CHAPTER 6
Cost effectiveness of Selected Three universities of Karnataka

Introduction:

Costing is a technique and process of ascertaining costs. This technique consists of principles and rules which govern the procedure of ascertaining the cost of products/services. The process of costing includes routines of ascertaining costs by historical or conventional costing, standard costing or marginal costing. Cost accounting is the classifying, recording, and appropriate allocation of expenditure for the determination of the costs of products or services, and for the presentation of suitably arranged data for purposes of control and guidance of management. It includes the ascertaining of the cost of every order, job, contract, process or 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 as may be appropriate. It deals with the cost of production, selling and distribution. It is thus, the provision of such expenditure as well 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 cost is constituted. (i.e. the value of material used, the amount of labour and other expenses incurred) so as to control and reduce its cost.

History and Development of Cost Accounting

The science of cost accounting is of recent origin which can be traced back to the beginning of 20th century. There are three systems of accounting. They are Cost Accounting Financial Accounting and Management Accounting. Financial accounting has its own limitations. Therefore new system of accounting called cost accounting came into existence to overcome these limitations to meet the growing needs of the modern industry specially to control cost, tracing policies and solving various other problems.
The large scale production technological advances growth in national and international trade competition are the main factors which diverted the attention of traders, manufacturers, and entrepreneurs to minute analysis of expenses and the need for their reduction. This brought about the field of accounting known as “Cost Accounting”

The primary purpose of accounting is to provide financial information relating to an economic / business activity. It is concerned with measuring, recording, and reporting financial information by the management to plan and control the activities of a business as well as by others who provide funds or who have various interests in the operations of an entity. The accounting system that provides the information to measure product costs and performance, and control the operations of a firm is called cost accounting (1).

Cost effectiveness is which gives good value when compared with the original cost. The advertising in the Sunday newspapers is very cost-effective. Cost effectiveness is being cost effective. One can calculate the cost effectiveness of air freight against shipping by sea. Costing is a calculation of the manufacturing costs and so the selling price of a product. Until the details of all the production expenditure costing cannot be calculated. Cost per click through is a method of pricing online advertising, based on the principle that the seller gets paid whenever a visitor clicks on an advertisement. Cost per Customer is a measure of cost effectiveness based on the cost per sale generated.

**Objectives of Cost Accounting.**

The primary objective of cost accounting is ascertainment of cost and its performance evaluation and decision making. Thus cost accounting

a) It is a process of accounting for costs

b) It records income and expenditure relating to production of goods and services
c) It provides statistical data on the basis of which future statistical data on the basis of which future estimates are prepared and quotations are submitted.
d) It is concerned with cost ascertainment and cost control.
e) It establishes budgets and standards so that actual cost may be compared to find out deviations or variances.
f) It involves the preparation of right information to the right person at the right time so that it may be helpful to the management for planning control & decision making (2).

**Service Costing**

Service costing is that form of operation costing which applies where standardized services are provided either by an undertaking or by a service cost centre within an undertaking. This method may also be used where service is not completely standardized but where it is convenient to regard it as such and to calculate average cost per period in relation to the standardized unit of measurement. Thus it is the cost of producing and maintaining a service. It is a method of costing applied to undertaking which provides service rather than production of commodities. The service to be cost could be

1. Transport Services: Tram ways, Railways, Bus
2. Supply Service: Gas Supply, Electricity Supply
3. Welfare Supplies: Hospital, Canteen, Libraries
4. Municipal Service: Street lighting, Road maintenance.

**Scope and use of Cost Accounting**

A service sector having a proper cost accounting system will help the management in the following ways:

1. The analysis of profitability of individual products services or jobs
2. The analysis of profitability of different departments or operations
3. The analysis of cost behavior of various items of expenditure in the organization. This will help in future cost estimation with reasonable accuracies.

4. It will assist in setting the prices so as to cover costs and generate an acceptable level of profit.

5. It locates differences between actual results and expected results. Such differences can be also traced to the individual cost centre with the efficient cost system.

6. The effect on profits of increase or decrease in output or shut down of a product line or department can be analyzed with by adoption of efficient cost accounting system.

7. The costing records serve to analyses the final accounts of a company i.e. the manufacturing, Trading and Profit and Loss Accounts in such a way as to give a detailed explanation of the sources of profit or loss.

8. Cost Accounting data generally serves as a base to which the tools and techniques of management accounting can be applied to make it more purposeful and management oriented.

9. The cost ascertainment, allocation, distribution, can be efficiently made under efficient costing system.

10. Cost records are the base for the management information systems.

11. The cost system generates regular performance statements which management need for control purposes.

12. Cost accounting system not only applicable to manufacturing organizations or functions but also extended to service organizations, functions.

13. Cost comparisons between different departments, machines and alternative processes help management to maintain maximum efficiency is possible with the adoption of efficient costing system. In view of the above it is said that cost accounting is a system of foresight and not a
post mortem examination, it turns losses into profits, speeds up activities and eliminate wastes and losses (3).

Cost Accounting has spread in many spheres of trade and business. Its benefit is reflected in the finality. On the basis of the profit or benefit derived from one or the other transaction, the future of the said trade depends.

**Cost Unit**

A cost unit is a unit of product or unit of service to which costs are ascertained by means of allocation apportionment and absorption. The selection of cost unit is important in cost accounting system. Since costing is measuring the unit of measurement must be clearly defined and selected before the process of cost finding can be stated. For example in cotton spinning mill cost may be calculated in terms of a meter; in brick kiln cost may be calculated in terms of a thousand bricks, etc. The main purpose of cost accounting is the accumulation of costs and the sub divisions in order to allocate the same to the selected cost units or cost centres; and this will enable one to know the total cost. The cost is to be ascertained in terms of cost unit or cost centre. The cost ascertainment necessitates the determination of a unit in terms of which costs can be ascertained or expressed.

**Cost Concepts**

The clear understanding of various cost concepts is essential for the study and evaluation of cost effectiveness in library consortia. In fact cost has different meanings under different circumstances.

Cost may be defined as the amount of expenditure (actual or notional) incurred on or attributable to a given thing. To ascertain the cost of a given thing. Cost represents the resources that have been or must be sacrificed to attain a particular objective. Sacrifice may be direct or indirect (4).

Cost effectiveness depends on the price paid for getting the benefit or achieving the given objective. The term cost may be referred in business in a
typical manner. The cost benefit analysis can be made fewer than three common models

1. Return on investment
2. Present value Analysis
3. Payback period basis

Return on Investment Models determines the amount of profit or returns. A product or service provides and compares this figure to its cost. Present value analysis models compare the cost of the product or service to its future estimated annual rate of return. Payback period models look at how long it will take before the profit or return pays for the cost of the product or service and compares this time period to the estimated life of the product or service. In the case of consortia these three models cannot be applied since it is a non-profit making organization. The benefits cannot be estimated merely in terms of money value. However compared to the print media the cost effectiveness will be assessed on the basis of downloads and the use of the databases in a particular year (5)

Cost Effectiveness Analysis

It is a technique that attempts to set out and evaluate the costs and social benefits of investment project to evaluate it or to decide whether or not a project should be undertaken or to derive maximum benefits from optimum utilization of limited resources.

Cost Benefit Analysis is defined as “Systematic comparison between the cost of carrying out a service of activity the value of that service or activity quantified as far as practicable, all costs and benefits (direct and indirect, financial and social) being taken into account” (6) It is also defined as, “The measurement of the positive effect on an operation that can be attributed to a particular cost” (7)
Need for Cost Benefit Analysis

The investment made in the transaction has to return some or more profit to the entrepreneur in order to run a programme. Such a benefit oriented programme can hold good in the long run. In service oriented programme cost benefit analysis is not the monetary benefit which is taken into account whereas the maximum utilization of the services provided. The library being a unit or origination for the service where the users gain the knowledge by reading information and enrich their wisdom which in turn will help in getting their cherished goals. The services provided for in a given set up shall derive benefit in terms of effectiveness. Hence the need for cost benefit analysis.

The essence of Cost Benefit Analysis includes the following

- Maximizing the level of Performance (at output stage/ end result) through optimum utilization of resources (i.e. minimize the costs as far as practicable involved in achieving the level / target)
- Ascertaining if any particular alternative has benefits exceeding its cost
- Improving service standards
- Facilitates self-evaluation and self-actualization etc. (8)

Method of Cost Benefit Analysis

As every analysis has a base to arrive at a befitting conclusion or inference. The cost benefit analysis too has a method to conduct can be explained as under:

- Cost savings in using this system as compared with the cost of finding the needed information elsewhere.
• Avoidance of loss of productivity that would result if information sources were not readily available.

• Improved decision making or reduction in the level of personnel required to take decisions.

• Avoidance of duplication or waste of research that has either been drawn before or proved unfeasible by earlier investigators

• Stimulation of invention;

• Measuring the benefits of information services in terms of income or benefit (i.e. calculate return on investment) (9)

Cost Effectiveness Analysis (CEA) is a comparative analysis of the costs and effectiveness of alternative interventions or services. In the library environment this could be in areas as diverse as competing methods of providing training or the use of different databases for information retrieval. Standard techniques and methods associated with evaluating the effectiveness of any service are used for the basic Cost Effectiveness Analysis, besides it also adds the costs associated with the provision of these services into the mix.

The theoretical foundations of cost–benefit analysis are well established, although practitioner should not pretend that all the problems are resolved. Essentially, Cost-Benefit Analysis compares the gains and losses associated with an investment project or with a policy, e.g. the setting of an environmental standard. A gain and loss are defined in terms of increments and decrements of human wellbeing and, in turn, these are measured as: individuals’ willingness to pay for a gain or willingness to pay to avoid a loss; or individuals’ willingness to accept compensation to tolerate a loss or to go without a benefit. These willingness-to-pay and willingness-to-accept concepts correspond to the measures of consumer surplus (10)
Importance of Cost Benefit Analysis

As indicated above, Cost-Benefit Analysis is a procedure for evaluating the social worth of investment projects, programmes, and policies. Its essential features can be listed as follows.

1. A benefit is defined as any gain in human wellbeing ‘welfare’ or ‘utility’ and a cost is defined as any loss in wellbeing.
2. A gain in wellbeing, i.e. a benefit, is measured by how much an individual is willing to pay to secure that gain, or how much they are willing to accept in compensation to forgo that gain.
3. A loss in wellbeing, i.e. a cost, is measured by how much an individual is willing to accept to tolerate the loss, or how much they are willing to pay to prevent the loss.
4. Willing to pay and willing to accept are measures of human preference. That human preferences should count and be ‘sovereign’ is the fundamental value judgment in Cost-Benefit Analysis. There is no social entity over and above the individual, so that ‘society’ is always the aggregation of individuals.
5. If benefits exceed costs, the project or policy is potentially worthwhile: potentially, because there may be many such projects and policies and there is always a limited budget. Hence those projects and policies passing the initial benefit cost test must be ranked in order of preference. This will usually be done by benefit–cost ratios, working down the list until the budget is exhausted.
6. Benefits and costs stretch out over time. Since individuals tend to prefer the present to the future, and since human preferences are paramount, this ‘present orientation’ has to be accounted for. Future benefits and costs are therefore discounted at some ‘discount rate’. The resulting sums are ‘present values’, i.e. sums of discounted benefits and costs, and
the benefit–cost rule becomes that the present value of benefits must exceed the present value of costs. (11)

Challenges of Cost Benefit Analysis

Though the cost benefit analysis tries to define the notional cost benefit ratio that a user may derive by the service, it falls short of explaining the reasons and the factors that hindered for less use of any source of information or getting a particular service. The said factors have been explained in the following manner

Ambiguity and Uncertainty Identifying and Quantifying Costs and Benefits

There is an ambiguity and uncertainty involved in quantifying and assigning a monetary value to intangible items leads to an inaccurate cost benefit analysis. These two tendencies lead to inaccurate analyses, which can lead to increased risk and inefficient decision-making. In addition to this a cost benefit analysis requires that all costs and benefits be identified and appropriately quantified. Unfortunately, human error often results in common cost benefit analysis errors such as accidentally omitting certain costs and benefits due to the inability to forecast indirect causal relationships.

Increased Subjectivity for Intangible Costs and Benefits

One more disadvantage is the cost benefit analysis is the amount of subjectivity involved when identifying and estimating different costs and benefits. Since some costs and benefits are non-monetary in nature, such as increases in customer and employee satisfaction, they often require one to subjectively assign a monetary value for purposes of weighing the total costs compared to overall financial benefits of a particular endeavor. This estimation
and forecasting is often based on past experiences and expectations, which can often be biased. These subjective measures further result in an inaccurate and misleading cost benefit analysis.

**Inaccurate Calculations of Present Value Resulting in Misleading Analyses**

Since this evaluation method estimates the costs and benefits for a project over a period of time, it is necessary to calculate the present value. This equalizes all present and future costs and benefits by evaluating all items in terms of present-day values, which eliminates the need to account for inflation or speculative financial gains. A cost benefit analysis template has been developed to help reduce the likelihood of incorrectly calculating the present value of costs and benefits, and it is available for download in the Project Management Media Gallery.

**A Cost Benefit Analysis Might Turn in to a Project Budget**

Yet another defect is seen when utilizing a cost benefit analysis is the possibility that the evaluative mechanism turns into a proposed budget. When a project manager puts together a cost benefit analysis and presents it to a leadership team, the leadership team might view the expected costs as actual rather than estimation, which may lead to misappropriating costs and setting unrealistic goals when approving and implementing a project budget. This can put a project manager in an unfavorable situation when he or she attempts to control costs in order to maintain the expected profit margin.

**Cases where cost effectiveness analysis is done**

Cost effectiveness analysis is a concept which is applicable in many areas. The very form and structure of this concept is notional. It is used when there is a question of investment is made from one end and users can be manifold. Hence the proper use of the material purchased is determined by its beneficial cost effectiveness.
In Clinical trials evaluating medicines, medical devices, and procedures now commonly assess economic value of these interventions

- Interest groups may attempt to include or exclude significant costs from an analysis to influence the outcome.(12)

- In health economics, some analysts think cost–benefit analysis can be an inadequate measure because willingness-to-pay methods of determining the value of human life can be influenced by income level.

- In environmental and occupational health regulation, it has been argued that if modern cost-benefit analyses had been applied prospectively to decisions(13)

- The cost effective analysis is also done in cases where maximum users go for utilization of a service or a commodity where the cost of the product or service remains to be same and it leads to benefit.

- At the same similar attitude is applied where common place is being shared by the different groups for number of times the cost benefit analysis is done.(14)

- The economics and commerce makes use of such analysis is to identify the maximum benefit of use of a commodity which also takes into account the law of diminishing marginal utility.

- The cost effectiveness is a common phenomenon where use of information by several users at the same for cost

- Cost effective analysis is done in cases where health and environments and the commerce which common features affecting quite a number of beneficiaries.

- The cost effective analysis is also used in physical exercises whereas the instruction too is given to a large public which is demonstrated at a time (15).
**Duration of study**

The study is done during the period of 2004 to 2009 and the usage of UGC – INFONET e - journals consortium facilities and the cost effectiveness with regards to e – journals usage data in the three libraries of Bangalore University, Karnatak University, and Gulbarga University. Since the accounts are yet to undergo audit and the compliance of the audit procedure the data with regard to the investment and downloads cannot be taken into account for analysis. Hence only the data of the said period from 2004 to 2009 is taken into account for my study.

**Steps in Cost-Effectiveness and Cost-Benefit Analysis**

The analysis without the frame work is a futile. Hence the frame work of the analysis of the available data was made ready in the following steps

1. **The framework for the analysis**
   
   As discussed throughout the study that the framework of analysis was designed to cost effectiveness of UGC-INFONET E journals’ Consortium. The Total utilization of the consortium by the users of the three selected universities was brought under the frame work of the analysis

2. **Recognized the users whose costs and benefits should be taken into account**
   
   The users who had accessed information through internet by consortium in the form of downloads in a year were recognized for the analysis. This data was made available by the INFLIBNET- INFONET

3. **Costs and benefits were identified**
   
   Similarly the price of the publishers as paid by the UGC INFONET was taken into consideration for calculation. This was converted as per the conversion of currency at the existing rates.

4. **Costs and benefits over the utility programme were projected**
After finding the actual prince in terms of Indian currency, it was put for simplification in terms of member universities of consortium programme. Then after finding the cost per university it was subjected to simplification by the number of downloads.

5. Costs were monetized

The cost benefit ratio which comes out as the final figure is taken for effectiveness wherein the cost benefit ratio that exceeds the investment ratio is taken as beneficial. The downloads or accessing of information from such a publisher is inferred as beneficial. In the below given tables that are taken for analysis the figure shown more than 1.00 has been considered as beneficial whereas the cost benefit ratio which is less than 1.00 infers that the benefit is less than the cost incurred in the knowledge imparting.(15)