have,

Total Cost = Fixed Cost + Variable Cost per Unit x Sales Units

Symbolically,

Total Cost = FC + V x Q

From the early definition,

We have,

Sales Revenue = Total Cost

i.e. $S \times Q = FC + V \times Q$

or, $S \times Q - V \times Q = FC$

or, $Q = \frac{FC}{S-V}$

Where, Q = Break-Even Point in Units

FC = Fixed Cost

S = Selling price per units

V = Variable price per units

Similarly,

Sales = Total Cost

Sales = FC + VC

Sales = FC + Sales x VC Ratio

Sales – Sales x VC Ratio = FC

Sales (1-VC Ratio) = FC

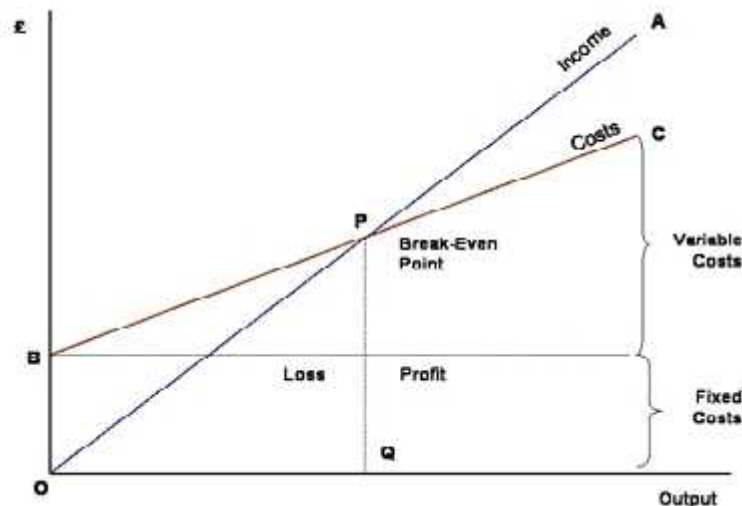
Sales = $\frac{FC}{CM \text{ Ratio}}$

And

$$\text{BEP (Rs)} = \frac{\text{FC}}{\text{P/V Ratio}} \quad \text{or, BEP (Units)} \times \text{Selling Price per Unit}$$

$$\text{Where, P/V Ratio} = \frac{S - V}{S}$$

ii) Graphic Method: Break-Even Point can also be determined by using graph. The relation shown among cost, volume and profit with the help of diagram is described as break-even chart. There can be neither profit nor loss and the break-even sales. However, if the sales exceed the break even point, the result will be profit. The loss will be reported if the sales are less than the break-even sales. Below is a simple illustration to a break even chart:



In the diagram above, the line OA represents the variation of income at varying levels of production activity ("output"). OB represents the total fixed costs in the business. As output increases, variable costs are incurred, meaning that total costs (fixed + variable) also increase. At low levels of output, Costs are greater than Income. At the point of intersection, P, costs are exactly equal to income, and hence neither profit nor loss is made. (Source: http://tutor2u.net/business/production/break_even.htm)

c) Cash-Break Even Point: For cash break even point, cash fixed cost is considered and fixed cost that does not involve cash like depreciation cost is excluded from cost. Cash break even point is calculated using formula below:

$$\text{Cash BEP} = \frac{\text{Cash Fixed Cost}}{\text{Unit CM/ PV Ratio}}$$

While calculating cash break even point, the cash fixed costs i.e. fixed cost less depreciation and deferred expenses are considered. The cash BEP helps the management in determining the level of activity below which there is a chance of insolvency on account of the firm's inability to meet cash obligation unless alternative arrangements are made.

d) Break-Even Capacity: It provides information about at what percentage of normal capacity will result the break-even point. In other words, Break-Even capacity provides information about the normal capacity for break even point. It is calculated using following formula:

$$\text{Break Even Capacity} = \frac{\text{BEP Sales} \times 100}{\text{Actual Sales}}$$

e) Other Uses of Break Even Analysis: Break even analysis can be used in a change situation in different elements. The different cases and formula are given below:

i) Required Sales for desired profit (in units) = $\frac{\text{Fixed Cost} + \text{Desired Profit}}{\text{Unit Contribution Margin}}$

ii) Required Sales for desired profit (in Rupee) = $\frac{\text{Fixed Cost} + \text{Desired Profit}}{\text{P/V Ratio}}$

iii) Required Sales in units for desired profit after tax

$$= \frac{\text{Fixed Cost} + \frac{\text{Desired Profit after tax}}{1 - \text{tax rate}}}{\text{Unit contribution margin}}$$

iv) Required sales in Rs. for desired profit after tax

$$= \frac{\text{Fixed Cost} + \frac{\text{Profit after tax}}{1 - \text{tax rate}}}{\text{P/V Ratio}}$$

v) Required sales volume for changes on selling price

$$\text{Revised Break-Even point in units} = \frac{\text{Fixed Cost}}{\text{Revised unit contribution margin}}$$

$$\text{Revised Break-Even pint in Rs} = \frac{\text{Fixed Cost}}{\text{Revised P/V Ratio}}$$

vi) Required ales volume for changes in variable cost:

$$\text{New Breakeven Point (units)} = \frac{\text{Present FC} + \text{Additional FC}}{\text{Unit Contribution Margin}}$$

$$\text{New Breakeven Point (Rs)} = \frac{\text{Present FC} + \text{Additional FC}}{\text{P/V Ratio}}$$

f) Income Tax Impact: As a shortcut to computing the effects of volume on the change in after tax income the following formula can be used:

Change in net income =

$$\text{Change in sales unit} \times \text{Contribution margin per unit} \times (1 - \text{tax rate})$$

Each unit beyond the breakeven point adds to after tax net profit at the unit contribution margin multiplied by (1- income tax rate)

With tax effect the break even point itself does not change because there is no income tax at a level of zero profit. (Horngren, Sundem & Stratten, 2004:65)

2.5.3 Profit-Volume Analysis:

Profit volume ratio expresses the relationship of contribution to sales. It is termed contribution margin ratio, contribution sales ratio or variable profit ratio. If the contribution margin is divided by sales revenue, the result is profit volume ratio.

Symbolically, it is:

$$\text{P/V Ratio} = \frac{\text{Contribution Margin}}{\text{Sales}}$$

Profit volume ratio can be taken as significant evaluation tool for earning capacity of a business enterprise. The earning capacity of an enterprise can be measured by the profit-volume ratio. The higher profit volume ratio reflects the firm's ability for increasing profitability.

The profit volume ratio is used to determine the following facts:

- a) For the analysis of break-even point.
- b) For determination of selling price.
- c) For an ascertainment of profit at a budgeted sales volume.
- d) For an ascertainment of profit on selling price.
- e) For calculation of sales amount to earn a target profit.
- f) For determination of profit on cost etc.

2.6 Cost-Volume-Profit Analysis for a Multi Product Firm

For any organization selling multiple products, the relative proportion of each type of product sold is called the sales mix. It is a relative combination in which a company's products are sold. The sales mix is an important assumption in multi products business. This is because such changes in the sales mix can cause interesting variation in company's profits. Since contribution on each product may be different, any change in the mix would affect profit, BEP and margin of safety of business as whole. A shift in the sales mix from high margin items to low margin can cause total to decrease even though the total sales may increase even though total sales decrease. Break even analysis is somewhat more complex if a company sells more than one product. The reason is that different products will have different selling prices, different costs and contribution margin. Consequently, the break-even point will depend on the mix in which the various products are sold. If the sales mix changes, then the break even point will also change. Thus, to enhance the profit, the firm may introduce required changes in the ratio with the help of break-even analysis.

In multi product firm, BEP is calculated in aggregate. The sales mix is used to compute a weighted average unit contribution. This is the average of the several products unit contribution margin weighted by the relative sales proportion of each product. Following procedures are followed to calculate BEP for multi product firm.

a) CMPU for each product

b) Proportion of sales = $\frac{\text{Individual sales}}{\text{Total sales}}$ OR $\frac{\text{Individual Sales Unit}}{\text{Total Sales Unit}}$

c) Weighted Average CMPU = Sales Mix (units) x Unit Contribution Margin

And

Weighted Average CM Ratio = Sales Mix (units) x CM Ratio

d) BEP (in units) = $\frac{\text{Total Fixed Cost}}{\text{Weighted average CMPU}}$

e) BEP (in units) = $\frac{\text{Total Fixed Cost}}{\text{Weighted average CM Ratio}}$

2.7 Margin of Safety

The soundness of business is indicated by margin of safety. The difference between total sales and break-even sales is identified by margin of safety. The high margin of safety is good for business. It indicates that there can be substantial falling of sale and yet profit can still be made. On other hand, if margin of safety is small, it indicates the weak position will adversely affect the profit position of business. If margin of safety is unsatisfactory, the following steps can be taken:

- i. By increasing the production and sales volume.
- ii. By increasing the selling price
- iii. By decreasing the fixed cost
- iv. By reducing the variable cost
- v. By changing the sales or product mix ratio

Margin of safety is ascertained by using the following formula:

a) Margin of safety = Actual sales – Break Even sales

b) Margin of safety in units = $\frac{\text{Profit}}{\text{Unit contribution margin}}$

c) Margin of safety in amount = $\frac{\text{Profit}}{\text{Profit volume ratio}}$

d) Margin of safety % = $\frac{\text{Actual Break Even sales}}{\text{Actual Sales}} \times 100$

i.e. Margin of safety Ratio = $\frac{\text{Margin of Safety}}{\text{Actual Sales}}$

2.8 Sensitivity of Analysis of CVP

Sensitive analysis in the measurement of responsiveness in outcome with the change in determinant variables. We know that goal of a business enterprise is to maximize profits. Profits are the excess of revenues over the total cost.

$$\begin{aligned} \text{Net Profit} &= \text{Total sales revenue} - \text{Total Cost} \\ &= \text{Sales units} \times \text{SPPU} - \text{Sales units} \times \text{UVC} - \text{FC} \end{aligned}$$

But none of the factors remain unchanged. Sometimes the manager can intentionally change the price and cost factors, a part of strategic decisions. But the strategy should focus more on the factor, which is more sensitive, or responsive for profits. Therefore, to measure the sensitivity of CVP factors one can see the impact of certain percentage of change in volume, price or cost factors on net profits.

❖ **Impact of price changes:** - An increase in the selling price will be the increase the P/V ratio and as a result will lower the break-even point. On the

contrary a decrease in selling price will deduce the P/V ratio and therefore, result in a higher break even point.

- ❖ **Impact of volume changes:** - A changes in volume, not accompanied with changes in the selling price and/or costs, will not affect P/V ratio. As a result, the break-even point remains unchanged. Profit increase in volume and will reduced with a decrease in volume.

- ❖ **Impact of changes in fixed costs:** - A change in fixed cost doesn't influence P/V ratio. Other factors remaining unchanged, a fall in the fixed cost will, however, lower the BEP and raise profits. An increase in fixed costs caused either due to some external factors or due to some changes in the management policy, will raise BEP. Increase in factory rent or insurance and taxes are examples of external factors, while increased depreciation or salaries of managers may be the result of management decision.

- ❖ **Impact of change on variable cost:** - The impact of the change in variable cost on profit is straight forward if it does not caused any changed in selling price and volume. An increase in variable costs will lower P/V ratio, push up the BEP and reduce profits. On the other hand, if the variable cost decline, P/V ratio will increase, BEP will be lowered and profit would rise.

- ❖ **Impact of changes in a combination of factors:** - The management accountant, evaluating profit plans or budgets, must realize that a change in one factors leads to a changes in another factors. Therefore, all such changes should be carefully visualized and their net impact on profit must be seen.

2.9 Assumption of Cost-Volume-Profit Analysis

Cost-volume-profit analysis is based on a specific set of assumption that should be clearly understood. These underlying assumptions are as follows:

- J Costs can be classified and measured realistically as variable and fixed.
- J There is a relevant range of activity for using the results of the analysis.
- J The sales price does not change as units of sales change.
- J There is only one product, or in case of multiple products sales mix among the products remains constant.
- J Basic management polices about operations will not change materially in the short-run.
- J General Price level will remain essentially stable in short run.
- J Sales and production levels are synchronized i.e. inventory remains essentially constant or is zero.
- J Efficiency and productivity per person will remain essentially unchanged in the short run. (Welesh, Hilton, Gordon, 2002:507)

2.10 Limitations of Cost-Volume-Profit Analysis

- a. According to the assumption of break-even-point, total cost can be divided into only fixed and variable costs, which is not practical in real life. There are some costs, which are neither fixed nor variable. Those costs are described as semi-fixed or semi variable costs.
- b. The assumption that fixed cost always remains constant is not true. Sometimes it can be increased, especially in that situation, when production or peration technique is changed.
- c. The assumption that variable cost per unit always remains constant cannot be entirely true.
- d. Constant selling price is also not true. In case of increase in sales volume, some modification can be made in selling price by considering the nature of demand for the goods.
- e. The assumption that either the firm produces only a single product or product mix ratio remains constant is also obviously quite unrealistic. An industry producing several types of goods has to bring about modification in the product mix ratio time to time.

- f. The assumption that the production level and sales level should be equal is another drawback of break-even point. Such a condition is hardly found in practice.
- g. The capital investment in business is also a significant element of profit planning & control. However, it is not given a place in break-even point.
- h. It also ignores the non-operating income & non-operating expenses.

2.11 Brief Review of Previous Research

Research in the area of cost-volume-profit analysis as a tool to measure effectiveness of profit planning and control are made in sufficient numbers. So, attempt is made here to review these researches to forward from the previous limitation.

Mr. Sapkota (2003) had conducted the research entitled "Profit Planning of Nepal Lever Ltd." Mr. Sapkota had connected his study to examine the application of profit planning concept in Nepal Lever Ltd.

The data and other necessary information had been accumulated from secondary as well as primary source. The time periods covered by the research was five years from 2053/54 to 2058/59.

Mr. Sapkota had pointed out various findings. Some remarkable findings were as follows:

-) No proper practice of profit plan had been exercised.
-) No preparation of proper budget regarding sales, production expenditure, income material etc.
-) The manager of concerned department in consultation with managing directors makes yearly budget of income and expenditure as well as other plans regarding production sales etc.
-) Lack of optimum utilization of capacity.

-) Various costs are not diagnosed as controllable expenses and non controllable expenses.
-) The company had no practice segregating cost into fixed, variable, semi variable cost.
-) The sales territories could be divided as domestic and export sales mainly export consists of the good in India.
-) The company had also give the priority to rural market by packing the products in mini packets affordable to the rural citizens.
-) The domestic sales of the company were in increasing trend and exports sales of the company were in decreasing trend.
-) Well developed policies regarding personnel managements could be found. Annually at least five days refreshment training was provided to employees.
-) Profitability of each product line couldn't be measured the expanses for each responsibility centered had not been managed.
-) Low stable policy regarding inventory had been followed.

Mr. Rijal (2005) had conducted research on the topic "Cost-Volume-Profit Analysis as a tool to measures effectiveness of profit planning and control: a case study of NEBICO Private Ltd." Mr. Rijal had concentrated his study to examine the CPV analysis as a tool to measure effectiveness of PPC, present practice of CVP analysis and identify the area where CVP analysis could be applied to strengthen the NEBICO Pvt. Ltd.

The data and other necessary information had collected secondary as well as primary sources of data. The time covered by the research was five years from 2055/56 to 2060/61.

Mr. Rijal had pointed out various findings. Some remarkable findings were as follow:

-) The company's sales trend had fluctuated trend but not satisfactory trend of increasing.
-) The company's variable cost was high proportion than fixed cost in total amount, which contributed for lower contribution margin.
-) There was no plan to reduce cost. There was lack of effective cost control Programmes or techniques.
-) Profit trend of the company was not satisfactory.
-) The company has no detailed any systematic expenses plan i.e. fixed, variable and mixed cost.
-) The goal and objective of the company were not clearly communicated to operating level of management.
-) The inventory management, raw material handling and controlling system were not efficient and effective.
-) Wages structure was based on accordance with the level of skill. Since, unskilled workers were great in number with approximately 84% wages captured in total production wages.
-) The pricing policy of the company was not scientific because BOD directly interference to price of biscuit and confectionary product.
-) The company has tried to adopt the new technology for improvement of qualitative products.
-) Financial position of the company was so good. Net profit margin, profitability ratios and other things were not satisfactory.
-) The company has not utilized its full capacity.

Mr. Dahal (2006) has studies on the topics of "Cost volume profit analysis as a tool to measure the effectiveness of profit planning with special reference to Dubar Nepal Ltd". This was submitted to Nepal Commerce Campus, TU in Partial fulfillment of Master's Degree in the year 2006. he found given findings and recommendation on his study.

-) Dabur Nepal Pvt. Ltd constitutes lack of adequate inventory policy.
-) No control over external factory i.e. it has poor SWOT analysis.
-) Dabur Nepal Pvt. Ltd. does not prepare strategic and policies for long term.
-) Dabur Nepal Pvt. Ltd is not able to co-ordinate among various departments.
-) Dabur Nepal Pvt. Ltd is not prepared raw material requirement budget and raw material purchase budget systematical.
-) The researcher also provides the following recommendations:
 - o CVP analysis should be considered while formulating profit plan.
 - o Profit planning manuals should be communicated from top level to lower level.
 - o The company management should look carefully into the basis of setting target for sales and achieving those targets meaningfully.
 - o Dabur Nepal Pvt. Ltd should focus on the relationship between expenditure and benefit, expenses planning and controlling is necessary to obtains companies goals.
 - o To get the idea of future cash requirement and application of the form, it should make cash budget systematically.
 - o The company should prepare raw material budget and production budget scientifically.

Mr. Pokhrel (2006) had conducted the research entitled" cost volume profit analysis as a tool of PPC: A case study of Himalayan Distillery Limited. Mr. Pokhrel had connected his study to examine the application of CVP analysis in Himalayan Distillery Limited. Data and other information had been collected from primary as well as secondary sources. The time period covered by the research was five years form the year 2006 to 2006 AD. Mr. Pokhrel had pointed some remarkable findings which are as follows:

-) The company has not practice of classification of costs into fixed cost and variable cost.

-) The fixed costs and variable costs are increasing annually.
-) The CM ratio was low due to the lack proper implementation of CVP analysis and fact based forecasting.
-) Generally, the actual sales of the company had not reached at BEP as a whole.
-) There was perfect negative correlation between actual sales and budgeted sales.
-) For profit achievement, the company should be adjusted fixed cost, variable cost, sales and profit by P/V analysis.

Mr. Timsina (2007) had studied on the topic "Cost volume profit analysis of Himalayan Distillery Limited". This was submitted to Nepal Commerce Campus, TU in partial fulfillment of Master's Degree in the year 2007. Mr. Timsina had pointed out some major findings in his research. Some major findings were as follows:

-) Different types of profit planning tools, which were used in the academic field, were not found applied by HDL.
-) CVP analysis was not applied by HDL as no segregation of cost in to fixed and variable, which was the hardcore of CVP analysis.
-) Company has no clear-cut boundaries to separate cost into fixed and variable. The classification of cost was not scientific and systematic. So, HDL had not been able to use CVP analysis and make the realistic and smart budget.
-) Production and sales were comparatively low than production capacity.
-) Avoiding CVP analysis tool and staff of the company were enjoying by achieving allowance and salary respectively. Other part, general shareholders were not achieving dividend and government couldn't claim for income tax since loss and loss recovery situation.

Mr. Karki (2008) had conducted the research on the topic of Cost Volume Profit Analysis as a tool of profit planning" as case study of Bottler Nepal Ltd. The data and other necessary information were collected by primary as well as secondary sources. Major findings and recommendation providing by his are as follows:

-) The company had not maintained the broad and long range objective periodic report and objectives were limited to the high ranking official only.
-) Relevant internal and external market variables were not fully explored.
-) Sales and production targets were not achieving because there was not and effective forecasting system.
-) Enterprises have no financial plan; they had only sales and production plan in term of required target.
-) The company's production trend was in an increasing trend.
-) There was no any effective plan for cost reduction and control.
-) There was lack of effective cost control programmes or techniques.
-) The profit of the company was not satisfactory as compared to profit proportion was very low with fluctuated trend.
-) The company had no detailed and systematic expenses plan.
-) In the company there was no effective inventory policy. The inventory management, raw material handling and controlling system were not efficient and effective.
-) The company had not proper practice of segregating the costs into fixed and variable or controllable and non controllable.
-) Management information system was not performance based.
-) There were no any proper criteria for performance evaluation for financial tools.
-) Classification of expenses item as variable and fixed or controllable and non controllable must be made within specific framework of responsibility and time.

-) Separate cost control department should be established for the effective management and reduction of cost.

2.12. Research Gap

There is a gap between this research and previous research. The researches studied earlier on the topic of cost volume profit analysis are mainly focused on single product. But some of the researches are there analysis to multi product firms, but these researches couldn't reach to the depth of the study. Other researchers have applied the CVP tools on surface or in aggregate. But, this study is concentrated to find the product sales and profit. Contribution of product on total sales and benefit from each product is clearly shown in this research. Due to sustention problem of the IT magazine in Nepal this study focuses on the one of the most effective part of the business that is CVP. I couldn't get above remarkable points in other researches, rather than it clear picture of cost, sales, profit, BEP, margin of safety, sensitivity of CVP, CVP impact on productivity can be ascertained in this study. Likewise, data are processed by using different types of statistical and mathematical tools in effective manner. So, I think this research becomes successful research to fulfill the gap between this research and previous researches.

CHAPTER - 3

RESEARCH METHODOLOGY

3.1 Introduction

In the previous chapter, general background, the role of IT and CVP analysis has been presented and the role of the CVP analysis in the business firm has described in review of literature with possible review of relevant books, articles and research finding has also been discussed along with the function of Commercial Banks, types of deposit, loan classification. This has equipped the researcher with the input necessary for the study and helped the researcher to make choice of research methodology to support the study in realistic terms with sound empirical analysis. "Research Methodology" refers to the various sequential steps to be adopted by a researcher in studying a problem with certain objectives in view, in other words: research methodology describes the method and process applied in the entire subject of the study.

This chapter equipped the researcher with the inputs necessary for the study and helped the researcher to make choice of research methodology to support the study in realistic terms with sound empirical analysis. "Research Methodology" refers to the various sequential steps to be adopted while studying a problem with certain objectives in view. In other words: research methodology describes the methods and process applied in the entire subject of the study. The chapter research methodology includes research design, resource of collection data and processing procedures tools for analysis, test of hypothesis, methods of analysis and presentation.

3.2 Research Design

Research Design is the overall plan, structure and strategy of investigation conceived so as to obtain answer to research question and control variance (Howard K. and Pant 1975:43). The design of the research project guides how to

conduct the study. The research designing implies procedures, techniques and tasks which guide to evaluate the objective of the study and propounds ways for research viability. It is the overall plan of a proposal study to specify the appropriate research methods and procedures for obtaining specific finding validity, objective, accuracy and economically as possible.

3.3 Data Collection Procedures

The source of data will be primary and secondary sources. All the required data and information would be collected from IT magazine publication house. The study would be followed description and analytical research to analyze the company's performance of PC Info Pvt. Ltd. A simple interview procedure has been adopted and the other data had been extracted from the financial reports of the company. Through the search goes through the many IT related company to collect the data to make the study broad. To collect the data, preparing lots of questionnaires will be prepared and attach to make sure about the study.

3.3.1 Nature and Source of Data

Though, IT was developing rapidly but due to lack of proper mass communication medium that represents the entire IT field, the most valuable and crucial tool to show the true position of any organization is its past data. Broadly study of the IT related business and the magazines which existed in Nepal and current scenario of the IT or ITC in Nepal. Study of IT related magazines organizational structure and the marketing strategies and the cost structure of the IT related news. The source of data shall be primary and secondary sources. All the required data and information would be collected from IT magazine publishing house.

3.3.2 Population and Sampling

Though, many newspaper and magazine are published IT related news and reviews but only one IT related magazine, which provides sufficient information about IT, that only magazine has been taken as sample as well as the population

so it is quite a bit search of a single organization that will define the probable causes for the failure of the IT related magazine in Nepal in past decade. I have chosen PC Info Pvt. Ltd as a sample of the study. The popular ways to collect primary data consist of surveys, interviews and focus groups, which shows that direct relationship between potential customers and the company, whereas, secondary research is a means to reprocess and reuse collected information as an indication for betterments of the service or product. Both primary and secondary data are useful for businesses but both may differ from each other in various aspects.

3.4 Tools and Techniques of Data Analysis

The financial data has been categorized to the relative variables and the cost concept has been developed through the views derived from the questionnaires under staying within following assumptions and limitation:

Assumption and the limitation:

1. It is assume that the total IT publishing houses are similar in all aspect to the cost with the PC-Info Pvt. Ltd.
2. This research is limited to the cost structure of the Publishing House.
3. This research is merely based on the financial and cost data availed by the company.
4. This research does not include other environment of the company, which unrelated to this study.
5. All costs have considered as the cost that can classified into fixed and variable component.
6. Volume of company is the only factor that is affecting the cost behavior.
7. However, CVP analysis is a useful planning and control device, usually in the firm if chart showings how revenue, cost, and profit fluctuate with volume. The CVP technique is useful to management is areas of budgeting, cost control and decision making. In spite of CVP being a useful tool, it

suffers from some limitations. Firstly, because of the many assumptions. CVP is only an approximation at best. If prices, unit cost, sales mix operating efficiency or other relevant factors are changes, then overall CVP analysis and relationship must modified.

However, CVP Analysis is a useful planning and control device, usually in the firm if a chart showing how revenue cost and profit fluctuate with volume. The CVP technique is useful to management in areas of budgeting, cost control and decision making. In spite of CVP being a useful tool, it suffers from some limitations. To analysis data different cost related tools under CVP analysis has been used and beside that the cost ratios and the leverage ratios has been used and the some statistical tools have also been used. The various techniques that have been used are as follows:

$$\mathbf{3.4.1 \text{ Variable Cost Ratio}} = \frac{\textit{Variable cost}}{\textit{Sales}}$$

$$\mathbf{3.4.2 \text{ Contribution Margin Ratio}} = \frac{\textit{Contribution Margin}}{\textit{Sales}}$$

3.4.3 Break Even Point in Units and in Revenue

3.4.3.1 Operating BEP

$$\text{BEP}_{\text{operating}} (\text{Units}) = \frac{\textit{Fixed Cost}}{\textit{Contribution Margin per unit}}$$

$$\text{BEP}_{\text{operating}} (\text{Rs.}) = \frac{\textit{Fixed Cost}}{\textit{Profit Volume Ratio}}$$

Where contribution margin is derived through the deviation between selling price per unit and the variable cost per unit and the profit volume ratio is derived by the following formula:

CMPU divide by selling price per unit

[Break even point defines the sales level to be achieved to get null profit i.e. the company will earn no profit and suffers no loss or in other words the total revenue covers the total cost of the organization.]

3.4.3.2 Financial BEP

$$\text{BEP}_{\text{financial}} (\text{unit}) = \frac{\text{Fixed Cost} + \text{Interest}}{\text{Contribution Margin per unit}}$$

$$\text{BEP}_{\text{financial}} (\text{Rs.}) = \frac{\text{Fixed Cost} + \text{Interest}}{\text{Profit Volume Ratio}}$$

[Break even point defines the sales level to be achieved to get null profit after interest payment to the debt capital i.e. the company will earn no profit and suffers no loss after the payment of the interest or in other words the total revenue covers the total cost of the organization in this point total cost includes both operating and non operating expenses i.e. interest]

$$\text{3.4.4 Margin of Safety Ratio} = \frac{\text{Margin of Safety}}{\text{Actual Sales}}$$

[This ratio shows the safety level of the organization]

3.4.5 Leverage Study

3.4.5.1 Degree of Operating Leverage [DOL]

$$\text{DOL} = \frac{\text{Contribution Margin}}{\text{Earning Before Interest and Tax}}$$

[DOL defines the relationship between the sales and the operating profit i.e. EBIT and it also indicates the effectiveness of the fixed cost excluding interest utilization in the organization in other words higher the DOL lower the utilization of the fixed cost and vice versa]

3.4.5.2 Degree of Financial Leverage [DFL]

$$\text{DFL} = \frac{\text{Earning Before Interest and Tax}}{\text{Earning before Tax}}$$

[DFL defines the relationship between operating profit i.e. EBIT and Earning before Tax and it also indicates the effectiveness of interest utilization in the organization in other words higher the DOL lower the utilization of the interest or debt capital and vice versa]

3.4.5.3 Degree of Total Leverage [DTL] or Degree of Combined Leverage [DCL]

$$\text{DTL or DCL} = \frac{\text{Contribution Margin}}{\text{Earning before Tax}}$$

[DTL defines the relationship between the sales and the Earning before tax i.e. EBT and it also indicates the effectiveness of the fixed cost including interest utilization in the organization in other words higher DOL lower the utilization of the fixed cost plus interest and vice versa]

3.4.6 Statistical Tools

3.4.6.1 Mean [X] = $\frac{\sum x}{n}$

[Where x is the variable that is under study like FC, Total Cost, Sales or profit. Mean defines the average of the historical data presented and the expected value for next future period]

3.4.6.2 Time Series or Regression Analysis under Least Square Method

Where,

$$Y = a + bx$$

In which Y is the dependent variable and the x is the independent variable under study.

Where,

$$b = \frac{\sum xy}{\sum x^2} \quad \text{and} \quad x = \bar{X} - X$$

3.4.6.3 Standard Deviation of the Profit

$$\sigma = \sqrt{\frac{\sum x^2}{n} - \left(\frac{\sum x}{n}\right)^2}$$

Standard deviation shows the risk level of the organization.

3.4.6.4 Coefficient of variation (CV)

$$CV = \frac{\sigma}{\bar{x}}$$

Coefficient of variation shows the risk level per rupee of the profit.

Pre Testing:

Pre testing has been done with the data availed by the company and the data seems to be quite relative to the study.

3.4.6.5 Pearson's Correlation Coefficient (r)

$$r = \frac{n \sum xy - \sum x \sum y}{\sqrt{\left[n \sum x^2 - \left(\sum x\right)^2\right] \left[n \sum y^2 - \left(\sum y\right)^2\right]}}$$

Where x and the y are the variables of those correlation is being studied.

The value of r lies between -1 to +1

If r > +0.5 High degree of positive correlation is predicted

r < +0.5 Low degree of positive correlation is predicted and vice versa of the negative correlation.

CHAPTER - 4

PRESENTATION AND ANALYSIS OF DATA

4.1 Introduction

The most valuable and crucial tool to show the true position of any organization is its past data. By analyzing the data one can find out the core problems of limitations of the organization. Therefore this chapter focuses on presenting the data related to PC Info's cost structure. Interpretation of data is to show the position of PC Info regarding its cost, revenue and profit. This chapter has been organized into different sections.

- i) Cost Indicator
- ii) Cost Volume Profit Analysis
- iii) Break Even Analysis
- iv) Profitability Analysis
- v) Cost Ratios
- vi) Sensitivity Analysis
- vii) Leverage Study
- viii) Statistical Analysis

4.2 Cost Indicators

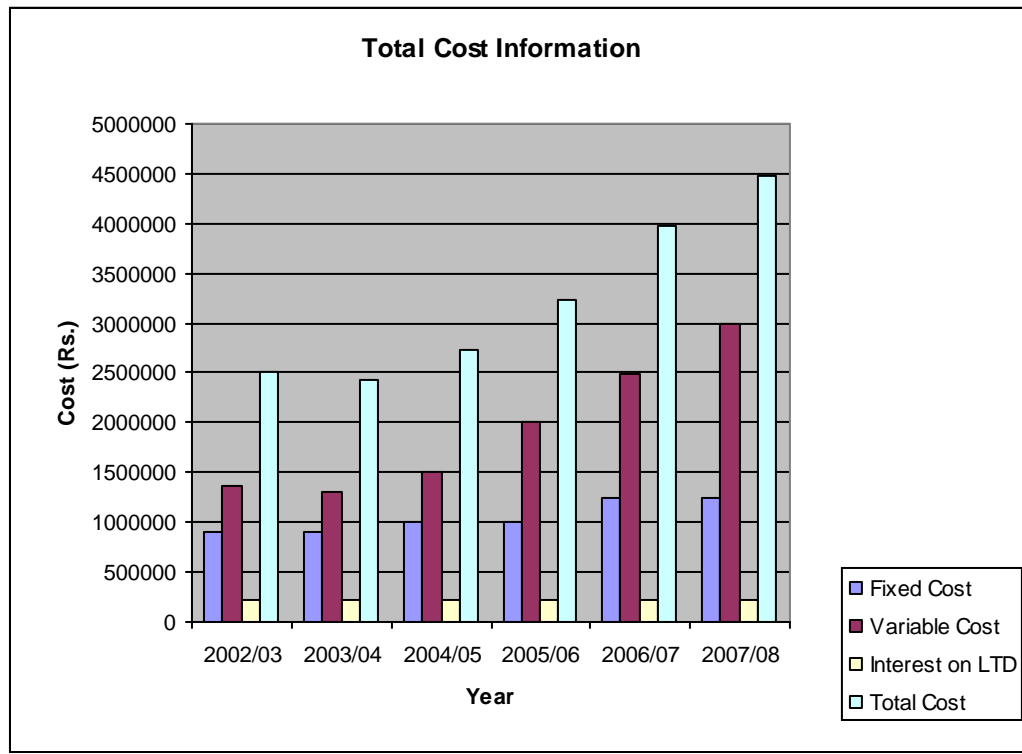
- a) Fixed Cost (FC)
- b) Financial Fixed Cost (FFC)
- c) Variable Cost (VC)

Table No.1						
Individual cost and the Total Cost						
Year	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08
Fixed Cost	855350	855350	05500	905500	1003000	1003000
Variable Cost	1350000	1400000	1375000	1300000	1500000	2000000
Interest on LTD	225000	225000	225000	225000	225000	225000
Total Cost	2430350	2480350	2505500	2430500	2728000	3228000

(Source: Financial Statement of the PC-Info Pvt. Ltd.)

Total cost has been drastically increased during last six years of life.

Chart No.1



The chart of cost presented above has expressed the incensed increment in the variable cost and remarkable increment in the fixed cost but financial fixed cost seemed constant over the period. Total cost has also increased drastically over the period where as the sales revenue has not been increased which may cause the low profitability.

Table No.2

Total Sales and the cost per unit and selling price per unit						
Year	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08
Sales	47825	41270	35925	40520	41250	40926
Variable Cost per unit	28.22	33.92	38.27	32.09	36.36	48.87
Fixed cost per unit	17.88	20.73	25.21	22.35	24.32	24.51
Selling price per unit	75	75	75	75	75	75
CMPU	46.78	41.08	36.73	42.91	38.64	26.13

(Source: Financial Statement of the PC-Info Pvt. Ltd.)

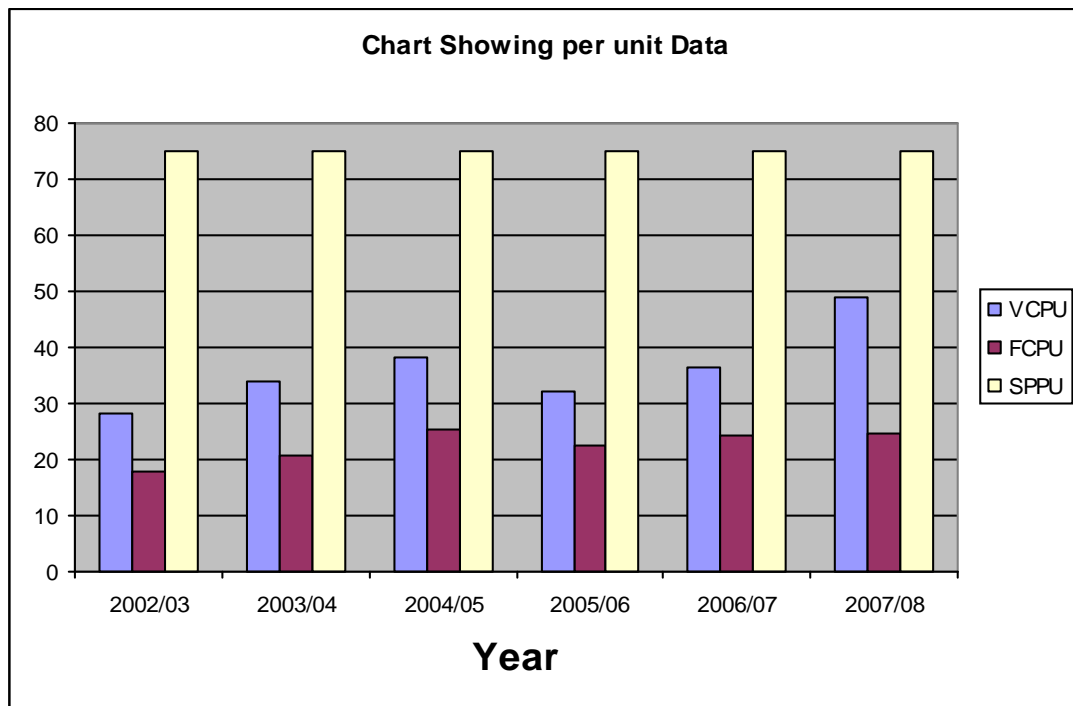
4.3 Cost Volume Profit Analysis

4.3.1 Per Unit Data

Capacity of sales were 47825 units in year 2002/03 where as 40926 units in the year 2007/08 almost 6899 units fall with compare to the beginning which is 14.42% declination.

In above table we can have a clear picture that the business has decreasing trend of the its capacity utilization but fixed cost has been increased to 24.51 from since the fixed cost per unit have the increasing trend rather than decreasing the capacity seemed underutilized.

Chart No.2



The selling price remained constant at Rs.75 where cost per units both fixed and variable cost ate in increasing trend it seemed due to the higher market inflation and the instability. Above trend of the fixed cost shows the increasing trend, which tends to low utilization of the fixed costs those are being spent over the period. The point to be noted is that the increasing trend of the fixed cost will make the higher obstacle for the achieving the targeted profit goal. Selling price per unit seems to be remained constant, which is also the sign of the lower sales

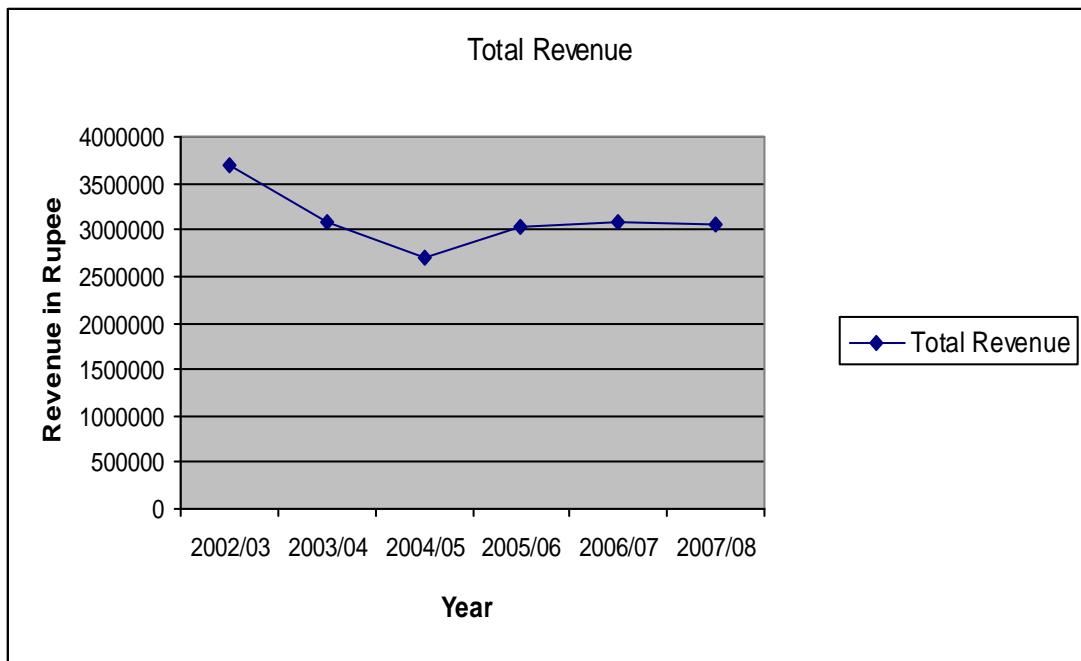
volume because there must be a decreasing tend of the SPPU for being competent in the market and the higher sales volume.

4.3.2 Total Revenue

Table No.3						
Total Revenue						
Year	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08
Sales	47825	41270	35925	40520	41250	40926
Selling price per unit	75	75	75	75	75	75
Total Revenue	3685875	3095250	2694375	3039000	3093750	3069450

The total revenue has significantly decreased over the five years period and it is the main case for the decreasing trend of the profitability. The overall investment seemed to be under utilized over the period and the selling price seemed unaffected by the lower sales revenue though it should be increase due to lower sales level and to maintain the profitability.

Chart No.3



Sales revenue trend seemed at decreasing trend over the year 2004/05 and seed almost constant over the last three year. The sales level has been lower than its initial stage which quite unexpected and the usual and it expressed the market status over the period.

In general, the sales revenue increases over the period in later years than its initial stage due to the goodwill and popularity that it will gain during its later period of existence. Sales revenue started from Rs.3685875 but remained constant at the level of Rs.3069450 at the year 2007/08 which almost reduction by Rs.616425 or by 17%.

4.4 Break Even Analysis

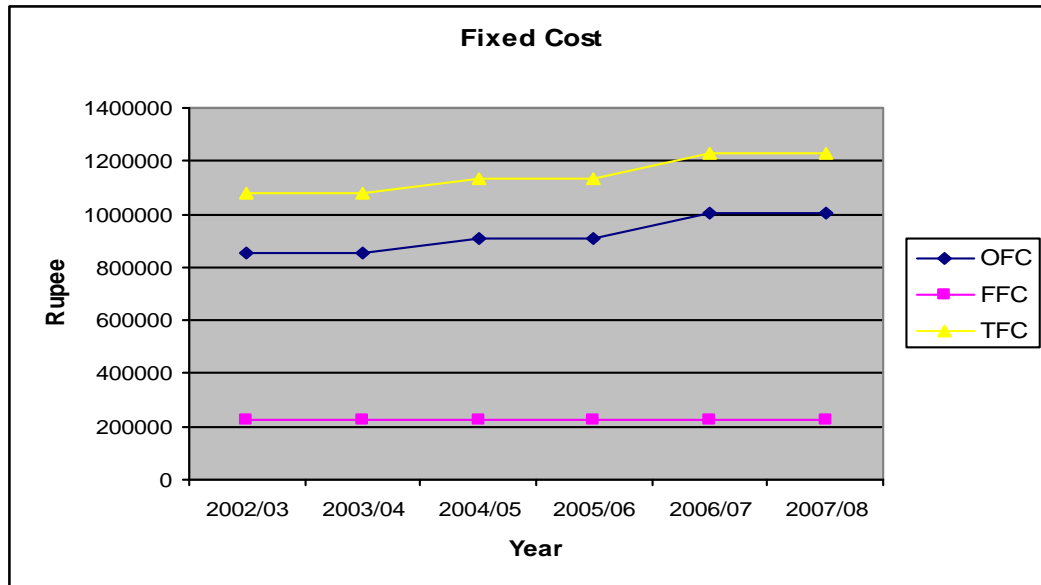
A break even analysis indicates at what level cost and revenue in equilibrium. It is a simple and easily understandable method of presenting to management the effect of change in volume on profit. For the purpose of the break even analysis the total fixed cost ahs been divided to two parts: Operating Fixed Cost and the Financial Fixed Cost i.e. interest on the borrowed capital.

Table No.4						
Fixed Cost Statement						
Year	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08
Operating Fixed cost (OFC)	855350	855350	905500	905500	1003000	1003000
Financial Fixed cost (FFC)	225000	225000	225000	225000	225000	225000
Total Fixed Cost (FC)	1080350	1080350	1130500	1130500	1228000	1228000

Total financial fixed cost showed the indifferent reaction of the company's debt condition though it is unfavorable condition of the debt situation that it has not redeem any of the debt since it has been stated. Fixed was Rs.855350 in year

2002/03 and increased to Rs.1003000 in year 2007/08 or increased by Rs.147650 i.e. 17.26% increment in those six year of life. Other operating cost has been significantly increased since year 2002/03 and it seems obvious in the context of the market condition and the inflation that is the main suffering case of our Nepalese market.

Chart No.4



The trend of the fixed cost and the total cost is in increasing trend and the financial fixed cost has the constant trend to it can be said that the debt capital of the firm has neither redeemed nor issued.

Therefore the increasing trend of the operating fixed cost tends to the increase in the overall fixed cost and in the increasing trend of the total cost has no specific role of the financial fixed cost.

Table No.5

Contribution Margin Per Unit						
Year	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08
Contribution Margin Per Unit (CMPU)	46.78	41.08	36.73	42.91	38.64	26.13

The table has expressed that the CMPU has decreased to Rs.26.13 from Rs.46.78 since last six years. It is due to change in variable cost per unit or increasing trend of the variable cost per unit. Contribution margin per unit has decreased by Rs.20.65 which almost 44% and which huge change in contribution margin per unit.

4.4.1 Operating Break Even Point

Table No.6						
Operating Break-Even Point						
Year	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08
Break Even Point Operating (units)	18285	20822	24653	21102	25958	38385
Break Even Point Operating (Rupees)	1371375	1561650	1848975	1582650	1946850	2878875

The break even sales level has drastically increased from 18285 units to 38385 units during its six years of life span which is almost 110% increment in the breakeven point to be achieved to get null profit. So as break even point in terms of Rupees has also been increased to Rs.2878875 from Rs.1371375 which is also almost 110% increase in the BEP.

The break-even table has expressed the unsatisfactory result of the output activity level to be achieved for reaching at break even level. The main cause for that may be due to the following conditions:

1. The fixed costs do not remained constant for the specific period and showed an increasing trend.
2. Where as the selling price remained constant.
3. Variable cost per unit also showed an increasing trend.

The operating fixed costs are in increasing trend that reflect that the company has to work hard to achieve break-even point through it has the constant selling price per unit.

Above table for the operating break even point showed that the company has to make a lots of sales to achieve the enough sales for the achieving the financial goal or enough profit. With compare to the actual sales with the break even sales the company is operating at the level higher than the break even level only in the initial one year i.e. for the year 2002/03 for last four years the company is operating at the level less than the break even point. So that it can be conform that in last four years the company's earning before interest and tax is lower than it should be.

4.4.2 Financial Break Even Point

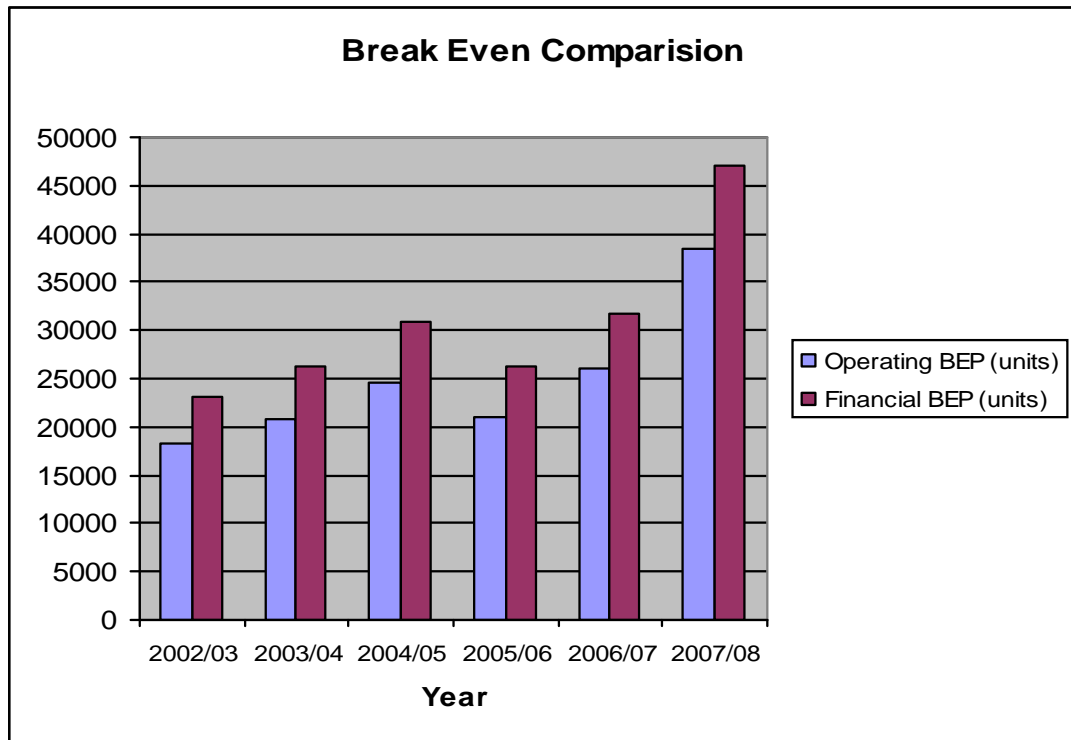
Table No.7						
Financial Break-Even Point						
Year	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08
Break Even Point _{Financial} (units)	23094	26297	30779	26348	31791	46996
Break Even Point _{Financial} (Rupees)	1732050	1972275	2308425	1976100	2384325	3524700

Financial Break Even Point has increased from 23094 units of sales in year 2002/03 to 46996 units of sales in year 2007/08 which is almost 103% increment over the base year i.e.2007/08. The break even table has expressed the unsatisfactory result of the output activity level to e achieved for reaching at break-even level. However, company has just left out the break even level and the deviation or margin of safety is in decreasing trend and the trend reflects that the company will face a loss during coming future.

The main cause for that may be due to the following conditions:

1. The financial fixed costs remained constant for the specific period or not redeemed over the period.
2. Where as the selling price remained constant.
3. Variable cost per unit also showed an increasing trend.

Chart No.5



The break-even comparative chart shows that the Financial BEP and the Operating BEP has quite a high deviation than it should be and it reflects that the financial fixed cost is not properly utilized over the period.

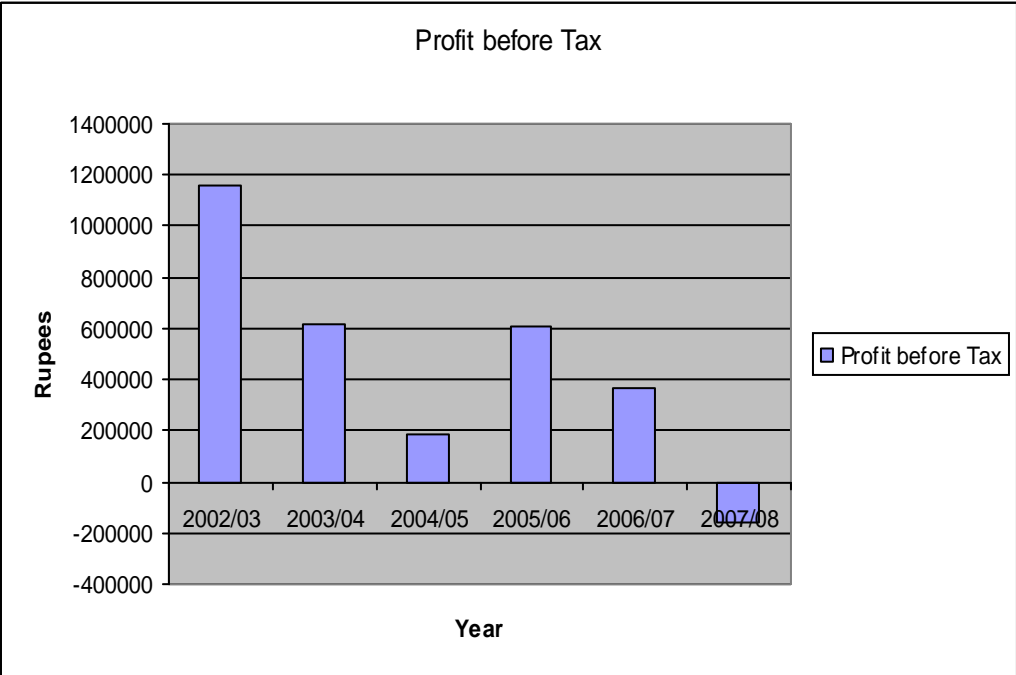
4.5 Profitability Analysis

Profit Analysis						
Year	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08
Total Revenue	3586875	3095250	2694375	3039000	3093750	3069450
Total Cost	2430350	2480350	2505500	2430500	2728000	3228000
Profit Before Interest and Tax	1480525	839900	413875	833500	590750	66450
Profit before Tax	1156525	614900	188875	608500	365750	(158550)

The profitability of the company is in decreasing trend since year 2002/03 and the profit before tax has decreased drastically from Rs.1156525 to Rs.(158550) in the year 2007/08 i.e. sales has been decreased by almost Rs.1414075 since last six years.

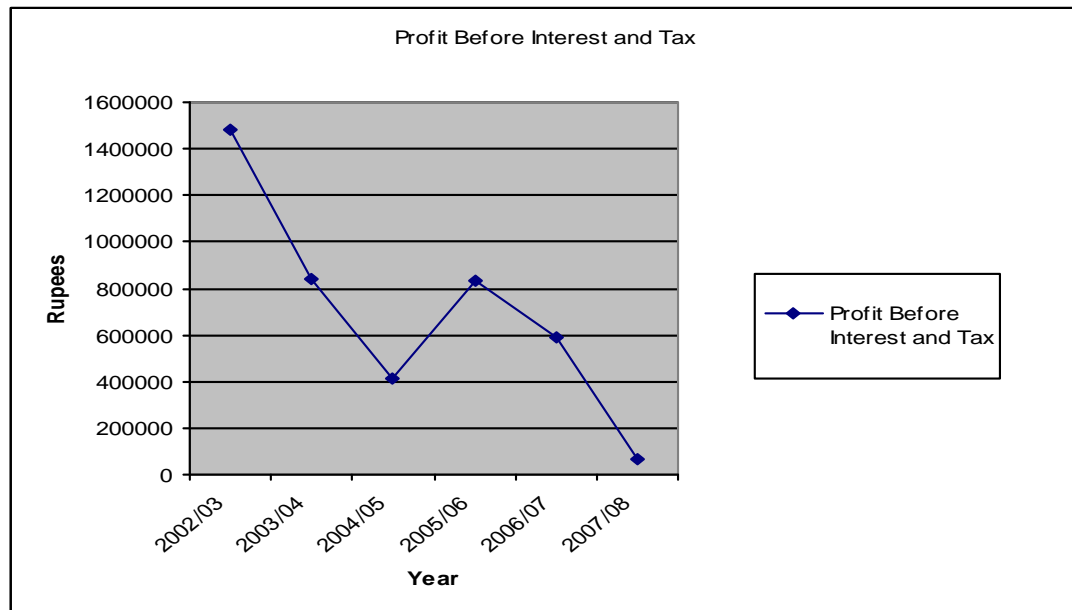
It is clear that due to the constant sales level and the increasing trend of the sales the profitability is in decreasing trend. Profit seemed recovering in the year 2003 and then profit has fallen more dramatically in the last two years.

Chart No.6



Above bar chart is for the evaluating the profit performance since last six years it seemed that profit is quite high in the beginning of the period and decreased drastically in the middle of the period but seemed recovering in the middle but decreased in the final years of the period suffers the negative earning in 2007/08.

Chart No.7



It is all because of the fixed selling price and the increasing trend of fixed cost and the variable cost. In assumption of the CVP analysis, we assume that the fixed cost remains constant over the period but the reality it does not exist and the CVP analysis became more difficult in the context.

The trend of the profit is in decreasing and during its 6 years of life the trend has been decreased unexpectedly and drastically.

4.6. Margin of Safety

Margin of safety is the difference between the actual sales and the sales at break even point. Therefore, margin of safety is also the excess production over the break even point output. Sales or output beyond break even point is known as the margin of safety. [Jain and Narang: *Principals and Practice* (2001) Kalyani Publisher Delhi]

This ratio shows the safer side of the company that the company is now being facilitated with or the limit that the sales may decrease by to reach the break even level from the current sales level.

Table No.9						
Margin of Safety						
Year	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08
Actual Sales (units)	47825	41270	35925	40520	41250	40926
Break Even Sales _{Financial} (units)	23094	26297	30779	26348	31791	46996
Margin of Safety (units)	24731	14973	5146	14172	9459	(6070)

The margin of safety was quite higher in the initial stage of the company and it has decreased to the (6070) units from 24731 units, which are quite amazing and unbelievable and company seemed unsecured regarding safety margin.

Margin of Safety seemed satisfactory and positive in during year 2006/07 and negative in the year 2007/08, which reflects the company has suffered loss in the year 2007/08. The margin of safety has decreased by almost 125% during last six years. Higher the margin of safety secures the firm so the company was quite secured in the beginning of period because it has highest margin of safety in those years.

Chart No.8

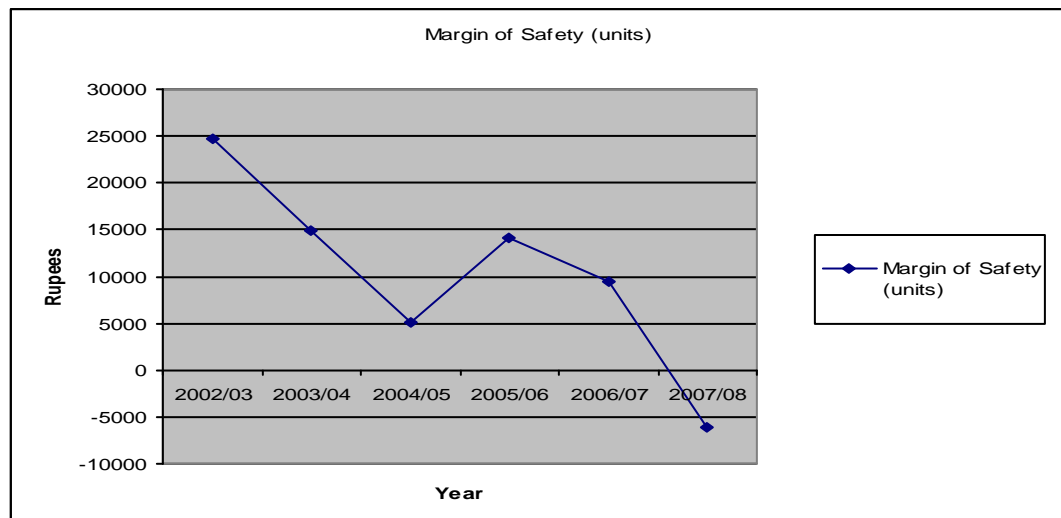
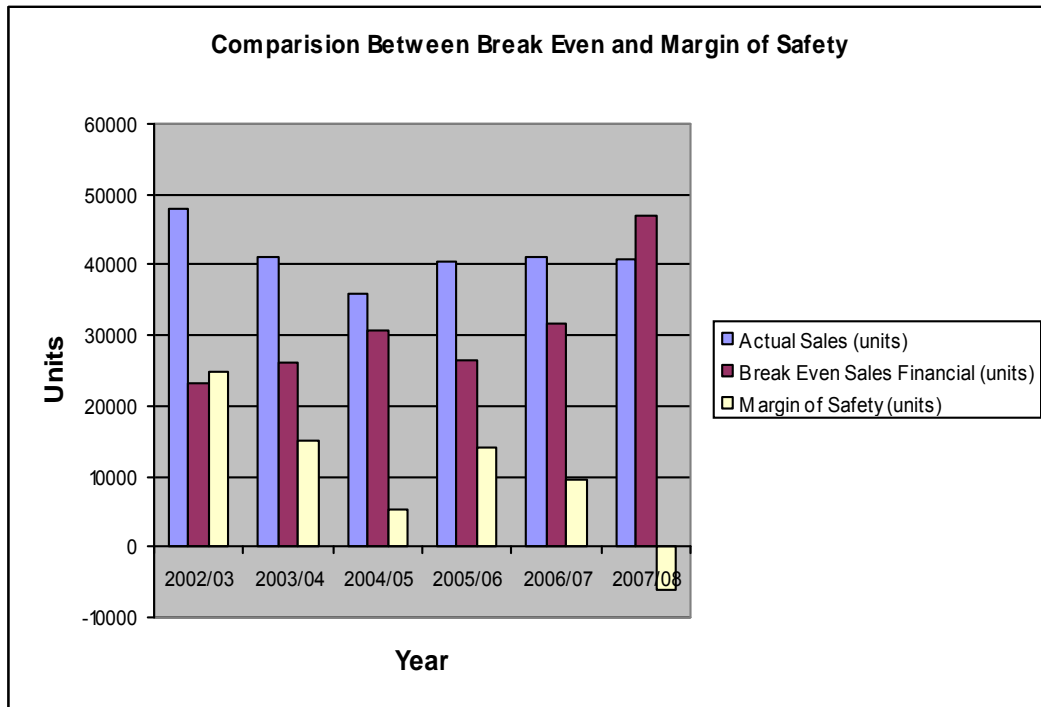


Chart No.9



As the break even unit is increasing the margin of safety units are in decreasing trend that it is showing the inverse relation between the break even units and the margin of safety.

4.6.1 Margin of Safety Ratio

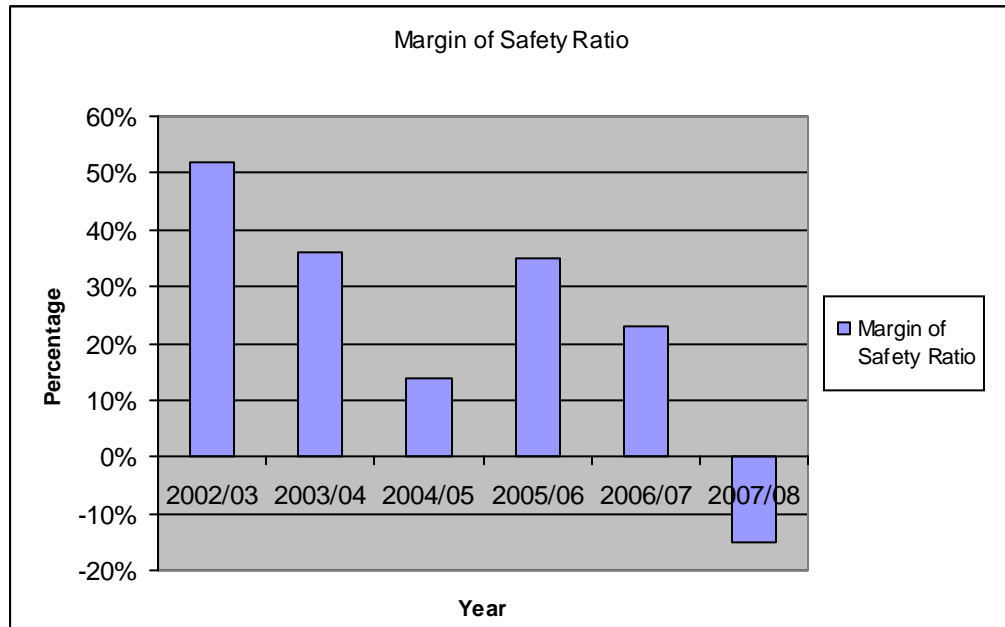
Margin of Safety Ratio						
Year	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08
Margin of Safety Ratio	52%	36%	14%	35%	23%	(15%)

Margin of safety ratio has been decrease to (15%) from 52% while passing through 5 successive years of company's life, which reflects that the risk level has been increased during last five years.

In year 2002/03 Margin of safety ratio shows the highest mark of 52% and in year 2007/08 it has the lowes margin of safety of (15%) and it can be observed that

margin of safety has been decreased by more than 75% of the initial margin of safety. It was progressing during the middle of the period and seemed drastically decreased in the final of the period.

Chart No.10



The margin of safety ratio has dropped drastically during last six years. The graph presented above showed that the Margin of safety and fluctuated over the last six years and showed the heavy volatility in the margin of safety. It has fallen in year 2003 and seemed recovering in 2005/06 and 2006/07 but lowered in year 2007/08.

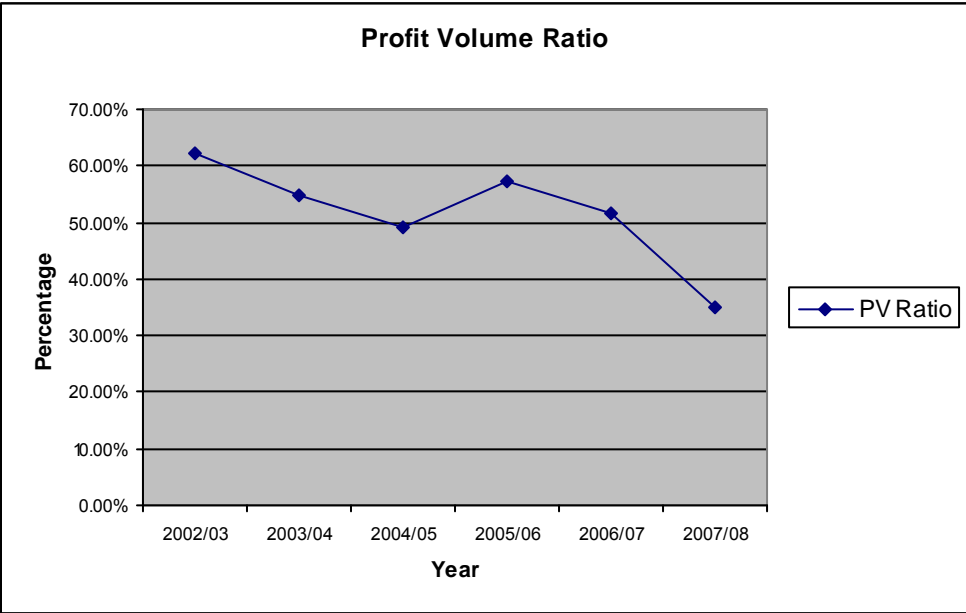
4.6.2 Profit Volume Ratio

The profit-volume ratio is one of the most important ratios for studying the profitability of operations of a business and establishes the relationship between contribution and sales: the rate of profit that added to the selling price that can achieve after the break even sales level.

Profit Volume Ratio						
Year	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08
PV Ratio	62.24%	54.78%	49%	57.21%	51.52%	34.84%

The profit volume ratio has decreased to 34.84% from the initial 62.24% which reflect that the profit margin on the selling price is dramatically decreasing which may also reflect that the variable cost is in increasing trend or selling price has not increased as the variable cost increased.

Chart No.11



The above trend has shown that the profit volume ratio has decreasing trend and has decreased by almost half of the initial ratio.

4.6.3 Contribution Margin per Unit

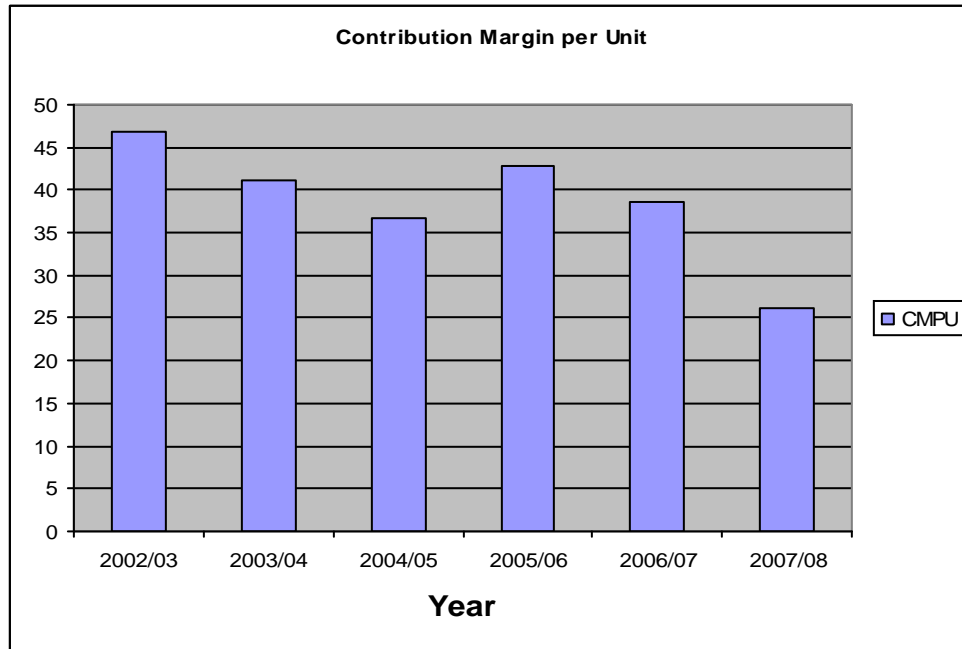
Profit before tax per unit can be gained after break even point.

Year	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08
CMPU	46.78	41.08	36.73	42.91	38.64	26.13

Contribution margin has decreased by almost 50% during last six years and which shows the increasing trend of the variable cost rather than the selling price per

unit. During year 2002/03 to 2006/07 it seems quite satisfactory and lied between 36.73 to 46.78 but in year 2007/08 it seem drastically lowered to 26.13

Chart No.12



4.7 Sensitivity Analysis

In this analysis the researcher tried to maintain a brief study of the relation of change in profitability if the company adjusted the selling price against the loss or low contribution margin.

With respect to the selling price:

1. If selling price has been increased by $33\frac{1}{3}\%$, selling price per unit will be Rs.100 per unit.

Sensitivity of Profit Analysis						
Year	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08
Sales Unit	47825	41270	35925	40520	41250	40926
SPPU (Rs.)	100	100	100	100	100	100
Total Revenue	4782500	4127000	3592500	4052000	4125000	4092600
Total Cost	2430350	2480350	2505500	2430500	2728000	3228000
PBIT	2577150	1871650	1312000	1846500	1622000	1089600
Profit Before Tax	2352150	1646650	1087000	1621500	1397000	864600

If the company was able to change the selling price per unit as the market price of fixed and variable cost has been increased so far the company would a sound profit over the six year though it would have decreasing trend but with positive value. Profit would have highest figure in the year 2002/03 of Rs.2352150 and lowest at year 2007/08 i.e. Rs.864600.

2. If selling price were lowered by $33\frac{1}{3}\%$, then

Sensitivity of Profit Analysis						
Year	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08
Sales Unit	47825	41270	35925	40520	41250	40926
Selling Price per unit (Rs.)	50	50	50	50	50	50
Total Revenue	2391250	2063500	1796250	2026000	2062500	2046300
Total Cost	2430350	2480350	2505500	2430500	2728000	3228000
Profit Before Interest & Tax	185900	(358150)	(484250)	(179500)	(440500)	(956700)
Profit Before Tax	(39100)	(583150)	(709250)	(404500)	(665500)	(1181700)

If sales unit remains constant if the selling price is lowered by 33.33% the sales revenue has drastically lowered and the so as the profit before tax are all in negative. It is all due to sales units remains the same as with the original selling price.

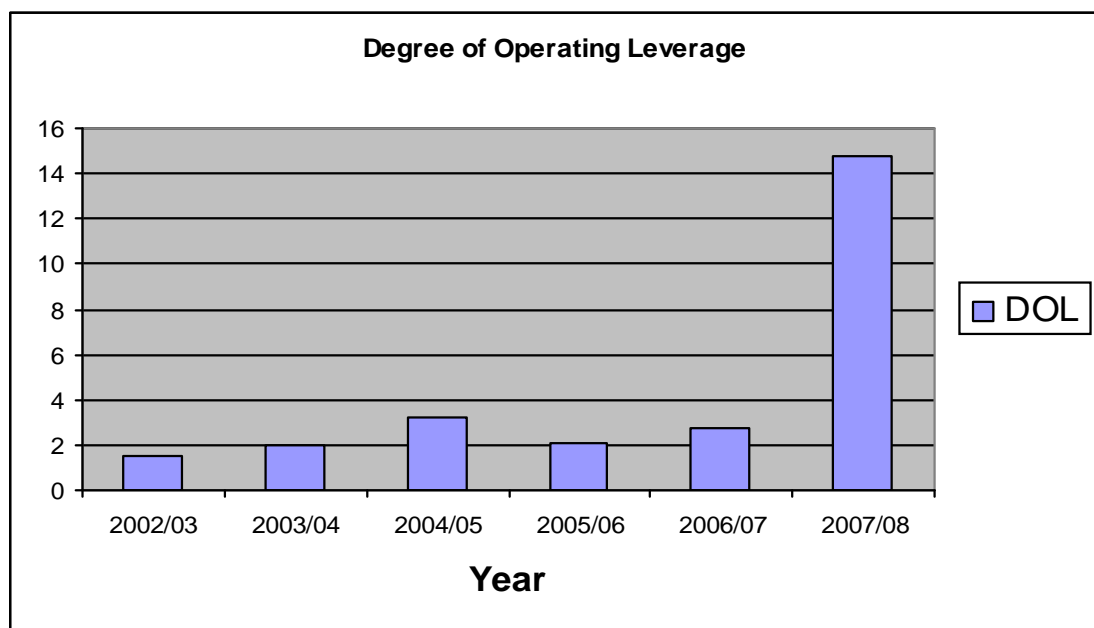
4.8 Leverage Study

4.8.1 Degree of Operating Leverage

Table No.15						
Degree of Operating Leverage						
Year	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08
DOL	1.51	2.02	3.19	2.09	2.70	14.74

The degree of operating leverage has an increasing trend it has been increased by almost 13.23 times over last six years i.e. almost 876% and this is the unsatisfactory result and it reflects that the fixed operating expenses have been underutilized and the organization should have idle fixed assets and fixed cost bearing elements must be idle.

Chart No.13



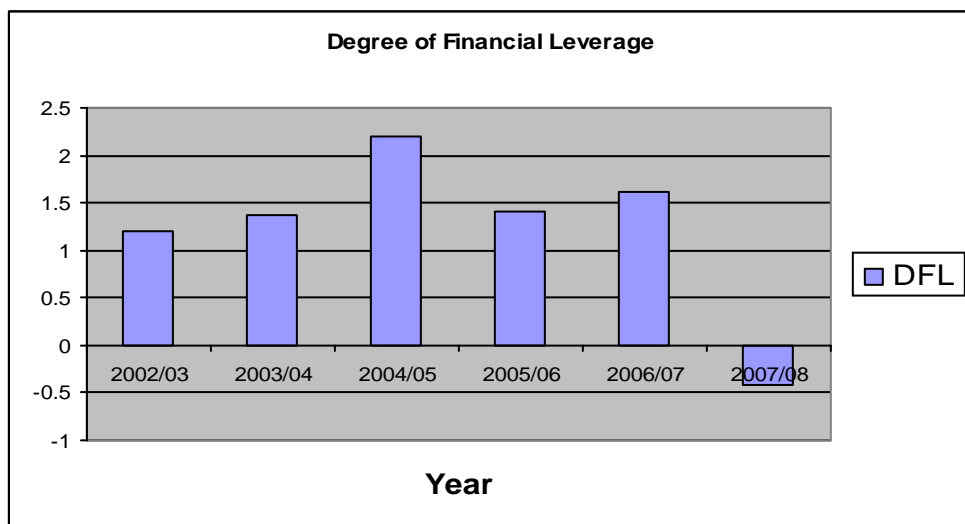
The trend of degree of operating leverage has highest violation among the entire studied ratio and it reached at the highest level in the year 2007/08 i.e. 14.74 times. It reflects that every percent changes in the sales will effect 14.74% change in EBIT and the at the least utilization of the fixed cost.

4.8.2 Degree of Financial Leverage

Table No.16						
Degree of Financial Leverage						
Year	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08
DFL	1.2	1.37	2.19	1.40	1.61	-0.42

Degree of Financial Leverage seemed constant over the period and the increased during the middle of the period and it has negative value in the year 2007/08 and it is due to negative EBT. The financial leverage showed an increasing trend and it is also an unsatisfactory result and it reflects that the fixed financing expenses have been underutilized that the debt capital has not been properly utilized.

Chart No.14



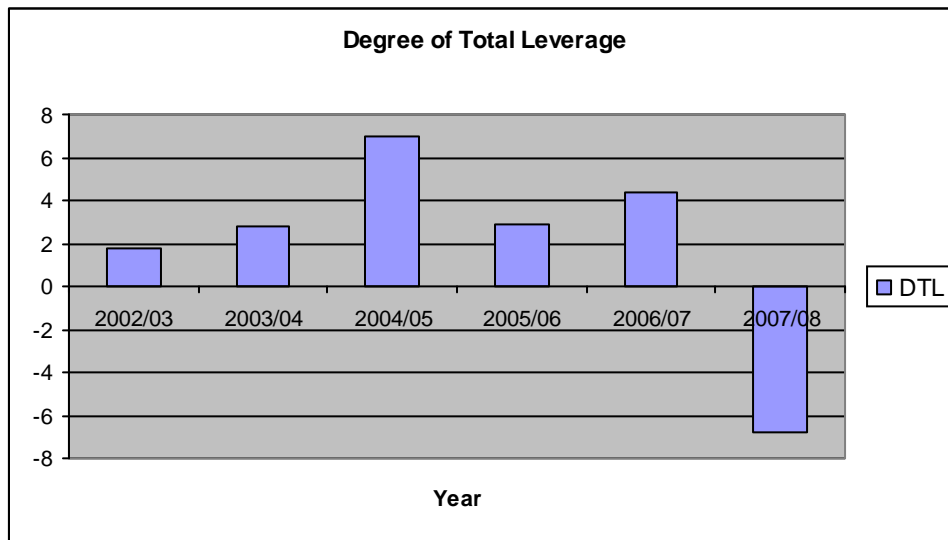
The trend of degree of financial leverage has lowest violation among the entire studied ratio and it reached at the highest level in the year 2004/05 i.e. 2.19 times. It reflects that every percent change in the EBIT will effect 2.19% change in EBT and the at the least utilization of the fixed cost.

4.8.3 Degree of Total Leverage

Table No.17						
Degree of Total Leverage						
Year	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08
DTL	1.81	2.77	6.99	2.93	4.35	-6.76

Since both the operating and financial leverage has an increasing trend it is obvious that the DTL will also in increasing trend. But it send lowered in the year 2005/06 and 2006/07 but negative figure in the year 2007/08 due to negative EBT in that particular year.

Chart No.15



Since both the operating and financial leverage has an increasing trend it is obvious that the DTL will also in increasing trend. But it send lowered in the year 2005/06 and 2006/07 but negative figure in the year 2007/08 due to negative EBT in the particular year.

4.9 Statistical Analysis

In this study some statistical tools have also been used beside the cost measuring tools and the results and studied are presented below.

4.9.1 Average Study

	Break Even Point (units) Financial	Actual Sales	Profit Before Interest & Tax	Profit After Interest and Tax
Average	30884	31.50	5.42	7
Standard Deviation	7775	2.6	3.63	4.32

Above table presents that the average break even till last six year is 30884 units of sales and the Actual sales in term of Rs.31.50 lakh and the profit before Tax and after tax in average is 5.42 and 7 lakhs respectively.

4.9.2 Correlation Coefficient

Correlation (Karl Personian) Coefficient between the sales and the profit before Interest and Tax.

Table No.19		
Correlation Coefficient		
Correlation between sales and the profit before interest and tax	Probable Error	6 P.E.
$r = .77$	P.E. = .11	= .66

The correlation coefficient between sales and PBIT is in high degree positive correlation that the trend of the sales and the PBIT is of high degree of the positive correlation. The r shows the high degree of positive correlation. It can be clearly express as follows:

Every 1% change in the sales revenue effect 77% in the profit before Interest and Tax which expressed a quite high rise. The above correlation coefficient has probable error of 11% and significance test has showed rather suspicious result through the result is significant because r is still less then 6P.E.

Correlation coefficient between the sales and profit before tax

Correlation between sales and the profit before interest and tax	Probable Error	6 P.E.
$r = .73$	P.E. = .11	= .66

Since the company has fixed and constant interest of Rs.2000000 the correlation between sales and the profit before taxes same as the Profit before Interest and Tax.

The correlation coefficient between sales and PBT in high degree positive correlation that the trend of the sales and the PBT of high degree of the positive correlation.

The r shows the high degree of positive correlation it can be clearly express as follows:

Every 1% change in sales revenue effects 73% in the profit before tax which expresses a quite high risk. The above correlation coefficient has probable error of 11% and significance test has showed rather suspicious result through the result is significant because r is still less then 6P.E.

4.9.3 Regression Analysis

4.9.3.1 Times Series or Regression Analysis between Sales units and Time

$y = a - bx$

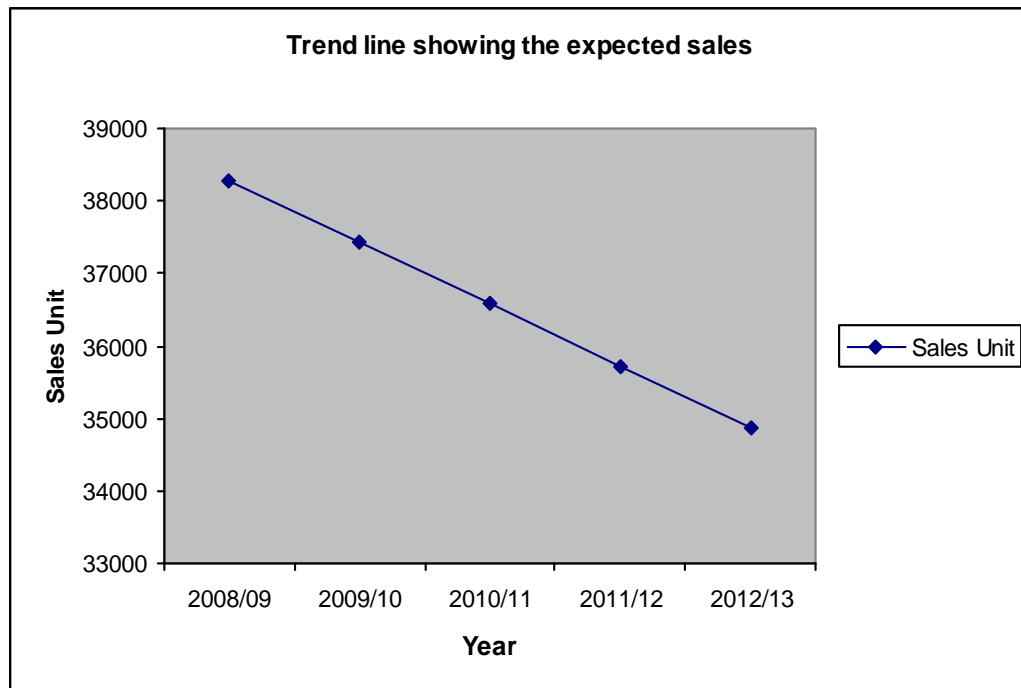
Where,

Y is the total sales revenue and the x is the time factor.

Here,

Table No.20	
Expected Sales Values using time series trend	
Year	Y = 1755426-856 *X
2008/09	38290
2009/10	37434
2010/11	36578
2011/12	35722
2012/13	34866

Chart No.16



The trend line study clearly specified that the annual sales are being in decreasing trend at 856 units per year which has expressed as the b in the above trend analysis and the table presented above shows the expected sales level for next five years. The trend line shows the downward slope due to the decreasing sales level.

4.9.3.2 Regression Analysis of Profit before Interest and Tax and Time factor

$$y = a - bx$$

Where,

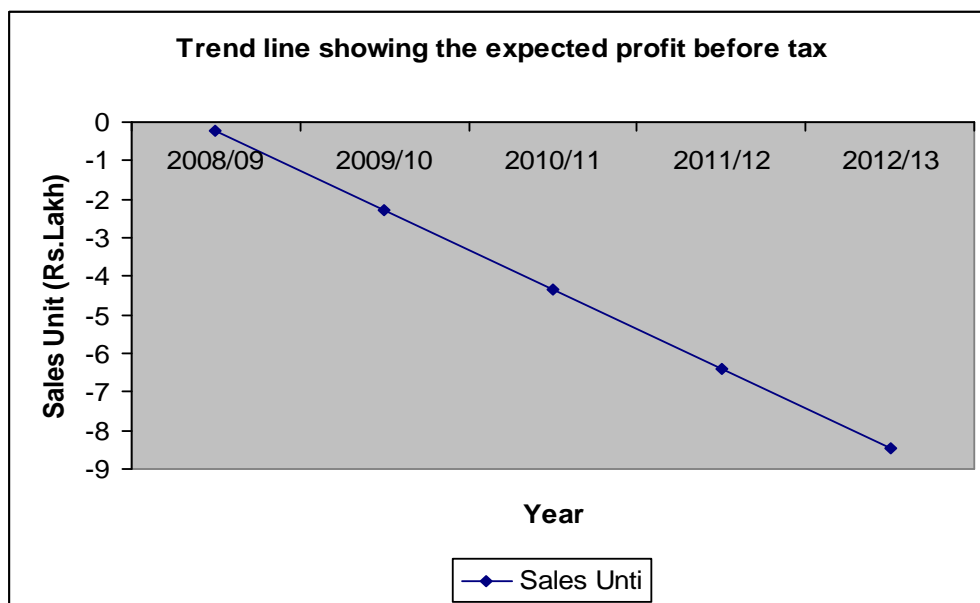
b is the annual change in the profit before interest and tax and x is the time factor and lastly y is the profit expected.

Here, $Y = 14.20 - 2.06 * X$

Table No.21		
Expected Profit before Tax		
Year	X	$Y = 14.20 - 2.06 * X$
2008/09	7	-0.22
2009/10	8	-2.28
2010/11	9	-4.34
2011/12	10	-6.40
2012/13	11	-8.46

The expected profit before Interest and Taxes have presented that the profit may have the negative values during next five years. The profit is decreasing at 162000 every year as per trend analysis says.

Chart No.17



Expected profit has decreasing trend over next few years that it may have downward slope of the profit curve.

4.10 Major Findings

1. Fixed cost as well as variable cost per unit is in increasing trend and the impact of this factor has been shown in the decreasing trend of the profit and the increasing trend of loss during last six years.
2. Break Even Points are in increasing trend which seems that the company has use higher amount of capacity to over come with break even point.\
3. Selling Price per Unit remained constant over the year which I the one of the main cause for the constant revenue over the period and due to increment in the total revenue could not contribute enough profit.
4. Contribution margin per unit is in decreasing trend due to increasing trend of the variable cost per unit and it is all due to increasing price of printing material as well as printing charge.
5. Profit volume ratio is also in decreasing trend due to low contribution margin that can be derived from sales less variable cost.
6. Degree of Operating Leverage is relatively higher in the later period of the study. Financial Leverage remained constant with compared to the Operating Leverage.
7. Margin of Safety is in decreasing trend. Trend analysis showed a negative profit before interest and tax over the next five year. Trend showed that sales revenue is also in decreasing trend.

CHAPTER- 5

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Summary

The main objective of this study is to enhance the lack of study of the Cost Volume Profit Analysis in the organization, which can enhance the performance of the organization and take a significant look on the cost utilization. Major finding that this study showed are as follows:

Fixed cost per unit has been increased from Rs.17.88 to 24.51, which almost 37% increment over year 2002/03 in year 2007/08. Variable cost has been increased from Rs.28.22 to Rs.48.87, which is almost 73% increment during its six years of life span. Since variable cost per unit and the fixed cost per unit are in increasing trend total cost is also in increasing trend. Since the actual sales unit are in decreasing trend i.e. the unit sales has decreased form 47825 units to 40926 units which means the total sales revenue in terms of Rupees is also in decreasing trend. Fixed operating cost is in increasing trend, which is increased by Rs.147.650 during six year or from year 2002/03 to 2007/08. Fixed cost is Rs.855350 in year 2002/03 where as Rs.1003000 in year 2007/08 which is 17.20% increments over six year period of life span. Fixed financial cost i.e. interest remained constant over the year at Rs.225000.

Break Even Point _{Operating} in units has increased to 38385 units during its six years experience from the beginning break even point of 18285 units of sales, which shows 20100 units increment i.e. 110% increment in past six years. Financial break even point has increased from 23094 units of sales in year 2002/03 to 46996 units of sales in year 2007/08 which is almost 103% increment over the base year i.e.2000. The profitability of the company is in decreasing trend since year 2002/03 and the profit before tax has decreased drastically from Rs.1255525 to

Rs.(158550) in year 2005 i.e. sales has been decreased by almost Rs.1414075 since last six years.

The margin of safety was quite higher in the initial stage of the company and it has decreased to the (6070) units from 24731 units, which are quite amazing and unbelievable and company seemed unsecured regarding safety margin. The profit volume ratio has decreased to 34.84% from the initial 62.24% which reflect that the profit margin on the selling price is dramatically decreasing which may also reflect that the variable cost is in increasing trend or selling price has not increased as the variable cost increased.

Since the internal environment of the business can be controlled if studied well and define well. This study is all because there is lack of study and analysis of the cost while company is making decision regarding the cost and profitability. Contribution margin has decreased by almost 50% during last six years and which shows the increasing trend of the variable cost rather than the selling price per unit. During year 2002/03 to 2006/07 CMPU seems quite satisfactory and lied between Rs.36.73 to Rs.46.78 but in year 207/08 it seem drastically lowered to Rs.26.13.

The degree of operating leverage has an increasing trend it has been increased by almost 13.23 times over last six years i.e. almost 876%. Degree of financial leverage seemed constant over the period and the increased during the middle of the period and it has negative value in the year 2007/08 and it is due to negative EBT. Since both the operating and financial leverage has an increasing trend it is obvious that the DTL will also in increasing trend. But it send lowed in the year 2005/06 and 2006/07 but negative figure in the year 2007/08 due to negative EBT in the particular year.

5.2 Conclusion

In conclusion, above study has been clearly expressed that the cost volume can inform organization distinct information for the cost status of the company. The point wise conclusions those have derived from the study are as follows:

- a) Fixed cost is in increasing trend that the fixed cost is not being utilized to its optimum level or the capacity utilization is in decreasing trend.
- b) Variable cost per unit is also in increasing trend which will affect the contribution margin per unit and the over all profitability of the company.
- c) Actual sales is in decreasing trend so that it will lower the contribution margin and it will affect the power of bearing fixed cost by the company and the company expressed itself toward the loss.
- d) Fixed cost seemed in increasing trend and company seemed fail to control the fixed cost bearing expense heads like rent, salaries and other.
- e) Fixed financial cost interest seemed fixed or constant over the period that reflects the company has not redeemed its debt during six years.
- f) Break even point is also in increasing trend and it reflects that company has to work harder in the year than its previous year to achieve break even point or null profit.
- g) Margin of safety is in decreasing trend that it reflects that company's safety has been lowered over the year.
- h) Profit volume ratio is also in decreasing trend which reflects that the over all profitability is in decreasing trend or the variation between sales and the variable cost is in decreasing trend.
- i) Operating leverage ahs been increased drastically over the year that reflects the fixed cost has not been utilized properly over the year and its utilization is in downward slope.
- j) It is common that every job should be done after knowing the job in its own angle an in perfect way as well as cost volume profit analysis is one of the most important till to dig deep the hidden cost miracles within own organization.

- k) Cost volume profit can be used to measure the effect of factor changes and management decision alternatives on profit. These factors include possible changes in selling price change in variable or fixed cost and expansion or contraction of sales volume or other changes in operating method or policies. Cost volume profit analysis is also useful for problems of product pricing, sell-mix, adding or deleting product line accepting special orders.

More specifically the objectives of cost volume profit analysis appear to be useful principally as a technique for the study because it can be useful fulfilling following objectives:

- i) To forecast the profit accurately.
- ii) To facilitate in the preparation of flexible budget.
- iii) To evaluate the performance of the business. For evaluation the profit earned and cost increased. It is necessary to know the impact of cost on the changed volume of output.
- iv) To enable management in determining the pricing policies.
- v) To enable the charging of overhead to cost production at different levels of operation.

Cost Volume Profit Analysis is a logical extension of marginal costing. It is based on the same principles of classifying the operating expenses into fixed and variable. Now days it has become a powerful instrument in the hands of policy mare to maximize profit.

Earning of maximum profit is the ultimate goal of almost of goal of almost all business undertakings. The most important factor influencing the earning of profit is the level of production (i.e. volume of output). Cost volume Profit Analysis examines the relationship of cost and profit to the volume of business to maximum the profit. There may be a change in the level of production due to many reasons such as; competition, introduction of a new product, trade

depression or boom, increased demand for the product, scarce resources change in the selling price of the products etc. In such cases management must study effect on the profit on accounting of the changing level of production. A number of techniques can be used as an aid to management in this respect: one such technique as the cost volume profit analysis.

5.3 Recommendations

After having above conclusion, the researcher has following distinct recommendations for the betterment of the performance of the business in terms of cost management.

1. The company should try to reduce the fixed cost bearing expenses heads if possible and look after the idle fixed costs.
2. It should try to increase its current operating capacity because it is under utilized over the years.
3. Variable cost markets should be clearly watched and should look after the most probable alternatives of the variable cost market i.e. raw material and labor.
4. Company should try to make higher pricing decision than current selling price, which will contribute to increase the contribution and make the higher profitability, higher profit volume ratio and ultimately higher profitability.
5. It should redeem its debt capital to lower the fixed cost as well as the degree of total leverage and to remove initialization of fixed cost over the period.
6. Above all company should search its market globally for the increase in sales volume, which is the most convenient way to resolve the profit which the company expects to earn.

APPENDIX I

Computation of the Correlation Coefficient between Total Revenue and the Profit Before Interest and Tax				
Total Revenue(X)	Profit Before Interest and Tax (Y)	X ²	Y ²	XY
37	15	1369	219	548
31	8	958	71	260
27	4	726	17	112
30	9	924	78	268
31	6	957	35	183
31	1	942.2	0	20
186.92	42.7	5875.9	420.2	1390.89

$$\text{Correlation Coefficient } X \left(\frac{n \sum xy - \sum x \sum y}{\sqrt{n \sum x^2 - (\sum x)^2} \sqrt{n \sum y^2 - (\sum y)^2}} \right)$$

$$\text{Correlation Coefficient } X \left(\frac{6 \times 1390.89 - 186.92 \times 42.7}{\sqrt{6 \times 5875.9 - (186.92)^2} \sqrt{6 \times 420.2 - (42.7)^2}} \right)$$

$$\text{Correlation Coefficient } X \frac{350.5675}{455}$$

$$\text{Correlation Coefficient } (r) X 0.77$$

Calculation of Probable Error

$$PE X 0.6745 \sqrt{\frac{1 - r^2}{n}}$$

$$PE X 0.1121$$

APPENDIX II

Computation of the Correlation Coefficient between Total Revenue and the Profit Before Tax				
Total Revenue(X)	Profit Before Tax (Y)	X ²	Y ²	XY
37	12.6	1369	158	463
31	6.2	958	38	190
27	2.0	726	4	54
30	6.0	924	36	182
31	4.0	957	16	124
31	-1.6	942.2	2.51	-48.67
186.92	29.12	5875.9	254.51	964.33

$$\text{Correlation Coefficient } X \frac{6 \mid 964.33 \mid 186.92 \mid 29.12}{6 \mid 5875.9 \mid (186.92)^2 \sqrt{6 \mid 254.51 \mid (29.12)^2}}$$

$$\text{Correlation Coefficient } X \frac{347.61}{476}$$

$$\text{Correlation Coefficient}(r) X 0.73$$

APPENDIX III

Time Series Regression Analysis between Time and Sales in Units

Time (X)	Sales Unit(Y)	X ²	XY
1	47825	1	47825
2	41270	4	82540
3	35925	9	107775
4	40520	16	162080
5	41250	25	206250
6	40926	36	245556
21	247716	91	852026

$$b_X = \frac{6 \mid 852026 \mid Z \mid 21 \mid 247716}{\sqrt{6 \mid 91 \mid Z \mid (21)^2}}$$

$$b_X = 8768.78$$

$$a_X = 1755426$$

Time Series Regression Analysis between Time and EBIT

Time (X)	EBIT (Y)	X ²	XY
1	15	1	15
2	8	4	17
3	4	9	12
4	9	16	33
5	6	25	30
6	1	36	4
21	42.7	91	110.884

$$b_X = \frac{6 \mid 110.88 \mid Z \mid 21 \mid 42.7}{\sqrt{6 \mid 91 \mid Z \mid (21)^2}}$$

$$b_X = 2.06$$

$$a_X = 14.20$$

APPENDIX IV

Computation of Average Break Even and the Standard Deviation

Break Even Units (X)	X ²
23094	533332836
26297	691532209
30779	947346841
26348	694217104
31791	1010667681
46996	2208624016
185305	6085720687
Standard Deviation = 7775	
Mean (Total BEP divided by N) = 30884	

APPENDIX V

Comparative Summarized Income Statement of PC-Info for last six years

	Year	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08
	Sales Unit	47825	41270	35925	40520	41250	40926
	SPPU	75	75	75	75	75	75
	Sales	3685875	3095250	2694375	3039000	3093750	3069450
Less	Variable Cost	1350000	1400000	1375000	1300000	1500000	2000000
	CM	2335875	1695250	1319375	1739000	1593750	1069450
Less	Fixed Cost	855350	855350	905500	905500	1003000	1003000
	EBIT	1480525	839900	413875	833500	590750	66450
Less	Interest	225000	225000	225000	225000	225000	225000
	EBT	1255525	614900	188875	608500	365750	-158550
	CMPU=CM/Sales Unit	48.84	41.08	36.73	42.92	38.64	26.13
	PV Ratio = CMPU/SPPU	0.65	0.55	0.49	0.57	0.52	0.35

Break Even Point Calculation

Year	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08
BEP operating units	18288	20823	24656	21099	25960	38383
BEP financial (units)	23098	26301	30782	26341	31784	46993
VCPU	28.23	33.92	38.27	32.08	36.36	48.87

APPENDIX VI

Total Sales and the cost per unit and selling price per unit

Year	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08
Sales Unit	47825	41270	35925	40520	41250	40926
SPPU	75	75	75	75	75	75
VCPU	28.22	33.92	38.27	32.09	36.36	48.87
Fixed Cost Per Unit	17.88	20.73	25.21	22.35	24.32	24.51
CMPU	46.78	41.08	36.73	42.91	38.64	26.13

Contribution Margin Per Unit						
Year	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08
Contribution Margin Per Unit (CMPU)	46.78	41.08	36.73	42.91	38.64	26.13

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