

CHAPTER 1

Introduction

1.1 Background of the Study

“Wedged strategically between China and India, the kingdom of Nepal is characterized by rugged topography, ethnic diversity and a predominantly agricultural economy. The country spans 147,181 square kilometers, and has three main geographical areas: high mountains bordering Tibet, the middle hills, and the plains (Terai) belt in the south. Geographically, Nepal lies in 26° to 30° north latitude and 88° 5' to 88° 12' east latitude with the length of 885 km and width ranging from 144 km to 240 km. Over 80% population of Nepal depends on the agricultural sector for their livelihood. However low productivity of this sector is one of the reasons for Nepal to remain one of the least developing countries in the world prospects for overall economic development of the country will depend upon the transformation present economy to industrial economy within the political scenarios.” (Nepal & Dahal, 2004: 142)

Approximately 38% of Nepalese live in under poverty. As per World Bank Development Report, 2007, the per capita income is estimated to Nepal \$270 and the consumer price is rose by 7%. There are no basic infrastructures in rural and semi urban communities. Almost every country in South Asia is in the grip of the vicious circle of the shortage of foreign exchange resources, obligation of rising interest payments on foreign debt as well as huge deficits in their balance of payments. The rising trade imbalance is basically caused by a rapid increase in import of goods and a slow growth in export. The account balance of Nepal in 2005 is US \$ 197millions. According to current census data, 59% of adults are illiterate, 74% of them are women Nepal’s markedly difficult geography coupled with a history of poor development performance by bilateral and multilateral foreign donor agencies have mired this developing nation is difficulties.

The geographical location and social economic pattern of the country also demand the development of small scale cottage industries. The manufacturing industries contribute only 2.6% in GDP of the country in the fiscal year 2004/05. The contribution of industry is 1.4% in the fiscal year GDP in 2004/05. From the fiscal year 2060/061, more than 1,538,762 people were employed in the small and cottage industries and there was Rs.95.62 billions (i.e.95 Arabs) capital invested.

The fiscal year 2005/2006 couldn’t be satisfactory in terms of national economic activities. During the year, the growth of agricultural sector, which makes up the major chunk of the national income, fell far short of expectation. Likewise, the growth rate of non-agricultural sector also remained nominal as industries faced difficulty in operation due to deteriorating security situation in the country. This decreased the growth rate to 1.9% in the fiscal year 2005/2006 from 2.7% in the fiscal year 2004/2005. During the first eight months of the fiscal year 2005/2006, total trade deficit increased by 37.1% to Rs 74.17 billions because of the increased import. During the same period of the fiscal year 2004/2005, total deficit

rose by 7.4% to reach Rs54.1 billions. An agreement between Nepal and China was signed to provide custom free facilities in the goods exported from Nepal to China on March 15, 2006 includes primary agricultural goods, animal products, construction materials and consumption goods. It also includes handmade materials. “The government has made the legal provision for the nonresident Nepalese to provide unlimited visa and provide other trading facilities and rights. Similar to those for the Nepalese till they invest in Nepal.” (Dual Citizenship to NRN by Government in 2006/2007).

Table no. 1.1.

Nepal foreign trade with India:

Fiscal year	Export%	Import%	Value of trade%	BOT (X-M)
2004/2005	24.62	53.55	78.17	(28.93)
2005/2006	29.91	72.17	102.08	(42.26)

Export to India by 21.5% in 2005/2006 whereas import by 34.8%.

Table no. 1.2.

Nepal foreign trade with other countries:

Fiscal year	Export%	Import%	Value of trade%	BOT (X-M)
2004/2005	13.15	38.73	51.48	(25.18)
2005/2006	13.40	45.31	58.71	(31.31)

Export to other countries increased by 2% whereas import by 18.2%.

“Nepal’s trade deficit with India widened further by Rs39.69 billion, whereas with other countries it expanded to Rs27.41 billion during the fiscal year 2005/2006. Slowdown in external demand for Nepali goods, long hours of load shedding, and the prolonged period of unrest in Terai among others factor accounted for the poor performance of the export sector in review period, states a Nepal Rastra Bank report on the current macro economic situation. So, during the first seven months of 2006/2007, total exports fell by 3.9% per cent to Rs.35.67 billion, in contrast to an increase of 12.2% in the corresponding period of 2005/2006.” (The Himalayan Times, April 12, 2007)

“High government expenditure has pushed the budget to Rs 9.81 billion deficit, in the first five months of 2007/2008. Similarly, total imports grew by 1.5% compared to growth of 10 % in the last year. While imports from India rose by 2.4% in the review period, imports from other countries were at the same level of 9.2%. But, total exports fell by 6.9% as against a rise of 0.2% in the corresponding period last year. Of the total exports, export to India plummeted by 9.3% compared to a growth of 0.9% in the same period of 2006/2007. Exports to other countries also posted a decline of 1.4%. The decline in the exports to India was primarily attributed to the decrease in the exports of vegetable ghee, toothpastes, chemicals, textiles and wire. Similarly, exports to other countries also dropped arising from the lower exports of woolen carpet, pashmina, readymade garments, Nepali paper and paper products and tanned skin.” (The Himalayan Times, January 25, 2008)

“The Government has revised GDP growth to 4.5% from its earlier projected of 5%. Launching a mid-term budget review, Finance Minister Dr Ram Sharan Mahat said all micro

economic indicators are looking up despite the unrest in Terai and our presumption of economy doing bad.” (The Himalayan Times, March 6, 2008)

Despite some changes brought about the policies and other performs initiated in the past, the contribution of the industrial sector in the GDP has not exceeded by 10% in terms of industrial units. However, in developing country like Nepal, industrialization is the most essence of rapid economic development. Industrialization increases the value of agricultural products and helps to shift the human resources from agriculture to industries. More than 90% of the industries fall under cottage and small scale categories such industries have contributed over 76% of employment in the industrial sector and 50% in value addition. The number of registered cottage and small scale industries and the value of fixed assets of those industries increased by 12.6% and value of fixed assets by 80.2% in the fiscal year 2004/2005 than in 2003/2004. Thus, there is a huge potential for using the development of small scale and cottage industries as important means for poverty alleviation. So the significance of the small scale and cottage industries to promote like handicraft and enhance the life of rural and urban poor in the country cannot ignore.

Some experts and intelligences say Nepal has insufficient physical infrastructures and resources. However the important point is that the reason behind Nepal’s under developed is due to lack of proper utilization of available resource. For the productive and effective utilization of resource, there must be proper plan control system. Profit Planning and controlling is used an important tools for same purpose which helps to achieve desired goals and objectives according to its plan and control criteria.

Present in Nepal, most of manufacturing organization are dealing so many obstacles i.e. political scenario and lack of large number of managers and correct managerial decisions. Most of organizations are incurring loss and to live them profit earning is life blood for them. So, profit motive being the most dominant, achieving objectives of the business organization.

Without profit planning tools, the business organization can’t forecast sales to achieve set up goal. Profit planning is a comprehensive plan expressed in financial terms by which an operating program is effective for a given period of time. Business managers are continually involved in planning, organizing and controlling the operation of both large and small business organizations. Budgeting is the one of the most important management tools used to plan and control business operation.

A budget is a detailed plan expressed in qualitative terms that specifies how resources will be acquired and used during a specified period of time. The products used to develop a budget constitute a budgeting system. (Hilton, 2000: 404).

Budgeting or profit planning is an estimation and predetermination of revenue and expenses that estimate how much income will be generated and how it should be spent in order to meet investment and profit requirements. In the case of business operation it presents a profit for spending income in a manner that does not result in a loss. Once it is developed, managers know when actual expenses exceed the limit and how much money remains to be spent in each expenses category.

Profit planning is a management technique and a business budget is such a written plan, in which all aspects of business operation with respect to a definite future periods are included and is a formal statement of policy, plan and objectives and goal estimated by the top management in respect of same future period.

The main objective of a business firm is to make an excess of revenue over expenses so as to maximize profits. But it is not a matter of dream or chance. Budgeting or profit planning, if followed properly, can increase the chances of making profit within the given environment. A systematic budget should encompass the procedures of evaluating the business environment, setting objectives, setting specific goals, identifying potential strategies, communicating the planning guidelines, developing long term and short term plans, implementation of budgets and periodic performance reporting and follow-ups. The profit plan should be regarded not as a master, but as a servant. It is one of the best tools yet devised for advancing the affairs of a company and the individuals in their various spheres of managerial activity.

Cost Volume Profit (CVP) is the powerful tool or technique of profit planning and controlling of cost for the management accounting. Moreover cost volume profit analysis is a supplementary tool of profit planning, it tells many things about the relationships between the business variables. It shows the chain relationship among cost volume and profit. The main objective of CVP analysis is to have a fair estimate to total cost, total revenue and profit at various sales output volumes. Management can estimate easily that what should be the required sales of the company to get desired profit and profit can be estimated in different expected sales volume. Therefore for managerial decision CVP is greatly helpful especially cost control and profit planning.

Profit doesn't happen by chance. It is to be managed. CVP is a supplementary tool of planning for profit cost volume profit analysis is immensely helpful for developing alternative strategies in sales planning and the cost estimation. A certain relationship exists between the variables like selling price, sales volume, expenses and taxes. Cost volume profit analysis is an accounting technique showing the relationship between these variables. This technique is applicable in all economic sectors (manufacturing, whole selling, retailing, and service industries), because the same types of managerial functions are performed in each type of organization.

It also determines the breakeven point where the sales level at which revenue equal expenses and net income is zero. Cost volume profit is sometimes referred to simply as break even analysis.

Success is not a matter of chance i.e. profit doesn't just happen and it is to be planned and managed. Nowadays most of the manufacturing business organizations are failing just starting after some years due to starting manufacturing products without thinking what and how to be produced to achieve desired profit? And what fixed and variable cost to be happened? In another sense, there are lack of managerial decisions technique. Hence, a company might use CVP analysis as a planning tool to reach the desired profit with cost

control purposes in the level of different departments in the manufacturing field. After a certain period of time i.e. one year a company analyses sales value and related actual costs to find actual profit. A company measures performance by comparing actual cost with expected cost. Expected costs are computed by CVP analysis to the actual sale volume. The results thus will be fruitful to use the CVP analysis in profit planning and controlling of manufacturing industries. Moreover, CVP is also known as complementary to PPC. So, Profit Planning can be done only when the management has the full information about the cost and selling price of the products.

1.2. SAARC and Global Economy Brief

In 2007, the global economy has grown by 4.9% per cent, 0.5 percentage point less compared to the growth achieved in 2006. In 2006, the growth rate of South Asia was 8.7 percent. All the SAARC countries except India are producers and exporters of primary products. The trades of these countries are primarily with the developed industrial nation with limited intra-regional trade. SAARC, that occupied 20 percent of the world's population, holds only percent of the global trade volume, while its imports are limited to only 1.2 percent. Trade within the region is than 2 per cent of the GDP, in contrast to East Asia where it is 20 percent and above. The cost of trading across borders is probably the highest in the world. Its combined agricultural and industrial output is hardly 3 percent of world's total. The total export of South Asia is less than one half of Hong Kong or South Korea or China and hardly two thirds of the exports from Singapore. Bangladesh, India, Pakistan, and Sri Lanka have continuing sizeable deficits on current account while Hong Kong, South Korea and Singapore have registered surplus and there is an ample slope for significant expansion of trade exchanges among Asian Countries. Investment ratios are low in each of these countries for development. The elimination of trade barriers between India and Pakistan could help to increase to more than US\$6.5 million while it is at present only worth around US\$400 millions. As estimated informal trade, through West Asia between the two countries is US\$ 2 billions. Regional imbalances in agriculture and industry have also to be removed. Promotion of an Intra regional investment would be a blessing for many small countries like Maldives. Establishment of regional stock exchanges and banks is a precondition for developing a global finance centre in the region. SAARC economies are agrarian and economically backward. They present a case of symmetry. Economic scenario is not homogeneous. Mass poverty and poor use of resources are the common problems of all the member countries. Their vulnerability to external markets is high because of their mono-cultural economies and limited export base, underdeveloped infrastructure, low levels of human resources development and lack of access to capital markets. Poverty notwithstanding, countries in the region are growing at the rate of 5 per cent and more. As per WDR, 2007, National poverty line in the region is as of: Bangladesh 49.8% (2000), India 28.6 % (1999-00), Nepal 30.9 % (2003-04), Pakistan 32.6% (1998-99) and Sri Lanka 25% (1995-96). Thus considering poverty the root cause of underdevelopment in the region. All the SAARC economies are marked by excess liquidity and increasing rates of inflation. The average rate of growth in money supply is much higher than desired primarily due to expanding of domestic credit, particularly in the

government sector. Of the world population 6,438 million (2005) South Asia has 1,470 million populations with 308 people per sq.km. Among the SAARC countries Maldives is the most density populated country with 1,097 people per sq. km, followed by Bangladesh 1090, India 368, Sri Lanka 303, Pakistan 202, Nepal 190 and Bhutan 20. Except to Bhutan all the SAARC countries have higher population density. The production structure is largely traditional in almost all the SAARC countries. Value added as percentage of GDP (agriculture, industry and service) in the region in 2005 were as of Bangladesh 21,28,52; India 19,28,54; Nepal 40,21,38; Pakistan 22,25,53 and Sri Lanka 17,26,57 respectively. In respect of structure of manufacturing, India and Pakistan have experienced significant changes among SAARC countries. In Nepal the manufacturing and industry sector including cottage industries, account for 10 percent of GDP. Almost every country in South Asia is in the grip of the vicious circle of the shortage of foreign exchange resources, obligation of rising interest payments on foreign exchange resources, obligation of rising interest payments on foreign debt as well as huge deficits in their balance of payments. The success of SAARC will depend on how the member states use their machinery, to uplift the socio-economic condition of the people by mutual and unanimous decisions. (Karna, 2064: 103-8)

1.3. Industrial Development in Nepal

Nepal had a late and slow in industrialization development. The development of cottage and small scale industries has a long listing. Ancient and Medieval Nepal witnessed the growth of various crafts and cottage industries. In the period of Lichhavi around 639 AD, cottage industries were smoothly run and existence. Historical monuments reveal that Kautilya, the Indian philosopher, and Hunsang the Chinese traveler, also described about the exports of Nepalese goods to the India and Tibetan markets. During that period, Nepal, had played a role of mediator due to it was a trade centre of India and Tibet and they had no separate and direct transactions to each other.

In Malla period, weaving paper industries, wooden carved works, statue making etc. industries were well furnished. Industrial policy adopted by the Malla rulers was more conducive to the development of cottage industry. Moreover, the great king Prithivi Narayan Shah played the most important role for the development of cottage industries during his regime by encouraging for protecting it from foreign competition. Until cottage and small scale industries were not developed in an organized way and one by one they began disappeared. The influxes of foreign goods in Nepal especially in the regime of Chandra Shamsheer proved to be strychnine for cottage industry. During the Rana regime, while the outside world had undergone in various ways the Kaleidoscopic changes, Nepal was relegated, to a position of deliberate isolation and obscurity and economic planning and development were ruled out as a matter of anachronism. However, the natural calamity, awareness of citizen and the war like situation abroad required some reorientation of the traditional economic policy of the government after 1930. Consequently, in 1935 a powerful development agency by the name of “Udyog Parishad” (Development Board) was constituted. The parishad was entrusted among other things, with the tasks of initiating development in

the fields of agriculture, industry, and commerce. In order to carry out development works in specific fields various specialized agencies like Krishi Parishad (Agriculture Board), Khani Adda (Bureau of Mines), Kathmal Report Adda (Department of Forest), Nepali Kapada Ra Gharelu Ilam Prachar Adda (Dept. of Nepali cloth and cottage skill Advertiment) etc. were also established. But all that was done by these various agencies amounted to nothing more than mere scratching the surface of the problems rooted deep into all pervasive state of economic backwardness of the past decades. The process of development was started with the; establishment of Biratnagar Jute Mill and industrial council in 1936 AD.

Just before the outbreak of the Second World War, there was an announcement of what was then called a 20 year plan in the regime of Juddh Sumsher Jung Bahadur Rana. Nothing was, however, heard of what was done about it in practice until a 'National Planning committee' in the regime of Mohan Sumsher Jung Bahadur Rana was set up in 1947 for formulating a 15 years plan to develop economic sectors in planned way. It was believed that the plan was actually prepared, but it never came to the notice of people and the idea of planning seems to have disappeared along with the dissolution of the national planning committee.

Even after the political change in 1951, Matrika Prasad Koirala also managed to constitute a planning committee but all proved in vain. Economic planning though discussed quite often both within and outside the government, could not take any shape, until a draft outline of the First Five year plan (1956-1961) was announced by the Royal Proclamation of October 10, 1955. It was believed that the draft outline was prepared primarily for its being incorporated in the Colombo Plan when Nepal attended the Singapore Session October 17, 1955 as a full-fledged member country. It took about a year when at last the Second Draft Outline was announced on September 21, 1956. The prime objective of the plan in the field of industrialization was an encourage and revive cottage and small scale industries. (Karna, 2064: 117-118)

The first Industrial Development Corporation was set up in 1959 to create adequate climate for industrial -development. The first industrial policy was announced in 1957. A total of 21 cottage industry centers were opened to provide training in various trades and Balaju industrial District and Royal Nepal Airlines were established. The second plan was for three years (1962-1965) and the fact that the rise of the Panchayat System and the dissolution of Multi Party System in 1960 largely affected the operation of Second Plan and there was a plan holiday of one year from 1961 to 1962. The industrial policy of 1960 was amended to attract foreign investment, facilitate financing of hotels by Nepal Industrial Development Corporation, and provide tax incentives to industries. Birganj Sugar Factory, Janakpur Cigarette Factory and Patan Industrial District were established. The third year plan (1965-1970) emphasized development of industries in both public and private sectors. During the plan period, the growth of cottage and village industries remained virtually standstill. In public sector, new industries were established i.e. Agriculture Tools Factory at Birgunj, Brick and Tile Factory at Harisiddhi, Leather and Shoe Factory at Bansbari, Hetauda Industrial District. The Fourth plan (1970-1975) adopted the concept of regional balance and the manpower planning, during this period one flour mill, one beer factory, one ghee processing

plant and few modern rice mills were established and in public sector machines were installed to increase the capacity of sugar and cigarette industry by 50 percent. Himal Cement Company, Pokhara Industrial District and new designs were developed for cottage industries like wood, metal, paper, decorative products etc. New industrial act was enacted in 1974. In the fifth plan (1975-1980) priority was given to medium and small industries. During the plan period, industrial production increased by 6.7% percent. Hetauda Textile, Bhaktapur Brick, and Agriculture Lime industries were established in the public sector. Butwal Industrial District and the institute of Standards were also established. The sixth plan (1980-1985) had a target to increase industrial production by 10%, emphasized giving to cottage and small industries and export processing zone was also proposed. The achievement of the growth of the industrial production was satisfactory. In the private sector, out of 168 planned industries, only 57 were promoted. The country became almost self-sufficient in biscuits, confectionery, vegetable ghee, laundry soap, polythene pipe, wheat flour, sugar, noodles, matches, soft drinks and paints. Bhaktapur and Surkhet Industrial Districts were established. The industrial policy of 1981 was announced. Excepting defense, it opened-up all the sectors of the economy for private investment, including foreign direct investment. The plan also aimed to increase the efficiency of industries and provided stimulus to locate industries in remote areas. As a result Bhaktapur Craft Printers (BCP) was established in 1981 at Bhaktapur Industrial District as a project of UNICEF. The seventh plan (1985-1990) proposed a long term plan preparation for development of the industrial sector. A total of 159 industries were proposed for promotion in the private sector. A new Industrial development policy was announced in 1987. During the plan period Nepal Orind and Magnsite, Bhrikuti paper and Lumbini Sugar mills were established. Rajbiraj Industrial District was established too.

The Eighth plan(1992-1997) emphasized comparative advantage, liberalization and privatization, foreign direct investment, technical skills, environment protection, modernization, backward and forward linkages, one window system, and regional balance. During this period a total of 1,443 medium and large industries were registered. Similarly, 40,790 cottage and small industries were registered. Also, 238 foreign direct investment projects were promoted. The objectives of industrial development in the Ninth plan (1997-2002) were: increase contribution of industrial production by 14% in gross domestic production, increase production of export-oriented and import-substituting commodities, increase non-agricultural rural employment through cottage and small industries. The key policies were privatization of public enterprises encouragement to foreign investment, leading role to private sector, reform in legal framework and encouragement to clean technology. During this plan period, industrial production growth was 13.2% and training was provided to 112,676 persons for the promotion of cottage and small industries. The plan severely disrupted by the adverse domestic and external developments aforementioned. In Nepal so far nine plans have been completed and tenth plan is in operation. The Current Tenth Plan (2002-2007/08...) also came in the form of window dressing. It was a perspective plan as everything has good and bad aspects; this plan also has a good and bad aspect. This plan is under implementation. The matter that how for this plan will achieve its objectives is still on in the womb of the future. (Agrawal, 2005: 99-112)

To conclude recent plans in Nepal are becoming more ideological in their scheme for socio-economic growth, low per capita income, mass poverty, weaker social indicators underdeveloped physical infrastructure and high cost economy leading to higher cost of production are some of the pertinent economic challengers at present in Nepal. Effective solutions to ensure an inclusive, just and high economic growth on a sustainable basis are to be explored so that sustainable peace and democracy could be institutionalized in the country. Nepal to sustain as a viable economic nation-state in compatible with the spirit of globalization and liberalization needs a fresh mind-set with commonsense paradigm of development. In recent years, market-based economy is leading to K-based economy and digital economy through enhancing efficiency and competition. Therefore, Nepal must make an effort towards a break –through in the economic front.

1.4. Historical Development of Handicraft Industries in Nepal

Handicraft, also known as craftwork or simply is the art of craftsmanship and is a type of work where useful and decorative devices are made completely by or using only simple tools. In another sense, the product made by hand is handicraft and the industry producing the products made by hand is called handicraft industries or craft industries. Handicraft is a occupation of making by hand usable products graced with visual appeal. Handicrafts include such activities as needle work, lace making, weaving, printed, textile decoration, basketry, pottery, ornamental metal working and such crafts as glass blowing and the making of stained glass that require complex facility. Nepal is one of the richest countries in the world with its heritage of artistic monuments made by hand. Handicraft products are one of the incomes generating industry in Nepal.

There is no record of the date of invention of handicraft in Nepal. But when turning the pages of the history of Nepal, it is found that since the early periods of Lichhivis around 639 AD and Kiratas handicraft was started. So many world heritage enlisted temples, monuments, palaces etc. are the glorious examples of such evolution. However, it would not be other wise to say that the golden days blaze for the development of handicraft in Nepal were the days of Malla regime. In this period, most of the craftsmanship was found splendid. And for the reason, Nepal is acquainted in the world for its rich arts. The creative skills of Nepalese artisian and craftsmen were reflected in ancient temples, stupas, palaces and work of art and architecture.

While taking the handicraft at the present moment, the People here are still rich for its art. It has been evolved and developed in a hierarchically way. The reason, its handicraft is very popular in the foreign market. Handicraft sector in Nepal is leading industry and contributes 7% to 8% to Nepal domestic product (GDP) so cottage industries in fact are fact better a manufacturing industries to the national economy because manufacturing industries contribute 3%-4% to GDP. Thus, handicraft industry contributes a big share in a foreign market. Even, strenuous effort of Nepalese handicrafts will lead to strengthen nation's economy by earning the foreign currency. The handicraft industry has vast potentiality for development as well as to earn foreign exchange with less cost to the country.

However, Handicraft industries have been operating since historical period; no new technologies were in existence and the product made by hand is handicrafts hasn't been changed yet despite the new technologies are developed in modern times. Handicraft industries like Traditional/Conventional (i.e. metal statues, ethnic customs, traditional silver jewellerys, wood carving, religious and ritual objects, stone sculpture, metal utensil, Paubha painting, ceramic, handmade paper, hand knitwear, filigree products etc.) or Contemporary/Modern handicrafts (i.e. home furnishing materials, floor covering, modern painting and patina products, puzzle toys, macramé's, leather products, gift ware, decorative items, dolls and puppets, bone/horn products natural buttons etc.) are emerging as a very challenging field in Nepal. The products produce in Nepal are mostly exported to foreign countries.

1.5. Meaning of Nepalese Handmade paper and products

In the heart of the Himalayas, Nepali craftsmen have been producing handmade paper for a more than thousand years. Most of Nepalese paper is handmade from the inner bark of the Danphne Cannabina or Danphne Papyracea called "Lokta". Lokta is one of the strongest paper fibers. In Nepal many kinds of Danphen species are available; among them Danphen Bholua is most commonly used to make handmade papers. It is ever green plant of 2 meter height with smooth gray bark. These plants are cut in September, which is beginning of the Lokta harvest. These plants grow in the forests of Nepal at an elevation of 2000 to 2700 meters. The paper has remarkable regenerative characteristics of quickly attaining full of growth once it is cut. Nepalese handmade papers are made from the fiber of the danphen plant. They are harvested without killing the plant at ground level creating a renewable source for raw material. Thus Lokta production does not affect the fragile forest ecology of Nepal and it provides renewable resource for the artisan who depends on the fragile eco-system of Nepal for their livelihoods. The growing stock of Lokta was estimated at about 1,00,000 tons in 1984. Not all of the growing stock is harvestable, as the bulk of it grows in remote and difficult to access areas. (www.nivapaper.com)

Nepalese handmade paper and paper products are acquiring popularity in international market, has occupied 9.36% of the total export of the handicraft items according to Handicraft Association of Nepal in Fiscal Year 2062/2063 BS. Nepalese craftsmen have been making these papers by hand for over a thousand years, utilizing the labor-intensive process today as was used then. It is widely regarded as one of the world's finest papers. These papers are completely natural and acid free. These papers are providing the basis for an expanding cottage industry with an annual turnover of around Rs 10 million. The industry provides direct employment for about 1,500 families, some of them the poorest of the poor, living in remote and backward areas. The entrepreneurs and exporters have been making different designs of product out of these handmade papers. The product differs according to the demand in the market and the preference of their targeted customers. The products that are being made out of these papers: notebooks, calendars, envelopes, photo frame, greeting card sets, journal, writing sets, stationeries and decorative paper products, Recycled paper etc.

1.6. Profile of Bhaktapur Craft Paper Ltd. (BCP)

Since a thousand years, the people of Nepal used natural paper in their daily life for sacred or popular masks for kites etc. The monks of Tibet have always used it for their manuscripts and printing sacred texts. The paper is renowned for its exceptional durability and for its lively and special texture. In 1980 UNICEF's executive boards the foundation greeting cards manufacturing project for community development in developing countries. It was further enhanced in Nepal by the His Majesty Government of Nepal. To improve quality of traditional handicraft goods for developing a growing export market in order to generate employment opportunity source of income for people in lower income brackets in rural and urban settings.

UNICEF agreed to implement its Board proposal in Nepal as a model for community development by utilizing raw materials and traditional technology. Paper making and block printing are major components of cottage industry in Nepal at the establishment period. These activities are extremely old and well established cottage industries in various parts of the country. It is said that art of making came to Nepal via Tibet and its use in Nepal started in 11th -12th centuries. Until about 1,930 handmade paper was the standard paper for used by almost all the people of the Nepal.

Paper making and block printing activities have suffered a sharp decline in the last several years mainly due to changing markets, heavy imports by Tibet. Since 1959, competition from imported machine made paper, and introduction of modern day technology. Recognizing all these factors, UNICEF/ Nepal in line with its policy of fulfilling the basic needs of children by enhancing opportunities for women, came forward with a community development through production of greeting cards project to assist communities engaged in paper making and block printing. Since women are active in paper making and play an important role in the whole production process.

In short, the main objective of the project is to promote community development through income generation activities associated with Lokta collection, paper making and manufacturing of greeting cards, stationeries and other decorative products for employment opportunity for the largest possible number of poor families. The project has already shown a positive impact on the economic conditions of the Lokta cutting paper making and card making families in their income generation.

Bhaktapur Craft Printers (BCP) Ltd. was established in 1981 at Bhaktapur industrial district, Bhaktapur as a project of UNICEF, Nepal under the bilateral agreement between UNICEF /Nepal and Government of Nepal for the improvement of quality of life of low income and to meet the community development objective of urban and rural families through the production of paper production. Although BCP was established in 1981, it came in full operation from 1982.

Since 1995 UNICEF/Nepal has been in tend to turning BCP into a registered company in Nepal. In 1988 approval for this strategy was given by the UNICEF financial comptroller of New York. It was agreed that once certain conditions were meet, UNICEF would hand over the assets of the projects to BCP Ltd. As a registered company. However,

this procedure had to be postponed due to the fact that because of a down turns in international market order and financial position. It was neither possible, nor realistic, for BCP to become a viable, independent company at that time. At present BCP now turned and incorporated into public limited company for its independent and legal entity. BCP has been registered in the then His Majesty Government of Industry Development keeping the name “BHAKTAPUR CRAFT PAPER LTD” (BCP) distributing its shares equally to all existing permanent staffs.

Today a new interest in traditional products has emerged in a public with the monotony of industrial goods. Its paper-craft workshop makes quality greeting cards, stationery sets, notebooks, wrapping paper, bags and envelopes that reflect the traditional of an ancient and original culture. In Bhaktapur, the artistic capital of Nepal, now processes have been introduced utilizing natural vegetables dyes and modern designs. The colors and subtle shades obtained, combined with the “archaic” feel of block printing, give a unique mixture of oriental sophistication and medieval Himalayan tradition.

1.6.1. Goals and objectives

BCP was established to accomplish the following goals and objectives:

- This program confirms to and was developed around, Nepal Government established policy guidelines for poverty alleviation.
- Focuses heavily on Nepal Government poverty alleviation and basic need policies with the objective of promoting women’s participation in income generating activities as a vehicle for the identification, implementation and support of Community Development services for children particularly girls.
- Improve the quality of the life or program beneficiaries and other in the targeted communities, especially children and women.
- Strengthen the delivery of community development activities.
- Promote community self-help in the targeted areas, focusing primarily on the needs of children and women.
- Raise the income poor families in the project areas.
- Increase the capacity of the institution and communities concerned.

1.6.2. Products

The company has been producing the products such as Greeting cards, Stationeries and decorative paper products made of traditional Nepali Handmade Paper and Recycled Paper.

1.6.3. Annual Production Capacity

- a) **Greeting Card:** 240,000 sets of cards (consists of 6 cards and 6 envelopes) in outer envelope of 3 color print in average) Note: volume of production depends on the design of the cards and number of color printing.
- b) **Monthly average capacity:** 20,000 sets
- c) **Per day average capacity:** 800 sets

- d) **Dyeing Papers:** 576,000 sheets in average per year
- e) **Recycled Paper:** 360,000 sheets in average per year

1.6.4. Working days: 288 per year

1.6.5. Working hours: 6:30 hrs a day (7 hrs. a day which include 30 minutes Lunch break)

1.6.6. Market: Foreign and domestic

1.6.7. Raw Materials

The primary raw materials of BCP is traditional Nepali handmade paper and it is produced from the paper makers about five district of western Nepal Baglung, Myagdi, Parbat, Lamjung and Gorkha. With the cooperation and coordination of Agriculture Development Bank/ Nepal, Development of Forest, BCP is receiving handmade paper produced in different districts and it collects about 134.2 metric tons of lokta (raw materials of paper) from the above mentioned districts.

The secondary materials are ink, dyes and packing materials which are readily available in local market. Those are some items imported from India in case of large quantity.

1.6.8. Manpower

BCP has 117 permanent staff (shares holders as well) in total, a total 52% are female and remaining 48% are male. The staffs are well-trained from India in the time of establishment and now are trained in factory itself.

1.6.9. Location

The BCP is located at Bhaktapur Industrial Area, Byasi, Bhaktapur district. BCP has a well developed plot of land with an area of 2.78 ropani (1415 m²) and factory building with floor area of 884.5 m² at Bhaktapur.

1.6.10. Project Engineering

The project itself was designed for handmade works. Most of its processes are directly done by hand and manually. The machines are used for calendaring, cutting, punching and printing works only, whereas the dyeing, folding, gluing, creasing, sorting and assembling are done by hand. It has Six sections in production department i.e. Recycle, Dyeing, Local, Machine, Hand and New Product.

1.6.11. Market Aspect

Bhaktapur Craft Paper Ltd. is producing greeting card, stationeries and other decorative paper products made of Nepali handmade paper and export them in Europe and other foreign markets. Most of its products (more than 80%) are sold to UNICEF Geneva Switzerland and distributed worldwide from there. The market of the products is growing annually because of its renowned, exceptional durability, lively and special texture. In future,

BCP anticipates more achievement by promoting its products in international market and wants to penetrate new foreign markets to supply its products worldwide.

1.6.12. Financial Aspect

Initial investment on the fixed assets of BCP was Rs. 10 million Nepalese Currency. The BCP is working capacity is at 80% capacity and the breakeven point at rated capacity is 48%. The authorized capital is Rs 20 million and the issued capital is Rs 12.8 million.

1.6.13. Socio-Economic Aspects

BCP, as per its objectives of establishment is helping communities to revive and revitalize paper making and block printing as a stimulus to economic and community development. It provides directly as well as indirectly employment opportunity to more than 4000 families both in rural and urban areas.

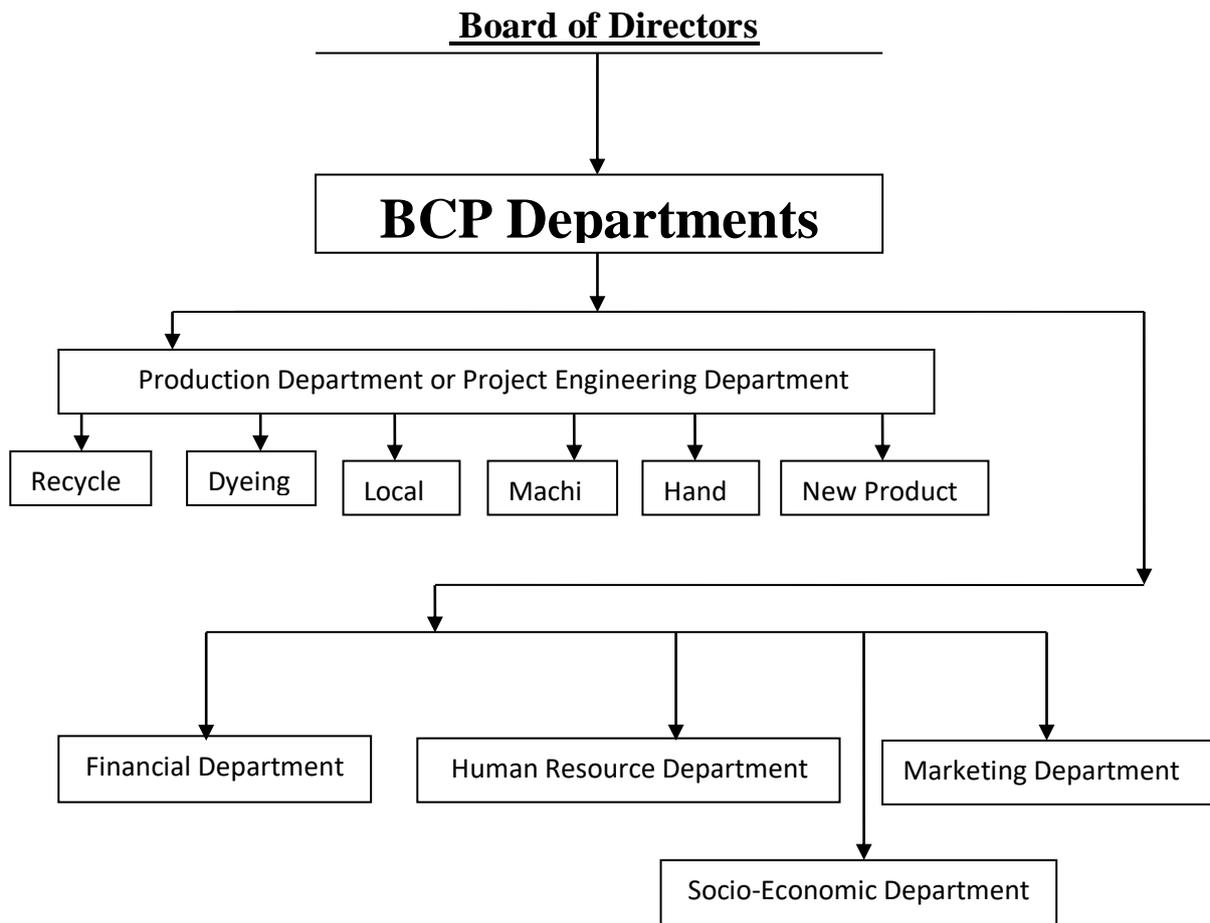
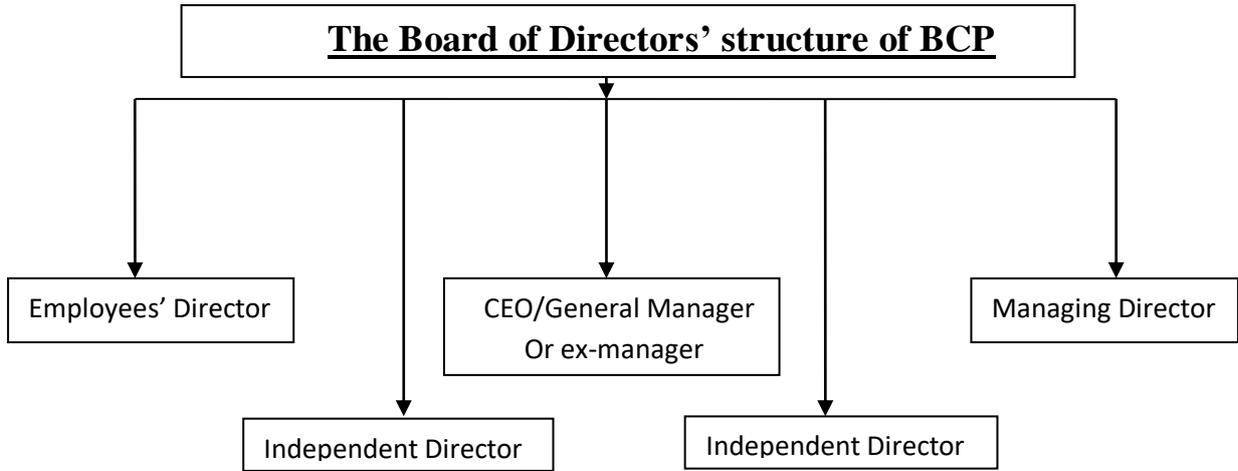
1.6.14. Present Organization and Management

Previously UNICFF/Nepal was looking after BCP and working on behalf of BCP. UNICFF used to make major decisions such as determining the overall plans and goals, approving factory rules and regulations, general working producers, financial regulations, personnel policies, fixing salary of employees, expansion programs etc. Subsequently UNICFF delegated entire authority to General Manager to control and direct day to day operation of BCP. To make sound working environment and to coordinate and execute the entire working system of BCP in decision making process and developing managerial entrepreneur skills, a management committee was formed and a kind of participatory management system was introduced. After the legal entity and turning up BCP to company, the board has been formed to look after overall operational activities.

1.6.15. BCP Board Structure

BCP is managed by Board of Director comprising five members appointed one each by BCP Staff Association and Managerial and Administrative staff of BCP. General Manager of the company shall be ex-officio member of the board. The Board of Director shall nominate to independent directors from outside BCP. Such person must be a non-political person of repute, be graduate of law or management and have minimum 7 years professional experience in managing/advising manufacturing companies or bank.

Figure no. 1.1



Sources: Annual Report of BCP

1.7. Statement of the Problem:

Economic progress has been affected by political instability in all the industrial sectors moreover in the small and cottage industries like handicrafts. None of industrials are doing well. Moreover, the manufacturing sector in Nepal is very small. These manufacturing sectors have not been facing only land locked situation problems but also underdeveloped situation of physical, human, financial and administration network, non availability of trained and skilled manpower, non availability of adequate capital, small size of market, lack of awareness of the industrial potential, higher cost of production, low production of inputs, manpower and technology, instabilities in government policy, turmoil scenario and moist problems.etc.

The major problem may arise is planning and implementation of budgetary program in coordinating individual objectives with international goals and objectives. For effective implementation of budgetary program putting individual and organization goal in a single bowl is necessary so that the entire individual work can be coordinated for the achievement in organization and goal to fulfill their own goals. Organization success is depended for the planning of the company whether sales planning or production planning guides for the future action.

The Nepalese handicraft sectors faces problems relating to production and promotion with effect the future prospect of handicraft export. Bhaktapur Craft Paper Ltd.(BCP) put among in the objectives to improve quality of traditional handicraft goods for developing a growing export market in order to generate employment opportunity and to provide supplementary source of income for people in lower income brackets in rural and urban settings by producing traditional paper. Paper making and block printing are major components of cottage industry in Nepal at the establishment period. These activities are extremely old and well established in cottage industries in varies parts of Nepal. Until about 1930 handmade paper was the standard paper for used by almost all the people of the country.

BCP's paper making and block printing activities have suffered a sharp decline in the last several years mainly due to changing markets, heavy imports by Tibet. Since 1959, competition from imported machine made paper and introduction of modern day vast technology. Instability of government policies and increasing turmoil condition of the country also hamper its production activities. Despite them source of main problem related to Nepalese handicraft industry are as follows.

- a) Sufficient availability of are materials.
- b) Quality control
- c) Market research
- d) Pricing and packaging
- e) Skilled craftsmen and technology are lacking
- f) Problem of inadequate infrastructure
- g) Publicity and promotional measures
- h) Instability of Government policies

- i) Lack of incentives
- j) Facility through legislation

However, this study focuses to examine the CVP analysis of Bhaktapur Craft Paper Ltd. CVP analysis is a management accounting tool to show the relationship between the ingredients of profit planning. Profit Planning is the function of management to manage the revenue, cost and profit. The entire range of profit planning is associated with CVP; therefore, it is also called the complementary of profit planning. CVP analysis provides the techniques of profit planning framework. Poor performance is the outcome of poor planning, controlling and decision making. The question has arisen, Are Nepalese managers competent enough? Do they use CVP analysis tool and technique to carryout planning, decision making and controlling functions? Is the practice of using CVP analysis tool in Nepal for different managerial decisions almost nil? Therefore, this study focuses on the following problems related with CVP analysis of BCP.

- ❖ Is BCP Ltd. practicing CVP analysis?
- ❖ What is the relationship between cost, volume and profit?
- ❖ What is the position of the BEP, MOS, and CM etc of BCP Ltd?
- ❖ What are the major difficulties in the application of CVP analysis?
- ❖ What steps should be taken to improve profit planning in BCP Ltd.?

1.8. Objectives of the Study

The main objective of the study is to capture the problems related with application CVP analysis and in BCP Ltd. Thus, the research study has the following objectives:

- To study the relationship of cost, volume and profit BCP Ltd.
- To analyze the impact of CVP of the company on productivity.
- To calculate breakeven point (BEP), margin of safety (MOS), contribution margin (CM) etc. and its impact on the profitability.
- To make suggestion for future prospects, problems and promotion of the BCP's Ltd through this study.

1.9. Significance of the Study

This study helps the BCP organization especially management teams to make effective and efficient profit planning and take measures for cost control to make more profit for the organization. Not only this it also helps to revive and revitalize paper making and block printing organizations as a stimulus to economic and community development. It also examines the application of CVP analysis in BCP Ltd.

1.10. Limitations of the study

Environment is not static and it is rapidly changing. Every research has its have limitation, basically lack of available data and adequate information. Similarly, this study has also some limitations which are as follows:

- This study is mainly based on secondary data.
- This study is confined only to cost volume profit analysis as a tool of profit planning and control of BCP Ltd.
- Only seven years financial data has been used covering 2056/57-2062/63.
- The accuracy of this study is based on true response and the data available from the company.

1.11. Organization of the Study

The research study was been organized into five chapters. Those are as follows:

Chapter I	Introduction
Chapter II	Review of Literature
Chapter III	Research Methodology
Chapter IV	Data Presentation and Analysis
Chapter V	Summary, Conclusion and Recommendation

The first chapter: It included background of the study, SAARC and global economic brief, meaning of Nepalese handmade paper and paper products, focus of the study, statement of the problem, objectives of study, and significance of the study, limitation of the study and organization of the study.

The second chapter: It dealt with relevant literature and studies. It is the backbone of study and conceptual framework where relevant studies have reviewed. This chapter focused the conceptual thoughts and terms of the CVP analysis.

The third chapter: It included research design, population and sample, sources of data, variables studies, and statistical and Mathematical tools of data analysis and processing of the study.

The Fourth chapter: It included analysis of the sales, fixed costs, variable costs and semi-variables costs. In other terms, computation of BEP, CM analysis, MOS and P/V analysis are computed for analysis and interpretation to fulfill objectives of the research study. It also covered major results out of the study.

The last chapter: It included summary, conclusion and recommendations. The recommendations will help to improve overall efficiency BCP Ltd.

Chapter II

Review of Literature

2.1. Conceptual Framework

Profit planning and control is an important approach, mainly in profit-oriented enterprises. Profit Planning is a tool of management. It is not an end of management or substitute of management. It facilitates the managers to accomplish managerial goal in a systematic way.

Profit means excess of company's revenue over the expenses of producing revenues in a given fiscal period. It is a primary measure of every success of the company. According to Groy, Jack and Jock and Johnston, Kenneths, "Profit is the primary measure of business success in an economy if a firm cannot make profit, it cannot obtain capital, it cannot secure and retain other resources such as, manpower, materials, and machines etc. In other word, more profitable enterprises are more attractive to the holders of the available capital. Since, these enterprises can attract capital; they have the money needed to buy other resources. The key here is that capital and other resources are scare, they are allocated to the profit makers in roughly descending order of their profit potential."(Groy and Kenneths, 1973: 2)

"Planning is a technique, a means to an end, the end being the realization of certain pre-determined and well-defined aims and objectives lay down by a central planning authority. Planning is a cornerstone of effective management. It begins from the objectives and ends with preparation of budget. Profit does not just happen; it has to be managed by the management. That is management plans and manages its profits. The quality and ability of the management are often judged by the size of the profit figures at the end of the accounting period. So, profit is a part of overall planning process of an organization. When management plans its profit, it is termed as profit planning." (Munankarmi, 2003: 6.01)

"A comprehensive profit planning and control program facilitates control in many ways. It involves reporting (i) actual results, (ii) budgeted or planned results, and (iii) the differences (performance variations) between the two. This type of reporting represents an effective application of the well-recognized management exception principle. The exception principle holds that the manager should concentrate primarily on the exceptional or unusual items that appear in daily, weekly, and monthly reports, thereby leaving sufficient managerial time for overall policy and planning considerations. It is the "out of out" items that need immediate managerial attention to determine the causes and to take corrective action." (Welsch, Hilton and Gordon, 2004: 45)

"The management will be efficient if it is able to accomplish the objective of the enterprise. It will be effective, when it accomplishes the objectives with minimum effort and cost. In order to attain long-range efficiency and effectiveness, management must chart out its course of action in advance. A systematic approach that facilitates effective management performance is profit planning and control, or budgeting. Budgeting is therefore an integral

part of management. In a way, a budgetary control system has been described as a historical combination of a goal-setting machine for increasing an enterprises profit, and “goal – achieving, machine for facilitating organizational co-ordination and planning while achieving the budgeted targets.” (Gautam, Bhattarai & Goit, 2062: 1)

Comprehensive profit planning and control (Profit planning and control) is a new term in the literature of business. Though it is a new term, it is not a new concept in management. The order term, the profit planning and control can be defined as process or technique of management that enhances the efficiency of management.

“Comprehensive profit planning and control is viewed as a process designed to help management effectively perform significant phases of the planning and control functions. The PPC model involves (1) development and application of broad and long-range objectives of the enterprise; (2) specification of enterprise goals; (3) development of a strategic long-range profit plan in broad terms; (4) specification of a tactical short-range profit plan detailed by assigned responsibilities (divisions, departments, projects); (5) establishment of a system of periodic performance reports detailed by assigned responsibilities; and (6) development of follow-up procedures.” (Welsch, Hilton, and Gordon, 2004: 30)

“Comprehensive view of PPC rather than the narrow, traditional view of a budget as a clerically derived set of quantitative schedules prepared by an accountant, because PPC overlooks the three most relevant aspects of: (i) requires major planning decisions by management, (ii) entails pervasive management control activities, and (iii) recognizes many of the critical behavioral implications throughout the organization. Viewed comprehensively, PPC is one of the more important approaches that have been developed to facilitate effective performance of the management process. The concepts and techniques of profit planning and control have wide application in individual business enterprises, governmental units, charitable organizations and virtually all group endeavors.” (Welsch, Hilton and Gordon, 2004: 31)

“In modern-day businesses except in very small companies, it is virtually impossible for the top manager to have firsthand knowledge of all the relevant factors operating throughout a business. Nor can a single lower-level manager be excepted to have the range of knowledge, experience, and competence to make all the decisions for the large segments of a company, either as a source of reliable information or as a participant in decision making. The quality of the judgments of the total management effort will continue to distinguish the better-managed and more successful companies. It is unlikely that clerical techniques, mathematical models, and simulations will substitute in major respects for managerial judgment in complex endeavors. These important tools, on the other hand, can use to increase significantly the effectiveness of a management and to place managerial judgments on a more objective and informed foundation.” (Welsch, Hilton, and Gordon, 2004: 31)

Profit planning and control can be adapted to any organization (profit or non-profit, service companies, financial institutions, hospitals, certain retail business, construction companies, and real-estate enterprises etc.). However, a single profit planning and control

system that is appropriate for all enterprises cannot be designed. A profit planning and control system must be tailored to fit the particular enterprise, and it must be continually adapted as the enterprise and its environmental change.

2.2. Fundamental Concepts of Profit Planning and Control

“Profit planning and control involves development and application of broad and long objectives for the enterprises, specification of goals, long range profit in broad term, tactical short range profit plan detailed by assigned responsibilities (division, department, project), a system of periodic performance reports detailed by assigned responsibilities, control system and follow up procedures. Hence, profit planning and control represents an overall plan of operations, providing guidelines to management and acting as single light for the management. It enables the management to correct its policy. Profit planning and control covers a definite period of time and formulates the planning decision of management. It consists of three main budgets: (i) Operational Budget related with revenue and expenses; (ii) Financial Budget concerned with financial statements; (iii) Appropriation Budget related with advertising and ultimately succumbs to the swirl of current events. PPC performance measurement extends from the top to the lowest organizational level in the enterprises. Some significant behavioral implications of PPC, with emphasis on developing positive reinforcement, improving motivation, developing goals, coping with the effects of budgetary pressure, resolving budget-padding problems, and using budgets for control.” (Gautam, Bhattarai & Goit 2062: 1.2)

The fundamental concepts of PPC include the underlying activities or tasks that must generally be carried out to attain maximum usefulness from PPC and these fundamentals have never been fully codified. An outline of the fundamental concepts profit planning and control usually identified is as follows:

- ❖ A managerial process that includes planning, organizing, staffing, leading, and controlling.
- ❖ A managerial commitment to effective management participation by all levels in the entity.
- ❖ An organization structure that clearly specifies assignments of management authority and responsibility at all organization levels.
- ❖ A management planning process consistent with the functions, decision making roles.
- ❖ A management control process consistent with preliminary control, concurrent control, feedback control.
- ❖ A continuous and consistent coordination of all the management functions.
- ❖ Continuous feed forward, feedback, follow-up, and replanning through defined communication channels (both downward and upward)
- ❖ A strategic (long-range) profit plan.
- ❖ A tactical (short-range) profit plan.
- ❖ A responsibility accounting system.
- ❖ A continuous use of the exception principle.

- ❖ A behavioral management program.
(Welsch, Hilton and Gordon, 2004: 31-32)

2.3. CVP Analysis as a Powerful tool of Profit Planning and Budgeting

Cost- Volume-Profit analysis is a supplementary tool of profit planning. It tells many things about the relationships between the business variables. It is an analytical technique for studying the relationship between volume, cost, prices, and profits. It is used to determine the profit planning process of the firm. In fact, entire field of profit planning has become associated with cost-volume-profit relationship. Total cost represents the fixed and variable cost for desired volume of output required for anticipated amount of profit. An extensive market research is to be conducted in advance for forecasting the volume of sales which is required for attainment of desired level of profit. Thus, total cost incurred for the volume of sales is calculated.

At the beginning point of the profit planning, it helps to determine the minimum sales to avoid losses and sales volume at which the profit goal of the firm will be achieved. As an ultimate objective, it helps the management to find out the most profitable combination of cost and volume. A management, therefore, uses cost volume profit analysis to product and calculates the implications of its short run decisions about fixed cost, variable cost, volume and selling price for its profit plan on a continuous basis.

Moreover, most of the businesses fail after a few years, sometimes months, of starting because they tend to do anything for volume without thinking how it's going to affect the bottom line. Cost volume profit is a management accounting tool to show the relationship between the elements of profit planning. Profit planning is the function of the selling price of product, demand, variable costs, fixed costs, taxes, etc. The whole picture of profit planning is associated with cost volume profit inter relationships. A popular technique to study cost volume profit relationships is break even analysis which is a cornerstone of profit planning. So, CVP analysis is an important tool for management to take the important managerial decision which effects the profit planning. In fact, CVP analysis supplies answers to questions such as:

- What is the minimum level of sales to avoid the losses?
- What should be the sales level to earn the desired profit?
- What will be the effect of changes in prices, costs, volume or profit?
- What will be the effect on the profit, where sales mix is change?
- What will be the new break-even point when there is change in prices, costs, volume and sales mix?

(Munankarmi, 2003: 373)

2.4. Basic Concept of Cost-Volume-Profit Analysis

“Cost-Volume-Profit (CVP) analysis includes the related concepts of (a) contribution analysis and (b) breakeven analysis. These concepts entered the mainstream of management accounting starting in the 1930s, with major emphasis in the 1950s. Both concepts rest upon the concepts of cost variability (i.e. flexible or variable expense budgets). Contribution

analysis involves a series of analytical techniques to determine and evaluate the effects on profits of changes in sales volume, sales prices, fixed expenses, and variable expenses. Basically, it applies the concept of a contribution margin income statement: Revenues minus variable expenses equals contribution margin, and contribution margin minus variable expenses equals contribution margin, and contribution margin minus fixed expenses equals profit. Breakeven analysis focuses on the breakeven point: Fixed expenses divided by the contribution margin equals breakeven sales volume (the point at which profit is zero because revenues equal total cost). The results of breakeven analysis are usually graphed to show the relationships between revenue (i.e. sales), fixed expenses, and variable expenses, within a relevant range of sales volume.” (Welsch, Hilton, and Gordon, 2004: 531)

Cost-Volume-Profit (CVP) analysis examines the behavior of total revenue, total costs and operating income as changes occur in the level, the selling price, the variable cost per unit, and/or the fixed costs of a product. In other words, CVP analysis is a key factor in many decisions, including choice of product lines, pricing of products, marketing strategy, and utilization of productive facilities. The concept is so pervasive in managerial accounting that it touches on virtually everything that a manager does. Because of its wide range of usefulness, CVP analysis is undoubtedly the best tool the manager has for discovering the untapped profit potential that may exist in an organization. In fact cost-volume-profit (CVP) analysis involves a study of the interrelationship between the following factors:

- Prices of products.
- Volume or level of activity.
- Per unit variable costs.
- Total fixed costs.
- Mix of products sold.

Moreover, Cost-Volume-Profit (CVP) analysis is the process of examining the relationships among revenues, costs and profits for a relevant range of activity and for a particular time frame. It 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: total cost, total revenue and profit at various sales volumes.

2.5. Basic features of cost-volume profit (CVP) analysis

- a) **Sales revenue:** Total sales revenue fluctuates in direct proportion to the units sold. Revenue per unit is assumed to remain constant.
- b) **Variable costs:** Total variable costs change in the same proportion and in the same direction at the volume of output changes, and as per unit variable costs remain fixed.
- c) **Fixed costs:** Total fixed costs remain unchanged for the same period of time whatever may be the level of output within the relevant range. Per unit fixed costs are variable.
- d) **Semi variable costs:** Those costs, which are neither constant in total amounts nor constant per unit, are mixed or semi-variables cost.

2.6. Basic Assumptions of Cost –Volume-Profit analysis

Cost-volume-profit analysis is a vital technique that provides supplementary information for profit planning. Every business starts with the target of break-even and then it aims to earn profit over its life. But the business firm passes through many ups and downs. Cost-volume-profit analysis helps to plan for every set of goals in the short-run. CVP analysis is based on a specific set of assumptions that are following:

- a) The concept of cost variability is valid; therefore, costs can be classified and measured realistically as fixed and variable.
- b) There is a relevant range of validity (i.e., activity) for using the results of the analysis.
- c) The sale price does not change as units of sales change.
- d) There is only one product, or in the case of multiple products, that sales mix among the products remains constant.
- e) Those basic management policies about operations will not change materially in the short run.
- f) The general price level (i.e., inflation and deflation) will remain essentially stable in the short run.
- g) The sale and production levels are synchronized; that is, inventory remains essentially constant or is zero.
- h) The efficiency and productivity per person will remain essentially unchanged in the short run. (Welsch, Hilton and Gordon, 2004: 507)
 - If any of these assumptions are changed, a revised budget would be needed for a new analysis.

2.7. Significance of CVP analysis

CVP analysis provides management with a comprehensive overview of the effects on revenue and costs of all kinds of short-run financial change. Planning, controlling and decision making are the essential managerial functions. Cost-volume-profit analysis helps managers to plan for profit, to control cost and make decision. It helps:

- ❖ To determine the break-even-point in terms of unit or sales value.
- ❖ To ascertain in the margin of safety.
- ❖ To estimate profits or losses at various level of output.
- ❖ To assess the likely effect of management decisions such as an increase or a decrease in selling price, adoption of new method of production to reduce direct labor and increase output.
- ❖ To help management to find the most profitable combination of costs and volume.
- ❖ To determine the optimum selling price.
- ❖ To determine the sales volume at which the profit goal of the firm will be achieved.
- ❖ To determine the maximum sales volume to avoid losses.
- ❖ To determine most profitable and least profitable product.

- ❖ To determine new break-even point for changes in fixed or variable cost.

It provides information regarding:

- ❖ Minimum level of sales to avoid losses.
- ❖ Sales level to earn target profit.
- ❖ Effects of changes on prices, costs and volume on profits.
- ❖ Effects of changes in sales mix on profit.
- ❖ New break-even point for changes.
- ❖ Impact of expansion plan on CVP relationship.
- ❖ Products those are most profitable and least profitable.
- ❖ Whether to continue or discontinue the sales of product or operation of plan.
- ❖ Whether to close or not the firm for a short-term.
- ❖ Effect on operating profit with the increase in fixed cost.

(Munankarmi, 2003: 4.01)

2.8. Application of Cost-Volume-Profit Analysis Technique

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, both fixed and variable cost and the selling price of the product. The most important factors that affect the planning for profit are costs-both fixed and variable and volume of sales. The cost-volume profit analysis besides performance several functions also helps to identify BE sales.

2.9. Break-Even Analysis

Break-even analysis tells what quantity of sales will make total sales revenues equal total costs. In other words, a break-even point is that quantity of sales at which the operating income is zero. Break-even analysis is usually applied on a “total company” basis. It emphasizes the level of output or productive activity at which sales revenue exactly will remain equal to total costs; making no profit or loss organization. The objectives of break-even analysis are:

- ❖ To determine profit/loss at different level of activity.
- ❖ To determine the selling price or sales volume to earn desired amount of profit.
- ❖ To determine selling price or sales volume to attain the desired rate of return on capital employed.
- ❖ To determine sales revenues and cost at different level of activity.
- ❖ To identify the effect of fixed cost, variable cost, selling price, production and sales volume on the profit.
- ❖ To recommend change in sales mix for maximizing the profit.
- ❖ To compare the profitability of the products.
- ❖ To determine the facilitates: Break-even point; Margin of safety; Contribution margin; Profit-volume ratio.

(Munankarmi, 2003: 383)

A) Methods of Determining Break-Even Sales: The BEP can be determined by i) Algebraic method and ii) Graphic Presentation method.

i) Algebraic Method or Equation Method or Formula Method: The most popular approach to determine the break-even sales is the formula, also known as the equation. It is particularly because the equation provides the most general and the easiest to remember. The formula approach uses an algebraic equation to calculate the break-even point. The calculation in the equation approach is similar to that of the contribution margin statement approach. To develop the cost-volume-profit equation, the following alphabetical symbols need to be considered:

Table no. 2.1.

Particulars Contribution Margin Income Statement	Symbol for Equation
Sales Volume (Units)	Q
Selling Price per unit	P
Sales revenue (Rs)	Q×P
Less: Variable costs	Q×VCPU
Contribution Margin	Q×P-Q×VCPU
Less: Fixed Cost	FC
Net profit	Q×P-Q×VCPU-Fixed Cost= 0

$$\text{Sales} - \text{Variable expenses} - \text{Fixed expenses} = \text{Net Profit} = 0$$

$$\text{Sales revenue} = \text{Total cost} = \text{Fixed cost} + \text{Variable cost}$$

$$\text{Or, selling price per unit} \times \text{sales unit} = \text{Fixed cost} + \text{Variable cost per unit} \times \text{sales unit}$$

$$\text{Symbolically, } S \times Q = FC + V \times Q$$

$$\text{Or, } (S \times Q) - (V \times Q) = FC$$

$$\text{Or, } Q(S - V) = FC$$

$$\therefore Q = \frac{FC}{S-V} \quad \text{or} \quad Q = \frac{FC}{C/M \text{ ratio}}$$

Where, Q = Break-even point in units

FC = Fixed Cost

VCPU = Variable cost per unit

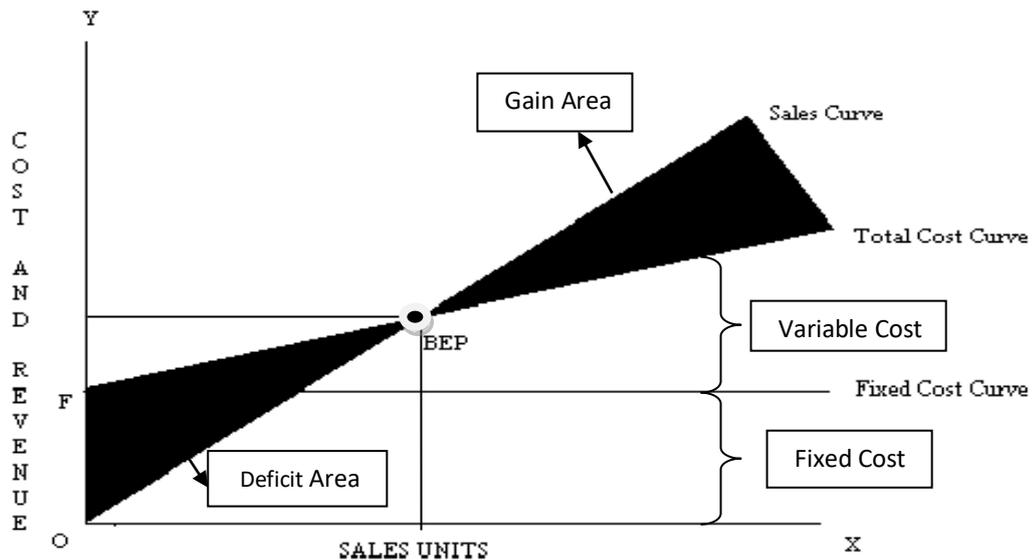
P = selling price per unit

(Dangol and Pradhan, 2055: 543)

ii) Graphic Method or Chart Method: A break-even chart is used to graphically depict the relationship among revenues, variable costs, fixed costs, and profit (or losses). The no profit / no loss point (the break-even point) is located at the point where the total cost and revenue lines cross. Below the point, the firm suffers from loss, and above this point, the firm earns profit. In the figure below, a chart can be framed to present the Break-even point. Sales revenue and costs are represented by Vertical axis OY and units represented by horizontal axis OX. OF denotes the fixed cost. A line for sales revenue and other line for total cost are drawn from left to right at different level of sales or units produced. The intersection point of these two lines is the break-even point (BEP). The sales revenue over the cost is profit (Gain area) and cost over the sales is loss (deficit area). From left to right, a triangle is developed up

to Break-even point, shows the loss areas. Above the break-even point, another triangle developed representing Profit area, which is also the area of safety margin

Figure no. 2.1.



B) Cost-Volume-Profit Analysis Applications: BE analysis can be applied to determine the sales volume to generate a budgeted/targeted profit amount. The below formulae are applied to determine sales volumes at different on the situations.

1) Sales Volume to earn desired/targeted profit:

i)

$$\text{Required sales volume (in units) to earn target profit} = \frac{\text{Fixed cost} + \text{Desired net operating profit}}{\text{Unit Contribution Margin}}$$

ii)

$$\text{Required sales volume (in Rs) to earn target profit} = \frac{\text{Fixed cost} + \text{Desired net operating profit}}{\text{Contribution Margin ratio or pv ratio}}$$

iii)

$$\text{Sales Volume required to produce the desired profit after tax} = \frac{\text{Fixed Cost} + \frac{\text{Desired income after taxes}}{1 - \text{tax rate}}}{\text{PV ratio}}$$

iv)

$$\text{Sales Volume required to earn (in Rs) the desired profit after tax} = \frac{\text{Fixed Cost} + \frac{\text{Desired profit after taxes}}{1 - \text{tax rate}}}{\text{Unit Contribution Margin}}$$

2) Revised Break-even point if changing in selling price:

v) $\text{Break-even point in units} = \frac{\text{Fixed Cost}}{\text{PV ratio}}$

vi) $\text{Revised Break even point in Rs} = \frac{\text{Fixed cost}}{\text{Revised Profit Volume ratio}}$

3) Revised Break-even point if changing in variable cost:

$$\text{vii) Revised Break even point in Units} = \frac{\text{Fixed Cost}}{\text{Revised Contribution margin per unit}}$$

$$\text{viii) Revised Break even points in Rs} = \frac{\text{Fixed Cost}}{\text{Revised PV ratio (New one)}}$$

4) Revised Break-even points if changing in Fixed Cost:

$$\text{ix) Revised Break even points in units} = \frac{\text{present Fixed cost} + \text{Additional Fixed cost}}{\text{Unit Contribution Margin}}$$

$$\text{x) Revised Break even points in Rs} = \frac{\text{Present Fixed cost} + \text{Addition Fixed cost}}{\text{PV ratio}}$$

$$\text{x) Required sales volume to earn the present profit} = \frac{\text{Present FC} + \text{Additional FC} + \text{Present profit}}{\text{PV ratio}}$$

$$\text{xi) Required sales volume to earn the present rate of profit on investment} = \frac{\text{FC} + \text{Existing profit}}{\text{pv ratio}}$$

C) Effect of income Tax: Almost all the business firms have to pay income tax on their net profit except those who have got the tax holiday facility under tax rule. Owners or the shareholders get the residual profit. So that if the firm under consideration falls within a tax bracket, sales target must cover the income tax. For a firm under the income tax bracket, the sales are to be generated not only for the fixed costs and the targeted profit before tax but also for the targeted profit leaving after paying the income tax. In most nations private enterprises are subject to income taxes. The effect of volume on the change in after tax income to calculate the following to be used.

Change in net income = Change in sales (units) × Contribution margin per unit × (1- tax rate)

Each unit beyond the break-even point adds to after tax net profit at the unit contribution margin multiplied by (1- income tax rate). Break-even point does not change because there is no effect on zero profit. So, income tax doesn't effect in the level of Break-even point.

D) Cash Break-Even Point: The Break-even point tells what volume of sales is necessary to cover all operating cash expenses. But, fixed costs include certain non-cash expenses like depreciation and amortization, for which no cash is needed in the short-run. Therefore the company can pay its cash bills even if it does not generate sales equal to BEP in the short-run. Therefore a company can exclude depreciation and other non-cash expenses in the short-run. If only the cash costs are included in fixed costs then cash BEP can be located. The cash BEP helps the management in determining the level of activity below which there is chances of insolvency on account of the firm's inability to meet cash obligations unless alternative arrangements are made. The formula used for calculation of cash break-even is:

$$\text{Cash BEP (units)} = \frac{\text{Fixed Cost} - \text{Non cash expenses}}{\text{SPPU} - \text{VCPU}}$$

E) Effect of Non-Operating Incomes and Expenses: Non-operating incomes and losses and extraordinary gains and losses, if materials in amount, cause a problem in cost-volume -profit analysis. A company may have incomes and expenses or losses from non-

operating sectors. Non-operating incomes include interests on lending and deposits, dividends from stocks, rent from sub-letting, income from guarantee fees, etc. Non-operating expenses and losses include interests on borrowing (financial charge), legal fees for issuing stock/bonds, and loss on investment fluctuations (provisions), donation/presents, etc. These items are to be adjusted in cost-volume-profit equation. The following adjustment style is recommended for those non-operating items.

$$\text{BEP (units)} = \frac{\text{Fixed cost} - \text{Non operating incomes} + \text{Non operating expenses}}{\text{CMPU}}$$

F) Break-even ratio: Break-even ratio is calculated to show the capacity utilization at the break-even sales on the normal capacity available, which contributes to the management for taking decision within the range of available capacity (normal capacity). It provides information about at what percentage of normal capacity will result the Break-even point. It is calculated using the following formula.

$$\text{Break-even ratio} = \frac{\frac{\text{Total fixed cost}}{\text{Total contribution margin}}}{\text{Capacity units (120\%)}} = \frac{\frac{\text{Fixed Cost}}{\text{PV ratio}}}{\text{Sales}} \times 120$$

2.9.1. Profit Volume Analysis

Profit-Volume denotes the relationship between contributions to sales. It is also known as contribution margin ratio, contribution sale ratio or variable profit ratio. Profit volume ratio can be taken as significant evaluation devise on earning capacity of a business enterprises. The earning capacity of an enterprise can be measured by the profit-volume ratio. The higher profit volume ratio indicates the firm's ability for increasing profitability.

2.10. Cost-Volume-Profit Analysis for Multi-Product Firms

“Most of the business firm produces different types of product for sale. The proportion of sales of each product is the sales mix. The sales mix is an important assumption in multiproduct CVP analysis. Sales mix can be defined as the relative combination of two or more products represented in total. It is not only the sales revenue that makes profit. The proportion of the sales contributed by different products greatly changes the amount of profit. Managers try to achieve that combination, or mix, that will yield the greatest amount of profit. If a company sells more than one product, these may not be equally profitable. So the company's profit will depend upon the ratio of each product's sales to total sales revenues. Profit will be greater if high margin items make up a relatively large proportion of total sales than if sales consist mostly of low margin items. Changes in sales mix can cause great variations in a company's profit. A shift to low-margin items can cause the total profit to decrease even through total sales increase. On the contrary, a shift in the sales mix from low-margin items to high margin items can cause the reverse effect-total profit 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 different contribution margins. 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 changes. Thus, to enhance the profit, the firm may introduce required changes in the ratio with the help of break-even analysis.” (Bajracharya, Ojha, Goet and Sharma, 2004: 260)

In multi-product firm, BE analysis by organizational subdivisions or by products poses a special problem because of indirect expenses. An indirect expenses is one that does not have a traceable relationship to the particular responsibility center under consideration. So, 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 sale proportion of each product. Following procedures are followed to calculate BEP for sales mix/multi-product.

a) Calculate CM/PV ratio for each product

b) Calculate proportion of sales mix in units and/or value = $\frac{\text{Individual product's sales units/values}}{\text{Total of all products' sales units/values}}$

c) Calculate weighted average for all products = Sales mix (units) × Unit contribution margin /pv ratio

d) Calculate BEP units = $\frac{\text{Fixed Cost}}{\text{Weighted average contribution (units)}}$

e) Calculate BEP Value = $\frac{\text{Total fixed cost}}{\text{Weighted PV ratio}}$

2.11. Margin of Safety (How safe is Business?)

The margin of safety (M/S) is the excess of budgeted (or actual) sales over the break-even volume of sales. It states the amount by which sales can drop before losses. Margin of safety = Budgeted sales-Break even sales. It gives management a feel for how close projected operations are to be organization’s break-even point. Managers often consider the size of the company’s margin of safety when making decisions about various business opportunities. The higher the margin of safety, the safer is the business and greater margin supports profit even the reduction in the sales within the range of safety margin. The margin of safety ratio is the margin of safety divided by the budgeted sales. The M/S ratio indicates how safe the future of the firm is? Therefore, a firm should try to maintain the BEP at lower level and increase the actual sales level. It is possible through reducing total fixed cost or reduces variable cost per unit or following dynamic sales policy. The safety margin is determined as:

a. Margin of safety = *Actual sales - BE sales (units and value)*

b. Margin of safety in value = $\frac{\text{Profit}}{\text{PV ratio}}$

c. Margin of safety in units = $\frac{\text{Profit}}{\text{UCM}}$

d. Margin of safety ratio = $\frac{\text{Actual sales}-\text{BE sales}}{\text{Actual sales}}$

e. % of Margin of safety on sales = $\frac{\text{Margin of safety}}{\text{Actual sales}} \times 100$

2.12. CVP Analysis Under Constrain and Applied of Linear Programming Technique

Resources are scarce and unlimited uses of resources are not possible especially in

multi-product environment. As such, a CVP analysis in multi-product environment can not focus attention only on products of high contribution margin. So, one should identify all the resources of the firm that could limit production. Such resources include the availability of machine time, availability of labor hours, availability of raw materials and other resources. Efficient allocation of resources considering their constraint among competitive activities in an optimal manner is necessary for maximizing the return.

a. Multi-Product CVP Analysis with a Single Resources Constraint: “Scare resources should be efficiently allocated in order to maximize the contribution margin. A particularly simple and instructive situation arises when there is only one constraining resource. This can occur if the firm’s products are all produced by a single machine and output is limited by hours available on this machine. In the same way, single resource constraint arises, if the firm’s products are all produced with only one material and output is limited by quantity available for that material. When there is a constraint for a scare resource that has alternative uses, the contribution per unit should be calculated for each of these uses. Then the available capacity for such scare resource should be allocated to the alternative uses on the basis of contribution per scare resource.” (Munankarmi 2003: 4.25)

b. Multi-Product CVP Analysis with Multiple Resource Constraints: “In general more than one resource will constrain the amount that can be produced. In this situation ranking of product profitability is required by using the ratio of contribution margin per unit of scare resource. The ranking of products across the different constraining resources will generally differ. When multiple constraining resources exist, simple profitability rankings among products are not possible. While simple profitability rankings are not possible if multiple constraining resources exist, the linear programming solution maximizes the total contribution margin subject to the described constraints. Multiple products with multiple constraints on production require a linear programming formulation to determine a production plan that maximizes the contribution margin from the product mix. The linear programming approach highlights the important point that the most profitable products are those that have the maximum contribution margin per unit of scare resource consumed. Being a mathematical model to optimal allocation of scare resources among the competing sectors, LP provides an exact solution to the practical problems in business. Linear programming model is highly useful and is of great use in business decisions relating to profit maximization and cost minimization problems as it helps in measuring the complex economic relation and thereby, provides an optimum solution to the problem of resource allocation.” (Bajracharya, Ojha, Goet and Sharma, 2004: 280/281)

2.13. CVP Analysis under Conditions of Uncertainties

Risk exists because of inability to make perfect forecasts. It arises due to inability to anticipate the occurrence of the possible future events with certainty. Under uncertainty, the possibility of occurrence and happening of a particular event are not known.

“CVP analysis based on single value estimates assumes that all costs and revenue are known with certainty. That is, it does not include departments for risk and uncertainty as it severely limits its usefulness. Profit (Z) is very much dependent mostly on the quantity of

sales units (Q), unit selling price (P), the variable costs (V), and the fixed costs (F), but also on uncertain quantity. But it is not necessary to assume that all other factors are certain. That is, the sales volume will mostly be treated as the only uncertain quantity. But it is not necessary to assume that all other factors are certain. The objective in CVP analysis under condition of uncertainty is to assess the probability distribution of the profit volume under given distribution of one or more of the factor, sales, price or profits.” (Munankarmi, 2003: 4.44)

“Probability distribution is a simple statistical tool which may used to measure the risk and uncertainty involved in CVP analysis. A Probability distribution of happening of event in consideration is used. This may be done either taking into consideration of experience in the past or may be done by considering the personal intuition of the personal doing so. In business, references of the past experience are hardly available therefore a person is likely to behave in the same manner in the similar situation in the different time. Personal judgment plays a significant role in the management decision making. Thus, the conditions postulated are assigned probability. It must be understood here that probability assigned here is a subjective probability based in, personal judgment of the man making such an analysis.” (Panday; 2003, p 17)

“Though all the variables of the cost-volume-profit analysis may be uncertain and random, still the sales volume is the most uncertain variable. In most of the cases in businesses the demand is uncertain. Assuming that sales quantity is a random variable, we can apply the concepts of the normal distribution in cost-volume-profit analysis problems.

Managers know their firm’s expected sales, the break-even sales and expected profit. Surely, they would benefit from knowing that:

- The probability of at least reaching the break-even-sales.
- The probability of making at least the required amount of profit.
- The probability of incurring losses, i.e. not achieving the break-even sales volume.etc.” (Bajracharya, Ojha, Goet and Sharma, 2004: 273)

2.14. Cost Structure and Operating Leverage with CVP

Cost structure refers to the relative proportion of fixed and variable cost in an organization. Cost structure differs widely among industries and firms within an organization. A company which has large investment in plant and equipment i.e. highly capital intensive is dominated by fixed costs. In contrast, variable cost plays dominant role in labor intensive organization. An organization’s cost structure has a signification effect on the sensitivity of its profit to change in volume.

Operating Leverage is a measure of the extent to which fixed costs are being used in organization. The relationship of a company’s variable and fixed costs is reflected in its operating leverage. The operating leverage is greatest in firms with a large proportion of fixed costs, low proportion of variable costs and resulting high contribution margin. To a physical scientist, leverage refers to the ability of a small force to move a heavy weight. To the managerial accounting, operating leverage refers to the ability of the firm or organization to generate an increase in income when sales revenue increases. In other words, the firms

with relatively high operating leverage have proportionally high fixed expenses, and the firm's break-even point will be relatively high. The operating leverage of a factory is determined by:

$$\text{Degree of operating leverage} = \frac{\text{Contribution Margin}}{\text{Net Income}}$$

Thus, an organization's cost structure plays an important role in determining its cost-volume-profit relationships. A firm with highly proportionately fixed cost has relatively high operating leverage i.e. it can generate a large percentage increase in net income from a relatively small percentage in increase in sale revenue. On the other hand, a firm with high operating leverage has a relatively high breakeven point. The optimum cost structure for an organization involves a trade-off. Management must weigh the benefits of high operating leverage against the risks of large committed fixed costs and associated high break-even point. (Hilton, 2002: 339)

2.15. Cost Volume Profit Analysis in Computer Application

"The output from a CVP model is only as good as the input. The analysis will include assumptions about sales mix, production efficiency price levels, total fixed costs, variable costs and selling price per unit. Nowadays, the widespread use of spreadsheet packages has enabled management accountants to develop CVP computerized models in the business organization and non business organization too. Managers can now consider alternative plans by keying the information into a computer, which can quickly show changes both graphically and numerically. In addition to speed and convenience, computers allow a more sophisticated approach to CVP analysis. Thus managers can study various combinations of changes in selling prices, fixed costs, variable costs and product mix, and can react quickly without waiting for formal reports from the management accountant. The wide spread availability of personal computers and electronic spread sheet software has made sensitivity analysis relatively easy to do." (Drury, 2000: 253)

2.16. Sensitivity Analysis of Cost-Volume-Profit Variables

"Sensitivity analysis is the measurement of elasticity of the change in cost-volume-profit factors on break-even point or given profit. The strategist should focus more on the factor, which is more sensitive or responsive for profit. Sensitivity analysis is one approach for coping with changes in the values of the variables. Sensitivity analysis focuses on how a result will be charged if the original estimates or the underlying assumptions change. With regard to CVP analysis, sensitivity analysis answers questions such as the following:

- What will the profit be if the sales value changes from that originally predicted?
- What will the profit be if fixed costs increase by 10% and variable cost declined by 5%?" (Drury, 2000: 253)

In other words, sensitivity analysis is the measurement of responsiveness in outcome with the changes in determinant variables. Profit = f (sales volume, selling price, VC, FC, Taxes, etc).i.e. profit are the function of volume, price, VC, FC, Taxes and so on. Sometimes the manager can intentionally change the price and cost factor, which is more sensitive or responsive for profit. Therefore, to measure the sensitivity of cost-volume-

profit factors one can see the impact of certain percentage or amount in volume, price, or cost factors on net profit.

- ❖ **Effect of Price Changes:** A change in selling prices will remain sales volume unaffected but direct impact on PV ratio, bringing change in BEP sales decrease and profit. If selling price increases, BEP sales decreases and profit will increase as the result of increase in PV ratio and the contrary, if selling price decreases, BEP sales increases and PV ratio as well as profit decreases.
- ❖ **Effect of Volume Changes:** A change in volume without any change in price, cost will not affect the PV ratio and BEP sales remain unchanged. Profit increase with volume increase and decrease in volume decrease.
- ❖ **Effect of Variable cost Changes:** The impact of change in variable cost on profit is that increase in variable cost reduces the profits because of low PV ratio and high BEP, if there is no change in selling price and volume. On the other hand, if the variable cost decline, PV ratio will increase, BEP will be lowered and profit would rise.
- ❖ **Effect of Fixed cost Changes:** A change in fixed cost does not influence PV ratio. In selling price, variable cost and volume remain unchanged, a fall in fixed cost, caused lower BEP and raise profits and vice versa.
- ❖ **Effect of Combination factors Change:** The management estimating the profit should analyze the change in one factor can lead to a change in other factor or factors. Therefore, all such changes should carefully analyze and their impact on profits must be observed.

2.17. CVP on Productivity

Profit is said life blood of the every profit motive organizations; therefore it is gained by providing satisfaction to their customers' need. Profit can be increased by reduction in costs and increase sale revenues. Due to the most acceptable way of achieving efficiency or productivity in reduction costs, productivity is the output function of input and output variables of the organizations. How much cost should be incurred to get zero profit? How much cost should be incurred to get different targeted profit? Are such types of questions, which can be satisfied through cost-volume-profit relationship? Certain costs are incurred to produce the product. There are different types of costs involved such as fixed costs, variable costs, semi variable costs etc. The nature of fixed costs normally constant due to organizations should invest lower in fixed costs to achieve higher profit at lower level of sales volume. As the sales increases, profitability also increases because only the variable costs changes or increase but fixed cost remain constant.

In real field of the organizations, many organizations produced products more than one product. So, limited resources of the organization should be managed properly to increase the overall profitability of the organization, which is known as productivity and can be possible only through with the help of CVP analysis.

2.18. Special Problems in Cost-Volume-Profit Analysis

“Cost-Volume-profit analyses are applied to i) individual products or parts of a business and ii) all the products or activities combined. There were three problems might be encountered;

A) Activity Based: When two or more products or activities are combined for breakeven analysis, the activity based is usually net sale dollars or Rs. Product units are preferable if the analysis is applied to one product. For multiple products, the activity base must be in additive units using a common denominator of volume or output. Therefore, for the company as a whole, net sales dollars or Rs are usually the only satisfactory common denominator because manufacturing, selling, and administrative activities are expressed in combination. If flexible expense budgets are used, they can be summed for cost-volume-profit purposes. This process may cause some complications because the different departmental flexible budgets are related to different activity bases. For example, selling expenses may be related to sales dollars, factory overhead related to direct labor or machine hours, and power department costs related to kilowatt hours. To add the flexible expenses budget amounts, it must be assumed that the departmental activity factor correlate reasonably well with the overall activity base selected for breakeven purposes. The usual procedure in developing breakeven analysis based on flexible expense budgets is to add the fixed cost components in the flexible budget amount to treat the remaining costs as variable.

B) Inventory Changes: Usually the budgeted changes in inventories (i.e. finished goods and work in process) are immaterial in amount and thus may be disregarded in cost-volume-profit analysis. On the other hand, when the change in budgeted inventory is significant, it should be included in the analyses. Including the effect of inventory changes in cost-volume-profit analysis requires subjective judgments about i) what management might do (about making inventory changes) at different volume levels and ii) the conceptual precision that is desired. We will consider two practical approaches often used: a) disregard the inventory change and b) include the inventory change.

C) Non-operating incomes and Expenses: Non-operating incomes (gains) expenses (losses) and extraordinary gains and losses, if material in amount, cause another problem in cost-volume-profit analysis. The basic issue is whether they should be included or excluded. Extraordinary gains and losses are nonrecurring and unusual; therefore, they should be excluded. Non-operating incomes (and gains) and expenses (and losses) are recurring, but they are not related to ongoing operations. They are excluded from cost-volume-profit analysis. However, they are included; it is preferable to include the net of other income and other expenses. If the excess is expense, it should be added to fixed expenses; whereas if the excess is income, it should be deducted from the fixed expense.”

(Welsch, Hilton and Gordon, 2004: 513)

2.19. Limitations of CVP 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 increases, especially in that situation, when production or operation technique is changed.
- c. The assumption that VCPU is always remain constants cannot be entirely true.
- d. Constant selling price isn't true too. In case of increasing selling 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 breakeven point. Such a condition is hardly found in practice.
- g. The capital investment in business is also significant element of profit planning and control. However, it is not given a place in break-even point.
- h. It also ignores the non-operating income and non-operating expenses.

2.3. Review of Concerned Studies

2.3.1. Briefly Review of Some Books

Glenn A. Welsch, Ronald W. Hilton and Paul N. Gordon state in their book entitled “**Budgeting Profit Planning and Control**” that “CVP analysis includes the concepts of contribution analysis and break-even analysis; and these concepts entered the mainstream of management accounting in the 1930s, with major emphasis in the 1950s. Both concepts rest upon the concept of cost variability. Contribution margin analysis a series of analytical techniques to determine and evaluate the effects on profits changes in sales volume and manufacturing variable. Basically it applies the concept of a contribution margin income statement and break-even analysis” in their budgeting profit planning and control book.

Colin Drury states in his book entitled “**Management and Cost Accounting**”, “CVP analysis is a systematic method of examining the relationship between changes in activity and changes in total sales revenue, expenses and net profit and the relationship simplifies the real-world conditions that a firm face. It is based on the relationship between volume and sales revenue, cost and profit in the short-run, the short run normally being a period of one year, or less, in which the output of a firm is restricted to that available from the current operating capacity. In short run, some inputs can be increased, but others cannot due to short-run profitability be most sensitive to sales volume and highlights the effects of changes in sales volume on the level in the short run. Actually, it is taken as a powerful tool for decision making in certain situations in his book named Managerial Accounting.”

S.P. Munankarmi describes in his “**Management Accounting**” that “CVP analysis is the process of the relationships among revenues, costs and profits for a relevant range of activity and for a particular time frame; it is taken as a powerful tools that managers have at

their command in short-run planning and it helps for understanding the relationship between cost, volume and profit in an organization by focusing on interaction between the price of products, volume or level of activity, per unit variable cost, total fixed costs and Mix products sold.”

Ronald W. Hilton defines in “**Management Accounting**” that “CVP analysis as a sweeping overview of the effects on the profit of all kinds of changes in sales volume, expenses, product mix and sales prices and calculation of the sales volume required to break-even or earns a target net profit which provides an organization’s management with valuable information for planning and decision making.” Furthermore details that “CVP analysis technique summarizes the effects of changes in an organizations volume activity on its costs, revenues the effects of changes in an organization’s value of activity on its costs, revenue and Profit and extended to cover the effects on profit of changes in selling prices, service fees costs, income-tax rates and the organization’s mix of products or services

R.M. Lynch and Robert W. Williamson presented in their book “**Accounting for Management Planning and Control**” that “CVP analysis is an integral part of management’s administrative function including planning, organizing, and controlling which can make an important contribution to control current operation by comparing actual results with planned results, and limited by its static character and assumptions based on but used with discretion by a skillful management accounting analyst, it becomes a potent weapon in management’s strategic arsenal.”

Bajracharya, Ojha, Goit and Sharma state in their book, “**Management Accounting Nepalese Prospective**”, “CVP analysis is a supplementary tool of profit planning that tells many things about the relationship between the business variable and total variables costs are proportionate to the sales volume; whereas the total fixed costs remain unchanged within the relevant range of output level, that is why net incomes are not in proportion to sales and knowing this relationship one can assess the profit at forecasted sales volume. Likewise, required sales can be ascertained for the minimum level of profit.”

Post Graduate Publication, a compile Book presented the concepts of “CVP is a way of thinking rather than a mechanical set of procedures i.e. in order to put together the optimum combination of costs, selling price, and sales volume, the manager must train himself or herself to think in terms of the unit contribution margin, the break-even point, the C/M ratio, the sales mix, and the other concepts developed and these concepts are dynamic in that a change in one will trigger changes in others –changes that may not be obvious on the surface and only by learning to think in CVP terms can the manager move with assurance toward the firm’s profit objectives” in the book of Management Accounting. In this book focuses to put together the optimum combination variables to develop changed concepts with variables analysis and role of manager to achieve the objectives of the firm.

My Own View that “CVP analysis is a powerful device for any profit or non-profit organizations to analyze the limitations with interrelation among cost, volume and profit; and get improved them for safety, profitability and productivity to live in this tough competitive global business environment.”

2.3.2. A Brief Review of the Previous Research work

Indeed Cost-Volume-Profit analysis can be practiced as a tool of any organizations for measuring their effectiveness and productiveness. So, the research cost-volume-profit analysis is a main key device of profit planning and control or budgeting for measuring effectiveness and productiveness of especially Nepalese profit motive manufacturing organizations and non-profit organizations. Therefore, the research on this most of the previous researchers conducted to get improvement in Nepalese context organizations is a main objective. But many researchers have conducted in the area of profit planning and control and management accounting in Nepalese context and some of scholars tried to research conduct on the CVP analysis in Nepalese based. Here, an attempt is made to review some of the researches conducted based on management accounting practices, Profit planning and control, cost volume profit analysis and promotional aspect of export of Nepalese handmade paper in Nepalese context.

Mr. Sagar Sharma (2002)

He had conducted research on the topic “Management Accounting Practices in the Listed Companies of Nepal.” His research is conducted to examine the practice of management accounting tools in the listed companies of Nepal and his research was based only in primary data and no priority given to the secondary data. The objectives of his study were: i) To study and examine the present practice of management accounting tools in the listed companies in Nepal. ii) To identify the areas where management accounting tools can be applied to strengthen the companies. iii) To identify the difficulties in applying management accounting tools in Nepalese companies. iv) To make recommendations to overcome the difficulties in applying management accounting tools in Nepalese companies. In his research work pointed out various findings and recommendations. Some remarkable findings were as below:

- Different types of management accounting tools are taught in the colleges which are not found applied by the listed companies of Nepal.
- Management is to help managers in overall managerial activities by providing information and supporting in planning, controlling and decision- making.
- Nepalese listed companies are in infant stage in practicing of management accounting tools like capital budgeting, activity based costing, targeted costing and value engineering.
- As Nepal is proceeding toward globalization and get membership of WTO, companies are recommended to apply management accounting tools to fit with the global environment.

Mr. Sharma conducted research on practice of management accounting in listed companies of Nepal focusing on the overall aspect of Management accounting but could not deal on specific tools like CVP. 21st century is the age of specialization not generalization due to it is realized a specific tool is more realistic and effective rather than using overall tools as a whole of once.

Mr. Madhav Rijal (2005)

Mr Rijal had conducted on the topic “Cost-Volume-Profit analysis as a tool to measure effectiveness of profit planning and control: a case study of Nebico Private Ltd.” Mr. Rijal had concentrated his study to examine the CVP 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. The data and other necessary information had collected secondary as well as primary sources of data. The time covered by the research is five year from fiscal year 2056/57 to 2060/2061. The objectives of his study were: i) To study relationship of cost volume profit as a tools of budgeting. ii) To analyze the cost volume profit of the company and its impact in PPC. iii) To evaluate the sensitivity of profitability. iv) To provide suggestions and recommendations for improving Nebico condition. In his research work following findings and remarkable were as:

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

Mr. Rijal conducted his research study on Nebico Private Ltd. but in this research study could not disclose sufficient information for the company improvement way in the future by showing clear way that which management accounting tool to be used, what statistical methods to be practicable to reduce cost structures and to increase its effectiveness that is one of the CVP tool. Indeed, according to title the study is not fulfilling.

Mr. Bijay Raj Adhikari (2007)

Mr. Adhikari had conducted his study research on “Cost Volume Profit Analysis of Nepal Lube oil Limited” and presented a dissertation on it. His study is base on the financial data from 2056/57 to 2062/63. The objectives of his study are: i) To study relationship of cost, volume profit as a tools of budgeting. ii) To evaluate the profitability and sensitivity of NLO’s activities. iii) To analyze the cost-volume-profit and its impact in profitability. iv) To provide suggestion and necessary recommendations for the improvement of profitability through CVP analysis of Nepal Lube Oil in future based on the analysis of past secondary data. The data were collected by primary and secondary medium. However, the following findings and remarkable were described in his study:

- The company budgeting sales are more than actual sales due to SPPU.
- The company has usually very low margin at safety and also negative in some years.
- Sales trend of the company is fluctuating i.e. increasing trend.
- Correlation coefficient between budgeted sales quantity and actual sales quantity is negative i.e. indicates the negative degree of moderate correlation coefficient.
- In flexible budget the company suffers losses below 100% capacity utilization that indicates the current utilize capacity is average.
- BEP is in increasing trend due to decrease in PV ratio.
- Variable cost is fluctuating .i.e. increasing but fixed cost is decreasing.
- Estimated budgeted net profit is over ambition.

Mr. Adhikari tried to describe the CVP tool on NOL on the basis of the company P/L account but there is not only sufficient to describe the company efficient status using only P/L account. He also says that there is no relationship in sales and profit of the company; here I am forced to think that isn’t CVP the interrelationship items analysis? And isn’t affecting each other in this study only? Due to it created doubt its own research study. Therefore, this study not wholly shown to CVP analysis.

Mr. Churbhuj Aryal (2006)

Mr. Aryal had conducted a research entitled “CVP analysis as a tool to measures effectiveness of PPC (A case study of Herbs Production and processing co. Ltd).” For his research, he used primary and secondary data sources and research study was based from fiscal year 2054/55 to 2060/60. The objectives of his study were: i) To analyze the variance between target and actual sales of HPPCL. ii) To evaluate the profitability financial position. iii) To analyze the cost volume profit of HPPCL. iv) To provide suitable suggestions and recommendations of the analysis for improving HPPCL conditions. His major findings of the research work as follow:

- Budgets are prepared in traditional methods.
- HPPCL has burden of management and administration expenses and interest on loan which directly influenced on profitability.
- Pricing system is not competitive market price due to using traditional pricing method.
- No cost segregation method is used.
- Negative margin ratio due to huge losses of every year.
- Margin of safety ratio is negative.

- BEP of the company is higher than actual sales due to it should not maintain the expenses.

Mr. Aryal conducted his study CVP as tool to measure effectiveness of PPC of HPPCL. In his study described limitations, losses, MS, BEP etc. but didn't clearly disclose the systematic CVP tool as a PPC, so that coming few years the company will enter into profit making business organizations.

Mr. Doleshwor Poudel (2007)

Mr. Poudel had research conducted on an entitled "Cost volume profit analysis tool used to projected profit by salt trading corporation Limited." His research is based on from fiscal year 2057/2058 to 2062/63. The objectives of his study were: i) To analyze the cost and profit and loss of STCL. ii) To study the relationship of cost, volume and profit. iii) To analyze the impact of cost-volume-profit of the company on productivity. iv) To provide suggestions and recommendations for improving the condition of Salt Trading Corporation Ltd. for faster improvement. Primary and Secondary sources were used. The remarkable and findings were in his research:

- Total sales of the corporation were unstable.
- The company sold different products among them agricultural and machine equipment and machine equipment on the total sales found nominal.
- Costs like fixed, variables are fluctuated time to time. Therefore, company has no expenses plan.
- Contribution margin is 15% of total sales.
- There was high degree of the correlation between sales and profit.
- Higher degree of MOS indicated higher profitability ratio.
- BEP is lower and CM too.

Mr. Poudel conducted research on cost volume analysis tool used to projected profit by salt trading corporation Limited. In this research study, it was said probably first multiple products in CVP analysis but the most important technique for multiple products analysis using LP analysis is gaped due to the results out not fully reliable.

Mr.Barun Pokharel (2007)

Mr. Pokharel had conducted his research on the topic "Cash flow management of Handicraft industry as a component of Profit planning and Control." His research is based on fiscal year 2058/59 to 2062/63 primary as well as secondary data. The objectives of his study were: i) To analyze sales and expenses budget associated with cash budget of Sunrise Enterprises. ii) To draw true picture of profit planning control of Sunrise Enterprise. iii) To find of the relationship of cash budget with profitability. iv) To evaluate various budget with actual result. The major findings of the researcher's were:

- Planning is not based upon some specific but it is on surface planning.
- Sales revenue forecasting is baseless.
- Profit margin isn't meeting although sales revenue is high.
- Product productions cost is high comparatively to other administration and overheads expenses.
- Hard cash balance is not sufficient as to meet the current liabilities of the company.

- Company merely suffers chances of bad debts as the debtor of the company is too negligible.
- The average current ratio is only 1.63 times i.e. it has weak financial position.
- The average gross profit margin for 5 year is found to be 40.3%.
- The expenses seem to be under control.
- The company doesn't seem applying the effective managerial tools "Profit planning and Control" for controlling its activities.

Mr. Pokharel tried to show sales and expenses budget associated with cash budget of sunrays enterprises as a tool of PPC i.e. it summarized only cash received and payments due to only operational budget described not to get fulfilling result out as a tool of the PPC.

Mr. Anup Sharma (2007)

Mr. Sharma had conducted his research work on the topic "Revenue planning in manufacturing company; a case study of Shree Bhrikuti pulp and paper Nepal Limited." His study data were collected from primary and secondary data sources and the objectives of his study were: i) To understand theoretical concept of revenue planning. ii) To analyze the practice and effectiveness of revenue planning program in Shree Bhrikuti Pulp and Paper Nepal Limited. iii) To examine the use of sales budgeting in managerial short term and long term decision making. iv) To print out possible suggestions and recommendations to improve the performance of Shree Bhrikuti Pulp and Paper Nepal Limited with the means to revenue planning system. To study data was based on the fiscal year from 2058/59 to 2062/63. His findings and remarkable as below:

- SBPPNL plans only short-term budget on the basis of ad-hoc rather than realistic and systematical analysis.
- The revenue trend is fluctuated year by year but target sales are increasing year by year.
- The correlation between sales quantity (MT) and revenue for budgeted and actual sales are positive .i.e. 99% and 95% respectively.
- Both sales quantity (MT) and revenue have coefficient of variance 19.53%, it indicates that mean achievement percent would up or down by 19.53%.
- The analysis of machine wise revenue plant shows a bit high than other.
- Domestic market is higher than export.
- All fiscal year negative net profit margins indicate that it has suffered from huge loss.
- Main source of cash generation is operating activity but it has poor cash generated.
- Actual sales per employee are highly decreased, although after increasing number of employees.
- The margin of safety has not been appeared any fiscal year due to the company has high fixed cost.

Mr. Sharma's research only concentrated in revenue planning of SBPPNL but he kept silence on the case of the analysis of sales trend treatment about how should be net negative margin removed that is fully depend on revenue and why sale per employees is highly decreased although number of employees increased. What cost structure technique to be developed to show the margin of safety appeared? Therefore only revenue planning is not

completed just analysis of its present situation but also importance about revenue planning improvement techniques.

Sirjana Pradhanang (2004)

Miss. Pradhanang had conducted his research study on the topic “A study on the promotional Aspect of the Export of Nepalese Handmade paper and paper Products.” The objectives of her study were: i) To identify the various factors affecting the promotion of Nepalese handmade paper and paper products and how the enhancement of these factors helps to increase the export of it. ii) To examine the trend of export Nepalese handmade paper. iii) To examine the trend of export of handmade paper product. iv) To submit recommendations for the export enhancement. v) To serve as ready reference to the concern parties such as HMG paper products and exports. vi) The study will be useful materials for the other MBS students interested in preparing dissertation in the Nepalese handmade paper and paper products. Her study was based on primary and secondary data sources from fiscal year 1997/98 to 2001/02. Her study findings and remarkable were as follow:

- The organizations exporting Nepalese handmade paper and paper products in the international market are generally both manufacturer and exporter.
- Major of the respondents don't have difficulty in procuring the basis raw material, Lokta.
- It has been found 61% of the organization has been able to deliver the Nepalese handmade paper and paper products to the international customers on the timely basis.
- Majority of the respondents have website to promote their products and many are planning to construct it in the near future.
- Respondents are giving importance on quality control and they are conducting quality control to produce standardized products as demanded in the international market.
- Lokta is used for paper making as a raw material but lokta bark reproducing is slow.
- Government has adopted nine point's monetary and organizational measures to evolve a dynamic and permanent export of the exportable goods.
- 313 handmade paper industries are registered in different districts under Government of Nepal.
- Handicraft items are one of the leading exportable items of Nepal to the overseas market.
- The export trend of Nepalese handmade paper shows increasing trends.

Miss. Pradhanang concentrated only on promotional aspect of Nepalese Handmade paper but it is not cleared which handmade paper industries are promoting and which not? Therefore, it is the research on handmade paper area as a whole Nepal due to can't decide clear cost structure of the handmade paper industries. Another fact that only promotional aspect of export analysis can't based right position of the handmade paper industries. So, the research is uncompleted as a title.

2.3.3. My Research Gap Area

I found most of the previous research conducted on the topic Profit planning and control on public and non-public manufacturing organizations and revenue planning. All of them didn't use CVP as a specific tool analysis of PPC. However, they recommended an

effective implementation of PPC. Some other researchers conducted on management accounting practices in listed companies of Nepal on which they covered overall aspect of management accounting tools not a specific. Today world is globalization in which get tough competition prevailed among domestics and international or multi-national companies. Therefore, to cope with it, every profit motive manufacturing organizations and service motive manufacturing organizations should concentrate on specific products and tools. Specific tool is more effective other than using overall aspects' tool for analysis. In the previous researcher on the area of PPC and management accounting practices of listed companies used as a whole not a specific.

Another aspect of this research area is that there were some researchers who conducted their research on the CVP analysis as tool for the analysis of the companies' effectiveness. Some of these researchers didn't completely used as tool of CVP, but some used CVP as tool of the company analysis. However, a few of who used as a tool to CVP only on the area of Nepal Lube oil Limited, Nebico Private Ltd, Salt Trading Corporation etc.

While I considered on the area of Handcraft industries, for more handmade paper industries, there were not research conducted CVP as a tools of the sales, volume and cost analysis due to without CVP analysis. Most of the previous research conducted on the area of promotional aspect of export of handmade paper and products, problem and prospect of handicraft export, cash flow management of handicraft as tool of PPC, constraints and solutions of Nepalese handicraft etc. There was lack of research study on the Handicraft industries or Handmade Paper industries as a tool of CVP analysis to measure their effectiveness, profitability and productivity. Therefore, the research was conducted to fulfill the previous research uncompleted using of CVP tool on the area of the Handmade Paper Industries analysis. I think this is the first research study on the area of the Handmade Paper Industries by using tool of CVP.

Chapter-III

Research Methodology

3.1. Research Design

A research without a pre-drawn plan is like a ocean voyage without Mariner's compass. The preparation of a research plan for a study aids in establishing direction to the study and in knowing exactly what has to be done and how and when it has to be done at every stage. It enables the researcher to consider beforehand the various decisions to be made: what are the objectives of the study? What are the investigative questions? What are the sources of data? What is the universe of the study? What sampling method is appropriate? And so on. Without a plan, research work becomes unfocussed and aimless empirical wandering, the researcher would find it difficult, laborious and time consuming to make adequate discriminations in the complex inter-play of factors before him; he may not be able to decide which is relevant and which is not, and may get lost in a welter of irrelevancies. The use of a research design prevents such a blind search and indiscriminate gathering of data and guides him to proceed in the right direction.

Thus, Research design is the plan, structure and strategy of investigation conceived so as to obtain answer to research question and control variance. A well settled research design is necessary to fulfill the objectives of the study. Research design adopts a definite procedure and techniques that guide the study and it propound the way of research viability.

A research plan prescribes the boundaries of research activities and enables the researcher to channel his energies in the right work. With clear research objectives in view, the researcher can proceed systematically toward their achievement.

The research study is intensively based on the past performance financial data. However, for achieving or attaining the objectives of the study, both description and analytical research design have been followed.

3.2. Nature and Sources of Data

Data may be obtained from several sources; it is not easy to list them in detail. Each research study has its own data needs and data sources. However, in this research study secondary and primary data have been used for analysis through concerned company authority. The primary data are collected through questionnaire, observation and direct interview methods with concerned manager of the BCP Ltd named Jhoti Tuladhar. Secondary data collected mainly from annual report, P/L statements or income statements, balance sheet, cash flows statements, company's brochure, newspapers, internet and other relevant and irrelevant unpublished documents of Bhaktapur Craft Paper Ltd.

3.3. Population and Sampling

Bhaktapur Craft Paper Ltd. is a sample and population itself. The research is completely based on Cost-Volume-Profit analysis of BCP Ltd. It is not concerned with any branch or production. Therefore, there is no any difference between sampling and population.

3.4. Research Variables with time frame

BCP Ltd. Sales revenue, costs, P/L acc, capacity utilizations, income statements, time frame covered the fiscal years (2056/57 to 2062/63) were the research variables.

3.5. Used Tools

For the analysis the data various types of tools have been used such as scientific management accounting, statistical and mathematical tools which have been displayed as the requirement of the research conducted of the problems types. The scientific management accounting tools have been used such as contribution margin, breakeven point graphically and mathematically, margin of safety, operating leverage sensitivity of CVP, cost reduction and productivity etc. The statistical tools are: average (mean), correlation coefficient, regression, ANOVA, Hypothesis, bar and pie chart-diagrams etc. Similarly, mathematical tools are percentage; differences etc and financial tools are necessary ratios etc.

3.6. Mathematic & Statistical Tools

In the research study of BCP Ltd, statistical and mathematical tools have been used for attaining or achieving accuracy on analysis of data. The used tools as follows:

3.6.1. Arithmetic Mean

Arithmetic Mean of a given set of observation is their sum divided by the number of observations. For example, the arithmetic mean(\bar{X}) of n observation $X_1, X_2, X_3, \dots, X_n$, is given by:

$$\bar{X} = \frac{\sum X}{n}$$

3.6.2. Standard Deviation

Standard deviation usually indicated by Greek letter small sigma (σ), it is positive square root of the arithmetic mean of square of deviations of the given values from their arithmetic mean as:

$$\sigma = \sqrt{\frac{\sum (X - \bar{X})^2}{n}}$$

Where, \bar{X} is the arithmetic mean of the distribution

3.6.3. Karl Pearson's Coefficient of Correlation

There is several mathematic method of measuring correlation, among them Karl Pearson's Coefficient of Correlation is most popular method. Therefore, in this research study, it has been followed. In which correlation coefficient denoted by r that measures the intensity or magnitude or degree of relationship between the two variables and given by the formula:

$$r = \frac{\text{Covariance}(X,Y)}{\sigma_X \sigma_Y}$$

Where, covariance measures the relative change in the variable X and Y. Mathematically it can be obtained for calculations using relation as:

$$r_{xy} = \frac{n \sum XY - (\sum X)(\sum Y)}{\sqrt{[n \sum X^2 - (\sum X)^2][n \sum Y^2 - (\sum Y)^2]}}$$

Here, n = numbers of pairs of X and Y observed

X = Variable

Y = Variable

r = Karl Pearson's Correlation Coefficient

The correlation coefficient always lies between -1 and +1, i.e. $-1 \leq r \leq 1$, $r = +1$ denotes the perfect positive correlation between two variables. As such $r = -1$ denotes the perfect negative correlation between two variables. As $r = 0$ denotes independent variables or say no correlation between two variables.

3.6.4. Probable Error (P.E.)

Probable error of correlation coefficient denoted by P.E.(r) is an old measure of testing the reliability of an observed value of correlation coefficient in so far as it depends upon the conditions of random sampling. Thus, it is used to measure the reliability and test of significance of correlation coefficient. The probable error of the coefficient of correlation is obtained using following formula:

$$P.E. (r) = 0.6745 \times \frac{1-r^2}{\sqrt{n}}$$

Where, r = the value of correlation coefficient

n = number of pairs of observations

If the value of r is less than probable error, it is no evidence of correlation. If $r > 6 P.E.$, it is significant.

3.6.5. Small sample test (t –Test)

For small sample, the standardized statistic, $\left[\frac{t-E(r)}{S.E.(t)} \right]$ may not follow the normal distribution. So we cannot apply z-test in such cases. For small sample, we apply t-test. In general a sample is said to be small. If the sample size is less or equal to 30.i.e. $n \leq 30$. The following formula to be used for testing of hypothesis concerned population mean, difference between sample and two populations mean, an observed correlation coefficient etc.

$$t = \frac{\bar{X} - \mu}{S/\sqrt{n}} \sim t_{n-1}$$

3.6.6. Analysis of Variance (ANOVA)

If any problem consisting of more than two samples, say 3 or more samples, is given to find whether there is significant difference between sample means or variance, it is difficult to solve the problem by applying t or F tests. Moreover, the analysis of variance is applicable to test whether there is significant difference between means or variances. Not only this, but also when the response variable is affected by more than one factor we apply ANOVA technique. The technique of analysis of variance is to split up the total variation into

components variations due to independent factors where each of the components gives us the estimate of the population variance. The variance ratio is obtained by dividing the variance between the samples by the variance within samples. Thus ratio forms the test statistic known as F statistic, i.e.

$$F \text{ statistic} = \frac{\text{Variance between samples}}{\text{Variance within samples}}$$

3.6.7. Test of Hypothesis

In general, hypothesis is defined as an assumption or statement made about the population parameter. Since these assumptions may or may not be valid, we have to perform hypothesis test to confirm it. Thus, a statistical hypothesis is some assumption or statement, which may or may not be true, about a population or equivalently about the probability distribution characterizing the given population, which we want to test on the basis of the evidence from a random sample. If the hypothesis completely specifies the population, then it is known as simple hypothesis, otherwise it is known as composite hypothesis.

There are two types of hypothesis, namely, null hypothesis and alternative hypothesis.

Null Hypothesis:

The null hypothesis is the hypothesis to be tested and it is referred as hypothesis of no difference. According to Fisher “Null hypothesis is the hypothesis which is tested for possible rejection under the assumption that it is true.” It is denoted by H_0 . In general, if we are testing the hypothesis that the population mean (μ) has some specified value (μ_0) then the null hypothesis is set as: $H_0: \mu = \mu_0$

Alternative Hypothesis:

Any hypothesis which is complementary to the null hypothesis is called an alternative hypothesis. It is usually denoted by H_1 . It is very important to explicitly state the alternative hypothesis in respect of any null hypothesis H_0 because the acceptance or rejection of H_0 is meaningful only if it is being tested against a rival hypothesis. The alternative hypothesis $H_1: \mu \neq \mu_0$ (i.e. $\mu > \mu_0, \mu < \mu_0$) is known as a two tailed alternative i.e. right-tailed and left-tailed alternatives. If we want to test the null hypothesis that the population has a specified mean μ_0 , say i.e. $H_0: \mu = \mu_0$, then the alternative hypothesis could be :

- i) $H_1: \mu \neq \mu_0$
- ii) $H_1: \mu > \mu_0$
- iii) $H_1: \mu < \mu_0$

3.6.8. Hypothesis Used in Research study

For precise, reliability, achieving and attaining objectives of the research, the following hypothesis has been used as:

Hypothesis 1:

H_0 : There is no correlation between sales and mixed cost (i.e. change in sales volume cannot explain the change in mixed cost).

H_1 : There is correlation between sales and mixed cost (i.e. change in sales volume can explain the change in mixed cost).

Hypothesis 2:

H₀: There is no correlation between sales and total cost (i.e. change in total cost cannot explain the change in sales).

H₁: There is correlation between total cost and sales (i.e. change in total cost can explain the change in sales).

Hypothesis 3:

H₀: $\mu_x = \mu_y$ i.e. there is no significant difference between the net profit/loss before and after adjustment of the forward profit from earlier year and appropriation of the company.

H₀: $\mu_x > \mu_y$ (right tailed test) i.e. there is affected (changed) the net profit/loss after adjustment of the forward profit from earlier year and appropriation of the company.

Hypothesis 4:**Null Hypothesis:**

- i) H₀: $\mu_c = \mu_v = \mu_p$, i.e. There is no significance difference between the average cost, volume and profit.
- ii) H₀: $\mu_c = \mu_v = \mu_p$, i.e. There is no significance difference between the average cost, volume and profit in different fiscal years.

Alternative Hypothesis:

- iii) H₁: $\mu_c \neq \mu_v \neq \mu_p$, i.e. There is significance difference between the average cost, volume and profit.
- iv) H₁: $\mu_c \neq \mu_v \neq \mu_p$, i.e. There is significance difference between the average cost, volume and profit in different fiscal years.

3.6.9. Correlation and Regression Analysis

Correlation analysis is the statistical tool used to describe the degree and direction of linear relationship existing between two or more dependent variables. Two variables are said to be correlated when the change in the value of one variable is accompanied by the change of another variable. Thus the correlation like regression shows the degree and direction of relationship between the variables but, unlike regression, it does not show the cause and effect relationship.

Correlation coefficient measures the degree of relationship between two variables whereas the regression analysis is used to estimate the likely values of one variable from the known value of the other variable i.e. in regression analysis we establish a kind of average irreversible functional relationship between the two variables. The cause and effect relationship is clearly indicated through the regression analysis than by correlation. In other words, regression analysis is a mathematical measure of the average relationship between two or more variables in terms of original units of data. There are two types of variables in regression analysis-dependent variable and independent variables. The variable whose value is influenced or is to be predicted is called dependent variable whereas the variable which influences the value or is used for prediction is called independent variable. The independent variable is also known as regressed or explained variable while the independent variable is called as regressor or predictor or explanator variable. In the multiple regression, the value of

a criterion variable can be estimated for the given the value of a predictor. A least square regression line can be used which is the strongest line that best fit the data on a scatter diagram. This line maximizes the sum of the squared distances between each data point and line. The amount of discrepancy between the value of Y predicted with the regression equation and the actual value is provided by the standard error of estimate.

In regression analysis, the relationship between variables is expressed in the form of a mathematical function in which Y, the dependent variable, is set equal to some expression that depends only on X, the independent variable.

The general equation for a straight line fitted to the variables X and Y is

Regression equation of Y on X,

$$\hat{Y} = a + b X$$

Where, \hat{Y} is the dependent variable, X is the independent variable, a is the constant that represent the intercept of the line and b is the slope of the line which measures the rate of relationship. Actually, a and b are the regression parameters.

To determine value of b, the following formula can be used:

$$b = \frac{N \sum XY - \sum X \sum Y}{N \sum X^2 - (\sum X)^2}$$

The formula for y- intercept (a) is:

$$a = \bar{Y} - b (\bar{X})$$

3.6.10. Diagrammatic and Graphic Representation

Classification and tabulation are the devices of presenting the statistical data in neat, concise, systematic and readily comprehensible and intelligible form, thus highlighting the salient features. Another important, convincing, appealing and easily understood method of presenting the statistical data is the use of diagrams and graphs. Diagrammatic and graphic presentations are visual aids which give a bird's eye view of a given set of numerical data. They present the data in simple, readily comprehensible form. Diagrams are generally more attractive, fascinating and impressive than the set of numerical data. They are more catching and as such are extensively used to present statistical figures and facts in most of the exhibitions, trade or industrial fairs, public function, statistical reports etc. They registered a meaningful impression. When properly constructed, diagrams and graphs readily show information that might otherwise be lost amid the details of numerical tabulations. They highlight the salient features of the collected data, facilitate comparisons among two or more sets of data and enable us to study the relationship between them more readily. In this research area, the presented data are simply and comprehensive form. However, bar diagrams, pie – chart, graphs, tables, and lines graphs have been used for the mine research area for the presentation and analysis of the given data.

3.6.11. Mathematical Percentage Analysis

It is used for comparing between two or more data to get general information of the related data. It is an expression of relations between two numerical figures in terms of hundred. It is used as a tool or method to divide the opinions of the related sectors into two or more sectors for easily understood and fruitful analysis.

3.6.12. Ratio Analysis

Ratio analysis is a technique of analysis and interpretation of financial statement through mathematical expression. It may be defined as the mathematical expression of the relationship between two accounting figures. For evaluating the different performances of the company by creating the ratios like operating leverage ratio etc from the figures of different accounts have been used.

3.6.13. Time series Analysis

A time series is an arrangement of statistical data in a chronological order, i.e. in accordance with its time of occurrence. It reflects the dynamic pace of movements of phenomenon over a period of time. Most of the series relating to prices, production and consumption of various commodities; agricultural and industrial production, national income and foreign exchange reserves; investment, sales and profits of business houses; bank deposits and bank clearings, prices and dividends of shares in a stock exchange market, etc. are all time series over a long period of time. Accordingly, time series have an important and significant place in business and Economics, and basically most of the statistical techniques for the analysis of time series data have been developed by economists. However, these techniques can also be applied for the study of behavior of any phenomenon collected chronologically over a period of time in any discipline relating to natural and social sciences, though not related directly to economics or business. Thus, “a time series may be defined as a collection of readings belonging to different time periods, of some economic variable or composite of variables.” Hence, the time series is used to measure the change of economical and commercial data like sales revenues, productions, exports and imports over a time period. Mathematically, a time series is defined by the functional relationship,

$$Y = b x$$

Where, ‘y’ is the value of variable or phenomena value under consideration study in time ‘t’ or ‘x’. The value of may be yearly, monthly, weekly, daily, even in hourly, etc. However, in the research study yearly has been accepted.

Chapter-IV

Data Presentation and Analysis

4.1. Introduction

Success is measured in terms of accomplishment of the entity's goals. Management can be defined as the process of defining entity goals and implementing activities to attain those goals by efficient use of human, material, and capital resources. The management process is a set of interdependent activities used by the management of an organization to perform the functions of management planning, organizing, staffing, leading and controlling. Therefore, the comprehensive profit planning and control rests firmly upon the planning and control theory; that is, the primary success factor in an enterprise is the competence of management to plan and to control enterprise activities. So, profit planning and control is an important approach, mainly in profit oriented enterprises. CVP analysis, a tool of PPC, can be most essential device to analyze and utilize the cost with effectively and productively. It is a powerful tool in arena of the PPC of the every manager. Actually, CVP is the most effective and specific way of presenting, analyzing and examining of the interrelationship among cost, volume and profit.

The data presentation and analysis is the most important part of the study because all the information and ideas will be analyzed and presented in this chapter. For achieving our research study objectives, the available data were presented in table, diagram and graph and they were analyzed with the help of statistical, mathematical and accounting tools and finally interpreted on the basis of which facts were explored of BCP. For analysis of the BCP, both secondary and primary data were used as per given by the company. Secondary data were collected by annual report of the company and primary data were collected through direct meeting by using questionnaires.

The study has tried to cover the "Bhaktapur Craft Paper Ltd." for the last seven years from the fiscal year 2056/057 to 2062/063. The information that collected from the BCP was analyzed as follow.

4.2. Income Statement Analysis

Income is determined after deducting all expenses from revenues. It is surplus of over expenditure from sales revenues. Indeed income measures the performance of the real situation of the businesses. High income indicates good performance and highly opportunities scope of the business whereas low incomes shows threatens to the businesses. While subtract from sales revenue to the variable costs then will receive the contribution margin and net income is received after deducting fixed costs from contribution margin. After adding other sources of the business income in net income and will receive the net profit from the business. After calculating the net profit for the year, the company added the earlier year profit/loss to calculate the total net profit of the company. Balance sheet net profit/loss was calculated after non operating cost and appropriations expenses of the company. Therefore,

for more details analysis of the BCP Ltd, we analyses the following income statement of the BCP Ltd as follows:

Table no 4.1
Bhaktapur Craft Paper Ltd.
Income Statement Details

Rs. in Lakhs

Fiscal Year	2056/57	2057/58	2058/59	2059/60	2060/61	2061/62	2062/63
1.Sales revenue	333.81	450.99	240.89	301.12	181.05	156.79	244.56
2.Variable Cost	219.06	246.39	13.53	189.73	200.76	39.43	179.86
3.Contribution Margin (1-2)	114.75	204.60	227.36	111.39	-19.71	117.36	64.70
4.FixedCost (Including depreciation, provision for bonus, tax)	105.30	112.08	100.38	129.49	97.23	98.76	98.90
5.Net Income (3-4)	9.45	92.52	126.98	-18.10	-116.94	18.60	-34.20
6.Other Income	31.69	21.87	75.77	40.39	21.30	5.27	33.20
7.Net Profit for the year (5+6)	41.14	114.39	202.75	22.29	-95.64	23.87	-1
8.Profit from earlier years balance	360.56	389.36	459.94	479.69	383.74	155.10	17.44
9.Total Net Profit (7+8)	401.70	503.75	698.69	501.98	288.10	178.97	16.44
10.Utilization during the year	-	9.49	205.84	109.33	133.00	-	-
11.Profit available for appropriation (9-10)	401.70	494.26	492.85	392.65	155.10	178.97	33.88
12.Appropriation : Staff Welfare Fund	4.11	11.44	3.29	6.68	-	-	-
Community Devt Fund	8.23	22.87	9.87	2.23	-	-	-
13.Balance of Profit transferred to B/S Rs in Lakhs	389.36	459.94	479.69	383.74	155.10	178.97	33.88
14.Net profit margin Ratio (5÷1)	2.83%	20.52%	52.71%	-6.01%	-64.6%	11.86%	-13.9%
15.Net profit margin after other income (7÷1)	12.32%	25.36%	84.17%	7.40%	-52.8%	15.22%	-0.41%
16.V/V Ratio (2÷1)	65.62%	54.63%	5.62%	63.01%	110.9%	25.15%	73.54%
17.C/M or P/V Ratio (3÷1)	34.38%	45.37%	94.38%	36.99%	-10.9%	74.85%	26.46%
18.FC Ratio on sales (4 ÷ 1)	31.54%	24.85%	41.67%	43.00%	53.70%	62.99%	40.44%
19.Variable cost							

ratio on total cost {2÷(2+4)}	67.54%	68.73%	11.88%	59.44%	67.37%	28.53%	64.52%
20.Fixed cost ratio on total cost {4÷(2+4)}	32.46%	31.27%	88.12%	40.56%	32.63%	71.47%	35.48%
21. Degree of operating Leverage (3÷5)	12.14	2.21	1.79	-6.15	0.17	4.72	-1.89
22. Degree of operating Leverage after other income (3÷7)	2.79	1.79	1.12	4.99	0.21	3.99	-64.7
23.Non-operating expenses (12+10)	12.3432	43.8078	13.166	118.2468	133.00	-	-

Sources: Annual report of BCP Ltd.

Here, total net margin after and before were calculated due to other income of the company was also shown in the company income statement which was the most essential part of the company for income increase. Net profit was calculated after deducting segregation costs of variables and fixed cost of the company. Net profit margin was calculated by dividing contribution margin from Sales revenues. BCP Ltd. net profit margins were 2.83%, 20.52%, 52.71%, -6.01%, -64.6%, 11.86% and 13.9% respectively from the fiscal year 2056/57 to 2062/63. While analyzing the net profit margin of the company, it disclosed that the company contribution margin was decreasing haphazardly. In the year 2058/59 had the highest net profit margin. In this year, the raw materials of the previous year were more raw materials stock and price increased in the raw materials not only this other incomes were also more due to its increased the company net profit margin. Unfortunately, in this year a fire broke out in the factory that occurred losses fixed assets and raw materials by Rs 78, 55,223 and Rs 54, 56,858 respectively. However, the company made success more contribution margin due to less variable cost. The contribution margins were Rs 114.75, 204.60, 227.36, 111.36, -19.71, 117.36, and 64.70 Lakhs respectively from the fiscal year 2056/57 to 2057/58. The changed in contribution margins by 78.30%, 11.12%, -51.02%, -117.70%, 495.43% and 44.87% from the fiscal year 2057/58 to 2062/63 respectively. The contribution margin of the BCP Ltd was satisfactory but the fixed cost was high. Similarly in the fiscal year 2059/60, 2060/61 and 2062/63 showed the negative net profit margin. In the fiscal year, 2059/56 showed the more cost spent on fixed cost; but in the fiscal 2060/61 year, sales revenue was less than previous year but not decreased fixed cost; similarly in the fiscal year 2062/63, there was more variable cost and fixed cost static. While net incomes of the other sources of the company added it showed that the net profit margin increased. Therefore other income was also one of the income increasing profits of the company. Which increases aggregated by 10% in net profit margin. Thus, it can be said that there was no systematic profit, sales and costs plan. The decreasing and negative net profit margin showed immediately the company should use modern accounting technique such as CVP analysis etc. to improve, decreased cost and increased net profit margin. Not only this it also should focus to increase the sales by increasing sales markets within domestic and international.

The variable cost volume ratio (v/v ratio) of the company was determined by the turnover of the company. The Variable costs ratio are 65.62%, 54.63%, 5.62%, 63.01%, 110.09%, 25.15% and 73.54% respectively in the fiscal year 2056/57, 2057/58, 2058/59, 2059/60, 2060/61, 2061/2062 and 2062/63. The aggregate variable cost was 56.81% on sales. The ratio of the variable cost is haphazardly increasing and decreasing. However, more than 55% has been incurred by the variable costs in the sales revenues of the product. In the year variable cost was more than sales revenues due to decreasing sales than the previous year but not decreasing in the fixed cost and variable costs. Similarly, the percentage of the fixed cost in the sales were 31.54%, 24.85%, 41.67%, 43.00%, 53.70%, 62.99% and 40.44% respectively from the fiscal year 2056/57 to 2062/63. The aggregate percentage of the fixed cost in the sales was 42.59%. Except the fiscal year 2062/63, the fixed cost trends in the sales were increasing. Therefore to maximizing of the company, it is necessary to decrease in the fixed cost. Thus we can say that aggregate ratio of the variable cost; fixed cost and profit in the sales are 5:4:1.

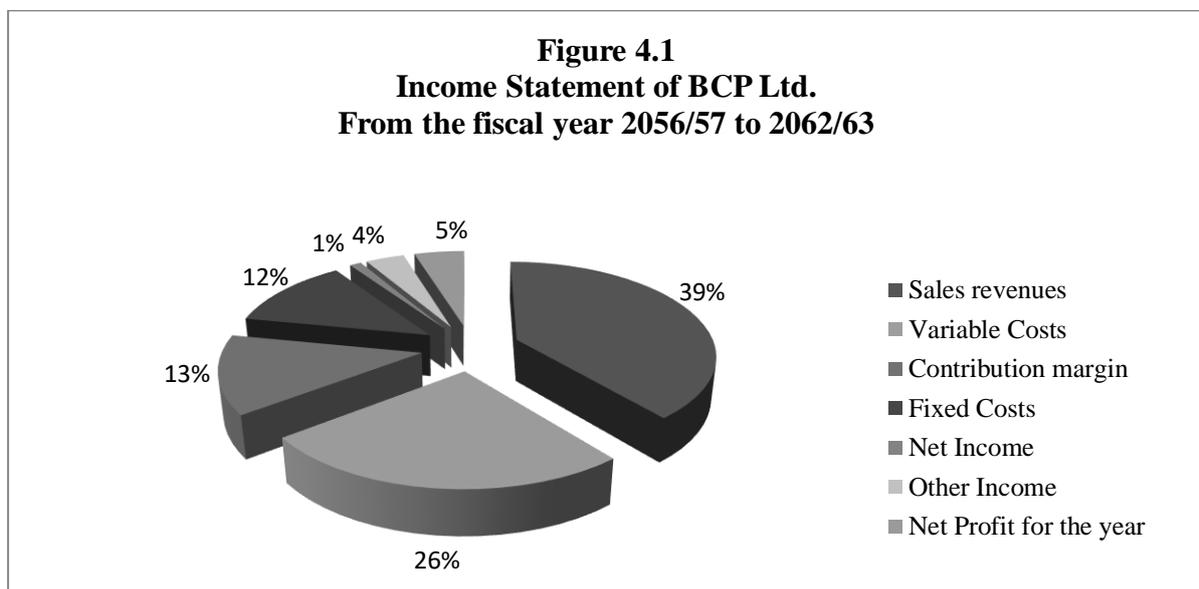
Similarly, the variable cost and fixed cost of the company in total cost showed 67.54%, 68.73%, 11.88%, 59.44%, 67.37%, 28.53% and 64.52% ; 32.46%, 31.27%, 88.12%, 40.56%, 32.63%, 71.47% and 35.48% respectively in the fiscal year 2056/57, 2057/58, 2058/59, 2059/60, 2060/61, 2061/62 and 2062/63. The average variable cost and fixed cost in the sales revenues were 52.57% and 47.43% respectively. Here, we can see that nearly variable cost and fixed cost showed equal in the total cost of the company. So, increasing sales and decreasing fixed cost is the most practicable to increase net profit of the company due to variable cost were very with the sales revenues of the company except 2058/59 and 2060/61.

The total net profit after including the previous year earned added were Rs. 401.40, 503.75, 698.69, 501.98, 288.10, 178.97 and 16.44 respectively in the fiscal year 2056/57, 2057/58, 2058/59, 2059/60, 2060/61, 2061/62 and 2062/63. The average total net profit after previous year earned added was 369.90 Lakhs. However after appropriation of the profit and utilizing the profit for the year during, the balance retained earning transferred to balance sheet were Rs. 389.36, 459.94, 479.69, 383.74, 155.10, 178.97 and 33.88 respectively in the fiscal year 2056/57, 2057/58, 2058/59, 2059/60, 2060/61, 2061/62 and 2062/63.

Leverage represents the influence of one variable over some other related variables. For more, it is an attempt to increase the return rate of ownership capital with maximum using low interest rate borrowed capital. The leverage helps a lot to the skilled manager of a company to maximize the return of ownership capital. Here, BCP Ltd had both operating cost and non operating cost. Operating cost included fixed cost, variable cost and semi-variable cost. The average degrees of operating cost before and after other income were 1.86 and 2.12 respectively. In the fiscal year 2062/63 after including other income too showed the negative degree of operating cost .i.e. -64.7. However, the degrees of operating costs were negative in fiscal 2059/60 and 2062/63 year before other income. Indeed operating cost leverage related with fixed cost and it measures quantitatively the extent of change in firm's operating income because of a change in sales. It also measures the risk of the company. Higher value of the operating cost indicates the higher amount of operating risk. If it is higher percentage of fixed cost, it is high degree of operating cost. Similarly if it is higher percentage of variable cost, it is low degree of risk and low profitability. But in the analysis, BCP Ltd. had 2.12 degree of

operating leverage. It had average Rs 106.02 Lakhs of fixed cost which was generally constant and high. Therefore, net profits were affected largely change in sales. It indicated that if the sales revenue increased by 10% then net profit after including other income EBIT increased by $10\% \times 2.12 = 21.2\%$, if the fixed cost be constant like fiscal year 2061/62 and 2062/63 respectively.

There also non-operating cost of the company were Rs. 12.3432, 43.8078, 13.166, 118.2468 and 133.00 Lakhs in the fiscal year 2056/57, 2057/58, 2058/59, 2059/60 and 2060/61 respectively. Non-operating cost included utilization profit expenses during the year, staff welfare fund and community development fund. The non-operating cost of the company after 2059/60 was not shown in the annual report of the company. The sales revenues, variable cost, contribution margin, fixed cost, net income, net profit before other income and net profit after income were shown in the following pie chart as :



The above pie-chart clearly showed the percentage of the total sales revenue, variable cost, contribution margin, fixed costs, net income, other income and net profit for the year from the fiscal year 2056/57 to 2062/63. In the chart total sales revenues represented by 39%, variable costs by 26%, contribution margin by 13%, fixed costs by 12%, net income by 1%, other income by 4% and net income for the year by 5% respectively.

4.3. Overall Revenues (including other income and sales), Costs and Profits

Every manufacturing organizations' main objective is to produce goods and sell them so that to achieve their objectives i.e. profit and services to survive in the competitiveness global business environment. Therefore, each organization should analysis their business environmental status. Here, I would try to analysis overall sales revenues, costs and profits of the "Bhaktapur Craft Paper Ltd." considering the some few years data which as follows.

Table no.4.2

Bhaktapur Craft Paper Ltd, Bhaktapur, Bhyasi-10

Overall Revenues (including other income), Costs and Profit						Rs in Lakhs	
Years							

Details	2056/57	2057/58	2058/59	2059/60	2060/61	2061/62	2062/63
Total Incomes	365.5015	472.85899	316.65804	341.50986	202.34925	162.05194	277.75514
Changes in income	-	29.3727%	-33.0333%	7.2770%	-40.7486%	-19.9147%	71.3988%
Total Sales	333.81145	450.98964	240.88961	301.1157	181.04949	156.78644	244.55663
Changes in sale	-	35.1031%	-46.5864%	25.0015%	-39.8738%	-13.4013%	55.9807%
Total cost	324.35762	358.46629	283.74307	319.21799	297.98539	138.32312	278.61466
Changes in cost	-	10.5158%	-20.8453%	12.5025%	-6.6514%	-53.5806%	101.4231%
Total Profit/loss except other income	9.45383	92.52335	-42.85346	-18.1023	-116.9395	12.17518	-34.05803
Total profit / loss including other income	41.14386	114.3927	32.91497	22.29186	-95.63615	17.44068	-0.85952
Change in profit/loss except other income	-	878.6864%	-53.6836%	-57.7577%	-545.993%	89.5885%	-179.733%
Change in profit /loss including other income	-	178.0310%	-71.2263%	-32.2744%	-329.018%	81.7935%	-95.0718%
Profit/loss after Appropriation (including earlier years profits)	389.3560	459.9430	479.6920	383.7400	155.1015	172.54218	171.6827
Change in profit/loss after Appropriation	-	18.1292%	4.2938%	-20.0028%	-59.5816%	11.2447%	-4.9813%

(Source: Annual report of BCP Ltd.)

The table showed that total incomes were not stable from the fiscal years 2056/57 to 2062/63. The increasing and decreasing of the total income were haphazardly due to it showed that there weren't any pre-planning income statements or budgeting of revenues. The total incomes included both sales revenues and other sources of income. The total income of the company decreased by -33.0333%, -40.7486%, and -19.9147% in the fiscal years 2058/59, 2060/61 and 2061/62 respectively. The increased percentage of total income from the fiscal years 2057/58, 2059/60 and 2062/63 were 29.3727%, 7.2770% and 71.3988% respectively. The increased of the total income is satisfactory in the fiscal year 2062/63 that also decreasing in the revenues of the previous while comparing. The aggregate total incomes contributed by each fiscal year were 17%, 22%, 15%, 16%, 9.5%, 7.5% and 13% respectively.

It showed that total sales revenues, costs and profits from the fiscal years 2056/057 to 2062/063 were not stable. Similarly, total costs of the company decreased by -20.8453%, -6.6514%, -53.5806% in the fiscal years 2058/059, 2060/061 and 2061/062 respectively. The

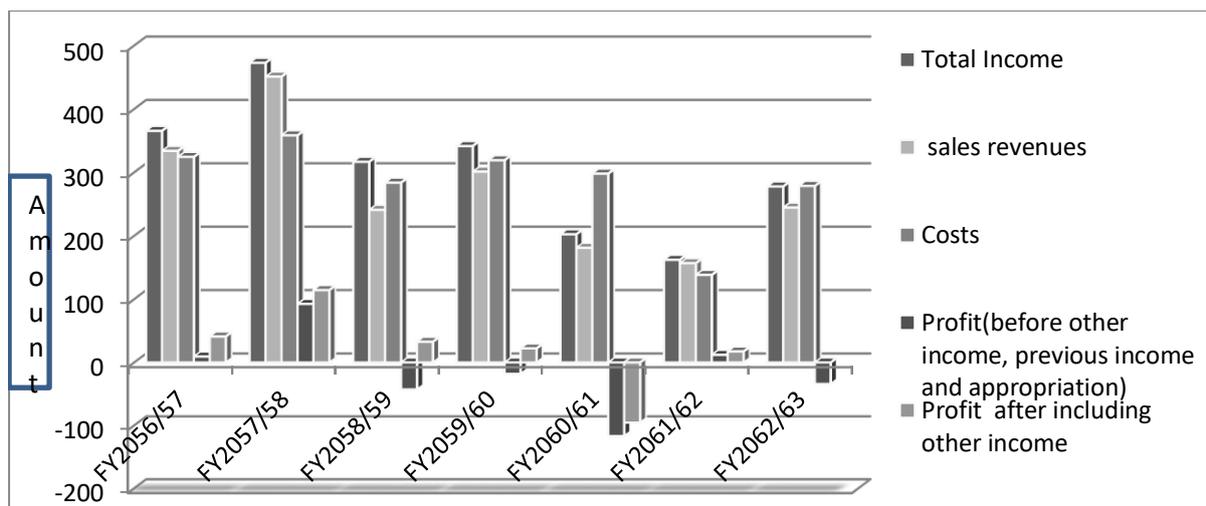
incremental percentages of the total costs were 10.5158%, 12.5052% and 101.4231% in the fiscal years 2057/58, 2059/60 and 2062/63 respectively and the aggregate total costs were as 16.21%, 17.92%, 14.18%, 15.96%, 14.89%, 6.91% and 13.93% respectively years in 2056/57, 2057/58, 2058/59, 2059/60, 2060/61, 2061/62 and 2062/63.

While considering total profits/losses of the company, there were losses in the fiscal year 2058/59 by Rs.-42.85346 lakhs, 2059/60 by -18.1020 lakhs, 2060/61 -116.9395 lakhs and 2062/63 -34.05803 lakhs respectively due to tough competition international market with machine made paper, heavy imported by Tibet, country's unstable political scenarios and insecurity condition. However, there were profits (margin) in the some fiscal years by Rs.9.45383 lakhs in 2056/57, Rs 92.52335 lakhs in 2057/58 and Rs 12.17518 lakhs in 2061/62. The changes in profit are too haphazardly in the fiscal years 2057/58 increased by 878.6864% but in the fiscal year 2062/63 decreased by -179.733%.

When included other income sources in the sales revenues then the profit changed in 2057/58 by 178.0310%, 2058/59 by -71.2263%, 2059/60 by -32.2744%, 2060/61 -329.081%, 2061/62 by 81.7935% and 2062/63 by -95.0718% respectively. While the profits of the previous year included then the profit changes after appropriation were 18.1292% in 2057/58, 4.2938% in 2058/59, -20.0028% in 2059/60, -59.5816% in 2060/61, 11.2447% in 2061/62 and -4.9813% in 2062/63. In the year 2062/63 there wasn't separate funds for appropriation due to it is the profit not included appropriation. Most of the fiscal years profit increased after included of the previous profits to show the actual balance profit of the year.

In overall analysis of the sales revenues, costs and profits, there was direct proportional relationship between among them. Therefore, if one of them changes in the amount, automatically will change in the one another amount. In the fiscal year 2056/57 the sales amount, cost and profit were Rs. 333.81145 lakhs, 324.35762 lakhs, and 9.45383 lakhs respectively but in the fiscal year 2057/58, the sales amount, cost and profit were 450.98964 lakhs, 356.46629 lakhs and 92.52335 lakhs respectively. Similarly, in the fiscal year 2062/63, the sales, cost and profit were Rs.244.55663 lakhs, Rs.278.61466 lakhs and Rs.-34.05803 respectively. Thus, it can be said that there was direct proportion between sales, cost and profit of BCP Ltd. The total income (sales and other incomes), sales revenues, costs and profit (before other income) of the BCP were shown by using the following bar diagram, the diagram is based on the fiscal year from 2056/57 to 2062/63

Figure 4.2
Bhaktapur Craft Paper Ltd, Bhaktapur, Bhyasi-10
Overall Income, Sales, Costs and Profit **Rs. in Lakhs**



Now, the bar-diagram clearly showed that picture of the fluctuation of the amount among total income, sales, costs and profit in the different fiscal years. The above diagram has shown the direct relationship among these variables. It showed that when the sales increased in the fiscal year 2057/58, 2059/60, 2062/63 by 35.1031%, 25.0015% and 55.9807% respectively, then it affected directly increasing costs by 10.5158%, 12.5025% and 101.4231% in the respective fiscal years. Similarly, the decreasing sales revenues of the fiscal years -46.5864% in 2058/59, -39.8738% in 2060/61 and -13.4013% in 2061/62 affected decreasing by -20.8453%, -6.65145% and -53.5806% in costs and profit increased by 878.6864% in 2057/58 and 89.5885% in 2062/63 respectively. But in the fiscal year 2059/60, there was loss shown in the income statement due to some payments has been made (interest, other expenses) which was included in the income statement, as we separated from it, and then it was Rs126.9853 Lakhs profits. Similarly, the losses in the fiscal years 2058/59, 2060/61 and 2061/62 were -53.6836%, -5.45.993% respectively. But in the fiscal year 2061/2062, there was profit due to sales is more than costs i.e. profit by 89.5889% but most of other fiscal year there was more costs than sales. Thus, it can be said that there was direct relationship among these sales, costs and profit of BCP Ltd.

4.4. Actual Sales Revenues Trend Analysis

The actual Sales revenues of the BCP from fiscal year 2056/057 to 2062/63 are as follows:

Table no.4.3
Bhaktapur Craft Paper, Bhaktapur, Bhyasi-10
Total Sales Revenue (excluding other income)

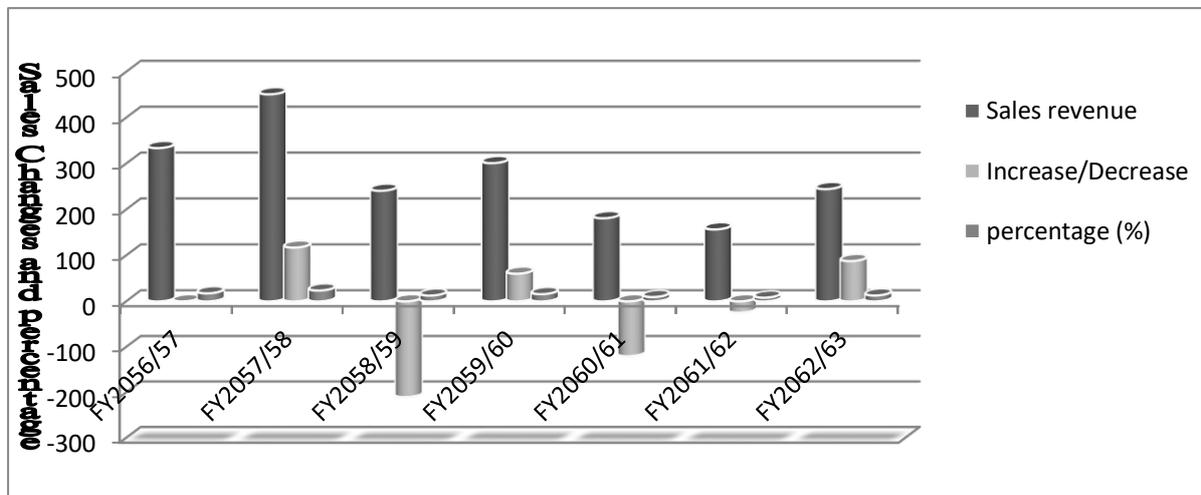
		Rs in Lakhs					
Years	2056/57	2057/58	2058/59	2059/60	2060/61	2061/62	2062/63
Total Sales	333.81145	450.98964	240.8896	301.1157	181.04949	156.78644	244.55663
Change in Sales	-	35.10%	-46.59%	25.00%	-39.87%	-13.40%	55.98%

The total sales revenue (not included other incomes) of the company were decreased by -46.5864%, -39.8738%, -13.4013% in the fiscal years 2058/059, 2060/061 and 2061/062 respectively. The increased percentage of total sales were not satisfactory in the fiscal years

2057/058, 2059/060 by 35.10%, and 25.00% but in the fiscal year 2062/63 by 55.98%. It was higher satisfactory than the previous year, still it was less sales than fiscal year 2056/57. The actual trend of the sales revenue can be shown by using multiple bar-diagrams in which vertical axis showed the Sales revenue, changes in sales of the fiscal year from 2056/57 to 2062/63 and horizontal axis showed the Fiscal years.

Figure 4.3
Bhaktapur Craft Paper Ltd, Bhaktapur, Bhyasi-10
Actual Sales Revenue and Changes in Sales

Rs. in Lakhs



Through the analysis of the sales revenues of the seven fiscal years of the BCP Ltd, the sales revenue trends fluctuated in each year. The trend of the sales of the fiscal year 2057/058 was the highest sales revenues and other years sales were less. The fluctuating sales were due to its international market representing more than 80%. The company faced the tough competition with international market where competition with machine made paper product was most wanted. Another competition was because of large exports from Tibet. The another aspect of the fluctuating of the sales revenue was not practicing of the Sales budgeting or revenues planning of BCP Ltd. Country's political unstable was the another factor for its sales fluctuations.

However, the markets of the products were growing annually because of renowned, exceptional durability, lively and special texture. In future, BCP anticipates more achievement by promoting its products in international market and new markets.

The study of the data over a long period of time enables us to have a general idea about the pattern of the behavior of the phenomenon under consideration. This helps in business forecasting and planning future operations. The time series data for a particular phenomenon exhibits a trend in a particular direction, then under the assumption that the

same pattern will continue in the near future, and assumption which quite reasonable unless there are some fundamental and drastic changes in the forces affecting the phenomenon.

The actual sales are expressed on the basis of time series analysis to find out probable future trend of the BCP sales. Time series analysis shows the relationship between time (t) and sales values. Here, BCP's sales values was taken as dependent variables (Y) and time factor (t or x) was taken as independent variable (b) to fit the straight line trend. The fiscal year 2059/060 was assumed as midyear and other values were estimated by using least square method. The detail analysis is given below.

Table no.4.4
Bhaktapur Craft Paper Ltd, Bhaktapur, Bhyasi-10
Statistical Calculation of Estimated Sales Revenues

Fiscal Year (t)	Actual Sales (y)	x = t – 2059/060	xy	x ²	Rs in Lakhs
2056/57	333.81145	-3	-1001.4344	9	
2057/58	450.98964	-2	-901.97928	4	
2058/59	240.88961	-1	-240.88961	1	
2059/60	301.11570	0	0	0	
2060/61	181.04949	1	181.04949	1	
2061/62	156.78644	2	313.57288	4	
2062/63	244.55663	3	733.63989	9	
	$\Sigma y = 1909.19896$	$\Sigma x = 0$	$\Sigma xy = -916.01098$	$\Sigma x^2 = 28$	

Let the least square straight line trend equation of sales (y) on the independent variable time (x) is

$$y = a + bx \dots\dots\dots (i)$$

Where, a = minimum sales value at x = 0

b = sales rate change per unit time

x = year 2059/060

To estimate equation (i) the values of a and b were determined by using

$$a = \frac{\Sigma y}{n}, \quad b = \frac{\Sigma xy}{\Sigma x^2}$$

Here,

$$a = \frac{1909.19896}{7} = 272.7427$$

$$b = \frac{-916.01098}{28} = -32.7147$$

$$\therefore \hat{y} = 272.7427 + (-32.7147) \times x$$

This straight trend line showed that there was negative growth of the sales revenue trend i.e. expected decreasing annually by Rs. -32.7147 lakhs.

Expected Sales for 2063/64,

$$\begin{aligned} \therefore \hat{Y}_{(for\ 2063/64)} &= 272.7427 + (-32.7147) \times 4 \\ &= \text{Rs. } 141.8839 \text{ lakhs} \end{aligned}$$

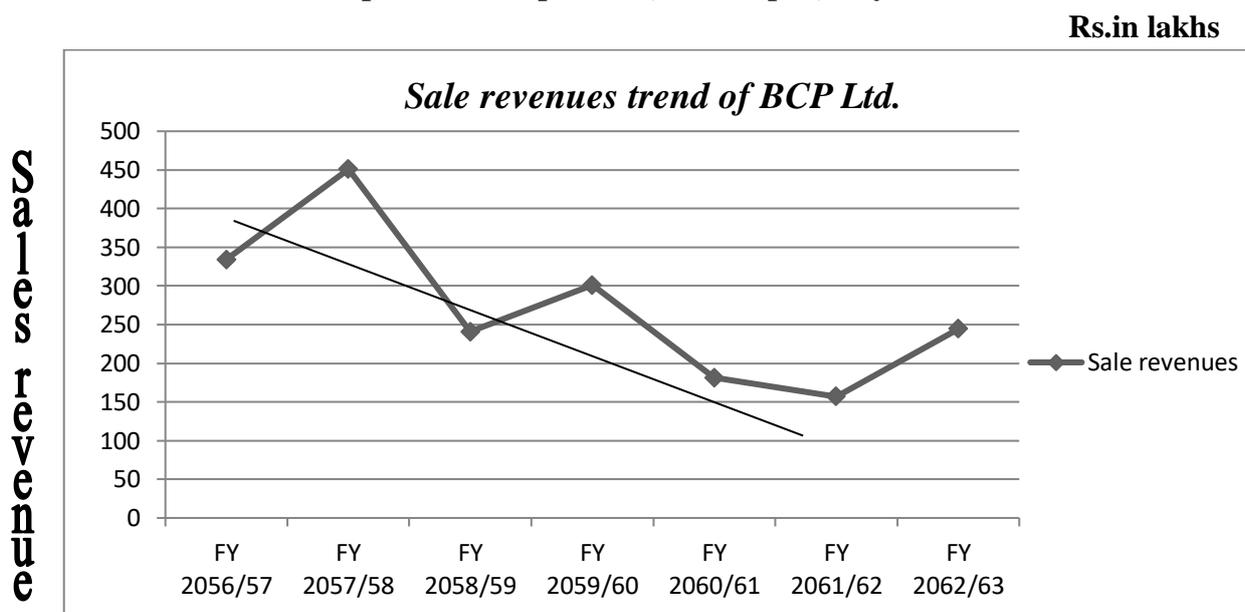
Similarly for 2064/65,

$$\begin{aligned} \therefore \hat{Y}_{(for\ 2064/65)} &= 272.7427 + (-32.7147) \times 5 \\ &= \text{Rs. } 109.1692 \text{ lakhs} \end{aligned}$$

If the sales trends remain constant, the probable future sales revenues will be Rs 141.8839 lakhs and Rs 109.1692 lakhs for the fiscal year 2063/64 and 2064/65 respectively. Therefore for more sales revenues, BCP Ltd should explore for more sale markets and maintain the business internal and external environment by using management technique as possible as. However, external business environment is macro variables in nature therefore it is out of control.

The sales trend of BCP Ltd. is presented by using time series trend line analysis diagram as follows:

Figure 4.4
Bhaktapur Craft Paper Ltd., Bhaktapur, Bhyasi-10



The sales revenues were shown on Y axis and the fiscal years on x axis. The sales were in decreasing trend. The highest sales revenue was in 2057/058 but the lowest in 2061/062. In the figure the straight line was in downward trend. But from the fiscal year 2062/63, there showed in sales revenue.

4.5. Other Sources of Income Analysis

BCP Ltd. has supplementary sources of income which is also known as other sources of the business. The other sources income of BCP included scrap paper sold, scrap fixed assets sold, ink boxes etc. The other sources of business income played most important role in the increasing total income of BCP. Therefore, to trend analysis for its fiscal year

2059/2060 was taken as midyear and other values were estimated by using least square method which as follows:

Table no.4.5
Bhaktapur Craft Paper Ltd., Bhaktapur, Bhyasi-10
Statistical Calculation of Estimated Other Income

Rs in Lakhs				
Fiscal Year (t)	Other Income (y)	x = t – 2059/060	xy	x ²
2056/57	31.69003	-3	-95.07009	9
2057/58	21.86935	-2	-43.73870	4
2058/59	75.76843	-1	-75.76843	1
2059/60	40.39416	0	0	0
2060/61	21.29976	1	21.29976	1
2061/62	5.265500	2	10.53100	4
2062/63	33.19851	3	99.59553	9
	$\Sigma y = 229.48574$	$\Sigma x = 0$	$\Sigma xy = -83.15093$	$\Sigma x^2 = 28$

Let the least square straight line trend equation of other income (y) on the independent variable time (x) is $y = a + bx$ (i)

- Where, a = minimum sales value at x = 0
- b = sales rate change per unit time
- x = year 2059/060

To estimate equation (i) the values of a and b were determined by using

$$a = \frac{\Sigma y}{n}, \quad b = \frac{\Sigma xy}{\Sigma x^2}$$

Here,

$$a = \frac{229.48574}{7} = 32.7837$$

$$b = \frac{-83.15093}{28} = -2.9697$$

$$\therefore \hat{y} = 32.7837 + (-2.9697) \times x$$

This straight trend line showed that there was negative growth of the other income trend i.e. expected decreasing annually by Rs. -2.9697 lakhs.

Expected Other Income for 2063/64,

$$\begin{aligned} \therefore \hat{Y}_{(for\ 2063/64)} &= 32.7837 + (-2.9697) \times 4 \\ &= \text{Rs. } 20.9049 \text{ lakhs} \end{aligned}$$

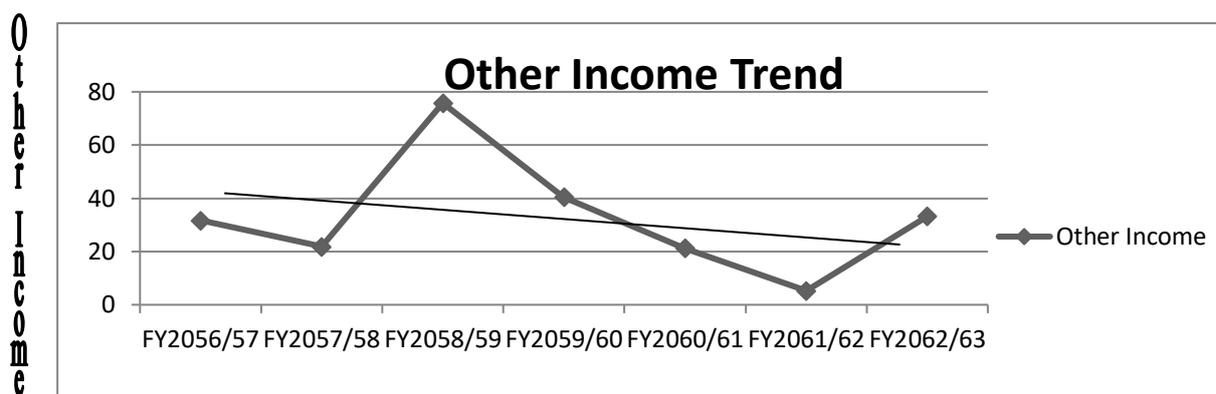
Similarly for 2064/65,

$$\begin{aligned} \therefore \hat{Y}_{(for\ 2064/65)} &= 32.7837 + (-2.9697) \times 5 \\ &= \text{Rs. } 17.9352 \text{ lakhs} \end{aligned}$$

If the trend remain constant, the probable other business income on the basis of time series analysis from past data, the next year other income will be Rs 20.9049 lakhs. Similarly for the fiscal year 2064/2065 will be Rs. 17.9352 lakhs. Therefore, it showed the decreasing trend of the other income sources. There was no budgeted other income sources in the company. The following trend figure so clearly as:

Figure 4.5

Bhaktapur Craft Paper Ltd., Bhaktapur, Bhyasi-10
Other Income trend (Rs. in Lakhs)



The figure showed that the trend line of the other income was decreasing downward but from fiscal year 2062/063, there was increasing trend too. However, decreasing trend showed that it was necessary to increase the other income by searching other income sources due to it played one of the most roles for increasing revenues of the company. It can be said that there was direct relationship with sales revenues of it due to sales was decreasing up to fiscal year 2061/62 but increasing in 2062/63. Similarly, other income also showed the same trend.

4.6. Semi Variable Costs or Mixed Costs Analysis

The strategy of management in dealing with mixed costs must be to obtain the fullest use of services possible for each separate step. Therefore, semi variable costs should be bifurcated into fixed and variable costs as the functions of profit planning, cost control and decision making. The detail of the mixed costs or semi variable costs of the BCP as given as:

Table no.4.6
Bhaktapur Craft Paper Ltd, Bhaktapur, Bhyasi-10
Semi Variable Costs or Mixed Costs

Rs. in Lakhs					
Fiscal Years (1)	Cost of Goods Sold (2)	Administration, selling & General overheads (3)	Total Mixed Cost (2+3=4)	Total Costs (5)	Percentage of Semi Variable Costs(Mixed Costs) in Total Cost (4÷5)
2056/057	200.89699	113.82181	314.71880	324.35762	97.0283%
2057/058	239.63465	102.41421	342.04886	358.46629	95.4201%
2058/059	32.94679	76.24128	109.18825	283.74307	38.4814%
2059/060	171.93480	113.45594	285.39074	319.21799	89.4031%
2060/061	189.01848	107.40040	296.41888	297.98539	99.4743%
2061/062	85.13965	49.94913	135.08878	138.32312	97.6617%
2062/063	171.76706	103.75280	275.51986	278.61466	98.8892%

Here, almost most of the total costs spent on cost of goods sold and administration, selling and general overheads. While considering in fiscal year 2056/057 by 97.0283% spent on mixed cost of total cost. In the fiscal year 2057/058, 2058/059, 2059/060, 2060/061 and

2061/062 are 95.4201%, 38.4814%, 89.4031%, 99.4743%, 97.6617% and 98.8892% respectively. Thus it can be said that BCP spent average 88.0512% on mixed cost of the total cost. Actually, there were different types of statistical techniques for bifurcating costs or costs segregation. Here, it tried to segregate the mixed costs by using 'Least Square Method' which is one of popular method for segregation costs either variable or fixed. Here, it tried to segregate the semi-variable costs of BCP Ltd. which was affected by the change in activity. Actually the variability of semi-variable expenses was caused by the combined effect of passage of time, activity or output and discretionary management decision of BCP Ltd. Therefore, least square segregation spread sheet as follows in which sales revenues were taken as based.

Table no 4.7
Bhaktapur Craft Paper Ltd, Bhyasi -10, Bhaktapur
Least Square Sheet

Rs. in Lakhs						
FY	Sales (X)	Mixed Cost (Y)	XY	X ²	Y ²	(X - \bar{X}) ²
2056/57	333.81145	314.7188	105056.7390	111430.0842	99047.92307	3729.39118
2057/58	450.98964	342.04886	154260.4922	203391.6554	116997.4226	31771.96856
2058/59	240.88961	109.18825	26302.31496	58027.80421	11922.07394	1014.619889
2059/60	301.1157	285.39074	85935.63245	90670.66479	81447.87448	805.0266426
2060/61	181.04949	296.41888	53666.48705	32778.91783	87864.15242	8407.646332
2061/62	156.78644	135.08878	21180.0889	24581.98777	18248.97848	13445.85622
2062/63	244.55663	275.51986	67380.20846	59807.94528	75911.19325	794.4550252
	ΣX =1909.19896 96	ΣY =1758.37417 7	ΣXY =513781.963	ΣX^2 =580689.0594 4	ΣY^2 =491439.6183 3	$\Sigma (X - \bar{X})^2$ =59968.963 85

From the table,

$$\bar{X} = \frac{\Sigma X}{n} = \frac{1909.19896}{96} = 272.7427$$

Now, we have,

b = Variable cost per Rupee of Sales

$$b = \frac{n \Sigma XY - (\Sigma X)(\Sigma Y)}{n \Sigma X^2 - (\Sigma X)^2} = \frac{7 \times 513781.963 - 1909.19896 \times 1758.37417}{7 \times 580689.0594 - (1909.19896)^2} = \frac{239387.6043}{419782.7469}$$

$\therefore b = \text{Rs } 0.570265$

This indicates that variable cost per sales Rs. 0.570265 per lakh sales

$$\text{Fixed cost (a)} = \frac{\Sigma Y - b \Sigma X}{n} = \frac{1758.37417 - 0.570265 \times 1909.19896}{7} = \text{Rs.95.6607}$$

This indicates that the fixed cost Rs.95.6607 lakhs per year.

Table no 4.8
Bhaktapur Craft Paper Ltd, Bhyasi -10, Bhaktapur
Mixed Cost Segregation

Rs in Lakhs							
FY	2056/57	2057/58	2058/59	2059/60	2060/61	2061/62	2062/63

Fixed Cost	95.6607	95.6607	95.6607	95.6607	95.6607	95.6607	95.6607
Variable Cost	219.05810	246.38816	13.52755	189.73000	200.75818	39.42808	179.85916
Mixed Cost	314.71880	342.04886	109.18825	285.39074	296.41888	135.08878	275.51986

Correlation may be defined as the degree of linear relationship existing between two or more variables. It showed the degree and direction of relationship between here mixed costs and sales which as follows:

Goodness of fit,

$$\begin{aligned}
 \text{(i) Coefficient of Correlation (r)} &= \frac{n \sum XY - (\sum X)(\sum Y)}{\sqrt{[n \sum X^2 - (\sum X)^2][n \sum Y^2 - (\sum Y)^2]}} \\
 &= \frac{7 \times 513781.963 - 1909.19896 \times 1758.37417}{\sqrt{[7 \times 580689.0594 - (1909.19896)^2] \times [7 \times 491439.6183 - (1758.37417)^2]}} \\
 &= \frac{3596473.741 - 3357086.137}{\sqrt{419782.7471 \times 348197.6064}} \\
 &= \frac{239387.607}{239387.607} \\
 &= \frac{647.9064339 \times 590.0827115}{239387.607} \\
 &= \frac{382318.3853}{239387.607} \\
 &= \mathbf{0.6262}
 \end{aligned}$$

The correlation coefficient lies between + 0.50 to +0.75 due to there is high degree of positive correlation between mixed costs and sales.

$$\begin{aligned}
 \text{(ii) Coefficient of Determination (r}^2\text{)} &= \left[\frac{n \sum XY - (\sum X)(\sum Y)}{\sqrt{[n \sum X^2 - (\sum X)^2][n \sum Y^2 - (\sum Y)^2]}} \right]^2 \\
 &= (0.6262)^2 \\
 &= \mathbf{0.3921}
 \end{aligned}$$

Thus, the 39.21% of the mixed cost was projected or explained from the variation in sales and remaining 100% - 39.21% = 60.79% was still unexplained. This unexplained portion might be the effect of the factors other than sales, such as effect of managerial efficiency, seasonality of the expenses variables, usual events, inflation, country business scenarios, raw material cost etc.

$$\text{(iii) Standard error of estimate (S}_e\text{)} = \sqrt{\frac{\sum Y^2 - a \sum Y - b \sum XY}{n-2}}$$

$$\begin{aligned}
 &= \sqrt{\frac{491439.6183 - 95.6607 \times 1758.37417 - 0.570265 \times 513781.963}{7-2}} \\
 &= \sqrt{\frac{491439.6183 - 168207.304 - 292991.8711}{7-2}} \\
 &= \sqrt{\frac{491439.6183 - 168207.304 - 292991.8711}{7-2}} \\
 &= \sqrt{\frac{30240.4432}{5}}
 \end{aligned}$$

$$= 77.7695$$

Thus, the standard error of the regression line is 77.7695. It indicates that there exists an average variation of Rs.77.7695 lakhs between in the sales and mixed costs.

$$\begin{aligned} \text{(iv) Standard Error of Regression Coefficient (S}_b\text{)} &= \frac{S_e}{\sqrt{\Sigma(X - \bar{X})^2}} \\ &= \frac{77.7695}{\sqrt{59968.96385}} \\ &= \frac{77.7695}{244.8856} \\ &= \mathbf{0.3175748} \end{aligned}$$

∴ The standard Error of Regression Coefficient (S_b) = 0.3176. This indicates that an average variation between per sale and mixed cost per year Rs. 0.3176 lakhs.

(v) Test of Hypothesis:

H₀: There is no correlation between sales and mixed cost (i.e. change in sales volume cannot explain the change in mixed cost).

H₁: There is correlation between sales and mixed cost (i.e. change in sales volume can explain the change in mixed cost).

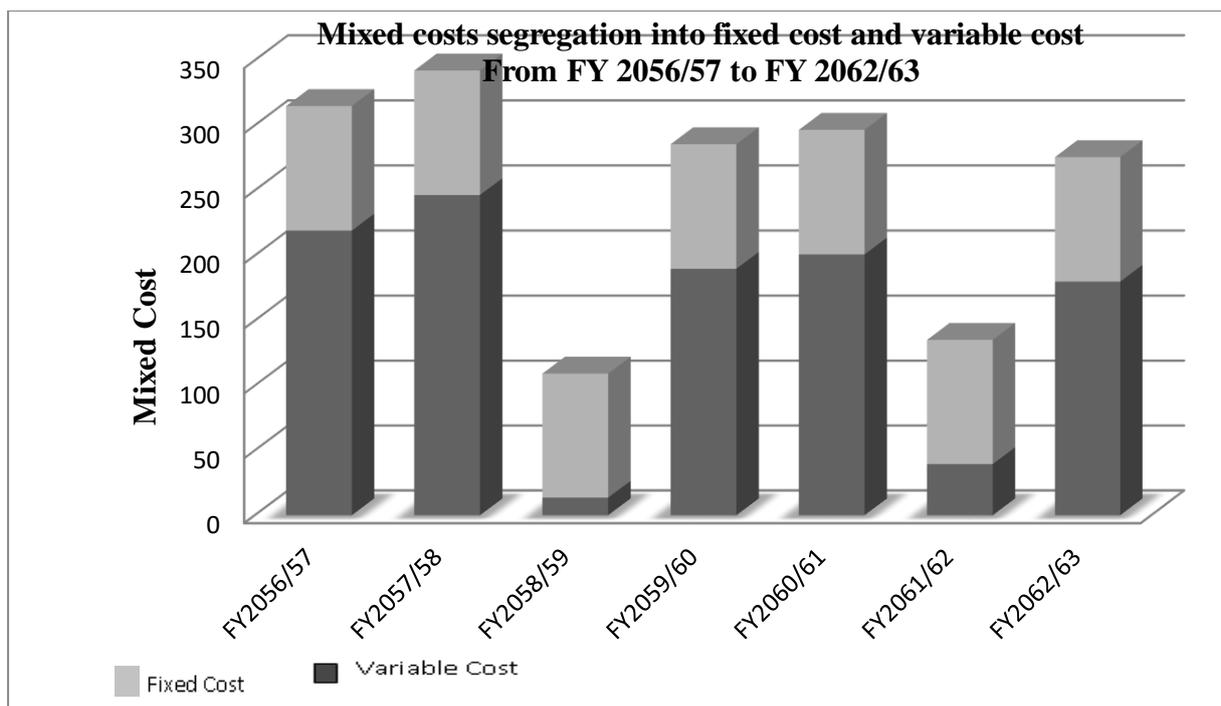
$$\begin{aligned} \text{Test Statistic, t-Test } t &= r \times \sqrt{\frac{n-2}{1-r^2}} = 0.6262 \times \sqrt{\frac{7-2}{1-(0.6262)^2}} \\ &= 0.6262 \times \sqrt{\frac{5}{1-0.3921}} \\ &= 0.6262 \times 2.8679 \\ &= \mathbf{1.7959} \end{aligned}$$

Tabulated t value at 5 (7-2) d.f. at 5% level of significance is 2.571. Hence, calculated t value is lower than tabulated t value, 1.7959 < 2.571 at 5% level of significance.

So, H₀ is accepted at 5% level of significance and there is no relationship between sales and mixed cost. But in the business organization practice, the sales and mixed cost are inter-related.

While considering the fixed cost that it can be seen all of fixed cost of the company from mixed cost was constant over the whole fiscal years due to lack of sufficient information and rest of portion from mixed cost after fixed cost is known as variable cost. However, the fixed cost and variable cost from segregation method of mixed cost was presented with help of multiple bar-diagrams shown as follow:

Figure 4.6
Bhaktapur Craft Paper Ltd, Bhyasi -10, Bhaktapur
Mixed Costs Segregation **Rs in Lakhs**



Here, the segregation of mixed cost was shown in the figure above in which the below shaded area were variable costs and above were fixed cost. In here, all the fixed cost was constant in which other fixed cost were not included. But the variable costs were fluctuating haphazardly increasing and decreasing each year due to there was no proper planning of variable cost and management inefficient in the accounting technique practices especially CVP analysis.

4.6.1. Segregation of Variable Administration, selling and General overhead

For the segregation from mixed cost of Administration, selling and general overhead, we use the following segregation method.

Table no 4.9
Bhaktapur Craft Paper Ltd,
Bhyasi -10, Bhaktapur
Administration, selling, general Overhead Costs Segregation
Rs in Lakhs

FY	Sales (X)	Adm, selling and gen Ovh (Y)	XY	X ²	Y ²
2056/57	333.81145	113.8218	37995.02344	111430.0842	12955.40443
2057/58	450.98964	102.4142	46187.7477	203391.6554	10488.67041
2058/59	240.88961	76.24128	18365.73221	58027.80421	5812.732776
2059/60	301.1157	113.45594	34163.36479	90670.66479	12872.25032

2060/61	181.04949	107.40040	19444.78765	32778.91783	11534.84592
2061/62	156.78644	49.94913	7831.346274	24581.98777	2494.915588
2062/63	244.55663	103.7528	25373.43512	59807.94528	10764.64351
	$\Sigma X=1909.19896$ 896	$\Sigma Y=667.0355$ 5	$\Sigma XY=189361.43$ 72	$\Sigma X^2=580689.0594$	$\Sigma Y^2=66923.462$ 95

From the table,

$$\bar{X} = \frac{\Sigma X}{n} = \frac{1909.19896}{7} = 272.7427$$

Now, we have,

b = Variable cost per Rupee of Sales

$$b = \frac{n \Sigma XY - (\Sigma X)(\Sigma Y)}{n \Sigma X^2 - (\Sigma X)^2} = \frac{7 \times 189361.4372 - 1909.19896 \times 667.0355}{7 \times 580689.0594 - (1909.19896)^2} = \frac{52026.57752}{419782.7469}$$

$\therefore b = \text{Rs } 0.1239$

This indicates that variable cost per sales Rs. 0.570265 per lakh sales.

$$\text{Fixed cost (a)} = \frac{\Sigma Y - b \Sigma X}{n} = \frac{667.0355 - 0.1239 \times 1909.19896}{7} = \text{Rs. } 61.4879$$

This indicates that the fixed cost Rs.61.4879 lakhs per year.

Table no 4.10

Bhaktapur Craft Paper Ltd, Bhyasi -10, Bhaktapur

Mixed Cost Segregation

Rs in Lakhs

FY	2056/57	2057/58	2058/59	2059/60	2060/61	2061/62	2062/63
Fixed adm, selling and Ovh Cost	61.4879	61.4879	61.4879	61.4879	61.4879	49.94913 (43.66099+ 6.28814)	61.4879
Variable adm, selling and Ovh Cost	52.3339	40.9263	14.75338	51.96804	45.9125	-	42.2649
Mixed Cost	113.82181	102.41421	76.24128	113.45594	107.40040	49.94913	103.75280

In the above table showed that fixed cost of the administration, selling and general overhead were constant except in the fiscal year 2061/062 due to all the mixed cost for administration, selling and overhead was less than the fixed cost. So, it was assumed all the cost was taken as fixed cost. There was haphazardly increasing and decreasing of variable administration, selling and general overhead. The average variable administration, selling and overhead was Rs 35.45128857 lakhs of BCP Ltd. Here, fixed administration, selling and overhead cost of 2061/62 included provision for tax too in the calculated value.

4.7. Variable Costs Analysis

Variable Costs are those that tend to vary in direct proportion and same direction to the changes in production activity, sales activity or some other measures of volume or cost driver. The costs of these input increase or decrease in proportion to increase or decrease in volume or cost driver. Here, the BCP variable cost was fluctuating each year due to internal

and external business environment. BCP found cost of goods sold and administrative, selling and general overheads were taken as variable cost. All the cost of goods sold part was not variable cost only that part after subtracting from fixed manufacturing and administration as variable cost which were segregated in the above. The details of the Variable cost were shown as below:

Table no 4.11
Bhaktapur Craft Paper Ltd, Bhyasi -10, Bhaktapur
Variable Cost **Rs in Lakhs**

Fiscal Year	Variable Cost of Goods Sold	Variable administration, selling and general overhead	Total Variable Cost
2056/057	166.7242	52.3339	219.05810
2057/058	205.46186	40.9263	246.38816
2058/059	- 1.22583	14.75338	13.52755
2059/060	137.76196	51.96804	189.7300
2060/061	155.24568	45.5125	200.75818
2061/062	39.42808	-	39.42808
2062/063	137.59426	42.2649	179.85916

The above table showed that total Variable Cost fluctuating haphazardly in different fiscal years. In the fiscal year 2057/058, 2059/060, 2060/061 and 2062/063 were increasing by 12.4762%, 1302.5452%, 5.8126% and 356.1702% respectively. Similarly, decreasing by -94.5097% and -80.3604% in the fiscal year 2058/059 and 2061/062 respectively.

Here, to analyze the total variable cost trend of each year, it used the time series analysis so that to find out the future probable total variable cost which was based on the past variable cost of the some fiscal year .i.e. from 2056/57 to 2062/63. Actually, it showed the interrelation between variable cost (dependent variable - y) and time frame (independent variable – t). The midyear was assumed to 2059/060 and other values were estimated by using least square method. The details as follows:

Table no.4.12
Bhaktapur Craft Paper Ltd., Bhaktapur, Bhyasi-10
Statistical Calculation of Estimated Total Variable Cost

Fiscal Year (t)	Total Variable Cost (y)	x = t – 2059/060	xy	x²
2056/57	219.05810	-3	-657.1743	9
2057/58	246.38816	-2	-492.7763	4
2058/59	13.52755	-1	-13.52755	1
2059/60	189.7300	0	0	0
2060/61	200.75818	1	200.75818	1
2061/62	39.42808	2	78.85616	4
2062/63	179.85916	3	539.57748	9
	$\Sigma y = 1088.74923$	$\Sigma x = 0$	$\Sigma xy = -344.28633$	$\Sigma x^2 = 28$

Let the least square straight line trend equation of Total Variable cost (y) on the independent variable time (x) is

$$y = a + bx \dots\dots\dots (i)$$

Where, a = minimum variable cost at x = 0

b = variable cost change per time

x = year 2059/060

To estimate equation (i) values of a and b were determined by using

$$a = \frac{\sum y}{n}, \quad b = \frac{\sum xy}{\sum x^2}$$

Here,

$$a = \frac{1088.74923}{7} = 155.5356$$

$$b = \frac{-344.28633}{28} = -12.2959$$

$$\therefore \hat{y} = 155.5356 + (-12.2959) \times x$$

This straight trend line showed that there was negative growth of the total variable cost trend i.e. expected decreasing annually by Rs. -12.2959 lakhs.

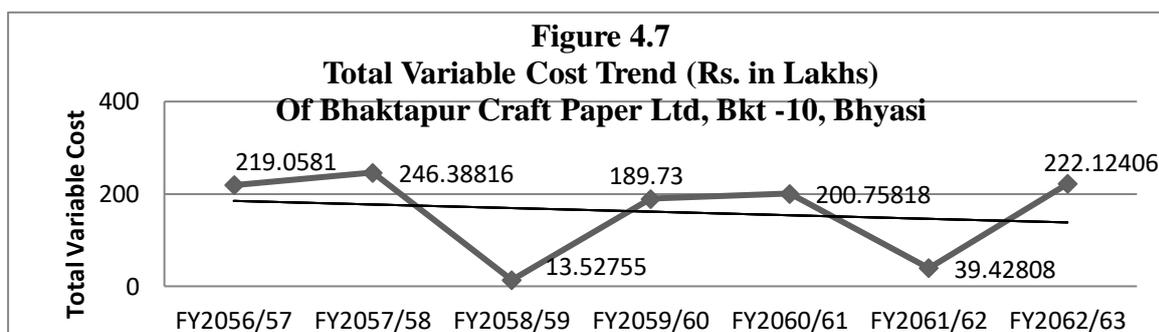
Expected total Variable Cost for 2063/64,

$$\begin{aligned} \therefore \hat{y}_{(for\ 2063/64)} &= 155.5356 + (-12.2959) \times 4 \\ &= \text{Rs. } 106.3518 \text{ lakhs} \end{aligned}$$

Similarly for 2064/65,

$$\therefore \hat{y}_{(for\ 2064/65)} = 155.5356 + (-12.2959) \times 5 = \text{Rs. } 94.0576 \text{ lakhs}$$

If the trend remains constant, the estimated total variable cost will be Rs. 106.3518 and Rs. 94.0576 for the fiscal year 2063/64 and 2064/65 respectively. The decreasing variable costs were shown due to only sales products of the company was decreasing trend. The trend of the BCP total variable costs can be seen with help of the trend line analysis which below shown as:



The trend line showed that decreasing haphazardly total variable cost. In the figure, x-axis shows the total variable fiscal years and Y axis showed that the total variable cost. The highest total variable cost was Rs. 246.38816 lakhs and the lowest total variable cost was Rs 13.52755 lakhs in the fiscal year 2057/58 and 2058/59. In the fiscal 2058/59, BCP Ltd faced the huge losses of raw materials and finished goods due to out broke of fire suddenly in the company. The factory didn't insure of the company. However, if the situation remains same of the company business environment, the total variable cost of the company will be decreasing trend. The average total variable cost was Rs 155.5356043 Lakhs.

4.8. Fixed Costs Analysis

Fixed Costs are costs associated with those inputs, which do not vary with changes in the volume of output or activity within a specified range of activity or output (relevant range). Fixed costs thus remain constant whether the activity increase or decrease within a relevant range. Like other costs, fixed cost is subject to change over a period of time. Consequently fixed costs per unit will become progressively smaller as the volume increases and vice versa. BCP Ltd. included the costs like depreciation, amortization, provision for Bonus, fixed administration, selling and general overhead, provision for Tax and fixed manufacturing costs as fixed costs. The details of fixed costs of the company as follows:

Table no 4.13
Bhaktapur Craft Paper Ltd, Bhyasi -10, Bhaktapur
Total Fixed Costs **Rs in Lakhs**

Fiscal Year	Fixed Cost of Goods sold	Fixed adm, selling and general Overhead	Depreciation	Amortization	Provision for Bonus	Provision for Tax	Total Fixed Cost
2056/057	34.1728	61.4879	5.52443	-	4.11439	-	105.29952
% of FC	32.45%	58.39%	5.25%	-	3.91%	-	100%
2057/058	34.1728	61.4879	4.97816	-	11.43927	-	112.07813
% of FC	30.49%	54.86%	4.44%	-	10.21%	-	100%
2058/059	34.1728	61.4879	1.42474	-	3.2915	-	100.37694
% of FC	34.04%	61.26%	1.42%	-	3.28%	-	100%
2059/060	34.1728	61.4879	1.32897	30.2691	2.22919	-	129.48796
% of FC	26.39%	47.49%	1.03%	23.38%	1.72%	-	100%
2060/061	34.1728	61.4879	1.56651	-	-	-	97.22721
% of FC	35.15%	63.24%	1.61%	-	-	-	100%
2061/062	45.71157	43.66099	3.0948	-	-	6.28814	98.7555
% of FC	46.29%	44.21%	3.13%	-	-	6.37%	100%
2062/063	34.1728	61.4879	0.86146	-	2.37288	-	98.89504
% of FC	34.55%	62.17%	0.87%	-	2.40%	-	100%

Total fixed costs were decreased by -10.4402%, and -24.9141% in the fiscal year 2058/059 and 2060/061 respectively. Similarly, were increased by 6.4375%, 29.0017%,

1.5719% and 1.4130% in the fiscal year 2057/58, 2059/060, 2061/062 and 2062/063 respectively. The highest fixed cost was Rs.129.48796 lakhs in the fiscal year 2059/060 due to amortization and provision for bonus separated to the staff who owned of the company itself too. While consider the fixed cost, there fixed cost only increased due to provision for bonus. Another factor for increasing fixed cost was provision for taxation. In average fixed cost of the company was Rs.106.0171857 (from 2056/57 to 2062/63). All the fixed cost of the cost of goods sold and administration, selling and general overhead of the company were constant except 2060/61 because of our above calculation, lack of details information of fixed cost and nothing increasing of staff members of the company. But in the all fiscal year more spent on fixed administration, selling and general overhead more than fixed cost of goods sold. Thus it can see that more cost spent on administration of the company and general overhead. The company permanent shareholders were itself staff members of the company. The company spent 56.44% on administration, selling and general overhead of fixed cost. Similarly, it spent on fixed cost of goods sold by 33.79%, depreciation by 2.53%, provision for bonus by 3.15%, amortization by 4.08% and provision for taxation by 0.85% respectively. The fixed cost percentages were on the basis of the total fixed cost of the different fiscal year i.e. from 2056/57 to 2062/63.

With help of the time series it can be expressed the actual total fixed cost into time series (using least square) due to forecast the probable future total fixed cost. It showed the relationship between time and fixed cost. To fit the straight trend line, it assumed that the time factor is independent variable (t) and fixed cost is assumed dependent variable (y). Fiscal year 2059/060 was assumed as midyear and other value was estimated by using least square method. The detail analysis of the trend line is given as follow:

Table no.4.14
Bhaktapur Craft Paper Ltd., Bhaktapur, Bhyasi-10
Statistical Calculation of Estimated Total Fixed Cost

Fiscal Year (t)	Total Fixed Cost (y)	x = t – 2059/060	xy	x ²	Rs in Lakhs
2056/57	105.29952	-3	-315.89856	9	
2057/58	112.07813	-2	-244.15626	4	
2058/59	100.37694	-1	-100.37694	1	
2059/60	129.48796	0	0	0	
2060/61	97.22721	1	97.22421	1	
2061/62	98.7555	2	197.5110	4	
2062/63	98.89504	3	296.68512	9	
	$\Sigma y = 742.1203$	$\Sigma x = 0$	$\Sigma xy = -69.01143$	$\Sigma x^2 = 28$	

Let the least square straight line trend equation of Total Variable cost (y) on the independent variable time (x) is

$$y = a + bx \dots\dots\dots (i)$$

Where, a = minimum fixed cost at x = 0

b = fixed cost change per time

x = year 2059/060

To estimate equation (i) the values of a and b were determined by using

$$a = \frac{\sum y}{n}, \quad b = \frac{\sum xy}{\sum x^2}$$

Here,

$$a = \frac{742.1203}{7} = 106.0172$$

$$b = \frac{-69.01143}{28} = -2.4647$$

$$\therefore \hat{y} = 106.0172 + (-2.4647) \times x$$

This straight trend line showed that there was negative growth of the total fixed cost trend i.e. expected decreasing annually by Rs. -2.4647 lakhs.

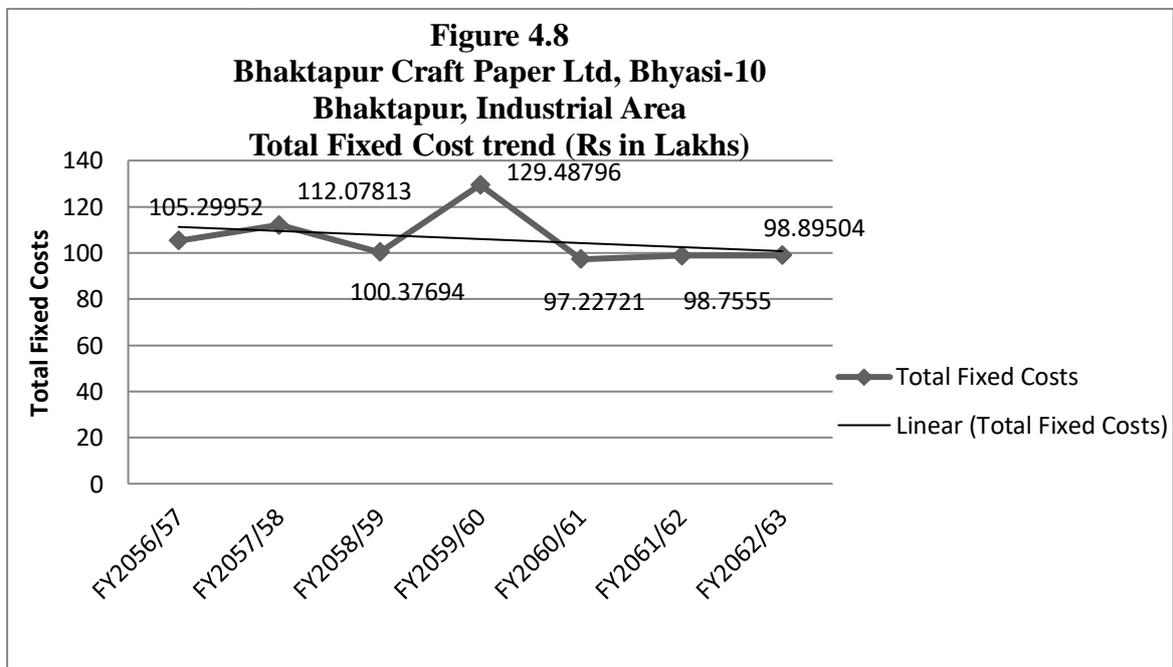
Expected total fixed Cost for 2063/64,

$$\begin{aligned} \therefore \hat{y}_{(for\ 2063/64)} &= 106.0172 + (-2.4647) \times 4 \\ &= \text{Rs.}96.1584 \text{ lakhs} \end{aligned}$$

Similarly for 2064/65,

$$\therefore \hat{y}_{(for\ 2064/65)} = 106.0172 + (-2.4647) \times 5 = \text{Rs.} 93.6937 \text{ lakhs}$$

If the trend remains constant, the estimated total fixed cost will be Rs. 96.1584 lakhs and Rs. 93.6937 lakhs for the fiscal year 2063/64 and 2064/65 respectively. The decreasing fixed costs were shown due to effect of provision for bonus, provision for taxation, amortization, controlling of over staffing members etc. The trend of the BCP total fixed costs can be seen with help of the trend line analysis which is below shown as:



In the figure above X-axis showed the fiscal year and Y –axis showed the total fixed costs. The trend line showed that total fixed cost of the BCP Ltd was decreasing trend. The highest fixed cost is Rs.129.48796 lakhs in the fiscal year 2059/60 due to written of

amortization of fixed cost. However, the fixed cost was going upward and downward haphazardly due to provision for bonus, provision for taxation and depreciation rate unstable. On the basis of the time series analysis of the past costs, it can be estimated the future total fixed cost of the BCP Ltd will be Rs. 96.1584 and Rs. 93.6937 Lakhs in the fiscal year 2063/064 and 2064/065 respectively.

4.9. Analysis of Correlation between Sales and Total Costs

The correlation is a statistical tool which studies the relationship between two variables and correlation analysis involves various methods and techniques used for studying and measuring the extent of the relationship between the two variables. Two variables are said to be correlated if the change in one variable results in a corresponding change in the other variable. Correlation analysis enables us to have an idea about the degree and direction of the relationship between the two variables i.e here sales and total cost. Here, Karl Pearson's coefficient of correlation one of the most popular methods is used to determine coefficient correlation between Sales revenues other than other income and total cost that included total variables and total fixed costs. The calculation can be shown as below:

Table no 4.15
Bhaktapur Craft Paper Ltd, Bhyasi -10, Bhaktapur
Least Square Sheet

Fiscal Year	Total Cost (X)	Sales revenue (Y)	XY	X ²	Y ²
2056/57	324.35762	333.81145	108274.2875	105207.8657	111430.0852
2057/58	358.46629	450.98964	161664.5831	128498.0811	203391.6554
2058/59	283.74307	240.88961	68350.75747	80510.12977	58027.80421
2059/60	319.21799	301.11570	96121.54851	101900.1251	90670.66479
2060/61	297.98539	181.04949	53950.10289	88795.29265	32778.91783
2061/62	138.32312	156.78644	21687.18955	19133.28553	24581.98777
2062/63	278.61466	244.55663	68137.06232	77626.12877	59807.94528
	$\sum X =$ 2000.70814	$\sum Y =$ 1909.19896	$\sum XY =$ 578185.5313	$\sum X^2 =$ 601670.9086	$\sum Y^2 =$ 580689.0594

Goodness of fit,

$$\begin{aligned}
 \text{(i) Coefficient of Correlation (r}_{xy}\text{)} &= \frac{n \sum XY - (\sum X)(\sum Y)}{\sqrt{[n \sum X^2 - (\sum X)^2][n \sum Y^2 - (\sum Y)^2]}} \\
 &= \frac{7 \times 578185.5313 - 2000.70814 \times 1909.19896}{\sqrt{[7 \times 601670.9086 - (2000.70814)^2] \times [7 \times 580689.0594 - (1909.19896)^2]}} \\
 &= \frac{4047298.719 - 3819749.9}{\sqrt{208863.2987 \times 419782.7469}} \\
 &= \frac{227548.819}{\sqrt{457.0156438 \times 647.9064338}} \\
 &= \frac{227548.819}{296103.3759} \\
 &= \mathbf{0.7685}
 \end{aligned}$$

The correlation coefficient lies between + 0.75 to + 1 due to there is very high degree of

positive correlation between total costs and sales. Therefore, if the total cost increases, the sales will be increase.

$$\begin{aligned}
 \text{(ii) Coefficient of Determination } (r^2_{xy}) &= \left[\frac{n \sum XY - (\sum X)(\sum Y)}{\sqrt{[n \sum X^2 - (\sum X)^2][n \sum Y^2 - (\sum Y)^2]}} \right]^2 \\
 &= (0.7685)^2 \\
 &= \mathbf{0.59059}
 \end{aligned}$$

Thus, the 59.06% of the sales was projected or explained from the variation in Costs and remaining 100% - 59.06% = 40.94% was still unexplained. This unexplained portion might be the effect of the factors other than sales, such as effect of managerial efficiency, seasonality of the expenses, usual events, inflation, country business scenarios etc.

(iii) Calculation of Probable Error (P.E.)

$$\begin{aligned}
 \text{P.E.} &= 0.6745 \times \frac{1-r^2}{\sqrt{n}} \\
 &= 0.6745 \times \frac{1-0.59059}{\sqrt{7}} \\
 &= 0.6745 \times \frac{1-0.59059}{2.645751311} \\
 &= 0.6745 \times 0.1547
 \end{aligned}$$

$$\text{P.E} = 0.1043$$

$$6 \text{ P.E.} = 6 \times 0.1043$$

$$= 0.6258$$

i) If $r < \text{P.E.}$, it is insignificant, i.e. there is no evidence of correlation.

ii) If $r > 6\text{P.E.}$, it is significant, i.e. there is evidence of correlation.

Here, $r > 6 \text{ P.E.}$ i.e. $0.7685 > 0.6258$, since, $r > 6 \text{ P.E.}$, it concluded that r is significant. However, only correlation cannot explain the relationship between costs and sales.

(iv) Test of Hypothesis:

H_0 : There is no correlation between sales and total cost (i.e. change in total cost cannot explain the change in sales).

H_1 : There is correlation between total cost and sales (i.e. change in total cost can explain the change in sales).

Test Statistic,

t- Test:

Tabulated t value at 5 (7-2) d.f. at 5% level of significance for two tail test is 2.571. Hence, calculated t value is greater than tabulated t value, $2.6857 > 2.571$ at 5% level of significance.

So, H_1 is accepted at 5% level of significance, it can be concluded that there is relationship between total costs and sales. In other cost, change in total cost can explain the change in sales.

4.10. Net Profits or Losses Analysis

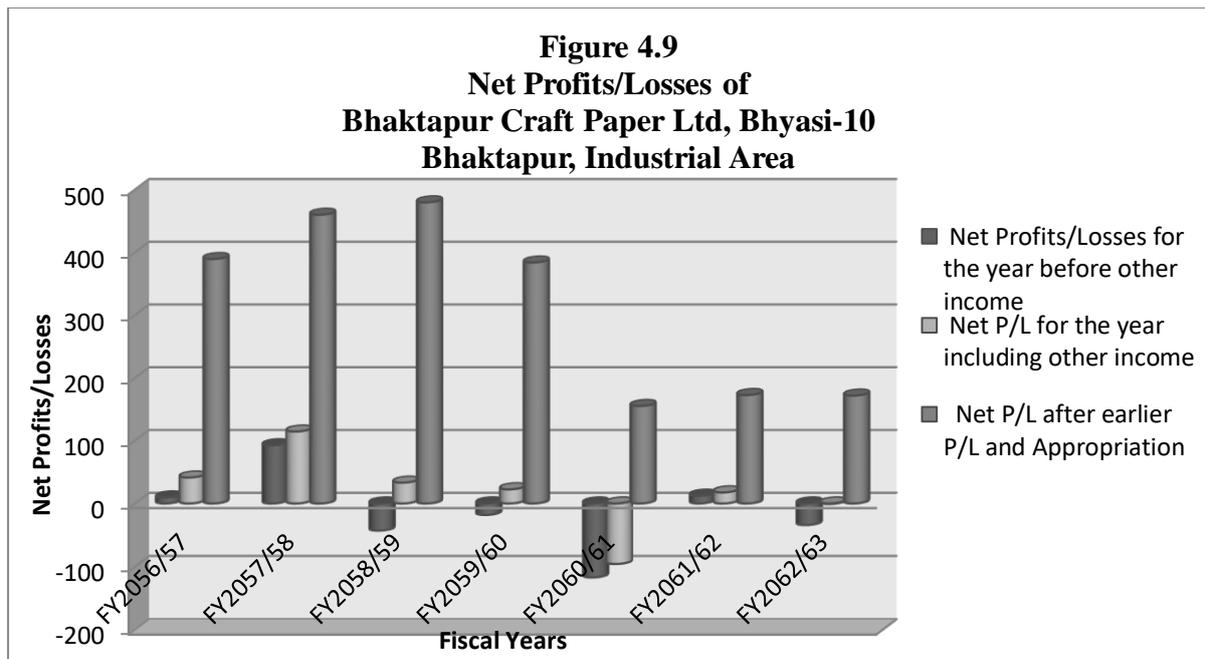
It is said that profit is the life blood of the business due to profit earning is the main objectives of the every profit motive business organizations. Net profit depends especially on cost of goods sold and sales. BCP Ltd hadn't planned the budgeted profit plan for future. Here, net profits or losses were calculated after deducting variable and fixed cost of goods sold and other fixed costs from the sales revenues of BCP Ltd. However, the net profits or losses are analyzed in details as below:

Table no 4.16
Bhaktapur Craft Paper Ltd, Bhyasi -10, Bhaktapur

Total Net Profits /Losses						
Rs in Lakhs						
Fiscal Year	Net profit or losses for the year before other income	Change in P/L for the year before other income	Net profit/losses for the year including other income	Change in P/L for the year including other income	Net profits/losses after forward from earlier profits & losses and appropriation (including other Income)	Change in P/L
2056/057	9.45383	-	41.14386	-	389.3560	-
2057/058	92.52335	878.69%	114.3927	178.03%	459.9430	18.13%
2058/059	-42.85346	-53.68%	32.91497	-71.23%	479.6920	4.29%
2059/060	-18.1023	-57.76%	22.29186	-32.27%	383.7400	-20.00%
2060/061	-116.9395	-545.99%	-95.63615	-329.02%	155.1015	-59.58%
2061/062	12.17518	89.59%	17.44068	81.79%	172.54218	11.24%
2062/063	-34.05803	-179.73%	-0.85952	-95.072%	171.6827	-4.98%

The above table showed the net profits/losses for the fiscal years are Rs. 9.45383, 92.52335, -42.85346, -18.1023, -116.9395, 12.17518 and -34.05803 respectively in 2056/57, 2057/58, 2058/59, 2059/60, 2060/61, 2061/62 and 2062/63. The net profit for the year 2057/58 Rs.92.52335 was the highest profit among in all the fiscal year. Similarly, net profit after including other income in the profit for the year was Rs. 114.3927 which was also highest among the fiscal years. But in this year after appropriation profit (i.e. previous year profits/losses miscellaneous expenditure written off, consultancy fee for restructuring BCP, staff emergency fund, staff credit fund, community development fund, expenses pertaining to prior year, provision for community development fund loan, prior period adjustment, share redemption fund etc) was less than the profit of 2059/60 due to only including previous year profit. However, it can be analyzed the change in profit/loss of 2056/57 was also the highest by 18.13%. In 2058/59 profit/loss was shown in losses due to suddenly out broke of the fire in the factory. (i.e. electricity problem). But after appropriation profit was positive due to only including previous year earned profit was included and appropriation of expenditures were less. In the fiscal year 2059/60 and 2060/61 were also shown the losses due to more expenditure spent in costs of the product. Similarly, while included previous other income in the profits/losses, some of the losses were decreased. However, the net profits after appropriation were shown in negative .i.e. BCP Ltd profits were shown in negative but it has

been distributed bonus, separate fund for community development fund, share redemption fund etc as a results due to it has been facing more negative net profit after appropriation. In the fiscal year 2061/62, there was increased in sales and other income as a results increased profit in this year. But in the fiscal year 2062/63 there is more costs than sales and other income that is why showed the negative position of the profit. In the fiscal year 2061/62 and 2062/63, there weren't any appropriation costs incurred in the company according to annual report of the company. The details profits/losses of the BCP Ltd. are shown with the help of the statistical tool of the bar-diagrams as below:



The above diagram clearly showed that there was haphazardly fluctuating profits/losses of the company. It also showed that the net profits increased after appropriation and including previous year profits which were shown in annual report of the company. There was highest change in net profit after appropriation and earlier profits including i.e. by 18.13% and the least by -59.58% in the year 2057/58 and 2060/61 respectively. Therefore it can be said that actual profit will not calculated only after fixed and variable cost in the company but done net profit calculated after appropriation and earlier year profit/losses adjustments which were shown in the income statement of the BCP Ltd.

However, here test of hypothesis only the net profits/losses for the year before adjustments of the appropriation including other income and net profit after adjustments of the appropriation including other income of the company as below:

Test of Hypothesis:

$H_0: \mu_x = \mu_y$ i.e. there is no significant difference between the net profit/loss before and after adjustment of the forward profit from earlier year and appropriation of the company.

$H_0: \mu_x > \mu_y$ (right tailed test) i.e. there is affected (changed) the net profit/loss after adjustment of the forward profit from earlier year and appropriation of the company.

Table no.4.17

Calculation of \bar{d} and S_d

Fiscal Year	Net profit/loss before adjustment and earlier profit (x)	Net profit/loss affected (changed) after adjustment and earlier profit (y)	d = y-x	d ²
2056/057	41.14386	389.3560	348.21214	121251.6944
2057/058	114.3929	459.9430	345.5501	119404.8716
2058/059	32.91497	479.6920	446.77703	199609.7145
2059/060	22.29186	383.7400	361.44814	130644.7579
2060/061	-95.63615	155.1015	250.73765	62869.36913
2061/062	17.44068	172.54218	155.1015	24056.4753
2062/063	-0.85952	171.6827	172.54222	29770.81768
			$\sum d = 2080.36876$	$\sum d^2 = 687607.7005$

We have,

$$\bar{d} = \frac{\sum d}{n} = \frac{2080.36876}{7} = 297.1955$$

$$\begin{aligned} \text{And } S_d &= \sqrt{\frac{1}{n-1} \left[\sum d^2 - \frac{(\sum d)^2}{n} \right]} \\ &= \sqrt{\frac{1}{7-1} \left[687607.7005 - \frac{(2080.36876)^2}{7} \right]} \\ &= \sqrt{\frac{1}{6} [687607.7005 - 618276.3111]} \\ &= \sqrt{\frac{1}{6} \times 69331.38942} \\ &= \sqrt{11555.23157} \\ &= 107.495263 \end{aligned}$$

Test statistic,

$$t = \frac{\bar{d}}{\frac{s_d}{\sqrt{n}}} = \frac{297.1955}{\frac{107.495263}{\sqrt{7}}} = \frac{297.1955}{40.6294} = 7.3255$$

Tabulated t value at 6 (7-1) d.f. at 5% level of significance for one tailed test is 1.943. Since calculated t i.e. 7.3255 > 1.943. Thus, reject the null hypothesis (H_0) and accept alternative hypothesis (H_1). This means, there is evidence that there is affected (changed) the net profit/loss after adjustment of the forward profit from earlier year and appropriation of the company.

With help of the time series it expressed the net profit/loss before adjustments, appropriation and other income (i.e. net profit before other income) into time series (using least square) due to forecast the probable future total net profit before adjustments, appropriation and other income. It showed the relationship between time and net profit before adjustments, appropriation and other income. To fit the straight trend line, it assumed the

time factor was independent variable (t) and net profit before adjustment, appropriation and other income was assumed dependent variable (y). Fiscal year 2059/060 was assumed as midyear and other value was estimated by using least square method. The detail analysis of the trend line is given as follow:

Table no.4.18
Bhaktapur Craft Paper Ltd., Bhaktapur, Bhyasi-10
Statistical Calculation of Estimated Total Net Profit before other income

Fiscal Year (t)	Total Net income before other income (y)	x = t – 2059/060	xy	x ²
2056/57	9.45383	-3	-28.36149	9
2057/58	92.52335	-2	-185.0467	4
2058/59	-42.85346	-1	42.85346	1
2059/60	-18.1023	0	0	0
2060/61	-116.9395	1	-116.9395	1
2061/62	12.17518	2	24.35036	4
2062/63	-34.05803	3	-102.17409	9
	$\Sigma y = -97.80093$	$\Sigma x = 0$	$\Sigma xy = -365.31796$	$\Sigma x^2 = 28$

Let the least square straight line trend equation of Total net profit before other income (y) on the independent variable time (x) is

$$y = a + bx \dots\dots\dots (i)$$

Where, a = minimum net profit before other income at x = 0

b = net profit before other income change per time

x = year 2059/060

To estimate equation (i) the values of a and b were determined by using

$$a = \frac{\Sigma y}{n}, \quad b = \frac{\Sigma xy}{\Sigma x^2}$$

Here,

$$a = \frac{-97.80093}{7} = -13.9716$$

$$b = \frac{-365.31796}{28} = -13.04707$$

$$\therefore \hat{y} = -13.9716 + (-13.04707) \times x$$

This straight trend line showed that there was negative growth of the total net profit before other income trend i.e. expected decreasing annually by Rs. -13.04707 lakhs.

Expected total net profit before other income for 2063/64,

$$\begin{aligned} \therefore \hat{Y}_{(for\ 2063/64)} &= -13.9716 + (-13.04707) \times 4 \\ &= \text{Rs. } -66.1599 \text{ lakhs} \end{aligned}$$

Similarly for 2064/65,

$$\therefore \hat{Y}_{(for\ 2064/65)} = -13.9716 + (-13.04707) \times 5 = \text{Rs. } -79.2070 \text{ lakhs}$$

If the trend remains constant, the estimated total net profit before other income will be Rs. -66.1599 lakhs and Rs. -79.2070 lakhs for the fiscal year 2063/64 and 2064/65

respectively. The negative net profits were shown due to effect of more expenditure spent on fixed costs and variable costs. Therefore, the manager of the company immediately should pose necessary by controlling unnecessary fixed costs and variable costs. However, BCP Ltd other income played crucial role for earning profits. The trend of the BCP total net profit before other income can be seen with help of the trend line analysis which is below shown as:

Similarly, the net profit including other income of the company can be estimated by using the following trend analysis of the past net profit including other income as below:

Table no.4.19

Bhaktapur Craft Paper Ltd., Bhaktapur, Bhyasi-10

Statistical Calculation of Estimated Total Net Profit including other income

Rs in Lakhs

Fiscal Year (t)	Total Net income including other income (y)	x = t – 2059/060	xy	x ²
2056/57	41.14386	-3	-123.42158	9
2057/58	114.3629	-2	-228.7258	4
2058/59	32.91497	-1	-32.91497	1
2059/60	22.29186	0	0	0
2060/61	-95.63615	1	-95.63615	1
2061/62	17.44068	2	34.88136	4
2062/63	-0.85952	3	-2.57856	9
	$\Sigma y = 131.6586$	$\Sigma x = 0$	$\Sigma xy = -448.3957$	$\Sigma x^2 = 28$

Let the least square straight line trend equation of Total net profit including other income (y) on the independent variable time (x) is

$$y = a + bx \dots\dots\dots (i)$$

Where, a = minimum net profit including other income at x = 0

b = net profit including other income change per time

x = year 2059/060

To estimate equation (i) the values of a and b were determined by using

$$a = \frac{\Sigma y}{n}, \quad b = \frac{\Sigma xy}{\Sigma x^2}$$

Here,

$$a = \frac{131.6586}{7} = 18.8084$$

$$b = \frac{-448.3957}{28} = -16.01413$$

$$\therefore \hat{y} = 18.8084 + (-16.01413) \times x$$

This straight trend line showed that there was negative growth of the total net profit including other income trend i.e. expected decreasing annually by Rs. -16.01413 lakhs.

Expected total net profit including other income for 2063/64,

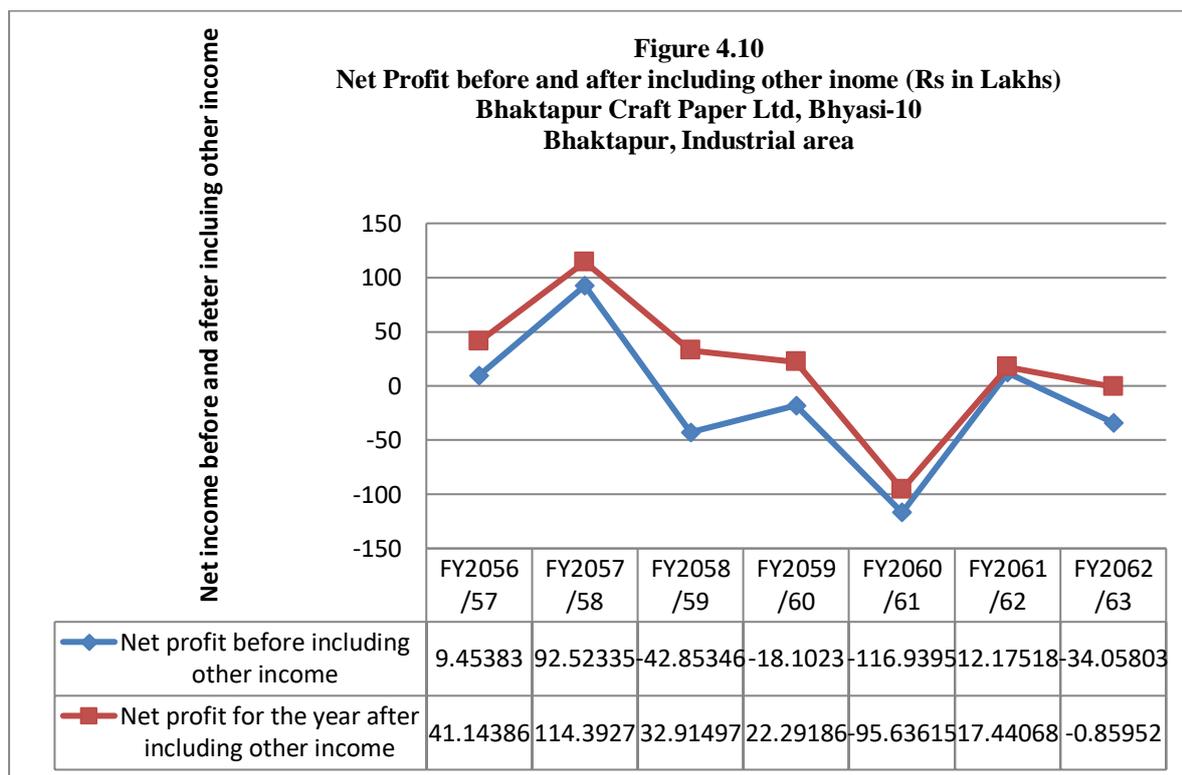
$$\begin{aligned} \therefore \hat{Y}_{(for\ 2063/64)} &= 18.8084 + (-16.01413) \times 4 \\ &= \text{Rs. } -45.2481 \text{ lakhs} \end{aligned}$$

Similarly for 2064/65,

$$\therefore \hat{Y}_{(for\ 2064/65)} = 18.8084 + (-16.01413) \times 5 = \text{Rs. } -61.26225 \text{ lakhs}$$

If the trend remains constant, the estimated total net profit including other income will be Rs. -45.2481 lakhs and Rs. -61.26225 lakhs for the fiscal year 2063/64 and 2064/65 respectively. Here, it can be seen that negative profit for coming year, so the company management committee should search new international market and domestic market for increasing sales and also should control the unnecessary costs to maintain the growth of the profit of the BCP which was shown negative.

The trend line analysis of the BCP Ltd can be shown by using the following trend line figure with (i) net profit before including other income and (ii) net profit for the year including other income which is shown as below:



The trend line showed that there was haphazardly net profit before and after of the BCP Ltd. The highest net profit was in the fiscal year 2057/58. However, the net profit trend line was decreasing.

4.11. Correlation Analysis of Total Sales and Net Profit after the including other income

Actual correlation deals to determine the degree of relationship between variables. It analyses the closeness of these variables. The degree of correlation is measured by correlation coefficient. Here, it used the variables total sales and net profit after including other income to determine correlation coefficient between them.

Table no 4.20
Bhaktapur Craft Paper Ltd, Bhyasi -10, Bhaktapur
Least Square Sheet

Rs. in Lakhs

Fiscal Year	Sales revenues (X)	Net profit before other income (Y)	XY	X ²	Y ²
2056/57	333.81145	9.45383	3155.7967	111430.0852	89.37490167
2057/58	450.98964	92.52335	41727.0723	203391.6554	8560.570295
2058/59	240.88961	-42.85346	-10322.9533	58027.80421	1836.419034
2059/60	301.11570	-18.1023	-5450.8867	90670.66479	327.6932653
2060/61	181.04949	-116.9395	-21171.8368	32778.91783	13674.84666
2061/62	156.78644	12.17518	1908.9031	24581.98777	148.235008
2062/63	244.55663	-34.05803	-8573.6737	59807.94528	1159.949407
	∑X = 1909.19896	∑Y = -97.80093	∑XY = 1272.421608	∑X ² = 580689.0594	∑Y ² = 25797.08857

Goodness of fit,

$$\begin{aligned}
 \text{i) Coefficient of Correlation (r}_{xy}) &= \frac{n \sum XY - (\sum X)(\sum Y)}{\sqrt{[n \sum X^2 - (\sum X)^2][n \sum Y^2 - (\sum Y)^2]}} \\
 &= \frac{7 \times 1272.421608 - 1909.19896 \times (-97.80093)}{\sqrt{[7 \times 580689.0594 - (1909.19896)^2] \times [7 \times 25797.08857 - (-97.80093)^2]}} \\
 &= \frac{8906.951256 - (-186721.4338)}{\sqrt{419782.7469 \times 171014.5981}} \\
 &= \frac{195628.3851}{647.9064338 \times 413.5391131} \\
 &= \frac{195628.3851}{267934.652} \\
 &= \mathbf{0.7301}
 \end{aligned}$$

The correlation coefficient lies between + 0.50 to + 0.75 due to there is high degree of positive correlation between sales revenues and net profit before other income. Therefore, if the total sales revenues increase, the net profit before other income will be increase.

$$\begin{aligned}
 \text{ii) Coefficient of Determination (r}^2_{xy}) &= \left[\frac{n \sum XY - (\sum X)(\sum Y)}{\sqrt{[n \sum X^2 - (\sum X)^2][n \sum Y^2 - (\sum Y)^2]}} \right]^2 \\
 &= (0.7301)^2 \\
 &= \mathbf{0.5331}
 \end{aligned}$$

Thus, the 53.31% of the net profit before other income is projected or explained from the variation in sales revenue and remaining 100% - 53.31% = 46.69% is still unexplained. This unexplained portion might be the effect of the factors other than sales, such as effect of other incomes, managerial efficiency, seasonality of the expenses, usual events, inflation, country business scenarios etc.

iii) Calculation of Probable Error (P.E.)

$$\begin{aligned}
 \text{P.E.} &= 0.6745 \times \frac{1-r^2}{\sqrt{n}} \\
 &= 0.6745 \times \frac{1-0.5331}{\sqrt{7}} \\
 &= 0.6745 \times \frac{1-0.5331}{2.645751311} \\
 &= 0.6745 \times 0.1765
 \end{aligned}$$

$$\begin{aligned}
 P.E &= 0.1190 \\
 6 P.E. &= 6 \times 0.1190 \\
 &= 0.7142
 \end{aligned}$$

If $r < P.E.$, it is insignificant, i.e. there is no evidence of correlation.

If $r > 6P.E.$, it is significant, i.e. there is evidence of correlation.

Here, $r > 6 P.E.$ i.e. $0.7301 > 0.7142$, since, $r > 6 P.E.$, we conclude that r is significant. However, only correlation cannot explain the relationship between sales revenues and net profit before other income.

4.12. Analysis of Variance (ANOVA) between Cost, Volume and Profit

If any problem consisting of more than two samples, say, 3 sample, is given to find whether there is significant difference between sample means or variance, it is difficult to solve the problem by applying t or F -tests. Moreover, the analysis of variance is applicable to test whether there is significant difference between means or variance. Not only this, but also when the response variable is affected by more than one factor we apply ANOVA technique. In a situation, when the response variable of interest is affected by two factors, two way ANOVA analyses is performed. Here with the help of two ways ANOVA, two factor analysis of variances test two sets of hypothesis with help of same data at the same time. The resulting statistic of the analysis of variance is called F ratio. Whether there is significant difference between three variables such as cost, volume and profit among different seven fiscal years.

Table no. 4.21
Bhaktapur Craft Paper Ltd, Bhyasi-10
ANOVA calculation

Fiscal Year	Cost(X_1)	Volume(X_2)	Profit(X_3)	Row Total	X_1^2	X_2^2	X_3^2
2056/057	324.35762	333.81145	9.45383	667.6229	105207.87	111430.08	89.37
2057/058	358.46629	450.98964	92.52335	901.97928	128498.08	203391.66	8560.57
2058/059	283.74307	240.88961	-42.85346	481.77922	80510.130	58027.804	1836.42
2059/060	319.21799	301.11570	-18.1023	602.23139	101900.13	90670.665	327.69
2060/061	297.98539	181.04949	-116.9395	362.09538	88795.293	32778.918	13674.846
2061/062	138.32312	156.78644	12.17518	307.28474	19133.285	24581.987	148.24
2062/063	278.61466	244.55663	-34.05803	489.11326	77626.129	59807.945	1159.95
Column total	2000.7081	1909.19896	-97.80093	Grand total(T) 3812.1062	601670.917	580689.059	25797.086

Test of Hypothesis:

Null Hypothesis:

- v) $H_0: \mu_c = \mu_v = \mu_p$, i.e. There is no significance difference between the average cost, volume and profit.
- vi) $H_0: \mu_c = \mu_v = \mu_p$, i.e. There is no significance difference between the average cost, volume and profit in different fiscal years.

Alternative Hypothesis:

- vii) $H_1: \mu_c \neq \mu_v \neq \mu_p$, i.e. There is significance difference between the average cost, volume and profit.
- viii) $H_1: \mu_c \neq \mu_v \neq \mu_p$, i.e. There is significance difference between the average cost, volume and profit in different fiscal years.

Table no. 4.22.

**Bhaktapur Craft Paper Ltd, Bhyasi-10, Bkt
Two- way ANOVA table**

Sources of Variation	Sum of Squares (S.S.)	d.f.	Mean sum of square (M.S.S.)	F-ratio
Between columns	SSC = 401912.4808	c-1 = 3-1 = 2	401912.4808/2 = 200956.2404	$F_{c(2,12)}=72.4281$
Between rows	SSR = 80942.54151	r-1 = 7-1 = 6	80942.54151/6 = 13490.42359	$F_{r(6,12)}= 4.8622$
Residuals (errors)	SSE = 33294.7216	(c-1) (r-1) = 12	33294.7216/12 = 2774.560133	
Total	SST = 516149.7439	n-1 = 21-1 = 20		

$$\text{Correction factor (C.F.)} = \frac{T^2}{n} = \frac{(3812.1062)^2}{21} = \frac{14532153.68}{21} = 692007.3181$$

$$\begin{aligned} \text{Total sum of square (TSS)} &= \sum \sum X_{ij} - \text{C.F.} \\ &= 1208157.062 - 692007.3181 \\ &= \mathbf{516149.7439} \end{aligned}$$

$$\begin{aligned} \text{Sum of square between columns (SSC)} &= \frac{(2000.7081)^2}{7} + \frac{(1909.19896)^2}{7} + \frac{(-97.80093)^2}{7} - 692007.3181 \\ &= \mathbf{401912.4808} \end{aligned}$$

$$\begin{aligned} \text{Sum of square between rows (SSR)} &= \frac{(667.6229)^2}{3} + \frac{(901.97928)^2}{3} + \frac{(481.77922)^2}{3} + \\ &+ \frac{(602.23139)^2}{3} + \frac{(362.09538)^2}{3} + \frac{(307.28474)^2}{3} + \frac{(489.11326)^2}{3} - 692007.3181 \\ &= \mathbf{80942.54151} \end{aligned}$$

$$\text{Sum of square within samples (or sum of square due to error) (SSW)} = \text{TSS} - \text{SSC} - \text{SSR}$$

$$= 516149.7439-401912.4808-80942.54151$$

$$=33294.7216$$

For Column:

i) **Critical Value:** The tabulated value of F at 5% level of significance for 2 and 12 d.f. is 3.89.

Decision: Since the calculated value of F is more than the tabulated value of F, null hypothesis is rejected and it is highly significant; H_1 is accepted which means that there is highly significance between the average of cost, volume and profit.

For Row:

ii) **Critical Value:** The tabulated Value of F at 5% level of significance for 6 and 12 d.f. is 3.00.

Decision: Since, the calculated value of F is more than the tabulated value of F, null hypothesis is rejected and it is highly significant; H_1 is accepted which means that there is highly significance between the average of cost, volume and profit in seven different fiscal years.

4.13. Break Even Analysis

A break-even point is that quantity of output sold at which the operating income is zero. It emphasizes the level of output or productive activity at which sales revenue exactly totals costs; there is no profit or loss. Breakeven analysis rests upon the foundation of cost variability separate identification and measurement of the fixed and variable components of cost. Breakeven analysis is usually applied on a “total company” basis. Cost-volume-profit analysis is sometimes referred to simply as break-even analysis. BEP is that point at which losses end and profit begins. Here BEP of the company were as follows;

Table no 4.23.

Bhaktapur Craft Paper Ltd.

Break Even Points Analysis

Rs. in Lakhs

Years Details	2056/57	2057/58	2058/59	2059/60	2060/61	2061/62	2062/63
BEP (Rs.)	306.2827	247.0355	106.3573	350.0676	-892.018	131.9439	373.7717
Changes	-	-19.34%	-56.95%	229.14%	154.81%	-85.21%	183.28%
BEP(Ratio)	0.92	0.55	0.44	1.16	4.93	0.84	1.53
Break-even Capacity	91.75 %	54.78%	44.14%	116.26%	492.69%	84.15%	152.83%
Cash BEP including other income	278.25	210.85	101.36	258.62	877.65	128.66	362.08

Cash BEP excluding other income	186.08	162.65	21.08	149.43	682.23	121.62	236.60
Changes	-	-12.59%	-87.03%	608.87%	365.55%	-82.17%	94.54%

The table showed that fluctuating trend of BEP (Rs). The main reason of its change was changed in variable cost and fixed cost. The changes in contribution margin or profit volume ratio also root causes of the changed of the BEP (in Rs.) in the company. The BEP (in Rs) were 306.2827, 247.0355, 106.3573, 350.0676, 892.0183, 131.9439 and 373.7717 respectively in the fiscal year 2056/57, 2057/58, 2058/59, 2059/60, 2060/61, 2061/62 and 2062/63. In the fiscal year 2056/57, 2057/58, 2058/59, 2061/62, there were lower break even sales in Rs. due to more cost (fixed cost and variable cost) incurred than break even sales. But in the fiscal year 2059/60, 2060/61 and 2062/63, there were more break-even sales in Rs than total costs (fixed cost and variable cost). So, it can be said that the average BEP sales in Rs was 343.93 Lakhs. The first fourth fiscal year, there were low bread even sales. To increase more break-even sales costs control should be maintained especially variable costs and fixed costs. The company earns profit beyond the break-even sales. The ratio between BEP sales and Actual sales is called as BEP ratio. The BEP ratios of the company were 0.99, 0.55, 0.44, 1.16, 4.39, 0.84 and 1.53. It provided information about how many percentages of the total sales was utilized only to meet the total costs of the company. Lower break-even showed the company strength and good performance of the company. But the company had no satisfactory break-even point sales that would cover the total costs. However, the BCP had some fiscal year BEP sales was more than total costs incurred of the company.

The capacity of the BEP of the company were 91.75%, 54.78%, 44.14%, 116.26%, 492.69%, 84.15% and 152.83% from fiscal year 2056/57 to 2062/63 respectively. It showed the capacity utilization at the break-even sales on the normal capacity available, which contributes to the management for taking decision within the range of available capacity (normal capacity). But while considering some fiscal year of the company there showed the minimum capacity utilization of the normal capacity available. In the aggregate the capacity utilization was not very satisfactory. Therefore, the management committee of the BCP should focus to utilize maximum available capacity utilization.

The cash break-even points including other incomes of the company were Rs. 278.25, 210.85, 101.36, 258.62, 877.65, 128.66 and 362.08 Lakhs respectively in the fiscal year 2056/57, 2057/58, 2058/59, 2059/60, 2060/61, 2061/62 and 2062/63. The cash break-even was not included the depreciation and non-other cash expenses (provision for bonus, provision for tax etc). It considered that the fixed cost related to cash expenses only and excluded the non cash expenses and calculated the cash expenses which were equivalent to sales revenues of the BCP here. The percentage changes of cash BEP excluding other income was less in the fiscal year 2057/58 by -12.59%, 2058/59 by-87.03% and 2061/62 by 20-82.17%. Similarly cash BEP increased by 608.87%, 365.55% and 94.54% in the fiscal year 2059/60, 2060/61 and 2062/63 respectively. The cash break-even point of the company excluding other income were Rs.186.08, 162.65, 21.08, 149.43, 682.23, 121.62 and 236.60 respectively from the fiscal year 2056/57 to 2062/63. It indicated the cash BEP in Rs fluctuating increasing and decreasing haphazardly. The highest cash break-even point was in

the fiscal year 2060/61 and 2058/59 by Rs.682.23 and the lowest cash break-even point was 21.08 Lakhs respectively.

Where,

- a. $BEP \text{ in Rs} = \frac{\text{Total Fixed cost}}{C/M \text{ ratio}}$
- b. $BEP \text{ ratio} = \frac{\text{Break even sales (Rs.)}}{\text{Actual Sales (Rs.)}}$
- c. $Cash \text{ BEP in Rs} = \frac{\text{Fixed costs excluding depreciation and other non cash expenses}}{\% C/M \text{ ratio}}$
(Including other income)
- d. $Cash \text{ BEP in Rs} = \frac{\text{Fixed costs excluding depreciation and other non cash expenses} - \text{other income}}{\% C/M \text{ ratio}}$

4.14. Margin of Safety Analysis (M/S)

Margin of safety (M/S) is the excess of actual (budgeted or expected) sales over the break-even volume of sales. Actually, it is the difference between the actual sales and break-even sales. It states the amount by which sales can drop before losses begin to be incurred in an organization. It is the position above the BEP. It gives management a feel for how close projected or actual operations are to be organization's break-even point. Margin of Safety = Actual sales or budgeted sales – Break-even sales. The higher margin of safety indicates the safer is the business and higher profitability or low margin of safety indicates the higher operating cost. The margin of safety can be expressed as a percentage by dividing the margin of safety by actual sales of the company. The Margin of safety (in Rs), Margin of safety ratio and % of margin of safety on sales calculated as follows:

Table no 4.24.
Bhaktapur Craft Paper Ltd.
Margin of Safety Analysis

Rs. in Lakhs

Fiscal Years	2056/57	2057/58	2058/59	2059/60	2060/61	2061/62	2062/63
Details							
Margin of Safety in Rs.	27.49	203.92	134.54	-48.93	1072.84	24.85	-129.25
% of Margin of safety on Sales	8.24%	45.22%	55.85%	-16.25%	592.57%	15.85%	-52.85%
Changes in %	-	36.97%	10.63%	-72.11%	576.32%	-576.7%	-68.68%
M/S Ratio	0.824	0.4522	0.5585	-0.1625	0.59257	0.1585	-0.5285
% of Margin of safety including other income	16.20%	47.76%	66.41%	-2.51%	540.83%	18.58%	-34.57%

It clearly showed the Margin of Safety of the company in the various fiscal years. The company margins of safety were 27.49, 203.92, 134.54, -48.93, 1072.84, 24.85, and -129.25 Lakhs in the fiscal year from 2056/57 to 2062/63 respectively. It showed that in the fiscal

year from 2056/57 to 2058/59, there were more sales than BEP sales due to positive margin of safety. But in the fiscal year 2059/60 and 2062/63 margins of safety were negative due to more break even sales than actual sales. Similarly, in the fiscal year 2059/60, there was a negative break even sale due to show the more margin of safety. The percentage of margin of safety on sales were 8.24%, 45.22%, 55.85%, -16.25%, 592.57%, 15.85% and -52.85% in the fiscal year from 2056/57 to 2062/63 respectively. The percentage changes in the fiscal year from 2057/58 to 2062/63 are 36.97%, 10.36%, -72.11%, 576.32%, -576.7% and -68.68% respectively.

Similarly, Margin of Safety while including other income of the company were 16.20%, 47.76%, 66.41%, -2.51%, 540.83%, 18.58% and -34.57% respectively in the fiscal year 2056/57, 2057/58, 2058/59, 2059/60, 2060/61, 2061/62 and 2062/63. The average margin of safety of while including other income on the sales is 93.24%.

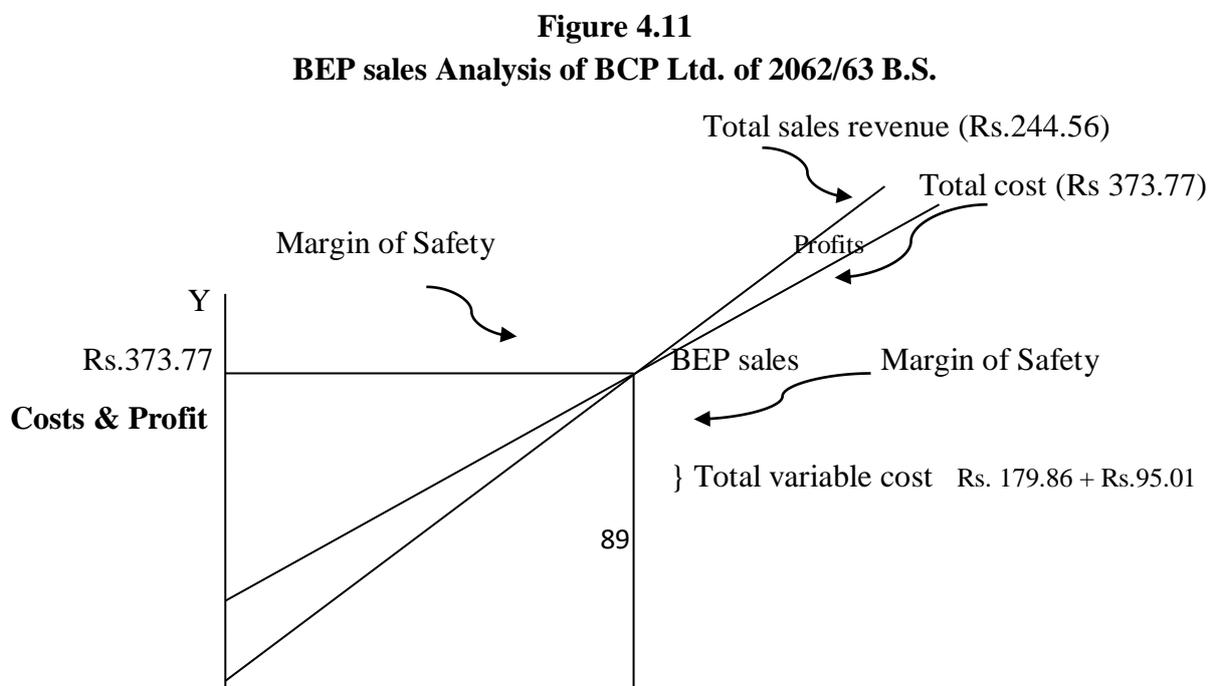
The higher percentage of M/S ratio indicates that the company has higher profitability position and lower indicates vice versa. The BCP Ltd. had negative margin of safety in the fiscal year 2059/60 and 2062/63 respectively and indicated that there were more BEP sales of the company. Similarly in the fiscal year 2060/61 showed there was high M/S due to more negative BEP sales than actual sales which was very dangerous to the company. Therefore, to make more margin of safety (M/S) it was necessary to control costs structure of the BCP Ltd that affected to the manufacturing price of the company.

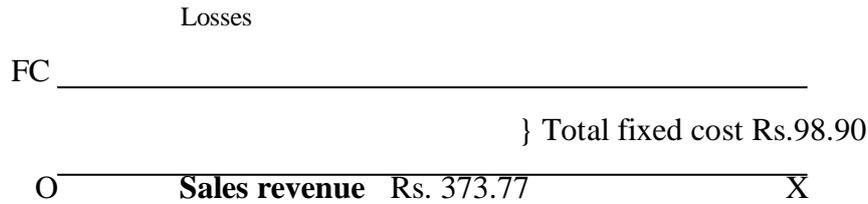
Where,

- a. Margin of Safety (M/S) in Rs. = $\frac{\text{Net Income or profit}}{P/V \text{ ratio}} = \text{Actual sales} - \text{BE sales}$
- b. Margin of Safety ratio = $\frac{\text{Actual Sales} - \text{BE Sales}}{\text{Actual Sales}}$
- c. % of margin of safety on sales = $\frac{\text{Margin of Safety}}{\text{Actual Sales}} \times 100\%$

4.15. Cost Volume profit graph for the company of the fiscal year 2062/63

Cost Volume profit graph is called as BEP graph sometimes. A BEP can analysis the relation between cost volume and profit. It showed the profit and loss area of the company with lining intersection each other. Here, it tried to show the one fiscal year 2062/63 BEP of the BCP Ltd. In here, the fixed cost of the company was assumed fixed. The figure is as below:





In the above X-axis showed the Sales Revenues of the company which was not included other business income. Similarly, Y-axis showed the total Costs and Profits/losses of the company. It clearly showed the BEP sale of the BCP Ltd. of the fiscal year 2062/63 was Rs373.77. The sales revenue of the company was Rs. 244.56 Lakhs but the total cost of the company was Rs. 278.76 Lakhs. Here Sales revenue was less than the total costs incurred due to it showed the losses by Rs.-34.20 Lakhs. From O to FC part is the fixed cost of the company which was shown by the straight line and from FC up to BEP sales is known as total variable cost part. The below part from BEP sales is known as losses and above is profit area. But in the fiscal year 2062/63 showed the losses in the company due to more operating costs of the company than sales revenues by Rs-34.20 Lakhs. To maintain profit over its costs necessary products should sell over BEP sales (Rs.373.77).

4.16. Sensitivity of CVP Analysis or Assess the impacts of the changes in CVP variables

Sensitivity analysis is the measurement of elasticity of the change in cost-volume-profit factors on break-even point or given profit. The strategist should focus more on the factor which is more sensitive or responsive for profit. Therefore, to measure the sensitivity of cost-volume-profit factors should be considered with the impact of certain percentage or amount change in volume, price, or cost factors on net profit. The management terms are not only able to obtain numerical expression of business orientation, but in addition are able to measure range of issues related to product and service profitability, profit improvement and the effectiveness of alternative accounting procedures, cost control strategies and budget preparation methods. Therefore, to measure the sensitivity of cost-volume-profit factors it can be seen the impact of certain percentage or amount change in volume-price or cost factors on net profit as follows:

Table no 4.25.
Bhaktapur Craft Paper Ltd.
Different Factors affecting CVP analysis

Factors	Effect in P/V ratio	Effect in BEP	Effect in Profit
Sales Revenue:			
Increase	No effect	No effect	Increase
Decrease	No effect	No effect	Decrease
Variable Costs:			
Increase	Decrease	Increase	Decrease
Decrease	Increase	Decrease	Increase

Fixed Costs:			
Increase	No effect	Increase	Decrease
Decrease	No effect	Decrease	Increase

4.16.1. Effect of Change in Sales Volume

A change in volume without any change in price, cost will not affected the P/V ratio and BEP sales remain unchanged. Profit increase with volume increase and decrease in volume decrease.

In the above fiscal year 2062/63, if sales volume increases and decreases by 10%, the variable costs also proportionately will change but other factors assumed remain constant. The following results will get as:

Table no 4.26.
Bhaktapur Craft Paper Ltd.
Income Statement with changes of Sales Volume
Fiscal Year 2062/63 (Rs in Lakhs)

Particulars	Original	Change on Sales Volume	
		Increased by 15%	Decreased by 15%
1.Sales Revenue	244.56	281.24	207.88
2.Variable Costs	179.86	206.84	152.88
3.Contribution Margin (1-2)	64.70	74.40	55.00
4.Fixed Costs	98.90	98.90	98.90
5.Net Income	-34.20	-24.50	-43.90
6.Other Income	33.20	33.20	33.20
7.Net profit (5+6)	-1.00	8.70	-10.70
8.P/V or C/M ratio (3÷1)	26.46%	26.46%	26.46%
9. Change in Net Profit	-	+9.70	-9.70
10.Break-EvenPoint in Rs(4÷8)	373.77	373.73	373.77
11.% Change in Net Income	-	+28.36%	-28.36%

The table showed that if Sales revenue increased by 15%, net income will be increased by 28.36% and if other income will be included in the net income then, there net profit will be increased by Rs.9.70 Lakhs and in decreased case vice versa. Similarly if decreased in sales revenue by 15%, the percentage of net income will be decreased by same percentage .i.e by 28.36% . But in the case of BEP sales and P/V were not affected due to change in sales revenue of the company.

4.16.2. Effect of Variable Cost Change

The impact of change in variable cost on profit is that increase in variable cost reduces the profits because of low P/V ratio and high BEP, if there is no change in selling price and volume. On the other hand, if the variable cost decline, P/V ratio will increase, Break-even point will be lowered and profit would rise.

In the above fiscal year 2062/63, if Variable costs decreased and increased by 15%, it affected to the P/V ratio and BEP sales but other factors assumed remain constant. If change the following results will get as:

Table no 4.27.

Bhaktapur Craft Paper Ltd.
Income Statement with changes of Variable Costs
Fiscal Year 2062/63 (Rs in Lakhs)

Particulars	Original	Change on Variable Costs	
		Increased by 15%	Decreased by 15%
1.Sales Revenue	244.56	244.56	244.56
2.Variable Costs	179.86	206.84	152.88
3.Contribution Margin (1-2)	64.70	37.72	91.68
4.Fixed Costs	98.90	98.90	98.90
5.Net Income	-34.20	-61.18	-7.22
6.Other Income	33.20	33.20	33.20
7.Net profit (5+6)	-1.00	-27.98	25.98
8.P/V or C/M ratio (3÷1)	26.46%	15.42%	37.49%
9. Change in Net Profit	-	-26.98	+26.98
10.Break-EvenPoint in Rs(4÷8)	373.77	641.37	263.80
11.% Change in Net Income	-	-78.89%	+78.89%

In the above table showed that if sales volume remain constant and changed by 15% in the variable costs, it would affect BEP by increasing and decreasing. Similarly, it affected the net profit Rs -26.98 Lakhs while increased in the variable cost, if decreased vice versa. The percentage changed in net Income by increasing and decreasing 78.89% respectively. It showed there is inverse relation between net income and variable costs.

4.16.3. Effect of Change in Fixed Costs

A change in fixed cost does not influence P/V ratio. In selling price, variable cost and volume remain unchanged, a fall in fixed cost, caused lower BEP and raise profits and vice versa. In the fiscal year 2062/63, if increased and decreased of fixed costs by 15% with other factors assumed remain constant same, the following results show as:

Table no 4.28.

Bhaktapur Craft Paper Ltd.
Income Statement with changes of Fixed Costs
Fiscal Year 2062/63 (Rs in Lakhs)

Particulars	Original	Change on Variable Costs	
		Increased by 15%	Decreased by 15%
1.Sales Revenue	244.56	244.56	244.56
2.Variable Costs	179.86	179.86	179.86
3.Contribution Margin (1-2)	64.70	64.70	64.70
4.Fixed Costs	98.90	113.74	84.07
5.Net Income	-34.20	-49.04	-19.37
6.Other Income	33.20	33.20	33.20
7.Net profit (5+6)	-1.00	-15.84	13.83
8.P/V or C/M ratio (3÷1)	26.46%	26.46%	26.46%
9. Change in Net Profit	-	-14.84	+14.84
10.Break-EvenPoint in Rs(4÷8)	373.77	429.86	317.72
11.% Change in Net Income	-	-43.39%	+43.39%

In the above analysis of fixed cost changed in the fiscal year 2062/63, there it can be seen that only fixed cost can change in BEP and net profit of the company. Here if 15% changed by increasing in fixed costs affected in BEP increased by Rs.56.09 Lakhs and decreased in net profit by Rs.-14.84 Lakhs. Similarly if decreased by 15% in the fixed costs affected in BEP sales by Rs.56.06 by decreasing and increased by 43.39% in the net income of the company. Thus we can say that there is indirect relationship between fixed costs and net profit. It also caused to BEP sales.

4.17. Estimated Income Statement Analysis

Estimated or Projected income statement is prepared on the basis of past data analysis. Here for preparing estimated or budgeted income statement for the BCP Ltd. Sales, variable costs, fixed costs and other income of the previous year of the company were analyzed. All the above forecasting data was based on seven past data trend analysis was used by using the least square methods or time series analysis. Therefore, the forecasted or budgeted income statement detail is as follows:

Table no 4.29.
Bhaktapur Craft Paper Ltd.
Estimated or Projected Income Statement
Fiscal Year 2063/64 and 2064/65 (Rs in Lakhs)

Particulars	Fiscal year 2063/64	Fiscal year 2064/65
1.Sales Revenue	141.8839	109.1692
2.Variable Costs	106.3518	94.0576
3.Contribution Margin	35.5321	15.1116
4.Fixed Costs	96.1584	93.6937
5.Net Income	-60.6263	-78.5821
6.Other Income	20.9049	17.9352
7.Net Profit	-39.7169	-60.6469
8.Net Profit Margin(8÷1)	-27.99%	-55.55%
9.V/V Ratio (2÷1)	74.96%	86.16%
10.C/M Ratio (3÷1)	25.04%	13.84%
11.% of Fixed costs on Sales	67.77%	85.82%
12.% of VC on Total Cost{2÷(2+4)}	52.52%	50.10%
13.% of FC on Total Cost{4÷(2+4)}	47.48%	49.90%
14.Operating Leverage (3÷5)	-0.58	-0.19
15.BEP sales (4÷10)	384.02	676.98

While considering past data analysis by using least square method or time series analysis shows that the sales revenue in the fiscal year 2063/64 and 2064/65 should be Rs.141.8839 and Rs.109.1692 Lakhs respectively. Similarly, the variable costs of the company should be Rs.106.3518 and Rs. 94.0576 Lakhs respectively in the coming fiscal year 2063/64 and 2064/65 which show the decreasing trend in sales and variables costs. It also indicates there is direct relationship between the variable costs and sales of the BCP Ltd. The contribution margin ratio of the fiscal year 2063/64 and 2064/65 should be 0.2504 and

0.1384 respectively. The net incomes would be in negative due to high fixed costs of the company. The fixed costs of the company would be Rs. 96.1584 and Rs. 93.637 Lakhs which would be 67.77% of the sales in the fiscal year 2063/34 and 85.82% in the fiscal year 2064/65. It indicates that fixed costs were high of the company. The negative net profits would decrease while added other income of the company in the net income. The net profit margins would be -27.99% and -55.55% in the coming fiscal year. The net profit margin shows the negative margin ratio in the coming fiscal year due to high variable costs and fixed

costs of the company. Therefore to maintain net profit of the company, it is necessary to control variable costs and remove the unnecessary fixed costs which will help to make positive net profit. Not only this, the company also should increase the sales revenues by finding new markets of the products.

The total variable costs and fixed costs would be 52.52% and 47.48%; 50.10% and 49.90% in the fiscal year 2063/64 and 2064/65 that indicate the variable costs and fixed costs ratio. Similar in the coming fiscal year also no research was yet conducted in the field on sales including other income, variable costs, fixed costs and profit. In the fiscal year 2056/57 and 2057/58, the fixed costs, variable costs, total net incomes after other incomes were 28.81%, 59.93% and 11.26% ; and 23.70%, 52.11% and 24.19% respectively. The average ratio in the total income of the company of fixed costs, variable costs and total net income after other income of the company were 26.26%, 56.02% and 17.73%. Therefore, for the company the better strengthen of its position, it should be maintain the 26.67%, 56.02% and 17.73% among the total fixed costs, variable costs and profit with the total income of the company. But while considering in the fiscal year 2063/64 and 2064/65 the ratio among fixed costs, variable costs and net income after other income were 59.07%, 65.33% and -24.40%; and 73.71%, 74.00% and -47.71% respectively. To maintain total costs of the company, the BEP sales should be Rs.384.02 and Rs. 676.98 Lakhs in the fiscal year 2063/64 and 2064/65 respectively.

4.18. Major Findings

Every research studies have its own finding out results. On the basis of mine research studies, observations and available information of the BCP Ltd analysis has been found out the following results as:

- ❖ The total incomes of BCP Ltd were not stable (for the fiscal year 2056/57 to 2062/63) i.e. fluctuating upward and downward haphazardly.
- ❖ The aggregate total incomes contributed of each fiscal year from 2056/57 to 2062/63 were 17%, 22%, 15%, 16%, 9.5%, 7.5% and 13% respectively.
- ❖ The total costs decreased by -20.8453%, -6.6514% and -53.5806% in the fiscal year 2058/59, 2060/61 and 2061/62 and increased percentage of total cost by 10.5158%, 12.5052%, and 101.4231% in the fiscal years 2057/58, 2059/60 and 2062/63 respectively.
- ❖ The aggregate total costs were 16.21%, 17.92%, 14.18%, 15.96%, 14.89%, 6.91%, and 13.93% from the fiscal year 2056/57 to 2062/63.
- ❖ The losses in the fiscal year 2058/59 were Rs.-42.85346, Rs.-18.1020 in 2059/60, Rs.-116.9395 in 2060/61 and in 2062/63 Rs.-34.05803 Lakhs respectively due to tough

competition in international market with machine made paper and heavy imported from Tibet, unstable political scenarios and insecurity condition of the country.

- ❖ There was direct proportional relationship among sales revenues, total costs and net profits i.e.5:4:1 and percentage of the total sales revenue, variable costs, net incomes, other incomes and net profits for the year from the fiscal year 2056/57 to 2062/63 are 39%, 26%, 13%, 12%, 1%, 4% and 5% respectively.
- ❖ There were more profits in the fiscal year 2061/62 by 89.5889% due to low costs and more sales revenue than the other fiscal years.
- ❖ The aggregate sales of the fiscal years from 2056/57 to 2062/63 were 17.48%, 23.62%, 12.62%, 15.77%, 9.48%, 8.12% and 12.81% respectively. The sales didn't include other incomes of the company.
- ❖ The sales revenues were in fluctuating trend and a highest sale of the company was in the fiscal year 2057/58 and recorded Rs.450.98964 Lakhs of sales revenue.
- ❖ More than 80% of the sales were in international market and markets of the products are growing annually because of renowned exceptional durability, lively and special texture.
- ❖ While using least square trend analysis, it showed the probable future sales revenues would be Rs.141.8839 Lakhs and Rs.109.1692 Lakhs for the fiscal year 2063/64 and 2064/65 if sales remain constant and sales revenue trend line was downward.
- ❖ The trend line of other income was decreasing downward but from fiscal year 2062/63, there showed that increasing trend line from it and the estimated other incomes of the company for the fiscal year 2063/64 and 2064/65 would be Rs.20.9049 Lakhs and Rs.17.9352 Lakhs respectively.
- ❖ Most of the total expenses spent on cost of goods sold, administration, selling and general overheads. The mixed costs or semi-variable costs included cost of goods sold, administration, selling and general overheads.
- ❖ The mixed costs spent out of the total costs on the products were 97.0283%, 95.4201%, 38.4814%, 89.4031%, 99.4743%, 97.6617% and 98.8892% in the fiscal year 2056/57, 2057/58, 2058/59, 2059/60, 2060/61, 2061/62 and 2062/63 respectively.
- ❖ The average mixed costs or semi-variable costs of BCP Ltd. were 88.0512% of the total costs.
- ❖ Least Square segregation method was used to segregate or bifurcate the semi-variable costs or mixed costs.
- ❖ The variable cost per sale was Rs.0.570265 per Lakhs sales.
- ❖ The fixed cost was Rs 95.6607 Lakhs per year which was assumed constant each year.
- ❖ There showed high degree of positive correlation between mixed costs and sales revenue of BCP Ltd. { i.e. $r = 0.6262$ }
- ❖ The Coefficient of Determination (r^2) of mixed cost is 0.3921. It showed that 39.21% was explained from the variation in sales and remaining 60.79% was unexplained.
- ❖ There existed an average variation of Rs.77.7695 Lakhs between sales revenue and mixed costs i.e. $S_e = 77.7695$.

- ❖ The variable costs were fluctuating haphazardly increasing and decreasing each year due to there was no proper planning of variable costs and management inefficient in the accounting technique practices especially CVP analysis.
- ❖ The fixed cost of the administration, selling and general overheads were constant i.e. Rs. 61.4879 Lakhs except in the fiscal year 2061/62 i.e. Rs. 49.94913 due to all the mixed costs for administrations, selling and general overhead were less than fixed costs.
- ❖ There was haphazardly increasing and decreasing of variable administrations, selling and general overheads.
- ❖ The average variable administrations, selling and general overhead were Rs. 35.45128857 Lakhs per year.
- ❖ The variable costs of goods sold, variable administrations, selling and general overhead or the total variable costs were fluctuating decreasing by -94.5097% and -80.3604% in the fiscal year 2058/59 and 2061/62 ; and increasing by 12.4762%, 1302.5452%, 5.8126% and 356.1762% respectively.
- ❖ Least square straight line trend showed that there was negative growth of the total variable cost and decreasing trend of its i.e. expected decreasing annually by Rs-12.2959 Lakhs.
- ❖ The expected total variable cost was Rs. 106.3518 Lakhs and Rs.94.0576 Lakhs for the fiscal year 2063/64 and 2064/65 respectively.
- ❖ The highest total variable cost was Rs.246.38816 Lakhs and the lowest total variable cost was Rs.13.52755 Lakhs in the fiscal year 2057/58 and 2058/59 respectively.
- ❖ The average total variable cost per year was Rs 155.5356043 Lakhs.
- ❖ The fixed costs included fixed cost of goods sold, fixed cost of administrations, selling and general overhead, depreciation, amortization, provision for bonus and provision for taxes.
- ❖ The average total fixed cost of the company was Rs. 106.0172 Lakhs per year.
- ❖ BCP Ltd spent 56.44% on fixed administrations, selling and general overheads 33.79% on fixed cost of goods sold, 2.53% on depreciation, 3.15% on provision for bonus, 4.08% on amortization and 0.85% on provision for taxation out of total fixed costs.
- ❖ The straight trend line showed the negative growth of total fixed costs i.e. expected decreasing annually by Rs.-2.4647 Lakhs.
- ❖ The expected total fixed costs for 2063/64 and 2064/65 should be Rs. 96.1584 and Rs.93.6937 Lakhs respectively.
- ❖ There was very high degree of positive correlation between total costs and sales. i.e. $r_{xy} = 0.7685$.
- ❖ 59.06% of the sale was projected from variation in costs and remaining 40.94% was still unexplained. This unexplained portion might be the effect of the factors other than sales, such as effect of managerial efficiency, seasonality of the expenses, usual events, inflations, country business scenarios etc.
- ❖ Since, $r > 6$ P.E. i.e. $0.7685 > 0.6258$, that is significant i.e. there was evidence of correlation between sales revenue and costs.

- ❖ Test of Hypothesis showed that H_1 was accepted at 5% level of significance, i.e. there was relationship between total costs and sales. (Change in total costs can explain the change in sales).
- ❖ Net Profits were shown after and before other income, after forward from earlier profits and losses and necessary appropriation (including other income).
- ❖ There was suddenly out broke of fire in the factory (due to electricity problem at night) in the fiscal year 2058/59 and fixed assets and raw material were lost by fire Rs. 78.55223 and Rs. 54.56858 Lakhs
- ❖ There was haphazardly fluctuating of profits/losses of the company in the fiscal year. The changed in profits/Losses after other income were 178.03%, -71.23%, -32.27%, -329.02, 81.79%, and -95.072% from fiscal year 2057/58 to 2062/63 respectively and highest net income after other income was Rs.114.3927 Lakhs in the fiscal year 2057/58.
- ❖ The test of Hypothesis after and before adjustment and earlier profits/losses, t-value of 6 (7-1) d.f. at 5% level of significance for one tail showed that there was evidence i.e. it was affected (changed) the net profits/losses after and before.
- ❖ The total net profits before other incomes trend i.e. expected decreasing annually by Rs.13.04707 lakhs per year.
- ❖ The expected net profit for the fiscal year before other income 2063/64 and 2064/65 should be Rs.-66.1599, Rs. -79.2070 lakhs, if profits trend remain constant and expected net profits/losses after other incomes for the fiscal year 2063/64 and 2064/65 would be Rs.-45.2481 lakhs and -61.26225 respectively, if profits/losses trend remain constant.
- ❖ There was high degree of positive correlation between sales revenues and net profit before other incomes. i.e. $r = 0.7301$.
- ❖ 53.31% of the net profit before other income was projected or explained from the variation in sales revenue and remaining 46.69% was effected of the factors other than sales revenues.
- ❖ Test of Hypothesis using ANOVA showed that for column, H_1 is accepted which means there was highly significance between the average of cost, volume and profit. Similarly, for Row, null hypothesis is rejected and H_1 is accepted which means there was highly significance between the average of costs, volumes and profits in seven different fiscal years.
- ❖ The Contribution Margins were Rs.114.75, Rs. 204.60, Rs.227.36, Rs.111.36, Rs.-19.71, Rs.117.36 and Rs.64.70 Lakhs which decreasing haphazardly due to root causes of BEP sales. However, the average contribution margin was Rs.117.2071 Lakhs which was satisfactory.
- ❖ The variable costs ratio on sales were 65.62%, 54.63%, 5.62%, 63.01%, 110.09%, 25.15% and 73.54% from the fiscal year 2056/57 to 2062/63 respectively. The aggregate variable cost was 56.81% on sales revenue.
- ❖ The percentage of the fixed cost in the sales revenues were 31.54%, 24.85%, 41.67%, 43.00%, 53.70%, 62.99% and 40.44% respectively from the fiscal year 2056/57 to 2062/63. The aggregate percentage of fixed cost is on sales revenue 42.59%.

- ❖ The average total variable costs and total fixed costs in sales revenues are 52.57% and 47.43%.
- ❖ The average net total profits after previous year earned added is Rs.369.90 Lakhs.
- ❖ The average degree of operating costs before and after other incomes were 1.86 and 2.12.
- ❖ If sales revenue increased by 10% and fixed costs remain constant, then net profit after including other income EBIT increased by 21.2%.
- ❖ The annual BEP sales in Rs is 343.93 Lakhs and the BEP sales and actual sales ratio were 0.99, 0.55, 0.44, 0.16, 4.39, 0.84 and 1.53 in the fiscal year 2056/57, 2057/58, 2058/59, 2059/60, 2060/61, 2061/62 and 2062/63 respectively.
- ❖ The capacity of the BEP sales of the company were 91.75%, 54.78%, 44.14%, 116.26%, 492.69%, 84.15% and 152.83% from the fiscal year 2056/57 to 2062/63.
- ❖ The cash BEP including other incomes of the company were Rs.278.25, 210.85, 101.36, 258.62, 877.65, 128.66 and 362.08 Lakhs from the fiscal year 2056/57 to 2062/63. The highest cash-breakeven point was in 2060/61 by Rs.682.23 Lakhs and the lowest cash-breakeven point was Rs.21.08 Lakhs in 2058/59.
- ❖ The percentage of Margin of Safety (M/S) on sales were 8.24%, 45.22%, 55.85%, -16.25%, 592.57%, 15.85% and -52.85% in the fiscal year from 2056/57 to 2062/63. The average margin of safety while including other income on sales was 93.24%.
- ❖ The BEP sale in Rs for the fiscal year 2062/63 was Rs.373.77 Lakhs.
- ❖ In the company, if sales revenue increased by 15%, net income will be increased by +28.36%, and if other incomes included in net income than net profit will increased by Rs.9.70 Lakhs. Similarly, if decreased in sales revenue by 15%, the percentage of net income will be decreased by same percentage rate i.e. -28.365%. If sales revenues remain constant and changed by 15% in the variable costs, it affected the net profit Rs-26.98 Lakhs while increased in the variable costs and if decreased the results showed vice versa. If fixed costs changed by 15% by increasing BEP sales would be increased by Rs.56.09 Lakhs and net profits decreased by Rs 14.84 Lakhs and if decreased in fixed costs by same rate then the results would be vice versa.
- ❖ If the BCP Ltd achieved the estimated sales revenues for the coming fiscal year 2063/64 and 2064/65, then the company would get contribution margin Rs.35.5321 and Rs. 15.1116 respectively. After including other income to the company net incomes, it would get the net profits Rs.-39.7169 and -Rs.60.6469. Therefore, it showed that sales revenues would be low than the BEP sales of the coming fiscal years which would be Rs.384.02 in 2063/64 and Rs.676.98 in 2064/65 respectively. The variable costs ratio on sales 74.96% and 86.16% which would be increasing trend. Similarly, the fixed costs ratio on sales 67.77% and 85.82% but contribution margins ratio would be 25.04% and 13.84% respectively. The variable costs and fixed costs ratio on total costs would be 52.52%, 47.48%; and 50.10%, 49.90% of the coming fiscal year 2063/64 and 2064/65 respectively.

Chapter-V

Summary, Conclusions and Recommendations

5.1. Summary

Nepal is a country with the area of 147181 square km, surrounded by China and India. Agriculture remains the main source of income through the arable land is less fertile, therefore, the government at present should transfer the labor forces from agricultural sector to industrial sector. The cottage and small scale industries are the essential industries in the country. The geographical location and social economic pattern of the country also demand the development of small-scale cottage industries.

Handicraft industry in Nepal is spreading all over the country. These industries consist of thousands of small and large units and they are employing large amount of labor force. Nepalese handicrafts have been playing a considerable role in the Nepalese heritage. It helps in expressing the country's art and culture to the rest of the world on one hand and on the other hand they help earn foreign exchange, which are needed to accelerate the pace of economic development. Handicrafts have long been a major line of Nepalese exports. It is important item next to jute products in case of merchandise goods as foreign exchange earner. Nepal exports have wide range of handicraft products to over 73 countries. Export is the lifeblood and motive power for economic growth. The handicraft goods that are being exported from Nepal are pashmina goods, silver jewelry, metal crafts, handmade paper, thanckas etc.

Danphe "Lokta" is the best-known paper of the several indigenous papers. The Lokta grows at an elevation of 2,000 to 2,700 meters in the forest. These papers are of an ancient origin. It is believed that Nepalese learned the art of papermaking from the Tibetans when they had trade intercourse. The making of handmade paper and paper products involves different processes until the making of final products. In the present business scenario international marketing plays a very pivotal role. The demand for the Nepalese handmade paper and paper products are high and these products are being exported to many countries. The government, exporters and other concern organizations should promote these products in the international market and they should use all the promotional tools such as advertising, public relation, personal selling, direct marketing, sales promotion effectively, management skills and as required to promote of exports.

In a dynamic business environment, it is necessary to every business and non-business organizations to achieve its objectives by using modern management skills and accounting tools which makes them to control the costs of the production of the products, promote its sales and making more profitability with increasing productivity of the company. For its, it is significance especially every profit motive business organizations where profit is the main achievement of the organizations. Therefore, today managers of the company, they should prepare budgeting such as profit planning, costs planning and sales planning so that to cover

the risks losses of the businesses. In this 21st century there is no free from risks, therefore, successful, skillful, experiences and updating of the managers are very essential for success of the businesses.

Profit planning and control is the one of the main function of the management area. Resources are scare. So, it is necessary to make efficient utilization of the scare resources. Management techniques help maximum utilization of scare resources and estimate future costs profits of the every business organizations. Therefore, CVP analysis is such a tool of management accounting which helps for the profit planning and costs controlling (PPC) area that operate as a device by the managers of the company. With the help of the CVP analysis, BCP Ltd can estimate the total costs, profits and sales volumes, not only this but it also helps risk measurement of the losses/profits by analysis the BEP sales. However entire field of the profit planning which is one of the main objectives of the every business organization has been associated with CVP analysis tool inter-related.

The key role of the CVP analysis of this research is to examine, analyze and forecast the costs, volumes and profits analysis as a tool of profit planning for profitability, effectiveness and productiveness of the BCP Ltd. In this research area, using analytical and description approach of data analysis of the secondary data, costs, volumes (sales) and profits, BEP sales, contribution margin, Margin of safety, estimated income statements were analyzed. For complete and realistic analysis, necessary primary data were collected by visiting several times with the manager of the BCP Ltd. The results showed that it has low contribution margin.

By analyzing of the CVP of BCP Ltd, it showed that there were fluctuating costs, volumes and profits. BEP sales were not satisfactory as the required of the company incurred in costs which were high. Similarly, Cash BEP was also fluctuating haphazardly. Margin of safety was very low but some years it was negative too. The average variable cost was Rs.155.54 Lakhs and the average fixed cost was Rs.106.02 Lakhs respectively which showed that 46.71% increased in the variable cost than the fixed cost. Fixed costs trends were more increased more than the sales revenue. The estimated variable costs and fixed costs ratios were nearly equal on total costs. There also showed that if fixed costs and variable costs increase, they will affect the BEP adversely. The forecasted income statements showed the negative net profits and net contribution margin. Therefore, it is immediately necessary for the BCP Ltd Company to improve its profitability, productivity and effectiveness by using as a tool of the CVP analysis which is one of the main key parts of the PPC. Thus by using CVP analysis(21st century's weapon of the management accounting), the company can improve in future.

5.2. Conclusions

There are different types tool of PPC. Among them CVP analysis is one the management accounting tool. In the research process, it was found out that most of the Nepalese industries didn't follow the management accounting tools. BCP Ltd wasn't using CVP analysis.

Handicrafts industries are one of the most export oriented industrial sector in the international markets like Europe, Latin America etc which paid a lot of taxes to the government and provided employment to thousands of persons and contributing social

sectors. In views of these points, it is necessary to promote those industries. However, there is more demand of handcrafts goods like handmade paper, pashmina, handmade thankas etc. in the international markets. But these products productions are very less, costs high, inefficient workers were used in production process, unskilled managers who didn't use knowledge of scientific management accounting tools like CVP analysis, zero base budgeting etc. resulted into low quality products, high costs, low/negative profits, low productivity capacity.

Similarly, in my research study, of BCP Ltd, where I didn't find used of CVP analysis for cost segregation. Cost segregation is one of the most essential aspects of CVP analysis which separate the total variable costs and fixed costs for the products by using statistical technique i.e. least square method. Therefore, the present costs, volumes and profits structure can be improved by using scientific management accounting tool like CVP analysis in the BCP Ltd. where different types of handmade products are produced and exported more than 80% in the international markets.

While considering projected or budgeted costs, profits and volumes in the company, I couldn't find use estimations. So, by following CVP analysis on production costs, profits and sales volume, projected volumes, costs and profits can be used to correct decreasing sales revenue trend and that affected directly to the variable costs and profits. Not only this, increasing fixed costs and variable costs affected directly in BEP sales of the Bhaktapur Craft Paper Ltd. The BEP of BCP Ltd in the fiscal year 2062/63 was very high than sales revenue. Therefore costs controlling and reducing variable costs by making effective use of raw material, removing leakage and using low cost transportation, removing unnecessary fixed costs and promoting sales revenues will help to increase sales in markets.

Mixed-costs or semi-variable costs were segregated by using least square methods and 88.0512% of total costs represented mixed costs. So, it is necessary to control mixed costs. Mixed costs and Sales relationship were high positive correlation. Therefore to maintain the operating cost it is necessary to control fixed costs of the company.

Contribution margin showed decreasing trend due to low sales revenue and high variable costs of BCP Ltd. The estimated fixed costs and variable costs of the company were also equal. Therefore, it is necessary to make cost analysis by using scientific management accounting tools. Sensitivity analysis showed increase in profits on account of increase in sales revenues and; variable costs and fixed costs decreased and vice versa.

The average margin of Safety of the company was 93.24% including other business income which was good for the company but in the year 2062/63 it showed -34.57% less sales which was dangerous for the company.

The average profitability position of the BCP Ltd was 43.97%. It was satisfactory but in the fiscal year 2062/63 there was negative profit and productivity position of the company was not satisfactory. Therefore a scheme is necessary to increase productivity position of the company. Therefore, it is necessary that the company's management committee need to take corrective actions by controlling costs, improving its sales markets through effective strategic of management planning.

5.3. Recommendations

Nepal is a developing and land-locked country. It is engaged in enhancing economic relations with the outside world. It has trade relations with more than 100 countries. Since 1990, Nepal's economic reforms aim at creating an open liberalized economy. Trade and tariff barriers are being dismantled. Nepal became a member of WTO (World Trade Organization) in 2004. As the competitions is very high in the global business environments. Therefore, Nepalese companies should maintain with the global environment using scientific management tools, techniques and principles with the help of statistical mathematics analysis. The BCP Ltd should follow CVP analysis for the improvement and effectiveness measurement as a tool of Profit Planning and Controlling (PPC). Therefore, the following recommendations will help to improve the operation of BCP Ltd.

- ⇒ Bhaktpur Craft Paper (BCP) Ltd. should make estimation of costs, sales and profits and it should analyze the relationship between the costs and sales revenue.
- ⇒ Aggregate total incomes were in decreasing trend except in the fiscal year 2062/63. Therefore, it should improve the total income by improving and using advance marketing skills for more products sales in the existing and new markets.
- ⇒ Scientific costs segregation method (i.e. Least Square method) should be used for costs segregation as mixed costs into fixed and variable cost that help to control costs minimize.
- ⇒ As possible as more varieties of paper made products should be focused to increase productions to minimize costs and increased demand of handmade paper products in international market.
- ⇒ The high degree of positive correlation showed between sales revenue and mixed costs. Therefore, it should be considered sales revenue changed with costs.
- ⇒ More fixed cost administrations, selling and general overhead were incurred in all the fiscal years than fixed manufacturing overhead, therefore it should be focused to minimize those costs.
- ⇒ Fixed costs were decreasing in the fiscal year 2058/59 and 2060/61 by -10.4402% and -24.9141% but remaining all the fiscal years showed the fixed costs were increasing trend due to separation of provision for staff bonus, depreciation, amortization, other fixed costs etc. Therefore, more provision separated from the profits should be minimized.
- ⇒ Very high degree of correlation between sales and total costs showed that if total costs changed, it would affect the sales revenues of the company due to sales and total costs relation should be considered.
- ⇒ In the company annual income statements, there were shown net profits only after including other incomes due to it was not clear how net profits/losses generated only through sales revenue without other incomes. Therefore, other incomes should be added only after variable costs and fixed costs calculation of the products cost that help to know net profits without other incomes.
- ⇒ Net profits/losses for the year before other incomes showed losses excepts 2056/57, 2057/58 and 2061/62 that indicated that it should be focused immediately to improve costs analysis by using CVP analysis as tools of PPC.

- ⇒ There was high degree of positive correlation between sales revenue and profits; therefore it is necessary to analyze relationship changed between them.
- ⇒ The company separated huge amount for market promotion expenses, however there were not expected changed in sales due to advanced and fruitful marketing promotional techniques should be followed.
- ⇒ The company should separate expenses for research and development program which would help advancing BCP's functions and production process with minimizing costs.
- ⇒ The company has 80% working capital capacity which showed more fund separation for working capital.
- ⇒ Profits, sales and costs should be analyzed by preparing budgeting or planning with actual performance within a periodic term such as monthly, quarterly, semi quarterly, semi yearly, yearly etc. which will help to improve the profit planning and controlling of the company.
- ⇒ Company's present poor performances should be improved by using management theory and principles like MBO, participating management activities etc.
- ⇒ The BEP ratio of the company were 0.99, 0.55, 0.44, 1.16, 4.39, 0.84 and 1.53 from the fiscal year 2056/57 to 2062/63 respectively which showed that there were high BEP sales than actual sales in the fiscal year 59/60, 2060/61 and 2062/63. It indicated that sales weren't sufficient to cover BEP of the company in some fiscal year including 2062/63. Therefore BEP should be focused within the time frame of the company by using break-even analysis.
- ⇒ Margin of safety of the company to be taken as satisfactory but in the fiscal year 2059/60 and 2062/63 showed the negative M/S that indicated losses sign of the business or incurred more in operating costs. It also should be considered.
- ⇒ BCP Ltd should follow scientific management techniques such as CVP analysis as tools of PPC to improvement and effectiveness of the performance of the company so that increasing profitability and productivity.

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Income Statement
For the year 1st Shrawan 2056/057 to 31st Ashad 2062/063

Income	2056/057	2057/058	2058/059	2059/060	2060/061
Sales	33,381,145	45,098,964	24,088,961	30,111,570	18,100,000
Other Income	3,169,003	2,186,935	7,576,848	4,039,416	2,100,000
Total Income	36,550,148	47,285,899	31,665,804	34,150,986	20,200,000
Expenditure					
Cost of Goods Sold	20,089,699	23,963,465	3,294,679	17,193,480	18,900,000
Administration, selling & General Overheads	11,382,181	10,241,421	7,624,128	11,345,594	10,700,000
Depreciation	552,443	497,816	142,474	132,897	150,000
Provision for Bonus	411,439	1,143,927	329,150	222,919	
Payment during 1 st Jan to 1 st Oct, 2002			16,983,876		
Amortization				3,026,910	
Profit before Income Tax					
Provision for Income Tax					
	32,435,762	35,846,629	28,374,307	31,921,799	29,700,000
Net Profit /Loss for the year	4,114,386	11,439,270	3,291,497	2,229,186	(9,500,000)
Balance of profit brought forward from earlier years	36,055,525	38,935,595	45,994,304	47,969,202	38,300,000
Less: Miscellaneous Expenditure Written off					
Less : Consultancy fee for restructuring BCP				-	(9,080,000)
Add : Staff Credit fund				-	(789,000)
Add : Staff Emergency fund				-	330,000
Add: Community Development fund				-	25,600,000
Less: Expenses pertaining to prior year				(932710)	3,540,000
Less: Provision for Community Development fund Loan				(10,000,000)	
Less: Prior period adjustment				-	(31,100,000)
Less: Share Redemption fund				-	(7,300,000)
Less : Utilization during the year	-	(948,780)	-	-	
Profit available for appropriation	40,169,911	49,426,085	49,285,801	39,265,678	15,500,000
Less : Appropriation					
Staff Welfare Fund	411,439	1,143,927	329,150	668,756	
Community Development Fund	822,877	2,287,854	987,449	222,919	
Balance of Profit transferred to Balance Sheet	38,935,595	45,994,304	47,969,202	38,374,004	15,500,000

Balance Sheet

For the year 1st Shrawan 2056/57 to 31st Ashad 2062/63

Sources of Funds	2056/057	2057/058	2058/059	2059/060	2060/061
UNICEF Capital Fund	10,717,247	10,717,274	10,717,274	10,717,274	10,717,274
Reserve and Surplus					
Secured Loan					
Retained Earnings	38,935,595	45,994,304	47,969,202	38,374,004	15,994,304
Community Development Fund	23,202,904	25,042,313	15,836,162	23,649,064	
Total	72,855,809	81,753,891	74,522,638	72,740,342	26,711,578
Application of Fund					
Fixed Assets:					
Gross Block	10,436,083	10,216,777	4,172,455	4,310,194	4,310,194
Less: Accumulated Depreciation	(6,244,086)	(6,328,301)	(2,247,447)	(2,380,341)	(2,380,341)
Net Block	4,191,997	3,888,476	1,925,008	1,929,853	1,929,853
Investment					
Investment on Fixed Deposit (Ear marked to staff Gratuity fund)			6,836,920	6,836,920	
Current Asset Loan and Advances					
Inventories	25,654,736	19,118,162	9,508,137	10,563,921	7,508,137
Sundry Debtors	9,652,042	6,469,101	6,896,236	6,684,651	4,652,042
Loans and Advances	993,066	4,516,494	6,727,454	3,108,679	6,727,454
Balance with UNICEF Trust Fund	32,422,666	6,821,072			
Cash and Bank Balance	10,658,819	51,790,211	40,304,878	47,963,549	6,658,819
	79,381,329	88,715,040	63,436,705	68,320,800	25,381,329
Less: Current Liabilities and Provisions					
Current Liabilities	2,592,553	1,117,196	1,024,188	1,487,944	1,117,196
Provisions	8,376,972	8,913,976	10,986,228	11,569,383	
Staff Welfare Fund	529,781	1,259,719	501,657	370,643	
	11,499,306	11,290,891	12,512,072	13,427,970	1,259,719
Net Current Assets	67,882,024	77,424,149	50,924,633	54,892,830	24,381,329

Miscellaneous Expenditures (to the extent not written off)					
Preparing Expenses	222,740	111,370	-	-	
Deferred Expenses	559,049	329,896	-	9,080,738	
Loss of Fixed assets by Fire		-	1,523,996		
Loss of Raw materials by Fire		-	7,855,223		
UNICEF Trust Fund Account		-	5,456,858		
Construction of Shed/Trust	-	-	-	-	
	781,789	441,266	14,836,077	9,080,738	
Total	72,855,810	81,753,891	74,522,638	72,740,342	2

Cash Flow Statement

For the year 1st Shrawan 2056/57 to 31st Ashad 2062/63

Particulars	2056/57	2057/58	2058/59	2059/60
Net Profit as per Profit & Loss a/c	4,114,386	11,439,270	3,291,497	2,229,186
Adjustment for:				
Depreciation	552,443	497,816	142,474	132,897
Miscellaneous Expenditure written off	-	340,523	-	-
Fixed Assets written off	-	94,219	-	-
Expenditure pertaining to previous year				(932,710)
Fund transferred to Community Development Fund				10,000,000
Payment of Consultancy Fees				-
Provision for Bonus				
Provision for Income Tax				
Operating Profit/Loss before working Capital changes	4,666,829	12,371,828	3,433,971	11,429,373
(Increase)/Decrease in Inventories	(1,671,472)	6,536,574	9,610,025	(1,055,784)
(Increase)/Decrease in Sundry Debtors	(6,870,347)	3,182,941	(427,136)	211,585

(Increase)/Decrease in Loan and Advances	705,909	(3,523,428)	(2,210,960)	3,618,775
(Increase)/Decrease in UNICEF Trust Fund Account	3,611,036	25,601,591	6,821,072	-
(Increase)/Decrease in Current Liabilities	983,339	(1,475,357)	(93,008)	(9,536,244)
(Increase)/Decrease in Provisions	403,492	537,004	2,072,252	583,155
Market Promotion expenses Fee				
Payment of consultancy fee				
Net Cash from Operating Activities	1,828,788	43,231,156	19,206,217	5,250,860
<u>Cash Flow from Investing Activities:</u>				
Purchase of Fixed Assets	(56,361)	(288,515)	(84,000)	(137,740)
Investment on Fixed Deposit	-	-	(6,836,920)	-
Transfer to Share Redemption Fund	245	-	-	-
Sale of Investment/write off fixed assets		-	1,904,994	-
Net Cash from Investing Activities:	(56,116)	(288,515)	(5,015,926)	(137,740)
<u>Cash Flow from Financing Activities:</u>				
Increase/(Decrease) in community Development Fund	(757,580)	(448,481)	(10,193,600)	(2,855,854)
Disbursement from Staff Welfare Fund	(4,649)	(413,989)	(1,087,212)	(353,933)
Increase/(Decrease) in Retained Earnings	-	-	-	-
(Increase)/Decrease in Miscellaneous Expenditure	340,522	-	(14,394,811)	5,755,228
Payment under Staff Voluntary Retirement Scheme		(948,780)	-	-
Secured Bank Loan	-	-	-	-
Net Cash Flows from Financial Activities	(421,707)	(1,811,250)	(25,675,623)	2,545,551
Net Increase/(Decrease) in Cash and Cash Equivalents	1,350,965	41,131,391	(11,485,332)	7,658,671
Cash and Cash Equivalents at the beginning of the year	9,307,854	10,658,819	51,790,210	40,304,878
Cash and Cash Equivalents at the end of the year	10,658,819	51,790,210	40,304,877	47,963,549
Note: Cash and Cash equivalent comprises cash in hand, cheques in hand and cash at bank.				

