CHAPTER I

INTRODUCTION

Situated in the lap of Himalayas, Nepal is located in between the most populous countries of the world, India in the east, south and west and china in the north. Nepal is a land locked country and having 147181 square kilometers area. Nepal, the steepest country in the world, descends from the heights of Everest to tiger-prowling jungles below. Between are valleys rich in more than 2500 years of culture where Hinduism and Buddhism have met and created undreamed of glories of spiritualism through stone, brick, and metal for the eye to behold and for the soul to experience. The most beautiful Himalayan country, discover the world of mountain, river, jungle and culture in the world of Nepal.

A part from its natural beauty, Nepal has been known for industrial developing countries. Agriculture has been playing key role in Nepalese economy where more than 64% of economically active population is estimated to be involved in agriculture. Nepal is just moving towards industrialization with manufacturing sector is very small.

After facing 104 years Rana's regime, industrialization is comparatively new phenomenon in Nepal. Biratnagar Jute mills set up in 1936 marked the beginning of urbanized industry in the country. In the year followed industrial growth was accelerated. Industries like Morang cotton mills (1941), Morang sugar mills (1946) and Raghupati jute mills (1946) were set up in Biratnagar in collaboration with Indian businessman

But before 1936 various craft and cottage industries flourished within the country. Nepalese art was very famous, especially in Tibet, china and India. Cottage industries were opened for spinning and weaving cotton and wool. Paper industry, shoe industry and industry producing leather products, wooden products, and metal products had also been in abundance. Similarly, water

mills also popular at that time for grinding of grains such as rice, corn, millet, etc. those mills were revealing the best examples of appropriate technology of that time. During initial period the British Railway service along Nepalese boarder gave enough encouragement to Nepalese industry set up in Tarai towns. Later, they were closed to due adverse effect of import of machine-made cheaper products from British India.

Even after the change from the democratic move of 2007 B.S., enough attention was not giving for industrial development it. National plan was launched in the year 2013 B.S. during first plan period (2013-2018) there were no achievements more than 24 rice and oil mills. Slowly, the industry flourished as Timber Corporation and Nepal industrial development corporation established. Two industrial estates Balaju and Patan were declared during the second plan period (2019-2022) with foreign assistance, Janank Cigarates Industry, Birgunj Sugar mills, Bansbari lealther and shoe industry were established in public owernship. Birgunj Agro Tools industry and Harishidhi Brick and Tile industry were established during the third plan (2020-2027); Heatuda Beer industry and flower mills were operated during the forth plan (2027-2032) and Heatuda cotton industry started manufacturing during fifth plan (2032-2037). To develop and assistance of industry the company registered office was set up in the eight plan (2049-2054) and also national productivity council was established and one window secretariat office was set up.

Till 2001/02 A.D. 3213 manufacturing industry were established total number of employ in the industrial sector were 191,853. The contribution of industrial manufacturing sector in GDP is 8%.

The national development of the country is possible only through the promotion of businesses and industries in the country. The businesses and industrial enterprises are initiated the entrepreneurs who start businesses to follow a vision and have skills. For initiating the business and industrial

enterprises, the cost plays a vital role. Business firms in Nepal are said to be losing their competitiveness due to higher cost. As Nepal is entering WTO, Nepalese markets have to be liberalized to products of their countries. Due to this, Nepalese products have to compete with the product of other countries made of higher sophisticated technologies with lower price. So, Nepalese breweries enterprises must to use the cost reduction mechanism.

1.2 Statement of the Problem

Nepal has a lot of resources; however it lacks required capital equipment and necessary infrastructures. Those resources and utilize them effectively, enterprises need to be economically and financially sound. It is possible only when enterprises have sufficient materials, minimum overhead cost and minimum cost of production etc. The Nepalese beverage enterprises are suffering from a very high level of cost, due to inefficiency, lack of technical knows how and mismanagement. Some other invisible factors may be responsible for high cost of production.

Management here should know that using many tools other than direct bargaining for costs with the suppliers can reduce cost of goods and services. Lack of well educated manpower and no-experienced management are the problems in every business firms and facing these days.

The research work has intended to explore the following question.

1. Whether the cost reduction mechanisms have been used in Nepalese breweries enterprises or not?
2. Are these any practical difficulties for applying cost reduction Mechanisms?
3. Is there any room for applying cost reduction mechanisms in Nepalese beverage companies?

1.3 Objectives of the Study

The main objective of the study is to evaluate the cost reduction Mechanism of strengthen Nepalese enterprises. In order to meet the main objective of the study, the following specific objectives have been proposed.

1. To study and analyze the current scenario of the cost reduction mechanism adopted by Nepalese beverage companies.
2. To examine and evaluate the practical difficulties for applying cost reduction mechanism in Nepalese beverage companies.
3. To access the impact of cost reduction mechanism on organization performance.
4. To provide suggestion the betterment of cost reduction on the basis of study findings.

1.4 Significance of the Study

Every business firm wants to niche at least a sustainable margin for it. Everyday we go through news regarding the shot-down of many big corporations. Although the reason whatever, the cost can be sometimes explained reasonable. Resources are filing short as demands have peaked up continuously along with the raise in population. So, the cost of purchase tends to rise up for the manufacturing industries. The research work tries to put light on the fact cost reduction can not be attained only bargaining with the suppliers. These are many other mechanisms of reduction.

A review of literature available on those mechanisms has been discussed here to introduce learners about the subject matters. Similarly, this research work has focused the correct status of application of those mechanisms in Nepalese industries. It seeks reason, why a particular mechanism is not used?

1.5 Focus of the Study

Business enterprises have to manage the cost from rising to sustain profit. In at the environment of free in industrialization unhealthy competition among the enterprises boosts up. Due to such tough competition firm are bound to cut down their products prices through cost reduction practice to manage sustainability and profit. Many mechanisms have been used in European and American countries to reduce the cost. Even in our neighboring country India, management has been far ahead in the application of modern tools of decision making. Some Nepalese Breweries companies are also using cost reduction mechanism. However other firms are not being able to bring the practice due to lack of proper knowledge about those mechanism. This study therefore, has focused over the available literature regarding the cost reduction mechanism and present analysis of the current status of their application in Nepalese manufacturing sector.

1.6 Limitations of the Study

Naturally, research works are based on hypothesis and assumption. Therefore, this research work is also not free from this limitation as stated below.

1. This study has made only upon the some manufacturing enterprises having head office or contact office within Kathmandu valley.
2. The analysis has been mostly based upon primary data provided by respondents. So, reliability of the conclusion has highly depended upon respondents.
3. The status of the application of cost reduction mechanism has analyzed in this research work, has based on the data collection at the time of unit visit. Hence, this research work has not shown the status before and after the visit.

1.7 Organization of the Study

All the study has organized five different chapters. The main topic of the different chapters has been as follows:

Chapter One: Introduction

This chapter consists of the introduction of the study, statement of problems, objectives of the study, significant of the study and organization of the study.

Chapter Two: Review of Literature

This chapter deals with review of books, journals and previous thesis.

Chapter Three: Research Methodology

In this chapter, different tools and techniques use for collection, presentation and analysis the data.

Chapter Four: Data Presentation and Analysis

This chapter deals on data collection, tabulated and analyzed by the use of various statistical tools, graphs and diagram with findings.

Chapter Five: Summary, Conclusion and Recommendation

This chapter deals with summary, finding, conclusion and recommendation of the study.

Bibliography and appendixes are also included at the end.

CHAPTER II

LITERATURE REVIEW

2.1 Role of Management Accounting in Cost Reduction/ Management

2.1.1 Introduction to Management Accounting

Management accounting is that branch of the accounting system of business enterprises, which uses accounting information for planning, controlling and decision-making (Khan & Jain; 1997: p.9).

Management accounting system provides information to assist managers in their planning and control activities. Management accounting activities include collecting, classifying, processing, analyzing and reporting information to managers. Unlike the financial accounting information prepared for external constituencies, such as investors, creditors, suppliers and tax and regulatory authorities, management accounting information should be designed to help decision making within the firm. Therefore, the scope of management accounting extends beyond traditional measures of the costs and revenues from the transaction that have already occurred to include also information on sales backlogs, unit quantities, prices demands on capacity resources and extensive performance measures based on physical or non financial measures (Kaplan & Atkinson; 1998 : p.1).

Management accounting is concerned with the provision of information people with the organization to help them make better decimations and improve the efficiency and effective of existing operation (Drury; 2000 : p.5).

Management accounting is the term used to describe the accounting method, system and technique which coupled with special knowledge and ability assist management in minimizing losses. It is essentially the application and controls the corporate plans (Batty; 1982:p. 1).

In ordinary language "Management Accounting" is the modern concept of accounts as tools of management in contrast to the conventional annual or half yearly account prepared mainly for information of proprietors the object being to so expand the financial and statistical information as to shed light on all phases of the activities of organization(Goyal; 1997: p.7).

Accounting has two aspects one is "of management" and the other is "for management". Accounting of management is a post decision exercise involving a proper record of transaction and its emphasis in on the various aspects of such transaction as: formalism, periodicity, legality, centralization and accuracy. Accounting for management helps to take managerial decisions. It supports the administration to decide on the allocation of resources and to measure performance. Truly, management accounting can be defined as accounting for, by and of management. It is an interpretive function.

Management accounting is concerned with providing information to manager that is to those who are inside of an organization, and who have to direct and to control its operation.

In general, users of accounting information fall in to three categories:

* Internal manager, who use the information for short term planning and controlling routine operations.

* Internal managers who use the information for making no routine decision and formulation overall policies and long range plans.

* External parties, such as investor and government authorities, which use the information for making the company (Horngreen & Sundeen; 2001: p.5).

Management accounting is used by the third group of user of accounting information.

2.1.2 Contents of Management Accounting

Broadly speaking, management accounting consists of three types of information each of which is governed by a different set of principles. There are:

i) Full Cost Accounting

ii) Differential Accounting

iii) Responsibility Accounting (Khan & Jain; 1997: p.7)

i) Full Cost Accounting

The one approach of management accounting is full cost accounting. Cost can be two types: direct and indirect. Direct costs are those which are conveniently, wholly and exclusively attributable to a particular unit of production. Indirect costs relate to the organization as a whole and can not be identified with specific units of production. The sum of direct and indirect costs is the total or full cost. Thus, full cost accounting may be defined as a system of management accounting that is prepared in circumstances where the full cost of an item consisting of the direct costs and a fair share of the indirect cost is relevant. Full cost is relevant in two situations. Firstly, while preparing financial accounts, items are shown on the basis of full cost, i.e. cost of goods sold is shown in the profit and loss account and amount of inventory on the asset side of the balance sheet. Secondly, full cost is also useful in fixing the sale price of goods and services. In normal circumstances, the sale price is determined on the basis of full cost plus a margin of profit.

ii) Differential Accounting

The second type of management accounting is differential accounting. One decision situation before management is an alternative-choice-decision-situation, defined as a situation in which there are alternative uses to which resources (cost) can be put. These alternatives are mutually exclusive, i.e. if the

resources (cost) are put to one use, they can not be utilized for another use. Therefore, the selection of another alternative choice decision include make or buy decision, capital budgeting and so on. The accounting information that is used in market alternative decision is termed as differential accounting. The term differential cost refers to a cost which varies according to the alternative is chosen. The cost associated with it will be different from the cost if a competing alternative is selected. As such in management accounting, only differential costs are relevant for decision-making.

iii) Responsibility Accounting

Finally, management accounting also takes the form of responsibility accounting. Here, the information is summarized for each responsibility centre. The term responsibility centre refers to the division of an enterprise into segments, each having a defined responsibility, and headed by a manager. Thus, accounts are prepared not only for the organization as a whole but also for its segments. The technique, usually adopted to prepare such an accounting is budgeting. A budget is a plan, expressed in financial terms for the activities and operations of the form. There are three elements of planning as a tool of responsibility accounting.

i) Budgeted of planned performance

ii) Actual performance and

iii) Difference between the budget and actual performance

2.1.3 Significance of Management Accounting

When cost data are used inside the organization to evaluate the performance of operations, activities, personnel, etc. as the basis of decision-making, they are said to be used for management accounting purpose. Cost accounting records, measures and reports information about cost. It deals in classifying, recording and appropriate allocation of expenditure for the determination of the costs of products and services, and for the presentation of

suitably arranged data for purpose of control and guidance of management. It includes the ascertainment of the costs of every order, job contract, process, service of unit as may be appropriate. It deals with the cost of production, selling and distribution. It is thus the provision of such analysis and classification of expenditure as will enable the total cost of any particular unit of production or service to be ascertained with reasonable degree of accuracy, and at the same time to disclose exactly how such total is constitutes(i.e. the value of material used, the amount labor, other expenses incurred). So, as to control and reduce its cost (Jain & Narang; 1999: pp. 1-2).

Management accounting presents reports covering shorter longer period revealing pre-determined and past information. Greater importance is given to each of the separate units called responsibility centers of the enterprises. Information is collected and analyzed according to responsibility centre or cost centers. Management accounting is related with the whole affair of the concern the capacity for making profits or losses and expectation for the future. In order to discharge its duties properly, it has to depend on both financial and cost accounting. Therefore, management accounting may be regarded as the expansion of these two forms of accounting viz. financial accounting and cost accounting.

Management accounting is significantly used in cost management/ reduction areas. It gives all information regarding costs to the management in the form as required so that cost reduction decisions are effectively taken and implemented. It takes a part of information from the cost accounting, another part from financial accounting, compiles the information collected in required format and shape so that the decision makers can extract all the required information for decision making.

2.2 Types of Costs

From the view point of managerial needs, cost can be divided in to five broad categories, which can be presented as below.

From the Viewpoint of Income Measurement

a) Product Cost Period Costs

Costs, which vary according to the volume of activities of level of outputs or units of products, are called products cost. So, product cost can be defined as those cost, which can be identified with goods produced or purchased for resale. Raw material and direct labor are the example of product cost. In contrast, periods costs are those cost, which vary with the passage of time & not with volume of production. For example; factory rent, insurance installment, which have to pay whether there is production or not.

Period costs are the expenses, which are recovered from the revenue of the period. Normally, expenses of general administration, selling and distribution and finance are treated as period cost. These costs are not necessary for production and hence, are called period cost (Nigam & Sharma; 1992: p. 26).

Absorbed Cost and Unabsorbed Costs

Those cost which have been charged to production costs, which remain unchanged to production are referred to unabsorbed cost. In contrast, over absorbed costs represent the positive difference between fixed costs charged to production and actual fixed cost (Khan and Jain; 1997: p. 145).

Expired Costs and Unexpired Costs

An expired cost is one which can not contribute to the production of future revenues. In contrast an unexpired cost is one, which has the capacity of contributing to the production of revenue in the future (Khan & Jain; 1997: p. 145).

Joint Product Cost and Separated/Subsequent Costs

Joint product costs are the costs of a single process or a series of processes that simultaneously produce two or more products of significant sales

value. Such costs are not attributable to different individual product until after a certain stage of production known as the split off point(Horngreen; 1978 : p. 118).

Separated cost, in contrast, refers to any cost that can be attributed exclusively and wholly to particular product process, division or department (Khan & Jain: 1997 : p. 145).

From the View Point of Profit Planning

a) Fixed Cost

Fixed cost are those costs, which because of organizational structure, style of operation, capital available, methods of selling size of productive capacity and stored up knowledge of key individual, can not be added or dropped. It will stay through wide ranges of activity rate fluctuation (Gardner; 1955 : pp. 28 - 29).

Fixed costs are further divided into two types

i) Committed Fixed Costs/Capacity Costs

Fixed costs caused by the purchase of capacity producing assets such as plant or equipment are called committed cost (Khan and Jain; 1997 : p. 147).

Committed costs are primarily associated with maintaining the company's physical and legal existence. The management has little discretion over these costs. Typical example of such costs are rent and rates and insurance premium (Nigam and Sharma; 1992 : p. 21).

Discretionary Fixed Cost/Programmed Costs/Managed Costs

The cost caused by management policy decision to undertake such activities as research and development. Training program for its employees, advertising and sales promotions, charitable and political donation management consulting service and so on are called discretional fixed costs. Such costs can

be reduced substantially (and in extreme causes almost entirely) for a given in difficult time at the discretion of management. For instant, the management may decide not to given any donation, may stop making advertisements on newspapers or other media and, thus eliminate those costs. These costs are also known as programmed costs or managed costs (Khan & Jain; 1997: p. 150).

Managed costs are management and staff salaries that are related to current operations. Such costs must continue to be paid to ensure the continued operatives of the company (Nigam & Sharma; 1992 : p. 21).

b) Variable Costs

Costs that tend to vary total in direct proportion or in a one to one relationship to change in production activity sales activity or some other measure of volume are refereed to as variable cost (Khan and Jain; 1997 : p. 151).

In view of their behavior variable costs are sometimes called 'engineered costs'. An engineered cost is any cost that has an explicit, specified, physical relationship with a selected measure of activity. Most variable costs are of this type. An 'engineered variable cost is said to exist when work measurement techniques (materials standards with the help of production engineer, labor standards through time and motion study) have carefully established an optimum relationship between input and output (Horngreen; 1978 : p. 206).

c) Semi-variable/Mixed Costs

Costs that bear the feature of both fixed costs and variable costs are called semi-variable cost or hybrid cost. These costs remain fixed costs to same level of activity and beyond that level they vary in accordance with the volume of activity. Generally the most preferred example of cost of this type is the billing system of the NEA and NTC in our country. There institutions charge a fixed sum for the utilization of the facility to a certain level or less. If the utilization of the facility is more than that level then the charging system will

be variable in nature. For the business decision making, mixed costs are of less important, and thus, they need to be segregated into the fixed and variable cost (Dahal, 2004: p. 18).

From the View Point of Control

a) Responsibility Costs

Cost which is incurred due to responsible person of the responsibility center is responsibility cost. Thus, helps to localize the responsible person for the cause when an actual cost exceeds the budget cost (Khan & Jain; 1997: P.160).

b) Controllable and Non-Controllable Costs

An item of cost is controllable if the amount of cost incurred in a responsibility center is significantly influence by the actions of the manager of the responsibility center otherwise; it is non-controllable (Anthony & Welrh; 1977 : P.451).

c) Direct and Indirect Costs

Costs which can be traced into the particular department or product are direct costs. Those cost which are not allocated into any particular department product or units are indirect costs. Indirect cost is the common cost e.g. salary of the manager is the common cost for all departments such costs should be allocated to different units, subunits, departments and product as per the activity (Decoster; 1979: P.10).

From the View Point of Decision-Making

a) Relevant Vs Irrelevant Cost

Cost which is influenced by a decision is a relevant cost and hence is important for decision makers. Cost which is not affected by a decision is irrelevant cost. Such cost is of no relevance to the decision maker. These costs

should be ignored while making decision committed fixed costs are irrelevant that of additional fixed costs are relevant. Relevant cost, in true sense, is incremental cost. Most of the variable costs are relevant cost for decision maker (Khan and Jain; 1997 : p. 162).

Incremental Vs Differential Costs

A differential cost is the difference is costs between any two available acceptable alternatives. This approach compares the two alternatives directly by looking at the difference between them (Decoster; 1979 : p.10).

b) Out of Pocket Costs Vs Sunk Costs

A cost, which requires current or future cash expenditures as a result of decision, is labeled as an out of pocket cost. In situation where funds/cash resources available are limited, such costs become very in the decision, making process (Khan and Jain; 1997 : p.163).

Sunk costs are those costs, which have already been paid out before the specific project under review was ever considered (Chadwick; 1996 : p.7).

Opportunity Costs Vs Imputed Costs

Opportunity cost is not usually entered on the books of organization but is a cost that must be expertly considered in every decision that a manager makes some opportunity cost attached to it (Garrison; 1985 : p.44).

From the View of Cost Reduction

a) Costs that Add Value or Value Added Costs

A value-added-activity is an activity that customers perceive as adding usefulness to the product or service they purchase. For example, painting a car would be a value-added activity in an organization that manufactures cars (Drury, 2000 : pp. 8-9).

The main focus of the study was on the types of cost from the view point of cost reduction. From view point of cost reduction, costs are divided into two types. They are

i. Value added costs

The cost of value added activity is called value added cost. A value added activity is an activity that costumers perceive as adding usefulness to the products of service they purchase. For example painting a car would be a value added activity in an organization that manufacturer car.

ii. Non value added cost

The cost of non-value-added activity is called non-value added costs. Non- value added activities reflect thing that the organization does because of poor design or poor planning rather than what is inherently required to make the product. Moving, storing and inspecting are all activities that cause delay or waste in the manufacturing process while consuming resources. A product or process design, that eliminates the need for non-value added activities will reduce costs and cycle time and often will increase product quality (Kaplan and Atkinson, 1998: pp. 229-230).

2.3 Traditional Management Account Vs Cost Management

Traditional management account focused on comparing actual results against a pre-set standard (typical budget) identifying and analyzing variances, and taking remedial action to ensure that future outcomes conform to budgeted outcomes. Traditional cost control system tends to be based on the preservation of the status and the way of performing existing activities are not reviewed. The emphasis is on cost containment.

Cost management focus on cost reduction rather than cost containment. Indeed, the term cost reduction could be used instead of cost management, but the former is an emotive term. Therefore, cost management is preferred where as traditional cost control systems are routinely applied on continues basis.

Cost management tends to be applied on the basis when an opportunity for cost reduction is identified(Drury; 2000: p. 389).

Cost Accounting and Management Accounting both have the same objectives of helping the management in planning, control and decision-making. Both are internal to the organization and use common tools and techniques like standard costing variable costing budgeting control etc (Jain & Narang, 1999: pp. 1-3).

2.4 Essentials for Success of Cost Reduction Programme

i. A cost reduction programme should not be taken as a one time activity. It is a continuous activity aimed at reducing cost continuously by innovating new ideas from time to time.

ii. Cost reduction should not be done by arbitrary cost slashing. It should be real and permanent reduction in cost.

iii. To make cost reduction programme acceptable to the employees of the organization, the example of cost reduction should be first set by top executives.

iv. Persons giving innovative ideas for cost reductions should be suitably rewarded by giving raise in wages and salaries, promotions and special awards.

v. cost reduction programme should not merely take into consideration reduction in cost but it should also consider all other factors (i.e. social and legal aspects) which will be affected by the programme of cost reduction (Jain S.P; 1999: p. 366)

vi. Nepal is in infancy period of industrialization. The manufacturing was to face numerous problems which have acted as constraints in the growth of manufacturing industries. These are landlocked situation of the country, underdeveloped physical infrastructure and inefficient communication network, manpower and technology and low

productivity of inputs etc. Various political uncertainties are also responsible for the slow growth of industrialization.

2.5 Conceptual Difference between Cost Reduction and Cost Control

Whilst cost control aims at reducing actual to the targets, cost reduction aims at reducing the targets themselves viewed from this point, it can be said that cost reduction begins where cost control ends (Swaminathan; 1978 : p. 349).

The main differences can be defined as following way, between cost reduction and cost control.

i. **Process:** In cost control, actual costs are compared with standard. And analyses the deviation between actual and standard to control. Similarly, in cost reduction, the only one target is the cost reduction without any comparison.
ii. **Time base**: Mainly cost control is related with past and present and cost reduction relates with present and future time.
iii. **Limitation**: For the cost control, it requires standard cost whereas cost reduction can be exercised freely in all area without using of standards.
iv. **Nature of function**: Cost control works as preventive function and cost reduction works as corrective function.
v. **Conservative concept**: The base of cost control is the standard cost. It does not expect any changes and cost reduction is very dynamics and changeable. Always it tries to reduce the cost on process.
vi. **Area**: In broad sense, cost control includes cost reduction. And cost reductive program are directed towards specific efforts to reduce cost by improving method, work arrangements and products.

2.6 Advantages of Cost Reduction

There are many advantages of cost reduction some of these are :

i) Cost reduction increases profit. It provides a basis for more dividends to the shareholders, more bonus to the staff and more retention of profit for expansion of the business.

ii) Cost reduction will provide more money for labour welfare schemes and thus improve men-management relationship.

iii) Cost reduction will help in making goods available to the consumers at cheaper rate.

iv) Higher profit will provide more revenue to the government by way of taxation.

v) As a result of reduction in cost, export price may be lowered which may increase total exports.

vi) Cost reduction is obtained by increasing productivity, so a developing country, like Nepal, which suffers from shortage of resources can develop faster it makes the best use of resources by increasing productivity.

According to G. Kantharaj, "In the particular context of a developing economy, it becomes predominantly important to emphasize on cost reduction in agriculture, industry, public administration, etc.

The motto of every industry and every organization should be to produce more goods and to render efficient services (Jain & Narang, 1999 : p. 367).

2.7 Dangers of Cost Reduction

The possible dangers of any cost reduction plan may be as follows:

i. Quality may be sacrificed at the cost of reduction in cost. To reduce cost, quality may be reduced gradually and it may not be detected till it has assumed alarming proportion. Quality may be reduced to such an extent that it may not be accepted in the market and the business may be lost to the competitors.

ii. In the beginning cost reduction programme may not be liked by the employees and danger may be posed to the programme because success of any cost reduction plan depends upon the willing cooperation and active participation the employees.

iii. It is possible that reduction in cost may not be real and permanent. It may not be based on sound reasons and may be short lived and cost may come back to the original cost level when temporary conditions (i.e. fall in prices of material) due to which cost has reduced may disappear.

iv. There may be a conflict between individual objective and organizational objective. It is possible that a head of a particular department may follow activities which may reduce the cost of his department but may lead to increase in cost for the organization as a whole.

2.8 Nepalese Economy and Industrialization

Nepal is being an agriculture country, agriculture dominates the economy of Nepal which accounts about 40 % of GDP, provide employment opportunities to more than 90% of the economically active population and supplies about 80% of all the nations industrial raw materials. Agriculture is the backbone of our country. Economic system determines the scope of private sector participation and market forces in business. Nepal is adopting the mixed economic system." This system is a mix of free market and centrally planned economics where both public and private sector co- exist. The public sector plays a strategic role through the ownership and control of basic industries

including utilities. The private sector owns agriculture and small, medium and large industries but is regulated by the state." (Agrawal; 2002 : p.104)

In an agricultural country like Nepal, effective mobilization of agricultural resources is very necessary. For this economic development of the country, industrial sector must be developed. Rapid and sound economic development is neither possible only from the side of private sector nor public sector. Participation of both sectors is essential for economic development of the country. Different public and private manufacturing industries were established with the object of balance regional development, public welfare, employment generation, import substitution and to export promotion for dissemination of the development activities according to national priorities.

Modern manufacturing enterprises in Nepal have a history of about 71 years. It was in 1935 A.D. that the first modern industry of Nepal Biratnagar Jute Mill was established in the joint venture of Nepal and India. In order to reap quickly benefit from the shortage of consumer goods created by the Second World War. Nineteen other mills were established haphazardly till 1945. They consisted of sugar, match, rice, oil, cotton, ceramics, cigarette, glass, chemicals, bobbin, and plywood, hydropower, furniture, soap, paper, and ayurvedic medicines etc. After the Second World War, Biratnagar Jute Mill and Juddha Match factory at Birjung continued operation successfully. Most other modern industries either closed down or declined. Nepal entered the era of planned development in 1956. The growth of industries using various plan period has been mixed.

After the launching of the first five year plan in 1956, Industrial policy was announced in 1957. It emphasized the need to promote the assist the private industries, which has undergone a series of revision in subsequent year. The fourth plan (1970-1975) emphasized the establishment of industries mainly in the private sector especially those based on agriculture, forest, mineral resources, import substitution etc, that period new industrial policy 1947 was

announced. During the fifty plans (1975-1980), priority was given to public sector. During the sixth plan a new industrial policy 1981 was announced, excepting defense, it opened-up all the sector of the economy for private investment including foreign direct investment. It also aimed to increase the efficiency of industry. It provided stimulus to locate industries in remote areas. The industrial enterprise Act 1982 and Foreign Investment Act 1982 were also enacted. In the seventh plan (1985 -1990), the industrial sector was given higher priority resource allocation, privatization of selected public enterprises was proposed. During that period a new industrial policy 1987 and industrial enterprises Act 1987 was announced. The Eighth Plan (1992-1997) kept the objective of sustainable economic growth, poverty alleviation and reduction of regional imbalances. During that period, different policies are announced such as: industrial policy 1992, industrial enterprise Act 1992, Foreign Investment Policy 1992, Foreign Investment and Technology Transfer Act 1992, company Act 1996, Privatization Act 1994, One window policy etc. Beside of this, National productivity council and Industrial enterprises development institute was established to serve as centre of excellence to develop industrial human resources. Company Registrar office was also set up. The ninth plan (1997-2002) has adopted poverty alleviation as its main objective. The key polices of ninth plan are privatization of public enterprises, encouragement to foreign investment, leading role to private sector, reform in legal framework and encouragement to clean technology etc. The tenth plan (2002-2007), has adopted the involvement of private sector in industries to increase production. To alleviate the poverty, this plan has prioritized to establish the cottage industries, by given the employment to the ‘rural’ people. It also focused to the foreign investment and technologies for increasing competitive advantage. This plan aims to get about at rate 7.8%, industrial increment. Industrial districts in Nepal which number one dozen have played an important role in the growth of industries. They provide infrastructure and other facilities for industrial enterprises at one spot.

Nepal's manufacturing sector is small but growing. Its share in GDP is about 10%. It consists mainly of light industries. Intermediate and capital goods industries are few but emerging. It is dominated by food manufacturing, especially milling activities. The government has been conducting census of manufacturing establishment since 1964/65 at given yearly intervals.

There are registered 6351 manufacturing enterprises, in 2055-056 B.S. according to industrial promotion statistic. In2056-057 this manufacturing establishment decreased to 6201. Similarly, in 2057-58 there were only 5742. And, this establishment increased by 3.28% in 2058-59. Again, in 2059-60, there was negative incensement by 22.68%. This number is again decreased to 4389 in 2060-61. In 2061-62 there was only 4291 manufacturing establishment. According to 2062-63 statistic report from cottage and small industries registered, there was 3416 number of manufacturing establishment.

2.9 Areas of Cost Reduction

Cost reduction committee identifies area where the reduction activities can be best exercised. Generally, reduction works are made in the following areas.

1) Product Design

Cost Reduction begins with the improvement in the design of the product. Product design is the first step in the manufacture of a product and the impact of cost reduction effected at this stage is felt throughout the manufacturing life of the product. An investigation into the possibilities of cost reduction should be made, both when introducing new design and when making improvements in the existing designs.

2) Factory Organization and Products Methods

All efforts should be constantly made to reduce the costs by the adoption of new methods of organization and new production methods.

3) Factory Layout

A cost reduction program should make a study of the factory layout to determine whether there is any scope of cost reduction by elimination of wastage of time, unnecessary effort and loss of money due to useless movement and travel of work in progress.

4) Administration

There is ample scope of cost reduction in this area because cost reduction is a top management problem. Office should be organized if there is scope for improvement in the efficiency of persons engaged in the office. Use of unnecessary form should be avoided to save the cost of stationary and labor cost involved for compiling them. Efforts should be made to reduce the expenses on telephone, lighting and traveling but not at the cost of efficiency.

5) Marketing

The various activities which can be brought under the cost reduction programme include market research, advertisement, packing, warehouse, distribution, after sales service etc. The cost incurred in these activities, can be reduced by categorization of customer. Sales efforts will be better focused and there will be reduction in marketing cost.

6) Finance

With the increasing diffidently in procuring finance, management should eliminate useless investment. To be able to do it must critically examine the amount of working capital and fixed capital needed and the financial conveniences of reducing them. Wasteful use of capital is as bad as inadequate capital. Over and under capitalization are both danger signals; what is needed in fair capitalization. Capital should be procured at economical cost and it should be economically used should be sold; the money realized from their sales should be reinvested in more profitable channels (Jain & Narang, 1999. pp.366-367).

2.10 Mechanisms of Cost Reduction

A cost estimate is an attempt to forecast the expenses that must be incurred to manufacture a product. The factors to be considered may differ from one product to another, but the techniques are based on the same principles whether applied to watches, automobiles, machines and tools, building or anything else manufactured or fabricated.

Cost reduction in another words, is also called cost management. Thus, the mechanisms applied for cost management purpose are the mechanism used for cost reduction. The mechanism applied by successfully, Japanese manufacturing companies for cost reduction purpose is as follows:

- Just-In Time System
- Total Quality Management
- Activity Based Costing/Management
- Training Schemes
- Benchmarking
- Standardization, Simplification and Specialization.

It is the need of today to examine these mechanisms of cost reduction is used in Nepalese business enterprises. If these mechanisms used in Nepalese enterprises, the economic status of whole Nepal will reach in top level in comparison from now.

2.11 JIT SYSTEM

2.11.1 General Introduction

The success of Japanese firms in international markets generated interest among many western companies as to how this success was achieved. The implementation of just in time (JIT) production methods was considered to be one of the major factors contributing to the success. The JIT are to produce the

required items. At the required and in the required quantity at the precise time they are required (Drury, 2000: p. 908).

Just in time is the both a philosophy and a set of methods for manufacturing. It is an integrated set of activities designed to achieve high volume production using minimum inventories of raw materials, work-in-process and finished goods. Just in time means producing what is needed when it is needed and no more. JIT is based on logic that nothing will be produced until it is needed because anything over the minimum need is viewed as waste. JIT requires high level of quality at each stage of production process, strong vendor relations, and fairly predictable demand for the end product for smooth flow of work.

A major objective of JIT is to have only the right time; or to say it another way, to purchase and produce item only short time before they are needed so that work-in-process inventory is very low. The practice reduces not only working capital requirement but also the need for floor space and it shortens the flow through time because materials spend very little time in queues (Dilworth, 1993: p. 347).

JIT gained worldwide prominence in the 1970's but some of its philosophy can be traced to the early. 1900's in the United States. Henry ford used JIT concepts as he streamlined his moving assembly linear to make automobiles. For example, to eliminate waste, he used the bottom of the packing creates for car seals as the floor board of the car. Although elements of JIT were being used by Japanese industries as early as the 1930's, it was not fully refined until the 1970's, when Tai-ichi Ohno of Toyota motors used JIT to take Toyota’s cars to the forefront of delivery time and quality. Around the same time, quality expert's demining and Juran lectured on the need for American producers to adopt many JIT principles(Chase and Jocobs; 1999: p. 324).

JIT can be summarized as presented by Chase, Aquilano and Jacobs in 'what's of JIT'. This shows the requirements of and the assumption of the JIT system.

What it is?	**What it does?**
▪ Management Philosophy ▪ Pull system through plant	▪ Exposes bottlenecked and problems ▪ Achieves streamline productive
How it does?	**What is assumes?**
▪ Employees participation ▪ Industrial engineering ▪ Continuing improvement ▪ Small lot size ▪ Total quality control	▪ Stable environment

To implement JIT it is important to win not only management commitment, but that of all the workers as well. It means first of all allowing time for the necessary changes and the restructuring of the production process.

One possibility is to appoint a project leader who will champion. JIT's implementations, set up a training programme, make the conversion schedule and form a conversion team. Even after this conceptual training is complete and the organization has a common vision of the future, no company is prepared to transform its entire factory instantly into a JIT operation. First it is necessary to establish a pilot JIT project, perhaps involving an entire product line, before converting the whole factory. The main tools of the JIT methods are the fine tuning of the production process, autonomous groups and a special information system ("Kanban").

2.11.2 General Features of JIT System

The following are the features of JIT as experts have explained.

1) **Small Size of Material, Manufacture of Subassemblies and Product**

In JIT applying firm materials are purchased at the time when they are required for production and the reduction is done to meet production order.

Production is done in small lot sized to reduce or eliminate non-value adding carrying cost.

2) Smooth and Uniform Production Rate

JIT system requires a uniform rate of production, rather than one actuating more. Fluctuation rate may cause excessive production at the time of less need or shortage of outputs at the time of high need both of which creates non-value added costs.

3) Pull Method of Production

Manufacturing process occur in many stages. In a JIT system, the production is pulled form the following stage where as the first strike is at the marketing department. The marketing or sales department informs to the production department how much products are required. In a production department, there will be many works, centers depending upon the mature of the production work. The last work center of producing department receives the first message how much are needed. It then decides how much components also to be supplied to it from the farmer work center to meet its production needs and inform the same. The message is in the form of withdrawal Kanban, which is a card indicating how much parts are requested from the preceding work center when the former work center receives withdraw Kanban. It issues production Kanban, which specifies how many parts to manufacture. So, the work of production at a center is pulled by need for parts in the subsequent work center. This pull approach repeats from the last to the beginning. Manufacturer at any stage is pulled due to need at the former stage. Therefore, stocks do not accumulate.

4) High Quality Levels for Raw Materials and Finished Products

JIT should be strongly accompanied by total quality control (TQC) one which believes that quality should be controlled at each level. Since, materials are purchased to meet just in time production and not for stocking purpose, the arriving materials should be just right for their intended purpose. Otherwise,

the production in-charge has to return the material and wait for coming of right material. This increases non-value added waiting cost. Similarly, goods produced should be of uniform higher quality as very small level of inventories is kept.

5) **Quick and Inexpensive Setups of Production Machinery**

Since only required materials are purchased and components are produced only to the required units, there should not be any failure in the flow. For this, the setups of production machinery should be quick and inexpensive.

6) **Effective Maintenance to Prevent Breakdown**

Since goods are made just in time to meet customer orders, manufacturers have to prevent delay and breakdown. Otherwise, they result in shortage of materials.

7) **Team Work**

All the employees of an organization need to consider and contribute to the achievement of JIT goals. A team sprit must be taken and valuable suggestions should be provided by all the employees JIT goals should be goals of everyone.

8) **Efficient Workers and Flexible Facilities**

JIT goals can be attained of the workers have multi-skills and highly efficient. Similarly, the facilities chosen and layout should be well designed to make quick production and easy flow of outputs avoiding waiting time and reducing there on non-value-added costs.

2.11.3 Goals of JIT System

The JIT system is very important tool in production management which means do every thing just-in-time, mainly in case of inventory and production. In this system, when customers order the product then goods are manufactured. Similarly, components parts and subassemblies are manufactured only if they are required for next stages where finished goods are manufactured. Similarly, the

raw materials and parts are purchased where they feel the need for some phase of production process to keep the inventory shows, there must be carrying cost. So, JIT shows no inventory and no carrying cost.

JIT is widely applied by European, American and Japanese manufacturing firms in the production and inventory management so that cost can be saved. JIT goals is to eliminated or reduced inventories at every level of stage of production. The system was first applied by Japanese Toyota Company.

In particular, JIT seeks to achieve the following goals.

i. Elimination of non-value added
ii. Zero inventories
iii. Zero defects
iv. Batch sizes of one
v. Zero break downs
vi. A 100% on time delivery services

The above goals represent perfection, and are most unlike to be achieved in practice. They do, however, often targets and create eliminate for continuous improvement and excellence (Drury, 2000 : p. 908).

2.11.4 Types of JIT System

JIT is an integrated set of activities designed to achieve high volume production using minimum inventories of raw materials, work-in-process and finished goods. Parts arrive at the next work station "just-in-time" and are completed and moved through the operation quickly. Just-in-time is also based on the logic that nothing will be produced until it is needed. Need is created by actual demand of the product when an item is sold in theory the market pulls a replacement from the last position in the system final assembly in this case. This triggers in order to the factory production line, where a worker then pulls another unit from an upstream station in the how to replace the unit taken. This

upstream station then pulls from the next station further upstream and so on back to the release of raw materials. To enable this pull process to work smoothly, JIT demands high levels of quality at each stage of the process, strong vendor relations, and a fairly predictable demand for the end product (Chase, Aquilano & Jacobs; 1999 : 224).

JIT system can be studied in the two forms as mentioned below. Sometimes, the JIT service is found, taken as the third form. However, the stress is mostly given to the two forms only.

I) JIT Production/Manufacturing

JIT manufacturing includes a total availability which increase the value customers receive. JIT included people involvement which gains the advantage of the talents of many employees to reduce waste and improve performance. The improved motivation and the power of numerous employee suggestions can reduce costs and improve quality and responsiveness. Reduced wip can improve quality, reduce costs, cut the lead time to serve customers, and make the company more flexible. JIT also involves preventive maintenance which can improve and dependability of operations (Dilworth, 1993 : p.343).

JIT production system is a system in which an organization purchases material and parts and produces components just when they are needed in the production process, the goal being to have zero inventories because holding inventory is a non-value-added-activity (Hornegreen & Sundeen; 2001 : p. 145).

JIT Purchasing Inventory

The JIT philosophy also extends to adopt JIT purchasing techniques, whereby the delivery of materials immediately. Precedes their use by arranging with suppliers for more frequent deliveries, stock can be cut to a minimum. Considerable saving in material handling expenses can be obtained by

requiring supplies to inspect materials before their delivery the guaranteeing their quality (Drury, 2000 : p. 911).

There are many benefits from JIT purchasing system. Inventories are greatly reduced in the buyer’s plant since it is working off the suppliers’ inventory. Even the supplier inventory is smaller because of the nearby continues supply rate. There is a great deal less paper work in the system because of the blank contracts and simple specification. As a result of an assured steady flow, supplies can minimize peak capacity requirements and retained labor force (Dilworth; 1993 : p. 447).

2.12 Total Quality Management

2.12.1 General Introduction

The concept of quality as we think of it now first emerged out of the industrial revolution. Previously goods had been made from start to finish by the same person or team of people, with handcrafting and tweaking the product to meet 'quality criteria.'

To compete successfully in today's global completive environment, companies are becoming 'customer-driver' and making customer satisfaction on over riding priority. Customers are demanding ever improving levels of service regarding cost, quality, reliability, delivery and the choice of innovating new products. Quality has become one of the key competitive variables and this has created the need for management accountants to become more involved in the position of information relating to the quality of products and services and activities that produce them(Drury; 2000 : p. 901).

Quality must be a key goal in the operation function and in all other parts of a company. It is important that customers perceive quality in their contracts with all aspects of the company from the first sales brochure or sales call through the billing cycle and throughout the life cycle of the goods or services purchased. If a company is to be comprehensive, quality work is also

important in all support activities that customers do not see, such as a scheduling and materials management (Dilworth; 1993 : p. 461).

Total Quality Management (TQM) is a comprehensive set of management tool, management philosophy and improvement methods. It is to represent the concept and practice of Japanese quality control more properly than the term Total Quality Control (TQC). It is concerned with the integration of all the effort in the organization towards quality improvement, quality development and quality maintenance to meet the full customer satisfaction at an economical way. Simply speaking, TQM mean activities involving every on in a company towards improving performance are every level(Manandhar & Shrestha; 2057 : p. 147).

In the 1980s, most European and American companies considered quality to be an additional cost of manufacturing, but by the end of the decade they began to realize that quality saved money. The philosophy of emphasizing production volume over quality resulted in high levels of stocks at each production stage in order to perfect against shortages caused by inferior quality at previous stages and excessive expenditure on inspection rework scrap and warranty repairs. Companies discovered that it was cheaper to produce the items correctly the first time rather than wasting resources by making substandard items that have to be detected, reworked, scrapped or returned by customers. In other words, the emphasis of TQM is to design and build quality in rather than trying to inspect it in, by focusing on the cause rather than the symptoms of poor quality (Drury; 2000 : p. 901).

2.12.2 Management of Product Quality

Manufacturers today have been high alert concerning the quality of the products. They have come across the use of many management and statistical techniques to control the quality, control of quality leads to cost reduction. Output manufactured does not lose their markets and they eliminate the costs of sales returns from the customer due to inferior quality. Whenever we talk about

quality of product we may be talking any or all of the following types of quality.

They are:

- Quality of Materials
- Quality of Manpower
- Quality of Machines
- Quality of Management

They are also known as 4MS. Quality of materials must be controlled. Materials are important component since we serve our customers with processed materials. Lower the quality of materials lower will be the quality of outputs manufactured and there is equally likely to get those products returning back due to rejection from the customers. Loyal customer may also defect from the business firms. The costs for all these things are very high. Controlling the quality of materials before this tragedy materialize saves the costs of customer defection and sales returns.

Similarly, the quality of manpower should also be controlled. This refers to the education, expertise, experience and commitment of employees/ workers and managerial people. The technologies used should also uplift the quality of products. Machines should represent latest technology and failure or breakdowns should be avoided. Never the least, management of organization should also be highly qualified, hard working, educated, experienced and should posses' potentiality to lead the organization.

These are a number of statistical methods for checking the goods reaching the final customers with defects in them. In traditional statistical quality control, each and every item should be inspected to stop defective be looked upon and tested. So, sampling technique is followed. Manufacturers have to bring all the output under inspection and control to senor possible defectiveness. However, in sampling method only limited number of samples

out of the total population quantity is studied. So, the samples drawn may not be representative to the whole population. The reasons for such variation are as:

- Variation due to chance factors
- Variation due to assignable causes

When we follow random sampling, drawn samples may not be representative. Non representative sample may be drawn due to chance.

Similarly, inefficient workers, disordered machine and disturbing layout, defective materials etc, may assign defection to the later stage of production.

2.12.3 Principles of TQM

To lead and operate an organization successfully it is necessary to direct and control it in a systematic and transparent manner. Success can result from implementing and maintaining a management system. That is designed to continually improve performance while addressing the needs of all interested parties. Managing an organization encompasses TQM amongst other management discipline. Eight TQM principles have been stated in ISO 9001: 2000 that can be used by top management in order to lead the organization towards improved performance.

- **Customer focus**: Organization depends on their customer and therefore, should understand current and future customer needs should meet customer requirement and strive to exceed customer expectation.
- **Leadership**: Leaders establish unity of purpose and direction of the organization. They should create and maintain the internal environment in which people can become fully involved in achieving the organization's objectives.
- **Involvement of people**: TQM seeks involvement of everybody of all levels to achieve the organization's objective. Involvements enable to explore everybody's abilities.

- **Process approach**: It focuses on carrying out activities and management of resources. A good and desired result is achieved when activity and related resources are managed as a process.
- **System approach**: Identifying, understanding and managing inter-related process as a system contributes to the organization's effectiveness and efficiency in achieving its objectives.
- **Continual improvement**: Continual improvement of organization overall performance should be permanent objective of the organization.
- **Factual approach to decision making**: Effective decision are based on the analysis of a data & information.
- **Mutually beneficial supplied relationship**: An organization and supplies are interdependent and a mutually beneficial relationship enhances the ability of both to create value.

2.12.4 Approaches to Quality Management

Quality can be controlled applying many techniques. Especially there are three techniques to apply for quality control. Firstly the product characteristics should be improved. Secondly, the management should determine the level of qualities of the products during the planning and design phase. Thirdly, the process capability should be updated.

Along with techniques to control the quality there are many other approaches equally accepted. They are:-

i. Deming's Statistical Thinking

As per Deming's view over quality, it is the job of management to control quality. Deming suggests managers to use control charts to evaluate variability.

ii. Juran's Management Processes through Quality.

As per Juran’s view every one should regularly take the concern for quality. Quality control should be a regular and continuous process.

iii. Crosby's Concept of Free Quality

Crosby views that quality is a gift to process from its former process stage. It moves freely from one stage to next. Finished goods produced inherit special quality from raw materials. Unless the quality of raw materials is controlled, quality of finished goods can not be controlled. So, purchase of raw materials should be rationally done with committed participation from the workers.

In Japanese manufacturing organizations workers willingly from their work group to work over quality problems. Three to fifteen employees meet to discuss over quality problems, investigate causes, recommend solution and take corrective action, such work groups are known as Quality Circles (QC) get chance to show out their potential.

Similarly, zero defects programs are also equally applied in today's Japanese manufacturing organization. The core philosophy of Japanese zero defect program is that quality of product should be improved before reaching to customers, so that goods reaching to customers are zero defects. Defects in the quality of products occur due to either lack of knowledge or lack of attention. Lack of knowledge can be eliminated by imparting knowledge. However, in case of lack of attention, employees and workers must themselves be willing to participate in the program. For this, they need to be motivated with many motivational tools like promotion, bonus, salary increment, status enhancement etc. Unless employees are made more responsible, achievement oriented and proud of their works, zero defects program can not be successful.

Besides using non financial measures statistical quality control chart are used as a mechanism for distinguishing between random and non-random

variation in operating processes. A control chart is a graph of a series of successive observation of operation taken at regular intervals of time to test whether a batch of produced items is within pre-set tolerance limits. Usually, samples from a particular production process are taken at hourly or daily intervals. The mean and sometimes the range of the sampled items are calculated and plotted on a quality control chart. Each observation is plotted relative to pre-set points on the expected distribution. Only observation beyond specified pre-set control limits are regarded as worthy of investigation.

2.12.5 Cost of Quality

TQM, a term used to describe a situation where all business functions are involved in a process of continuous improvement has been adopted by many companies. TQM has broadened, from its early concentration on the statistical monitoring of manufacturing process to a customer oriented process of continuous improvement that focuses on delivering products or services of consistent high quality in a timely fashion. In the 1980s most European and American companies considered quality to be on additional cost of manufacturing, but by the end of the decade, they began to realize that quality saved money. The philosophy of emphasizing production volume over quality resulted in high levels of stocks at each production stage in order to protect against shortages caused by inferior quality at previous stages and excessive expenditure on inspection, rework scrap and warranty repairs. Companies discovered that it was cheaper to produce the items correctly the first time rather than wasting resources by making substandard items that have to be detected reworked scrapped or returned by customer. In other words, the emphasis of TQM is to design and build quality in rather than trying to inspect it in, by focusing on the causes rather than the symptoms of poor quality.

Management accounting system can help organizations to achieve their quality goals by providing a variety report and measures that motivate and evaluate managerial efforts to improve quality. These will include financial and

non-financial measures. Many companies are currently not aware of how much they are spending on quality. A cost of quality report should be prepared to indicate the total cost to the organization of producing products or services that do not conform with quality requirements. Four categories of cost should be reported.

1) **Prevention Cost**

Prevention costs are those cost which incurred in preventing the production of products that do not conform to specification. They include the costs of prevention, maintenance, quality planning and training and the extra cost of acquiring higher quality raw materials.

2) **Appraisal Costs**

Appraisal costs are the cost incurred to insure that materials and products meet quality conformance standards. They induce the costs of inspecting purchased parts, work in process and finished goods, quality audits and field tests.

3) **Internal Failure Costs**

Internal failure costs are the costs associated with materials and products that fail to meet quality standards. They include costs incurred before the product is dispatched to the customer, such as the cost of scrap, repair down time and work stoppages caused by defects.

4) **External Failure Costs**

External failure costs incurred when inferior products are delivered to customers. They include the cost of handling customer. Complains, warranty, replacement, repair of returned products and the costs arising from damaged company reputation (Drury; 2000: p. 903).

The cost of quality report can be used as on attention directing device to make the top management of a company aware of how much is being spent on

quality related costs. The report can also draw management's attention to the possibility of reducing total quality costs by wiser allocation of costs among the four quality categories. For example, by spending more on the prevention costs, the amount of spending in the internal and external failure categories can be substantially reduced and therefore total spending can be lowered. Also by designing quality in to products and processes appraisal costs can be reduced, since for less inspection is required.

Prevention and appraisal costs are sometime referred to as the cost of quality conformance or compliance and internal and external failure costs are known as the cost of non-conformance or non-compliance. Costs of compliance are incurred with the intention of eliminating the cost of failure. They are discretionary in the sense that they do not have to be incurred where as costs of non-compliance are the results of production imperfections and can only be reduced by increasing compliance expenditure.

2.12.6 Continuous Quality Management

As per W. Edwards Deming, the failure to achieve quality in U.S can be blamed 80% on system, which can be changed by management and 20% on the workers. So, Deming believes that management can play key role in quality management. The winner of Japanese National Prize 1989, Wayne Brunetti has mentioned four major barriers for implementation of quality program. They are top management, middle management, first line supervision and technical staff who think they are the only exports and have all the relevant knowledge. Management must take pride in its work as well as must also do its part and see that other requirements are met. Management has delegated some authority to the workers to improve quality and stop failing process. The common factors considered for managing continual quality management are as following:-

a) Management/ company commitment
b) Customer focus
c) Effective organization and co-ordination

d) Design for quality
e) Employee participation for quality improvement
f) Consistent on target performance
g) Data driven decision
h) Monitors and control quality and improvement
i) Instill on going improvement

2.13 Activity-Based-Management

2.13.1 General Introduction

The term activity-based management (ABM) or activity-based-cost-management (ABCM) is used to describe the cost management application of ABC (Drury; 2000 : p. 897).

This process is based on activity-based-costing which have been developed a more refined approach for assigning overheads to product and computing product cost by cooper and Kaplan on 1988. It is become the relationship between the overheads costs and different activities (Dangol; 2061 : p. 561).

To eliminate the shortfall in traditional accounting approach, Rabin Cooper and Robert S. Kaplan jointly introduced activity based costing, shortly known as ABC during 1998. Within two years from its origin many companies adopted this modern accounting approach for cost allocation. The core philosophy of this approach is that activities require costs. Costs should be allocated on the basis of activities done rather than the units produced. For this, one should use ABC. The pinpoints of ABC are as follows:

i. Activities are needed for production
ii. Both direct and indirect costs are required for performance
iii. Cost relates with activity

iv. The relationship between cost and production is ascertained, and indirect cost is allocated on the basic of activities.
v. Allocation of cost based on activities makes production cost real, culture and complete.

So, with the help of ABC, we can list out activities and compute cost per activities. Based on the information per number of a particular activity for a product, the total cost of an activity upon a product is determined. With this, we ascertain the cost of activity per product unit. Activity-Based-Costing, so focused on analysis, recording, controlling and reporting on the cost and wider performance of activities rather than the traditional narrow emphasis on merely the cost of departments and cost centers.

ABM views the business as set linked activities that ultimately add value to the customer. It focuses on managing the business on the basis of the activities that make up the organization. ABM is based on the premise that activities consume costs. Therefore, by managing activities costs will be managed in the long term. The goal of ABM is to enable customer needs to be satisfied while making fever demands on organizational resources(Drury; 2000 : 897).

Using activity-based-costing information to improve operation and eliminate non-value added costs in called activity-based-management (ABM).

To improve ABM system, only the first three of the four stages for designing on activity based product costing system are required. They are:

- Identifying the mayor activities that take place in an organization.
- Assigning cost to cost pool/cost centers for each activity.
- Determining the cost driver for each major activity.

The fourth stage in ABC i.e. assigning activity costs to products has been excluded for the purpose of cost management cum-reduction.

Prior to the introduction of ABM most organization has been unaware of the cost of undertaking the activities that make up the organization. Knowing the cost of activities enables those activities with highest cost to be highlighted so that they can be prioritized for detailed studies to ascertain whether they can be eliminated to perform more efficiently. To identify and prioritize the potential for cost reduction many organizations have found it useful to classify activities either value added or non-value or non-value added(Drury; 2000 : p. 913).

Non-value added activities are operations that are either.

1. Unnecessary and dispensable or

2. Necessary inefficient and improvable

Non-value-added costs which result from activities are the costs of activities that can be eliminated without defection of product quality, performance or perceived value (Hilton; 1997 : pp. 261 - 262).

2.14.2 Activity-Based-Costing and Management in the Service Industry

Activity-based-costing and activity-based-management are widely using in the service industry as well as in manufacturing. There have been many ABC success stories such diverse organization as airlines, insurance companies, banks, hospitals, financial service firms, hotels and railroads. The overall objectives of ABC and ABM in service firms are no different than they are in manufacturing companies. Managers want more accurate information about the cost of producing the service. Moreover, they want to use this information to improve operations and to better meet the needs of their customers in a more cost effective manner. The general approach of identifying activities, activity cost pools, and cost-drivers may be used in the service industry as well as manufacturing. The classification of activities in to unit-level, batch level, product-sustaining level, and facility- level activities also applied in service industry settings (Hilton; 1997 : p. 178).

2.13.3 Process of Activity-Based-Management ABC Procedure

Step 1 : Identify the major activities taking place in an organization.

Step 2 : Determine the cost-driver/for each activity, like number of production runs, labor hours, number of order etc.

Step 3 : Create a cost centre drivers/cost pool for each major activity, like setup costs, materials handling, production scheduling etc.

Step 4 : Trace the cost of activities to product demand for activities.

HILTON'S PROCESS

The objectives behind the use of ABM system are to identify activities incurring non-value-added costs and eliminated those costs. Activities need to be managed in a way the cost can be minimized to the lowest possible figure. Ronald W. Hilton has served the following steps to be taken for ABM.

1) **Identifying Activities**

The first step is activity analysis in which major activity are identified breaking down them into component activities, knowing root cause of each activity and explaining linkages among these activities.

2) **Identifying Non-Value Added Activities**

Once major activities and their component activities are identified, we use the following three criteria to determining if they are activity add value.

a) Is the activity necessary? We analysis whether the activity is value adding or non-value adding.
b) Is the activity efficiently performed? In answering this question, it is helpful to compare the actual performance of the activity to a valued baseline established using budgets, targets, or external benchmarks.

c) Is an activity sometimes value-added and sometimes non value-added ? for example, it may be necessary to move work in progress units between production operation but unnecessary to move raw materials around while in storage.

3) Understanding Activity Linkages, Root Causes and Triggers

In the third step the inter-relationship among the activities and their root causes are understood. When defective units are identified, they need to be sent for network. The defection might have occurred due to error in part specification, vender selection, part receipts etc.

4) Establishing Performance Measures

Management stock not loses the track when playing with defective works. The track should be maintained with establishing performance measures.

5) Reporting Non-Value Added Costs.

An activity center cost report should be prepared and non-value-added costs should be highlighted. Reduction or elimination of these cost are the goals of the management.

6) Achieving Cost Reduction.

The ultimate goals of ABM are to eliminate the non-value-added costs by avoiding unnecessary activities. For the elimination purpose, the following four techniques are used:-

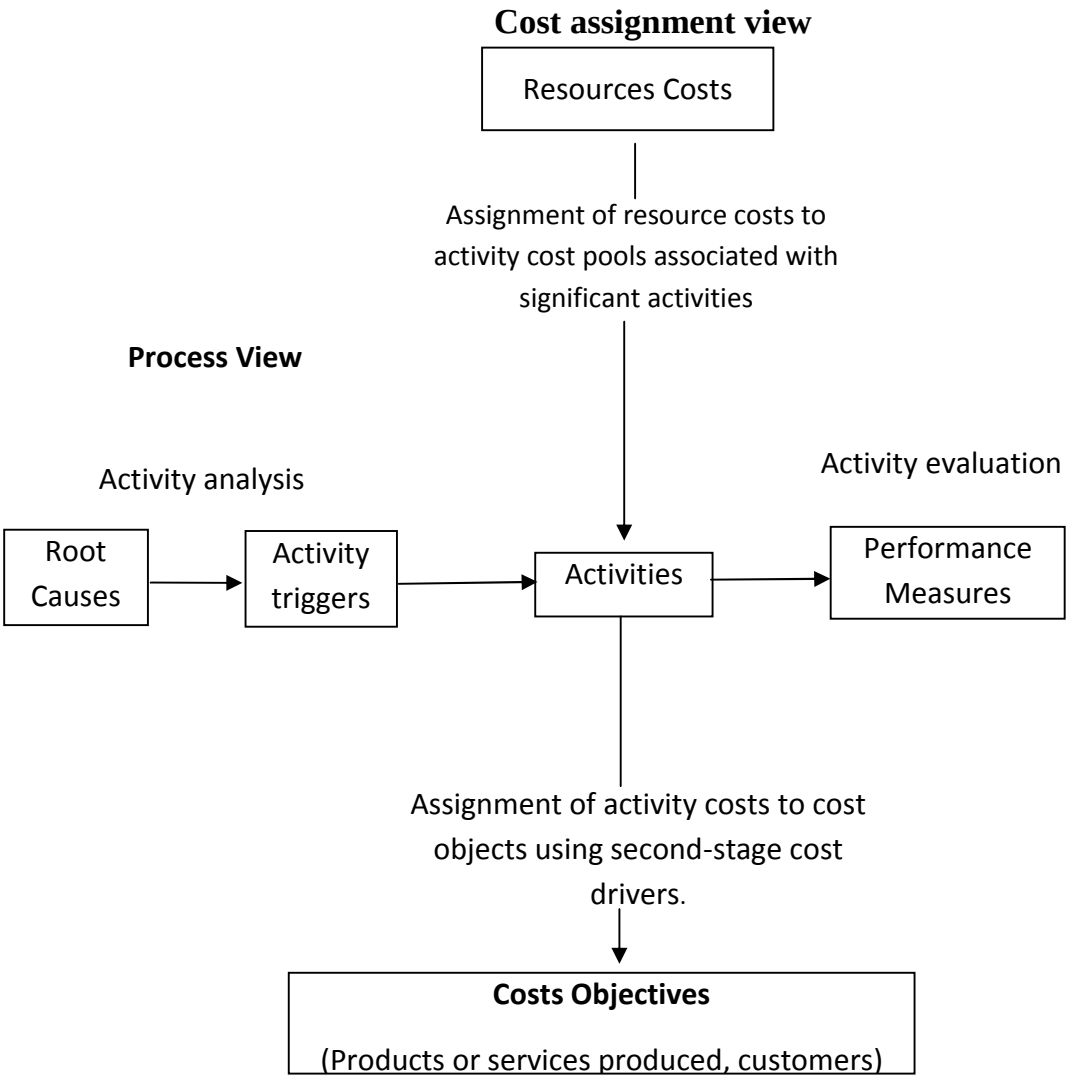
- **Activity Reduction**: The time devoted to the unnecessary activities or resources provided to it are reduced to save costs.
- **Activity Eliminates**: The whole activities are eliminated from doing rating unnecessary.
- **Activity Selection**: The most efficient activity is selected from set of alternative and done in place of the poor activity.

- **Activity Sharing**: In this strategy, function is combined in a more efficient manner to get more mileage out of an existing activity. For example, the use of common parts in several related products rather than designing unique parts for each product is activity sharing.

2.13.4 Two Dimensional ABC Model

Using activity-based-costing information to improve operations and eliminate non-value-added costs is called activity-based-management (ABM).

One way of picturing the relationship between ABC and ABM is in terms of the two dimensional activity-based-costing. Model as presented by Ronald W. Hilton;



Source: Hilton, 1991: p. 217

The vertical dimensional of the model depicts the cost assignment view of an ABC system. From the cost assignment view point, the ABC system uses two stage cost allocation to assign. The cost of resources to the firm's cost objects. These cost objects could be products manufacturing services produced or customers served.

The horizontal dimension of the model is the view of an ABC system. The emphasis now is on the activities themselves, the various processes by which work is accomplished in the organization. The above figure, the left hand side depicts activity, analysis, which is the detailed identification and description of the activities conducted in the enterprise. Activity analysis entails identification not only of the activities but also of their root causes, the events that trigger activities and the linkages among activities. The right hand side of above figure depicts the evaluation of activities through performances measures. It is this process of activity analysis and evaluation that comprise activity-based management. Notice that the activities, which appear in the center of both dimensions in above figure, are the focal point of ABC and ABM (Hilton; 1997 : pp.216-217).

2.14 Training Scheme

2.14.1 General Introduction

Training is a learning experience in that it seeks a relatively permanent change in an individual that will improve his/her ability to perform in the job. We typically say, training can involve the changing of skills, knowledge, attitudes or social behaviors. It may mean changing what employees know, how they work their attitudes towards their work or their interaction, with their co-workers or their supervisor (Decenzo & Robins; 1988 : p.24).

Human resources development is about two things (Agrawal; 2002 : p.97).

a. Training: Helping employees to their present jobs

b. Development: Helping manages handle future responsibilities.

Training seeks to improve ability to perform present jobs. It is skills oriented, generally given to operative employees who do not supervise the activities of others. It is remedial in nature. Development seeks to improve experience to handle future challenges and responsibilities. It is education oriented, given to managerial employees who supervise the activities of others. It is also called Management Development or Executive Development (Agrawal; 2002 : p. 181).

Training is a key variable in the decision of administration systems highly trained people mean saving in supervisory cost and time (Simon; 1957 : p.15).

Education and training may be contrasted Education is the progressive utilization of experience of oneself and of others in the direction of making a more satisfactory adjustment to the surrounding world. It is a broad term. Training is applied education for the purpose of acquiring ability to exercise a given skill. It is a narrower term than education (Thompson; 1975:p.82).

2.14.2 Distinction between Training and Development

Simply, we use training and development in the same sense. But both are different in various aspects.

Training is short term process utilizing a systematic and organized procedure by which non-managerial personnel learn technical knowledge and skills for definite purpose. Development is a long term educational process utilizing a systematic and organized procedure by which managerial personnel learn conceptual and theoretical knowledge for general purpose. Training refers only to instruction in technical and mechanical operation while development refers to philosophical and theoretical education concepts. Training is desired for non-manages, while development managerial personnel.

2.14.3 Needs/Benefits of Training

Training is the corner stone of sound management. It makes employees more effective and productive. It is activity and intimately connected with all the personnel or managerial activities. It is an integral part of whole management program, with all its many activities functionally inter related. The needs/benefits of training are as follows:

a. Improvement in Job, Knowledge, Skills and Attitudes

It helps to increase the knowledge and skills of the employees for a particular job. Hence, it helps in increasing the productivity.

b. Attitude Formation

It helps to bring positive attitude of employees through good morale reducing absenteeism. Due to job satisfaction, it can also help to reduce labor turnover.

c. Supply of Man-Power Needs

It provides skillful, talent and capable man-power providing them required knowledge. So, needed manpower can be fulfilled from the organization.

d. Standardization

It provides best procedure of performing the work. So, work can be standard which helps to minimize the errors of the employees.

e. Less Cost

Training helps to keep cost down through properly utilization of resources like men, materials, money etc. It can also help to reduce wastes and scraps.

f. Reduction in Learning Time

Training helps to reduce learning time to reach acceptable performance due to qualified instructors and carefully controlled learning situation (Agrawal; 2002: p.219).

2.15.4 Determining Training Needs

Training should be given when there is a training need. A training need exists when a job performance problem can be traced to a knowledge or skill deficiency. This represents a gap between the existing capabilities of an employee and the requirements of the job.

Job requirement – Employees capabilities = Training needs

Training needs assessment is a systematic analysis of specific training activities required to achieve HRD goals.

2.14.5 Indicators of Training Needs

Organization requires training for its employees/workers/ manages for different purpose. These purposes are driven by short falls. Similarly, there may be different problem being faced within an organization, which can be avoided by appropriate training. The following indicators necessitate training.

- **Organizational Plans:-**

Changes in goal, programs, structure, technology, people, products, markets and productivity.

- **Employee Records**

High rates of staff turnover, absenteeism, accidents, low performance.

- **Work and Work Flow**

Production bottlenecks and backlogs; high waste, scrap rejects: job redesign, task relocations, changes in work methods and procedures; new jobs technological changes.

- **Employees Factors**

Deficiency in knowledge, skill, attitude, low moral, poor communication, poor supervision, selection, transfer, promotion of employee (Stanley; 1984: pp.26 - 27).

2.14.6 Training Methods

The most popular training methods used by organization can be classified as either 'on-the-job' or 'off-the-job' training.

a. On-the-job training.
b. Off-the-job training.

a. On-the-job Training (OJT)

This training involves 'learning while working.' Training takes place on the job. It places the employees in the context of real work situation. It is learning by doing under the supervision of an experienced employee. It is most widely used in practice. These are the following form of on-the-job training method.

- **Apprenticeship Training**

In apprenticeship training, employees learn by working with those who are already skilled in their jobs. The duration for apprenticeship varies from job to job; generally from two to five years. Trainees are allowed to perform sophisticated tasks as their skills and experience increases. A master worker guides the trainee. Apprenticeship programs are effective for acquiring skills and learning crafts. The examples are plumbers, electricians, accountants etc.

- **Internship Training**

It is provided to skilled and technique personnel. The goal is to combine practical experience with classroom-oriented theoretical knowledge. Trainees are interned in organization for a specified period and works as an employee. It blends theory with practice.

- **Job Instruction Training**

It is a systematic step-by-step approach to on-the-job training to teach new task. It is designed for supervisors to train operatives. It is related to specific work situation. It is easy to deliver and an effective low cost training solution to train supervisors. It consists of four basic steps.

i. Preparing the trainees by telling them about the job and overcoming their uncertainties.
ii. Presenting the instruction, giving essential information in a clear manner.
iii. Having the trainees try out the job to demonstrate their understanding.
iv. Placing the workers into the job on their own risk, with a designed resources person.

b. Off-the-job Training

Training takes place outside the work situation. It is mostly class-room based. The trainees focus on learning experience. The methods used for off-the-job training are:

- **Lecture/conference**

Lecturer is an explanation of facts or information by instruction to trainees. It based on showing and talking. The use of audio-visual aids like films, video, television, overhead, projector etc makes the formal presentation interesting.

- **Simulation Exercises**

Simulation is an abstraction of real working conditions in the lab or classroom. Trainees get training by being placed in an artificial environment closely resembling with actual working condition. Pilots are trained in this way. There may be two types of simulation:

a) Computer Modeling
b) Vestibule Training

- **Programmed Instruction**

Programmed instruction is provided with the help of programmed text or manuals, while in some organization teaching machines are utilized. All programmed instruction approaches have a common characteristic. They condense the materials to be learned in to highly organized, logical sequences, which require the trainee to respond. The ideal format provides for nearly instantaneous feedback that informs the trainee, if his or her response is correct.

- **Experimental Exercise/Role Play**

Hearing then doing is an experimental exercise. Trainees are told to act role to learn behavior appropriate for the job.

2.14.7 Appraisal of Training Effectiveness

Management should know that once employees are trained, it should lay on them efficiency more than before. Otherwise, training programs merely increase cost and nothing more. To make training goals achieved, management should use criteria or methods to evaluate the effectiveness of training. The widely used methods for evaluating training effectiveness are:

1) **Observation Method**

Trainees are closed observed during the delivery of training programs by trained experts. Changes in knowledge, skills and attitudes of trainees are assessed by observing them during the time they are on the jobs. While being

observed, trainee's errors and mistakes are observed carefully and recorded. Trainees are led to participate, discuss debate, play role, study the given case, interact, present and the effectiveness is measured.

2) Test-Retest Method

Participants are given a test to establish their level of knowledge before they enter the training program. After the program is completed, they retake the test. The change in test scores indicates the change in the level of knowledge resulting from training.

3) Pre-post Performance Method

The actual job performance of behavior of each participant is evaluated and related prior to training. After the training is complete, the participant's job performance is reevaluated. The change is job performance is attributed to training.

4) Experimental Control Group Method

When this method is used to measure the effectiveness of training, the trainees are divided into two groups; control group and experimental group. The members of control group work on the job without undergoing training. The members of experimental group undergo training and work on the job. Two groups are reevaluated at the end of training. If the performance of the experimental group is higher than the performance of control group, training is assessed being effective.

5) Training Surveys

This refers to direct questioning to trainees to gather the reactions about training programs. The participants are asked to fill-up a form after the end of training. Such forms after being filled up by the trainees are taken back from trainees. Effectiveness of training can be measured in this way.

6) Cost effectiveness Analysis

It assesses total value of training benefits against total costs of training. The training is said to be effective if the total value of benefits of training exceeds its costs.

2.15 Benchmarking

2.15.1 Concept of Benchmarking

The term benchmarking was originated as surveying term. It is a distinguished mark placed on a wall, building or rock that is used as a reference point to determine elevation and position in topography surveys. In business today, we use a benchmark in much the same to select a reference point to make measurements. It becomes a standard that we measure ourselves to.

Benchmarking is the continual search for the most effective of accomplishing a task by comparing existing methods and performance level with those of other organizations submits within the same organization. The most effective method of accomplishing various tasks in a particular industry, often discovered through benchmarking, is referred to as best practices. Xerox Corporation often is credited with originating the benchmarking concept, but now it is widely used by organizations throughout the world. Bench marking (also called competitive bench marking) provides more tools for companies to use in identifying non-value-added activities pursuing continues improvement (Hilton, 1997: pp.267 - 268).

Benchmarking involve comparing key activities with world-class practices. It attempts to identify an activity, such as customer order processing, that needs to be improved and finding a non-rival organization that is considered to represent world-class best practice for the activity and studying how it performs the activity. The objective is to find out how the activity can be improved and ensure that the improvements are implemented. Benchmarking since an organization can save time and money avoiding mistakes that other

companies have made and/or the organization an avoid duplicating the efforts of other companies. The overall aim should be to find and implement best practice (Drury; 2000: p. 906).

2.15.2 Process of Benchmarking

The crux of benchmarking is learning by sharing information between businesses. By comparing work process, inputs and outputs, we can gain valuable information that can help us improve our own process. At a very high level, the process of benchmarking can be broken down in the three steps:

a. Evaluate and measure our own operation of specific process to identify weaknesses and strengths.
b. Initiate a benchmarking study and document processes that are more productive or efficient than ours.
c. Determine how to adopt successful processes and producers form those who may be doing is better than our process.

The business firms around us are found sticking to status quo because they think changes brings challenges and cost to them. In addition they being quite satisfied with the present system, find 'the attempt to charge' meaningless. However, challenges are always not invited, they are mostly encountered with. New entrants generally come with the latest procedures and equipments, and to response to them change in the present system of the existing firms is unavailable. This fact necessitates the long time. About benchmarking following two approaches can be considered:

1. **Look inside and outside**

We can find best practice via bench marking in and out of our own industry-even in places we think are totally unrelated. One example come form a world-renowned ammunition manufacturer. The company wanted to create ammunition that was bright and shinny but nothing they tried world meet their stringent specifications. One evening a manufacturing engineer's wife was

putting on her makeup and lipstick, and he noticed the composition of her lipstick case- how bright and shinny it was after such a long time of use. Immediately, he arranged a meeting with the lipstick case manufacturing center to benchmarking their processes and a new product was introduced soon after.

2. **Continuous Improvement**

"How can we be better?" Is one simple question that world drive our business leaders to embrace change and defy the status quo? Benchmarking may be the answer to our process in efficiency question because it is so important within the quality profession. The Maleolm Baldridge National Quality Award requires all company entries to benchmark. Benchmarking helps determine the references point and standard from which world class performance can be measured.

2.15.3 Benchmarking Options

An organization finds so many things to benchmarks. To know what to benchmark of others, first, the requirement within the organizational work system and culture is to be identified. Organizations may have been facing problems in many areas or may have been thinking for enhancement in the efficiency. This helps them select the benchmarking option. Generally there are following options for benchmarking.

1. **Production process**

Organization may find the existing process inconsistent to the timely changes. Changes around the country urge organization for work at the higher efficiency. Organization conducts the same by benchmarking the best-com-low costing process of others.

2. **Marketing strategies**

Though the products of the organization are qualitative, sales of the same may not have been effective. All these are due to lack of strategic

marketing activities. Organizations have to benchmark the most successful promotional strategy to increase sales of its items.

3. **Management Expertise**

Success of organization largely relies upon good decisions of management. Failure of making correct decision leads to inescapable failure. Organization should benchmark successful management to update efficiency of ht management of the company itself.

4. **Cost structure**

Cost structure of someone can be a benchmarking option for another company it the cost structure of the company is attractively lowers. Organization can benchmark activities selection procedure to cut cost and minimize total product cost.

5. **Operations**

Organization should also bench mark ways and methods to increase operation efficiency. Operation is such segment of an organization the efficiency in which is closely rated by people/public since operations are ultimate things consumed by or served to the customers and it makes direct links with the customers.

To select all above options and reap subsequent advantage thereafter organizations have to decide whom to benchmark. There are so many parties, who can be benchmarked. However, parties to benchmarked should be the best ever example of the marker as well. An organization may select a best one among local competitions or select a successful market leader organization of best among successful rival firms or best national or international firm. Decision about who to benchmark is also dependent upon the scale of benchmarking firm. Larger firms can benchmark is also practices of best organization and smaller firms may be confined to bench marking best of smaller/local firms only. Relative to the size of the organization, an

organization can select up to world-class best practitioners. With these benchmarking an organization can reap many benefits. It can bring timely changes in it self by synchronizing its changes with the changes outside. This enhances efficiency of organizations and helps them successfully best the rival firms. A new producer is a result of innovation of any firm. Organizations with successful benchmarking of sum procedure can save cost of some sort of innovation made with their own efforts.

2.16 Standardization, Simplification and Specification

2.16.1 Standardization

In Japan, products are highly standardized and the result is low-pricing products. Goods are produced using Assembly line process Technology. Automated machines are used. Goods produced at two different times from the same technology are highly similar. This is the main feature of standardization.

Custom products are likely to be more costly than standardized products but managers must attempt a balance that clients will accept. Give the appropriate balance; these are many economic benefits to standardization. The cost affected items are raw materials, inventory, in-process inventory, lower set-up costs, longer production runs, improved quality controls with fewer items, opportunities for mechanization and automation, more advantageous purchasing better labor utilization, lower costs and so on (Buffa & Sarin; 2000 : p.471).

Standardization is an instrument to manufacture maximum variety of products out of the minimum variety of components by means of minimum variety of machines and tools. This decrease working capital requirements and leads to reduction in manufacturing costs.

2.16.2 Specialization

When someone is more specialized in a work, she/he can do the work easier and faster than the one who occasionally does the work. Hence, Japanese manufacturing organization employ such person for work, who is specialized in doing the same. This leads to time and cost saving.

Specialization, in another words, also refers to elimination of products variety so that the operation can be minimized which leads to use of expert's knowledge, skill and techniques in production system.

2.16.3 Simplification

When two or more parts are finally assembled rigidly together, perhaps the unit can be designed as one place, thus eliminating an assembly operation. This is often feasible when a single material will meet the service requirements for all the surfaces and across sections of the parts. Another example is the substitution of plastic snap-on cap in place of a screw-on cap for some applications. The costs of the materials and labor for the snap-on the cap are much less. Simply, the design the services offered has similar implication (Buffa & Sarin ; 2000 : p.471).

Simplification, in a very simple understanding, refers to the elimination of superfluous varieties, dimension and works.

2.17 Review of Previous Thesis

Major findings and recommendation are presented as under:

1. Dahal (2004) has made study about **"Cost Reduction Tools: A Study on applying to strength manufacturing enterprises of Nepal."** And his study has shown the following findings and recommendations:

Findings

- The main reason behind less use of JIT in Nepalese business environment is lack of information about JIT and non-availability of suppliers.
- There is the lack of skilled manpower and internal failure cost in applying TQM.
- The more useable cost reduction tool in business enterprises is training.
- The main cause of not applying benchmarking its lack of proper direction and co-ordination.
- And the constraint cause of ABM is poor organizations culture.
- Nepalese manufacturing firms believe in scientific management of cost.
- The hypothesis among by types of tools as well by the sub-sectors.

Recommendation

- Japanese cost management tools should be widely used. And firms have to think how to make the practice effective.
- Specially, the electric firm, textile companies and engineering firms should give effort for JIT application.
- Firms should keep on benchmarking other's practices and bring corresponding practice to their own ground.
- Firms should manage the activities with cost.

2. Mr. Nabin karki submitted the thesis "Practice **Of Cost Reduction Tools And Techniques In Selected Nepalese Manufacturing Companies".** His study was properly based on primary and secondary data. He choosed the following objectives.

- To examine the current state for application of cost reduction tools in Nepalese manufacturing enterprises.
- To examine the practical difficulties for applying cost reduction tools in Nepalese manufacturing enterprises.

- To show the linear relationship between selected variables.
- To provide suggestion for concerned parties based on basic findings.

His findings are as follows:

- The major cost of suffering the loss by Nepalese manufacturing enterprises is due to lack of proper supervision and management.
- The companies are trying to archive the objectives by means of increasing selling price. They are trying to reduce the purchasing cost by means of managing cost in proper way.
- Majority of the companies are not applying the JIT system currently. Major problem of the failure of the system is due to lack of skilled and experience manpower. in Nepalese manufacturing enterprises should establish the long term stable relationship with the employees.
- Majority of the companies are not using Total Quality Management (TQM) system currently. They are bearing the internal cost as the quality related cost at present and giving first priority to the quality design as the improvement technique of TQM system.
- Majority of company is implementing value analysis techniques currently and most of them adopting the design analysis as the value analysis system.
- Majority of sample companies are adopting the ABC costing system at present and adopting activities reduction as a tool of cost reduction under the system.
- Majority of the sample companies are conducting the training program in order to reduce the total cost of the organization (Karki 2006)s.

3. Gyanendra Pathak submitted the thesis **“Cost Reduction Tools Applied by Nepalese Manufacturing Companies**". His study was properly based on primary data collection through the questionnaire. He took 15 sample size and his objectives were as follows:

- To examine the current status of the application of cost reduction tools in Nepalese manufacturing companies.

- To examine the practical difficulties of applying cost reduction tools in Nepalese manufacturing companies.

  In order to reach in a conclusion, he analyzed the data collection from primary source using the analytical tools like percentage, hypothesis, testing, etc.

  Some major finding pointed by Gyanendra Pathak is as follows;

- The research work have found that just in time was lowest using tools than others. The main reason being he less using of JIT is non availability of supplier due to various reason like political instability, more changeable policy of government, strike/terrorist etc.
- The training scheme and TQM are more or less provided by all types of manufacturing firms due to main reasons are lack of skilled manpower and internal failure costs.

2.18 Research Gap

Above reviews implied that most of the Nepalese manufacturing enterprises are not very serious regarding application of cost reduction mechanism. That's way they have not been success to meet their target.

The other side, it is observed that the previous researcher not focused in impact of cost reduction tools on overall performance. The previous researchers have failed to recommend to the government of Nepal because the business mostly based on government rules and regulations. It is not considered the political instability, strike and other various abnormal cases which are shown time to time, though the researcher only consider the scientific cost reduction tools.

This study will be fruitful to those interested person, scholar, professor, and students and business for academically as well as policy prospective.

CHAPTER III

RESEARCH METHODOLOGY

3.1 Introduction

Research methodology is another important aspect of the thesis writing. Research methodology is a systematic and scientific method of handling the problems by the researcher. In other words, research methodology provides various tools, techniques, methods and process associated with the overall study. It is very helpful in identifying the research problems too. In fact, research is an art of scientific investigation.

Research methodology covers the broad range of investigation. It is composed by two words 'research' and 'methodology' in which research means to search again and again and methodology means the mechanism which helps to solve the research problems.

In this section, efforts have been made for explaining specific research design to attain the research objectives. This study has attempted to analyze the cost reduction mechanisms in beverage sector of Nepal. It has included research design, source of data, population and sampling, data collection procedures, data analysis procedure, testing hypothesis, research variable to get the result for the rising problems.

3.2 Research Design

A research design is a plan for the collection and analysis of data. It is the plan, structure and strategy of investigation conceived as to obtain answers to research questions and to control variance. The plan is the overall scheme or program of research. It can be compared with the blue map of the house. A research design includes what, why, when how aspect of research. Specifically, speaking research design describes the general plan for collecting, analyzing and evaluating data after identifying.

- What the researcher want to know?
- What has to be dealt with in order to obtain the required information?

There are various types of research design. Wolff and Pant have suggested four broad categories, i.e.

i. Descriptive
ii. Comparative
iii. Interventional
iv. Qualitative

The basic objective of this study is to examine application of cost reduction mechanisms in Nepalese Breweries Company. For the purpose both descriptive as well as analytical research design are followed.

3.3 Sources of Data

This study is mostly based on the primary data. For this semi structured questionnaire were prepared before the field visit, and they were distributed during the visit to the units under study. But some of the in formations have also been taken from the newspaper, magazines and websites as secondary data.

3.4 Populations and Sampling

The outcome of the study will represent all the beverage industries established and operating in Nepal but judgmental sampling have been done to take the sample population under direct study. The samples can be stratified as follows:

- Gorkha Brewery
- Nepal Brewery
- Sungold Brewery
- The Himalayan Brewery

3.5 Data Analysis Procedure

The collected information has been presented in tabular form for purpose of analysis and to get exact findings. As the respondents were given opportunities to give more than one answer to the questions; the total columns reflects the beverage industries and the total rows reflects the different parameters. For the analysis of data, percentage analysis method has been adopted.

3.6 Testing of Hypothesis

The hypotheses taken in the research are that the cost reduction practices among the beverage industries and the tools of cost reduction are identical. For this purpose, F-test (Two ways ANOVA) test has been conducted.

3.7 Research Variable

This research has conducted using the following research variables.

- JIT System
- Total Quality Management.
- Activity-Based-Management.
- Training Scheme.
- Benchmarking.
- Standardization, Simplification and Specification.

CHAPTER IV

DATA PRESENTATION AND ANALYSIS

4.1 Profit Maximization Practice

A survey was conducted in taken sample firm to know how they were trying to use profit maximization objective. The following results were found.

Table: 4.1 Profit maximization practice

Particular	Gorkha Brewery	Nepal Brewery	Sungold Brewery	Himalayan Brewery	Total		
					Sample	No	%
Increase in sales volume	1	1	1	1	4	4	100
Reduction in operation cost	-	1	1	-	4	2	50
Increase in sales value & reduction in operation cost	-	1	1	-	4	2	50

Source: Field survey, 2009

Table: 4.1 shows the profit maximization practices adopted by the sample breweries. The variable taken to measure the purpose is based on sales volume, operational cost and both sales volume and operation cost.

Regarding the table all sample breweries have found, to increase the profit by increasing sales volume and two companies are adopting operating cost reduction and both the increase in sales volume and reduction in cost. The study can be analyzed from above figure most of breweries are adopting increase in sales volume which represents 100 percent. Nepal and Sun gold

breweris are adopting reduction in operating cost which one is 50 percent represent.

Based on the analysis 100 percent breweries maximize the profit by increasing sales volume. Some of the breweries have found to maximize profit by using increase sales volume and decreasing operational cost.

4.1.2 Managing Lower Price of Products

Reduction in the cost can be achieved with the drive to control selling price of the products. It means that trying to minimize selling price of the product, organization is silently moving toward reduction of cost. There are so many optional activities for attaining the purposes. An organization may bargain with its suppliers for charging lower price of materials, so that selling price can be set at minimum. Organization may also go for scientific and budgetry control of its operation cost. If the business house is turning toward more service oriented, it may minimize its profit margin on its sales to provide low priced products to the customer. Studies over four breweries companies have shown the following results.

Table 4.2: Measures Applied for Lowering Price of Products

Particular	Gorkha Brewery	Nepal Brewery	Sungold Brewery	Himalayan Brewery	Total		
					Sample	No	%
Bargaining with suppliers of material	-	1	1	1	4	3	75
Managing the cost in scientific way	1	1	1	1	4	4	100
Minimize profit margin on sales	1	-	1	-	4	2	50

Source: Field survey, 2009

Table 4.2 shows the lowering price of the products by adopting bargaining with supplier of material, managing the cost in scientific way and maintain minimum profit margin.

Regarding the table cent percent of the sample breweries have found adopting managing cost in scientific way. Three firms under the sample taken have found lowering price by bargaining with supplier of materials that represent 75 percent of the samples taken. Only two firms are lowering price by adopting minimum profit on sales margin representing 50 percent of taken sample.

On the above analysis 100 percent breweries are minimized lower price by using managing the cost in scientific way. Number of firms that are reducing the lower price by adopting minimize profit margin on sales in minimum.

4.1.3 Area Selected for Cost Reduction

As mentioned earlier, cost reduction committee identifies area where the reduction activities can be best exercised. Generally, reduction works are shown in following table.

Table: 4.3 Area selected for cost reduction

Particular	Gorkha Brewery	Nepal Brewery	Sun gold Brewery	Himalayan Brewery	Total		
					Sample	No.	%
Product design	1	1	--	-	4	2	50
Organizational work system	-	-	-	1	4	1	25
Equipment and plant layout	-	-	1	-	4	1	25
Production planning controlling and administration	1	-	1	1	4	3	75
Office overhead	-	1	-	-	4	1	25
Purchase of material and control	1	-	1	-	4	2	50

Source: Field survey, 2009

Table 4.3 shows the area selected for cost reduction by adopting product design, organizational work system, production planning controlling and administration, equipment and plant layout , office overhead, purchase of material and control.

Regarding the table from sample breweries are found that three firms are adopting production planning, controlling and administration area for cost reduction that represents 75 percent. Two firms are cost reduced to product design, purchase of material and control that is 50 % of the samples taken. Nepal, Sun gold and Himalayan breweries have cost deducted by adopting in

organizational work system, equipment and plant layout and office overhead area selected.

On the above analysis the most selected area of breweries for reducing the cost is production planning controlling and administration. Some breweries firms are reducing cost in organizational work system, equipment and plant layout and office overhead.

4.1.4 Application of Cost Reduction Mechanism

As described earlier, there are various types of modern cost reductions mechanism which are using by Japanese manufacturing companies at present. This section deals with the study over the current as application of all or any of these tools in Nepalese business environment. The selected four breweries were taken to know about their practices of cost reduction mechanism the high cost.

4.1.4.1 Application of JIT systems

Table: 4.4 Applications of JIT Systems

Particular	Gorkha Brewery	Nepal Brewery	Sun gold Brewery	Himalayan Brewery	Total		
					Sample	Nos	%
Applying	1	-	-	-	4	1	25
Not applying	-	1	1	1	4	3	75

Source: Field survey, 2009

Table 4.4, this analysis is the measurement of cost reduction by the breweries industry based on JIT system. Only the Gorkha brewery has found it

reduce the cost by applying the JIT system. Rest of the industry taken under sample have not found in JIT system to minimize the cost failure.

The study analyzed that Japanese cost reduction JIT system is applied by Gorkha brewery which is 25% but 75 % brewery are not applying it. That is not good situation of adopting the system.

From this research, most of the breweries are not applying JIT. So, we suggest them to adopt JIT system because it is better for breweries otherwise production cost may be increased.

4.1.4.2 Application of Total Quality Management (TQM)

Table: 4.5 Application of Total Quality Management (TQM)

Particular	Gorkha Brewery	Nepal Brewery	Sun gold Brewery	Himalayan Brewery	Total		
					Sample	Nos	%
Applying	1	-	-	-	4	1	25
Not applying	-	1	1	1	4	3	75

Source: Field survey, 2009

Table 4.5 shows that 25% of breweries have cost reduced by using TQM techniques and 75% of industries have not used TQM tools. It means, of few number of breweries have applied TQM tools in Nepal.

4.1.4.3 Activities Based Management Practices (ABM)

Table: 4.6 Activities Based Management Practices (ABM)

Particular	Gorkha Brewery	Nepal Brewery	Sun gold Brewery	Himalayan Brewery	Total		
					Sample	Nos	%
Yes	1	1	1	-	4	3	75
No	-	-	-	1	4	1	25

Source: Field survey, 2009

Table 4.6 shows that the three firms have cost deducted by applying ABM tools. It represents 75% of the sample taken. The remaining firms are reducing cost without ABM i.e 25%.

The study analyzed that most of the firms are applying ABM that is 75% represent. The least firms are not applying ABM which is 25%.

It concluded that most of the firms are following ABM but least firms are not following it.

4.1.4.4 Conduction of Training Programme

Employees of an organization are the means whose high involvement helps organization to achieve the goals. An Organization is set up with certain goals. Goals of an organization may change on requirement timely. Whatever be the goals of the firms, they necessitate special set of qualification and exercise and in the men power organization assess the present expertise in there employee, determine needed expertise to accomplish task to achieve goals easily, find the gap between the required expertise and existing expertise and organized training progarmme to feel in employee all required expertise so that the gap is fulfill. In Nepal employee are found to be given training. In research almost all the firms claim that they occasionally or regularly but at least provide training to their employee.

Table: 4.7 Practice of Conduction of Training Program

Particular	**Gorkha Brewery**	**Nepal Brewery**	**Sun gold Brewery**	**Himalayan Brewery**	**Total**		
					Sample	No.	%
On the job training	1	1	1	-	4	3	75
Off the job training	-	-	1	1	4	2	50
Both	-	-	1	-	4	1	25

Source: Field survey, 2009

Table 4.7 shows that the taken sample breweries have reduced cost by adopting on the job training and off the job training and both.

Regarding the table 75% firm have cost reduced by adopting on the job training and 50% breweries have cost reduced by using off the job training and 25 % firms have reduced by both.

Table: 4.8 Types of on the Job Training Program

Particular	Gorkha Brewery	Nepal Brewery	Sun gold Brewery	Himalayan Brewery	Total		
					Sample	No	%
Apprenticeship training	1	1	-	1	4	3	75
Internship training	-	-	1	-	4	1	25
Job instruction training	1	1	1	1	4	4	100

Source: Field survey, 2009

Table 4.8 shows that on the job training have applied by sample breweries. They have adopted apprenticeship, internship and job instruction trainings.

Regarding table all sample breweries have found that 100% breweries are taken job instruction training, 75 % firms have adopted apprenticeship training and 25 % job instruction training of the taken samples.

It is found from the research that 100% of the firms have reduced their cost by applying job instruction training where some breweries have reduced their cost by using internship training.

Table: 4.9 Type of off the Job Training Program

Particular	**Gorkha Brewery**	**Nepal Brewery**	**Sun gold Brewery**	**Himalayan Brewery**	**Total**		
					Sample	Nos	%
Lecture/conference	-	-	-	1	4	1	25
Program instruction	-	1	1	-	4	2	50
Experimental exercise	1-	-	-	-	4	1	25

Source: Field Survey, 2009

Table 4.9 has explained that four sample breweries are operated by adopting off the job training. There are three methods, i.e. lecture/conference, program instruction, experimental exercise training programme have been found as application in 25%, 50% and 25%.

It can be concluded that program instruction training is the mostly useful in the brewery firms. But some firms are adopting lecture and experimental exercise.

The training is an urge fulfill that gap between the qualities existing in employees presently and what level of qualities employees required to accomplish expected level of performance.

Table: 4.10 Methods used for Evaluating Training Effectiveness

Particular	Gorkha Brewery	Nepal Brewery	Sun gold Brewery	Himalayan Brewery	Total		
					Sample	No	%
Observation method	1	1	1	1	4	4	100
Test retest method	-	-	-	-	4	Nil	Nil
Experimental method	-	1	-	1	4	2	50
Training survey method	1	-	1	-	4	2	50
Cost effectiveness analysis	-	1	-	-	4	1	25

Source: Field Survey, 2009

Table 4.10 shows that evaluating training program adopted by sample brewery. The variable has taken observation method, test retest method, experimental control, training survey and cost effectiveness analysis.

Regarding table four firms are adopting observation method. It is 100%. Two firms are applying experimental and training survey method representing 50 % each. Cost effectiveness system is applied by 25% of taken sample and no one applied test retest method

Based on the analysis most of firms are evaluating training program by using observation method and no one is evaluating training test retest method.

Some firms are adopting different training i.e 50% and 25% of the taken sample.

4.1.4.5 Application of Bench Marking

Benchmarking involves comparing key activities with best practices. It attempts to identify an activity. Such as customer order processing, that needs to be improved and finding a non rival organization that is considered to represent world class best practice for the achieving and studying how it performs the activities.

Table: 4.11 Application of Bench Marking

Particular	Gorkha Brewery	Nepal Brewery	Sun gold Brewery	Himalayan Brewery	Total		
					Sample	Nos	%
Yes	1	1	-	1	4	3	75
No	-	-	1	-	4	1	25

Source: Field survey, 2009

Regarding table three firms are adopting the benchmarking system and only the firm Sun gold brewery has not found taking of benchmarking in the process of comparing key activities in terms of best practices. Expressing percentage terms, the applying and without applying the benchmarking to compare the activities in the brewery industries are 75% and 25%.

In a research, most of the firms are cost reduced by using benchmarking system and least firms are cost reduced without using the system.

Table: 4.12 Parties Involved in Benchmarking

Particular	Gorkha Brewery	Nepal Brewery	Sun gold Brewery	Himalayan Brewery	Total		
					Sample	Nos	%
Local competitor	1	1	1	1	4	4	100
Market leader	-	1	1	1	4	3	75
National and international big companies	1	-	-	-	4	1	25

Source: Field Survey, 2009

The analysis shows that all the firms under the sample are found to involve in local competitor, three firms are adopting market leader and one firm is adopting national and international big companies in the benchmarking process.

The study can be analyzed that most of the firms are involving in local competitor representing 100%. The least companies are involved in national and international big companies' i.e 25%. Three breweries are taking market leader representing 75% of the sample taken.

In conclusion, most of the companies are cost reduced by adopting local competitor system and the least companies are cost reduced by following national and international big companies.

Table: 4.13 Benchmarking Process Practice

Particular	Gorkha Brewery	Nepal Brewery	Sun gold Brewery	Himalayan Brewery	Total		
					Sample	Nos	%
Production process	1	1	-	-	4	2	50
Marketing strategies	1	1	1	1	4	4	100
Operation	-	1	1	1	4	3	75

Source: Field survey, 2009

The above table shows that benchmarking process is used by adopting production process, market strategies and operation. Out of these process productions process is adopted by two firms i.e 50 % of taken sample. The marketing strategy is followed by all four breweries i.e. 100% and three firms are following operation process i.e 75%.

On the basis of above analysis most of the firms are applying bench marking by using market strategy and some firms are adopting benchmarking by following production process among given samples.

4.2 Failure to Cost Reduction

4.2.1 Failure in Applying JIT System

Table: 4.14 - Failure in an Applying Just in Time System

Particular	Gorkha Brewery	Nepal Brewery	Sun gold Brewery	Himalayan Brewery	Total		
					Sample	No	%
Lack of information	-	-	1	-	4	1	25
Because of unnecessary outside pressure	1	1	1	1	4	4	100
Lack of resource	-	1	-	1	4	2	50
Lack of proper direction and coordination	1	-	1	-	4	2	50

Source: Field survey, 2009

The table 4.14 shows that failure in just in time system due to following reason, lack of information, unnecessary outside pressure, lack of resource and lack of proper direction and coordination.

Considering above table, four firms are failure in JIT system because of unnecessary outside pressure such as strike, political instability, changeable government policy etc. Fifty percent firms are failed due to lack of resource and proper direction and coordination. Twenty five percent of taken sample are unsuccessful to apply JIT system due to lack of information.

At last, most of the firms are failure in JIT system due to unnecessary outside pressure and some firms are failed by lack of information and proper direction and coordination.

4.2.2 Failure in Applying TQM

Table: 4.15 Failure cost in Breweries Company

Particular	Gorkha Brewery	Nepal Brewery	Sun gold Brewery	Himalayan Brewery	Total		
					Sample	No	%
Internal failure cost	1	1	1	-	4	3	75
External failure cost	-	-	-	1	4	1	25

Source: Field survey, 2009

By studying above table three firms were found internal failure cost and remaining firms have external failure cost. This is represented by 75% and 25%. Internal failure cost is adopted by most of the firms. Least of the firms are suffering from external failure cost.

The study made over the non TQM firms has revealed that the firms are undergoing by unnecessary outside pressure in organization.

It can be concluded that most of the firms are suffering from internal failure cost and some of the firms are fall in external failure cost.

4.2.3 Failure in Applying Benchmarking

It has found that from sample, only 25% firms are not applying bench marking i.e. sungold brewery. It is failure in applying benchmarking due to lack of trained and competent personal and proper direction and coordination.

4.3 Testing of hypothesis

The hypothesis is that cost reduction practice in identical (i.e. no difference) among the firms and the tools of cost reduction.

To give equal justice to all the firms, LCM has been computed which comes to twelve. Then weighted have been calculated dividing respective sample firms each particular. Based on the weight assigned, the data regarding the number of firms practicing different cost reduction tools have been presented. The works have been shown in appendix.

Table: 4.16 Calculations of MSC, MSR and MSE

Breweries / Tools	X_A	X_B	X_C	X_D	Total Row (Tr)	X^2_A	X^2_B	X^2_C	X^2_D
JIT (X_1)	3	0	0	0	3	9	0	0	0
TQM (X_2)	0	4	0	12	16	0	16	0	144
ABM (X_3)	3	4	6	0	13	9	16	36	0
Training(X_4)	3	4	6	0	13	9	16	36	0
Benchmarking (X_5)	3	4	0	12	19	9	16	0	144
Total Column (TC)	12	16	12	24	$\sum Tr=64$	$\sum X^2_A=36$	$\sum X^2_B=64$	$\sum X^2_C=72$	$\sum X^2_D=288$

Assuming label of significance is 5%.

1. Null hypothesis:- No significance difference between brewery companies).

i.e. H_0: $\mu_{A=} \mu_{B=} \mu_{C=} \mu_D$

Alternative hypothesis: Significance difference between brewery companies.

i.e. H_1: $\mu_{A\neq} \mu_B \neq \mu_{C\neq} \mu_D$

2. Null hypothesis: - No significance difference between mechanisms.

   i.e. H_0: $\mu_{1=} \mu_{2=} \mu_{3=} \mu_{4=} \mu_5$

   Alternative hypothesis: Significance difference between mechanisms.

   i.e. H_1: $\mu_{1\neq} \mu_2 \neq \mu_{3\neq} \mu_{4\neq} \mu_5$

   Test statistics: - H_0: Fc = MSC/MSE

   Fr = MSR/MSE

Table: 4.17 The two ways ANOVA

Source of variation	Sum of square(SS)	Degree of freedom(DF)	Mean sum of square (MSS)	F ratio
Due to column factor	19.2	3	6.4	0.3855
Due to row factor	36.2	4	9	0.5421
Due to error	199.2	12	16.6	-

For breweries firm: - tabulated $F_{0.05}$ (3, 12) = 3.49

For mechanism of cost reduction: tabulated $F_{0.05}$ (4, 12) = 3.26

Conclusion for brewery companies- since calculated F (3, 12) > tabulated F (3, 12); it is significant and H_0 is rejected and H_1 is accepted which means that the mean productivity is not the same for different four brewery companies.

For cost reduction mechanisms- since calculated F (4, 12) > tabulated F (4, 12); it is significant and H_0 is rejected and H_1 is accepted which means that the five mechanism differ w.r.t. productivity.

4.4 Major Findings of the Study

The research works have found that 81% of the firms are practicing cost reduction in which just in time have found 33% of breweries companies which is lowest using tools than others.

i. The main reason behind the less using of JIT is lack of proper direction and co-ordination due to Mismanagement in team-work. And the next important factor is outsider's pressure in applying. JIT as a constraint. It is due to political instability, more changeable policy of government, strike, lack of supplier etc. The firms which have been using JIT, they believe in long-term relationship perquisites managed for applying JIT system.
ii. Fifty percent of the firms among those studied were applying total-quality management (TQM) and rest were not using due to the main reason of internal failure cost. The firms which were applying TQM found that the most of the firms maintain quality with prevention measure and addressing quality design.
iii. The main reason was found behind not using the activity-based-management (ABM) is lack of proper direction and co-ordination. 75% firms applied ABM to reduce the cost.
iv. Training schemes are provided by all types of Breweries Company in which 75% of the firms provided on-the-job

training and 25% provided both on-the-job as well as off-the-job- training.

v. Seventy five percent of the firms were found of as applying benchmarking. The main reason of not applying this tool is lack of trained and competent personnel and lack of proper direction and co-ordination. The firms benchmarked highly in subject of marketing strategy for enhancing efficiency and to bring timely change. Thus, it found that, in different sector, the different reduction practices have been entertained by different types of mechanism as hypothesis also have shown. From another angle, this research work has found that.

CHAPTER V

SUMMARY CONCLUSION AND RECOMMENDATIONS

5.1 Summary

After industrialization, America and European countries established multinational companies around the world in search of materials for production. Though lack of materials for production for their companies these countries have maintained low cost of production.

Nepalese breweries sector have been suffering from lack of materials and high cot of resources. They need to think for timely cut down of costs by taking modern cost reduction measures being applied by Japanese manufacturing organizations at present. This research work has been done with the objectives of analyzing the current state of the application of cost reduction mechanism in Nepalese breweries enterprises, pointing out and examining the practical difficulties of applying cost reduction tools in Nepalese breweries enterprises and providing suggestion for the application of cost reduction tools to strength Nepalese breweries enterprises.

To reduce the cost, it requires mass participation wide communication and effective training within the organization and between the departments. Management tools like leadership, motivation etc should be used. There are several areas where cost reduction works can be exercised. Some of these areas are product design, organization, product planning and control, equipment and plant layout, administration, selling and distribution finance, purchase and control of materials etc. For cost reduction, the modern Japanese tools are used which are JIT system, TQM, ABM, training, benchmarking and SSS.

The success of Japanese firms in international markets generated interest among many western companies as to how this success was achieved. The implementation of JIT production methods was considered to be one of the major factors contributing to this success. The JIT philosophy made famous by Toyota has been credited with success of many of the world's leading manufacturers. Tremendous cost saving have been realized by many companies that have adopted the JIT approach.

JIT means producing what is needed, when needed and no more. Anything over the minimum amount necessary is viewed as waste, because effort and material expended for something not needed now can not be utilized now. JIT system applied inventory management, the materials are purchased and/or sub-assemblies/ products are manufactured in small lot sizes. Excessive production at the time of less need and less production at the time of high need are avoided maintaining uniform production rate in JIT system.

In the 1980s, most European and American companies considered quality to be an additional cost of manufacturing, but by the end of the decade, they began to realize that quality saved money. Companies discovered that it was cheaper to produce the items correctly the first time rather their wasting resources by making substandard items that have to be detected, reworked, scrapped or returned by customers. In other words, the emphasis of TQM is to design and build quality in, rather than trying to inspect it in, by focusing on the causes rather than the symptom of poor quality.

As per traditional accounting approach, the share of direct costs like cost of materials, cost of labor and other direct cost are bigger than the share of overhead costs. To eliminate the shortfall in traditional accounting approach, Cooper and Kaplan jointly introduced activity-based-management (ABM) or activity-based-cost-management (ABCM), are used to describe the cost management application of ABC. ABM is based on the premise that activities consume costs. Therefore, by managing activities, costs will be managed in long term.

The employees as well as the managers of an organization must get training and development to enhance their efficiency timely and work effectively. Such activity is called human resource development. Human resource development is about two things i.e. training and development of employees. Factors like organizational plans, employee record, work and work flow, employee factors like skill, attitude etc. determine training need. Training to the employee can be given on-the-job or off-the-job. On-the-job training, employees are exposed to the practical works for the purpose of learning and in off-the-job training, employees are theoretically equipped. For effective implementation of training, training effectiveness should be appraised.

Benchmarking is the continual search for the most effective of accomplishing a task, by comparing existing methods and performance levels with those of other organization or with other organization or with other sub units within the same organization. Benchmarking involve comparing key activities with world-class best practices. Following process is to be applied for benchmarking:

i. Evaluate and measure our own operation or specific process to identify weakness and strengths.

ii. Initiate a benchmarking study and document processes that are more productive or efficient than ours.

iii. Determine how to adopt successful processes and procedures from those who may be doing it better than our process.

In Japan, products are highly standardized and the result is low-pricing products. Goods are purchased using assembly line process technology. Automated machines are used. Goods purchased at two different times from the same technology are highly similar. This is the main feature of standardization.

Specialization refers to elimination of product variety so that the operation can be minimized which leads to use of expert knowledge, skills and

techniques in production system. Simplification refers to the elimination of superfluous varieties, dimensions and works.

Manufacturing firms using the tools of cost reduction as described above can reduce the costs. The survey conducted over 4 breweries enterprises, has shown that modern cost reduction tools are principally being found applied in those firms, but no preparatory implementation has been made so far. Most of the firms claimed that they are using the mechanisms like training, TQM, ABM benchmarking. Remaining other mechanisms like JIT was found applied rarely.

5.2 Conclusion

Following conclusions have been drawn out from the entire research work carried out.

i. In context of our country Nepal, breweries enterprises mostly prefer to increase in volume of sales and reduction in operation cost for maximizing profit of the organization.

ii. Firms highly prefer managing the cost scientifically for the purpose of lowering the operating cost and consequently the price of products.

iii. Nepalese breweries enterprises are facing high cost problem in various sectors but major are production planning and control and administration, production design and purchased of material control area.

iv. A JIT system is not widely practices in Nepalese breweries sectors. The Gorkha brewery is applying JIT system to some extent. The main reason for low practice of JIT system is the lack of proper direction and co-ordination and next reason is unnecessary outsider's pressure. The firms which are using JIT system, most of the firms are using JIT production.

v. TQM is widely practiced in Nepalese breweries sectors. In management of total quality of products, firms are taking preventive measures. For application of TQM, firms are giving high quality of product design and then quality of service.

vi. The practice of activity-based-management in Nepalese breweries firms is high. About 75% of the firms are being managed with activities and most of the firms are using activity sharing for ABM program.

vii. Near about cent percent of the Nepalese breweries firms are conducing on-the-job training (OJT) programs. Job instruction and apprenticeship are mostly used method of OJT. Similarly, programmed instruction is mostly used in off-the-job training programs.

viii. Most of Nepalese breweries firms benchmark for the objective of bringing timely change and to enhance efficiency in them. They benchmark with local competitor and in sector of marketing strategy.

ix. The hypothesis testing has shown that cost reduction practice is identical by types of breweries but different by types of cost reduction mechanism.

5.3 RECOMMENDATIONS

The present situation of Nepal is very complex, unstable and future looking quite uncertain. The country is not only lacking the proper rules, regulations and policies but also the weak implementation. Nepalese brewery companies are facing with various types of problems. On other side, Nepal in now the member of various regional economic groups likes WTO, SAFTA, and BIMSTEC etc. Now, Nepalese brewery companies must have to compete with

international products, which are made by highly sophisticated technologies. Economists and businessmen are discussing that how can Nepalese brewery companies compete with international brands. And also, Nepalese breweries have to rethink for safeguarding the national markets to their products. Among different measures for this, cost reduction is most important. Based on the finding/conclusion of this research works, the recommendations have been made to three sectors separately i.e. Nepalese Brewery Company, Nepal government and future researchers.

i. Recommendation to Nepalese Brewery Companies

i. In context of our country, bearing high costs in all sectors are big and major problem. So, for the cost reduction, modern Japanese cost management tools should be widely used. Firms have to think how to make the practices effective. For this, they have to find out each and every cause for ineffective practice and prevention measures should be taken.

ii. Firms have to given enough strength to avail of materials easily and have to make good relationship with suppliers. They have to manage proper direction and co-ordination among the staffs. Also, firms have to gain the more knowledge about JIT.

iii. In Nepalese brewery companies, applying condition of TQM is satisfactory. But most of the firms suffered from internal failure cost due to outsider's unnecessary pressure. Firms have to think how to control or minimize internal failure cost and how to upgrade skills and knowledge in their manpower to work in challenging and this changed context.

iv. Nepalese brewery companies should benchmark with market leaders and worldwide best practitioners for pirating procedures.

ii. Recommendation to the Nepal Government

The knowledge about cost reduction in Nepalese brewery companies is low i.e. companies have no enough knowledge about cost reduction mechanisms. Although, firms who have knowledge about this, facing various difficulties and complexities for 100% achievement i.e. no. suitable environment of achievement of cost reduction practice.

So, government have to think how can upgrade their knowledge about cost reduction techniques and mechanisms and how can minimize difficulties and complexities. For this, government should play partnership role by giving and upgrading knowledge and skill through organizing remainder, discuss program etc. about this topic time to time. Government should also make clear and solid policies about industrial security, transportation worker's union etc. This type of policies will give a fair environment for practicing cost reduction mechanisms and techniques.

iii Recommendation for Future Researcher

Present study can be a valuable piece of the research work in cost reduction system especially in breweries business sectors. It maybe valuable for academicians, practioners, management and any others who are directly or indirectly involved in business, government and non-government sectors. After analysis, the researcher recommended to highlight the guidelines to put forward for better improvement.

i. A detail investigation of fundamental linkage of Cost Reduction System and organizational performance can be conducted.

ii. The study may be conducted to investigate the reasons behind efficiency or inefficiency of cost reduction system.

iii. It can be increased the sample size of the firms to get the more reliable result.

iv. The mechanisms (tools) can be increased to make the research work more broaden and reliable.

v. The future research can be made analyzing between public Vs private manufacturing enterprises.

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APPENDIX - I

Questionnaire on Cost Reductions

Respected Sir/Madam

I am going to conduct a research work on "**An Application of Cost Reduction Mechanism (Tools) in Nepalese Brewery Companies**." Basically, this research work will depend upon both primary secondary data. So, for the purpose of primary information, I am forwarding this questionnaire to you with full expectation to get your support to complete my research work.

Some questions are designed for the purpose of survey with their possible answers enlisted just after questions. Please, tick ( ) for the answers you have choose.

Which of the following options your company chooses for the profit maximization?

- Increase in the volume of sales
- Increase in selling price
- Both of above two
- Reduction in operating cost
- Increase in volume of sales and reduction in operating cost
- To reduce the purchasing cost of the customers
- All of above
- Other, if any. Please specify.....

1. To reduce the purchasing cost of the customers, which of the following way, your company has adopted at present?

    - Bargaining with the suppliers of materials
    - Managing the cost in the scientific way
    - Minimizing the company's profit margin on sales.
    - All of above
    - Other, if any. Please specify.....

2. Which of the following areas, your company is mostly suffered from '**cost**' ?

    - Product design
    - Organizational work system
    - Production planning and control
    - Equipment and plant layout
    - Production planning and control plus administration
    - Advertising, selling and distribution
    - Purchase of material and control
    - All of above
    - Other, if any. Please specify.....

3. Does your company use JIT (Just-in-time) system?

    - Yes
    - No

4. If yes, which of the following methods of JIT (Just-in-time), you use?

    - JIT (Just-in-time) production/manufacturing
    - JIT (Just-in-time) purchasing/zero inventory system
    - Both of above
    - Other, if any. Please specify.....

5. For successful flow of JIT (Just-in-time), which of the following perquisites, your company is managing with suppliers and customers?

    - Long-term stable relationship
    - Simple purchaser agreements
    - Small frequent delivers
    - All of above
    - Other, if any. Please specify.....

6. Does your company use TQM. (Total-Quality-Management) approach ?

   - Yes
   - No

7. Which of the following quality related costs, your company is bearing at present ?

   - Prevention costs
   - Appraisal costs
   - Internal failure costs
   - External failure costs
   - Other, if any. Please specify.....

8. Which of the following activities, your company addresses for TQM (Total-Quality-Management) ?

   - Quality of product design
   - Quality of product conformance
   - Quality of product service
   - Other, if any. Please specify.....

9. Is Activity- Based-M nt applied in your company?

   - Yes
   - No

10. If yes, which technique is followed by your company?

    - Activity Reduction
    - Activity Elimination
    - Activity Selection
    - Activity Sharing
    - Other, if any. Please specify.....

11. Does your company provide Training to the workforce/ employees?

- Yes
- No

12. If yes, which of the following methods it is using?

- On-the-job training
- Off-the-job training
- Both of above

13. For on-the-job training, which methods are used by your company?

- Apprenticeship training
- Internship training
- Job instruction training
- Other, if any. Please specify.....

14. For Off-the-job training, which of the following methods are used by your company?

- Lecture/conference
- Simulation exercises
- Programmed instruction
- Experiential exercises
- Other, if any. Please specify.....

15. How Training effectiveness is evaluated in your company?

- Observation method
- Test-retest method
- Pre-post performance method
- Experiential control group method
- Training surveys
- Cost effectiveness analysis
- Other, If any. Please specify.....

16. Does your company benchmark?

- Yes
- No

17. If yes, to whom your company benchmarks?

- Local competitor
- Market leader
- Successful rival firms
- National and international big companies
- Worldwide best practitioners
- Other, if any. Please specify.....

18. In what of others your company benchmarks?

- Production process
- Marketing strategies
- Management expertise
- Cost structure
- Operation
- Other, if any. Please specify.....

19. Why your company benchmarks?

- To bring timely change
- To enhance efficiency
- To beat rivals
- To pirate others procedures
- To avoid cost of innovation
- Other, if any. Please specify.....

20. What are the major constraints in applying 'Cost Reduction Tool's' in your company?

- Lack of trained and competent personnel
- Lack of proper communication
- Lack of proper direction and co-ordination

- Un-necessary outside pressure
- Lack of resources
- Lack of understanding 'cost reduction tools'
- Above all
- If other, Please specify.....

21. Has there any improvement on sales in your organization, by implementing the "Cost Reduction Tools?"

- Yes, we have
- No, we don't have
- No change in sales by implementing the tools

22. Has there any improvement on productivity, by implementing the 'Cost Reduction Tools'?

- Yes, we have
- No, we don't have
- No change in productivity by implementing the tools

23. Has there any improvement on capacity utilization, by implementing the 'Cost Reduction Tools'?

- Yes, we have
- No, we don't have
- No, change in capacity utilization by implementing the tools

24. Did you get any improvement on profit, by applying 'Cost Reduction Tools'?

- Yes, we got
- No, we didn't get
- No change in profit by applying the tools

25. Has 'cost reduction tools' helped to upgrade management?

- Yes
- No

Thank you for your kind co-operation

APPENDIX II

1. Computation of Weight

i) LCM comes to 12 from 4, 3, 2, 1

ii) Weight of each breweries $X\frac{LCM}{\text{Re}\,spectiveNS}$

iii) value of each breweries = weight x No of sample

iv) Gorkha, Nepal, Sungold and Himalayan breweries are denoted by X_A, X_B X_C, X_D and Mechanisms are denoted by X_1, X_2, X_3, X_4 and X_5

Name of Co. / Mechanisms	X_A	X_B	X_C	X_D	T_r	X^2_A	X^2_B	X^2_C	X^2_D
JIT (X_1)	$X\frac{12}{4}X3\|1X3$	$X\frac{12}{3}X4\|0X0$	$X\frac{12}{2}X6\|0X0$	$X\frac{12}{1}X12\|0X0$	3	9	0	0	0
TQM (X_2)	$X\frac{12}{4}X3\|0X0$	$X\frac{12}{3}X4\|1X4$	$X\frac{12}{2}X6\|0X0$	$X\frac{12}{1}X12\|1X12$	16	0	16	0	144
ABM (X_3)	$X\frac{12}{4}X3\|1X3$	$X\frac{12}{3}X4\|1X4$	$X\frac{12}{2}X6\|1X6$	$X\frac{12}{1}X12\|0X0$	13	9	16	36	0
Training (X_4)	$X\frac{12}{4}X3\|1X3$	$X\frac{12}{3}X4\|1X4$	$X\frac{12}{2}X6\|1X6$	$X\frac{12}{1}X12\|0X0$	13	9	16	36	0
Benchmarking (X_5)	$X\frac{12}{4}X3\|1X3$	$X\frac{12}{3}X4\|1X4$	$X\frac{12}{2}X6\|0X0$	$X\frac{12}{1}X12\|1X12$	19	9	16	0	144
T_C	12	16	12	24	64	x_A^2 X36	x_B^2 X64	x_C^2 X12	x_D^2 X288

Where

MSC = Mean Sum of square of variable between different breweries

MSR = Mean Sum of Square of variable between different cost reduction tools

MSE = Mean Sum Square of variable due to error, In order to find MSC, MSR and MSE we need to find SSC, SSR, SST and SSE.

T = Grand total $T_C \text{ X } T_r \text{ X } 64 and N \text{ X } 20$

Correction factor (CF) $\text{X } X_A^2 \Gamma X_B^2 \Gamma X_C^2 \Gamma X_D^2$

$\text{X } 36 \Gamma 64 \Gamma 72 \Gamma 288$

$\text{X } 460$

Row Sum of square (RSS) $\text{X} \frac{T^2}{N} \text{X} \frac{64^2}{20} \text{X } 204.8$

SST = RSS - CF = 460 - 204.8 = 255.2

SSC $\text{X} \frac{T_C^2}{nr} \text{Z} CF$

$\text{X } \frac{12^2}{5} \Gamma \frac{16^2}{5} \Gamma \frac{12^2}{5} \Gamma \frac{24^2}{5} \text{ Z } 204.8$

$\text{X } \frac{144 \Gamma 256 \Gamma 144 \Gamma 576}{5} \text{ Z } 204.8$

$\text{X} \frac{1120}{5} \text{Z } 204.8 \text{ X } 224 \text{ Z } 204.8 \text{ X } 19.2$

SSR $\text{X} \frac{T_r^2}{nr} \text{Z} CF$

:. $\text{X } \frac{3^2}{4} \Gamma \frac{16^2}{4} \Gamma \frac{13^2}{4} \Gamma \frac{19}{4} \text{ Z } 204.8$

$\text{X} \frac{9 \Gamma 256 \Gamma 169 \Gamma 169 \Gamma 361}{4} \text{Z } 204.8$

$\text{X } 241 \text{Z } 204.8 \text{ X } 36.2$

SSE = SST – SSC – SSR = 255.2-19.2 - 36.2 = 199.2

TWO WAY ANOVA TABLE

Source of variation	Sum of square (ss)	Degree of freed or (fd)	Mean sum of square(mss)	F-Ratio
Due to column	SSC=19.2	C-1=4-1=3	$MSC = \frac{SSC}{C-1}$ $= \frac{19.2}{3} = 6.4$	$F_C = (3,12) = \frac{MSR}{MSE} = \frac{6.4}{16.6} = 0.3855$
Due to row factor	SSR=36.2	R-1=5-1=4	$MSR = \frac{SSR}{R-1}$ $= \frac{36}{9} = 4$	$F_R = (4,12) = \frac{MSR}{MSE} = \frac{9}{16.6} = 0.5421$
Due to error	SSE=199.2	(r-1),(c-1) (4x3)=12	$msr = \frac{SSE}{(r-1)(c-1)}$ $= \frac{199.2}{12} = 16.6$	

For breweries firm: - tabulated $f_{(0.05)}(3, 12) = 3.49$

For tools of cost reduction: - tabulation $f_{(0.05)}(4, 12) = 3.26$

THE END