

Unit-12: Budgeting and Types

12.0 : Objectives

After reading this Unit, you will be able to:

- know the sources of finance for libraries;
- learn the various types of budgets and financial plans;
- formulate the budget proposal keeping in view both budgeting aspects and functions of a library;
- calculate the financial requirements using methods of financial estimation; and
- confirm the actual expenditure to the budget in a library.

12.1 : Introduction

Libraries and information Centres are essentially non-profit making service organisations, attached to one institution or another. Previously, their financial plans were part of the general budget, and as such the library staffs were exempted from preparing their budgets. However, with the recognition of the fact that a budget was both a financial plan as well as a control mechanism, it has become essential for librarians to prepare library budgets. To begin with, the budgets generally reflected

objects of expenditure such as, salaries, documents, etc. It was more an "On what budget". The purpose of the expenditure was a secondary consideration, and sometimes, it did not find a place in the budgetary statement. But, with the growing concern of costs, there developed a tendency to either reduce expenditure or to justify what was being spent. In this situation, the library was hard hit and was subjected to frequent budget cuts, as it was considered essentially a non-profit making, unit. This put a considerable pressure on librarians to justify the expenditure incurred on the libraries. It was surprising that they came out with plans which justified effectively the expenditures, which made Townsend remark, "A tight budget brings out the best creative instincts in man. Give him unlimited funds and he won't come up with the best way to result. Man is a complicating animal; he only simplifies under pressure. Put him under some financial pressure - then he will come up with a plan which, to his own private amazement, is not only less expensive, but also faster and better than his original proposal which you sent back".

Thus, it is necessary that librarians become familiar with the principles and practice of financial management. These would include problems of acquisition, distribution/allocation, and utilisation of financial resources. Some of the functions that a librarian has to perform would be determining financial requirements, budgeting the

various activities and programmes, managing the funds allotted appropriately and accounting for the same.

12.2 : Sources of Finance for Libraries

Libraries require finance on a continual basis for organising their activities, programmes and services. Depending on the type of library, the sources of finance are different. The following table gives, in general, the sources of funds for different libraries;

Table 12.1 : Sources of Funds for Academic, Special and Public Libraries

<i>Academic Libraries</i>	<i>Special Libraries</i>	<i>Public Libraries</i>
• University/College/ School budget • U.G.C. Grants • Governmental grants • Student Fees, including library fees • Fines • Sale of publications • Fees for documentation your a reprographic services • Endowments, Gifts, donations, etc • Miscellaneous Sources	• Funds from their respective parental organisation • Funds allocated to projects • Donor/ funding agencies like IDRC, UNESCO, etc. at international level • Endowments • Sale of publications • Fees charged for information/ translation/reprographic services • Membership subscriptions • Miscellaneous sources	• Library cess • Library Subscription • Governmental grant • Endowment -private and public • Miscellaneous sources

At this juncture, it may be mentioned that there is no consensus among the people concerned whether subscriptions and/or charges should be levied at all. Ranganathan, the librarian *par excellence*, for one was opposed to this idea as he favoured a free service, especially for public libraries, all his life. On the other hand, with increasing concern for costs and emphasis on self-sufficiency in recent times, this position needs to be re-examined. However, while such cost-recovery programmes may be workable in developed countries, it would not be so in developing countries like India. This is because of the fact that the users, in developing countries, cannot afford to pay fees for services rendered by libraries.

12.5 : Budget Justification

While a review of past expenditure, use of library statistics, and standards may be useful in estimating the different items of expenditure in a budget, they may not, by themselves, help much in justifying the budget. Therefore, the librarians or information scientists must put in some special effort in this regard. This effort may be in the form of data/information collection, or choosing a particular method of budget construction which will also aid in justifying it or adopting certain tactics.

12.5.1 : Data/Information Collection

Quantification facilitates justification to a certain extent. Hence, it is suggested that all activities amenable to quantification may be quantified. An increase in document circulation or of reference questions answered or of retrospective bibliographies, state-of-art reports compiled, etc., may be documented for future use at the time of budgeting. The data collected should be graphically presented for maximum impact. One precaution that needs to be taken is that whatever is presented graphically or otherwise has to be precise and concise, apart from being simple. A well-presented graph saves a lot of words.

Secondly, it will be a good practice to maintain a file containing testimonials of appreciation from users who have benefited by the library and information services. Comments from the clientele regarding inadequacy or lacunae in collection, services, etc., or suggestions for improvement needs to be recorded as these would stand in good stead when additional funds for collection development or for instituting new services are requested. In addition, information regarding various types of On-demand services undertaken by the library or information centre (in response to specific queries from users) with the feedback received from the users should be collected and maintained for future use.

If programmed budgeting, especially PPBS, has been the method adopted for budget construction, performance figures regarding the various operational and service activities would be available. These may come in handy at the time of justification.

12.5.2 : Method Adopted in Budgeting

In developing a financial plan for a library/information centre, the librarian should be aware that all he asks for, will not be sanctioned inspite of the fact that the budget might have been constructed on the basis of sound reasoning. Therefore, a technique that can be followed with successful results is to develop a multi-tier budget. In this method, a

minimum core level of service without which the institution cannot survive should be developed with corresponding costs. Then, several tiers indicating new programs and services with corresponding benefits should be developed with the necessary cost figures. After this exercise is gone through, the librarian should present its multi-tier budget indicating his preference of a particular tier. A word of caution here-do not be over-ambitious to recommend the top-most tier. It will be turned down much to the disappointment of the librarian. Hence, the librarian should indicate one of the tiers other than the top tier to give the impression to the management that he is rejecting some higher priced alternatives.

Another technique that can be fruitfully utilised is to calculate the amount required to run the present level of service and then compare it with the proposed budget which would include new programmes and services. This comparison would show that the increase in funds asked for, is more for continuing the present level of service than the starting of new services. Inflation may account for a substantial increase in funds accompanied by price increases of books and periodical

subscriptions. If, however, the management persists in not providing additional funds, one can tell them that no increase in budgetary funds would result in decrease in library and information services. This is because the fixed costs like salaries cannot be reduced (as a matter of fact, the fixed costs increase due to increments and other allowances to be given to the existing staff) and consequently the variable costs like book costs, periodical subscriptions, etc. would have to be reduced. Hence, it is hoped that such a comparison would convince the management in releasing the necessary funds.

12.5.3 : Other Tactics

The other tactics that can be adopted by the librarian and would help him indirectly in his quest for funds are:

- a) Inclusion of management and senior personnel in library committees;
- b) To charge other institutions who make use of the services;
- c) Maintain good relations with the finance section as this would facilitate obtaining financial information easily. In addition, financial personnel can be useful in the formulation of the library budget;
- d) Assess the financial climate of your organisation before you make demands;
- e) It will be a wise policy to adhere to the budget as far as possible. This would be a plus point as far as the management is concerned; and
- f) Speak to the financial management the language they understand. Therefore, in budgeting demonstrate to them that you have financial sense.

12.6 : Conclusion

From the foregoing account, it is clear that no administrative problem is more basic than the preparation of an appropriate budget for the operation of library or information centre. But, for budgeting to be

successful it should indicate all the details relating to the expenditure incurred in a library. For this, it becomes necessary for librarians to develop a certain degree of competence in order to justify their financial demands. The problem does not stop there as they have to exercise a lot of constraint and discipline to conform to the actual expenditures incurred to the budgeting statement prepared earlier. Of course, it goes without saying that the final correlation between the budget and the actual financial statement at the end of the year would depend upon "the validity of the data used in the construction of the original budget, the knowledge, experience and luck of the librarian in the manipulation of the data and forecasting the future, and finally, the discipline exercised by or on, the library manager in making the actual expenditure conform to the budget"

12.7 : Summary

In this Unit, you were introduced to the concepts pertaining to financial planning. Terminology concerned with budgeting has been explained in detail. In addition, different methods of financial estimation - Per capita method, Cost of addition method, Method of details, Method of proportions, Programmed Budgeting (PPBS, ZBB) and Budget justification procedures have been highlighted.

Unit-13: Budgeting Control System

13.0 : Objectives

After reading this Unit, you will be able to understand:

- what a budgetary control system is;
- why is it needed;
- how it operates in information centres;
- what are its advantages and limitations; and
- the circumstances under which the budgetary control system has to operate in service oriented and not-for-profit organisations and the characteristics of a flexible budgetary system.

13.1 : Introduction

In the preceding Unit you have learnt about the budgeting process and various types of budgets for an information centre. Further, you are now also familiar with different monitoring and evaluation techniques of the systems analysis (Block-2) and you know that controlling is one of the management functions (Unit 2, Block 1). In this Unit you will learn what a budgetary control system is, and why it is required in information centres, how is it operated and what are its advantages and disadvantages. Preparing a budget as well as setting up of a budgetary control system for an information centre depend on cost analysis and costing techniques which you are going to study in the succeeding Units of this block. In other words, this Unit and the succeeding two Units deal with the last phase of financial management, namely, financial control and accounting.

13.2 : Budgetary Control System

Budgeting is a planning process in which expenditure and revenue of the organisation over a specific time period are accounted for. Budget' is a plan document and a financial statement which provides details of the proposed revenues and their utilisation for

expenditure for a specific period, usually an year. It is a means of check and control on what money should have been received and how they are to be spent. Budgeting need not be just confined to money. It can be expressed both in financial and non-financial terms. But it is a practice (and it is the strength of the budget) that it is expressed with a common denominator called Rupee. Hence, the budgeting is the process of quantifying all the plans of an operation to determine whether they will achieve the desired results, and to adjust accordingly, where ever they fall short of achieving the desired results. Budget is a quantitative expression of a plan of action, a tool in the hands of an information centre manager, a road map to guide management actions towards the destination, and a tracking device to measure progress, highlight variations from the plan and show the need for corrective actions to put the operation back on track. In other words, budget aids orderly and progressive planning, coordination and implementation, serves as an instrument of financial control, and a device for evaluating results. Nobody has the luxury of working without financial restrictions. Nobody gets money without justifying its requirements. Above all, one should be prepared to face both sudden windfalls as well as severe cuts in budgets. Budgetary control system is an example of a system (particularly, the monetary and evaluation techniques of system analysis) as well as a widely recognized control function of the management.

A control system is a system whose purpose is to maintain a desired state or condition. It consists of four elements: i) a measuring device called *detector*, ii) a device for assessing the significance of what is happening by comparing with a standard or expectation i.e., *selector*, iii) a device for altering behaviour (if needed) called *effector*, iv) a means of communication among devices. Unlike biological and physical control systems which are quite simple, control systems in organisations are more complicated. Strategic planning, operational control and management control are the three broad categories of planning and control activities in organisations. "Management control is the process by which managers assure that resources are obtained and used effectively and efficiently in the accomplishment of the organisations".

In more simple terms, control, as one of the important functions of management, aims at highlighting the variations between the standards set and performance and then to take necessary steps to prevent the occurrence of such variations in future. Control is the process through which managers assure that actual activities conform to planned activities and it involves - i) identifying and establishing standards for key result areas, ii) measuring and comparing actual results against standards and iii) taking corrective actions.

Budgetary control is one of the oldest and traditional control techniques used by

managers. Budgetary control is the process of comparing, what was planned with what has been accomplished, during the budget period. It is not a past-oriented or post-action control but a future-oriented control system. It is not a post-mortem type assessment but a continuous examination of the progress made and comparing it with the cost standards and time lapsed so that the manager is able to make adjustments in the operation on a day-to-day, week-to-week, or month-to-month basis for rest of the period of the budget.

Some important sources of finance for an information centre include: i) regular and ad hoc grants from parent organisation and/or governments, ii) ad hoc grants or subsidies from endowments and other agencies interested in this promotion of information dissemination, and iii) revenues earned in the form of fines, fees and service charges. Important heads of expenditure of information centre are: i) collection building and updating (books, journals, reports, etc.), ii) binding and other maintenance costs, iii) furniture and equipment, iv) building, v) salaries and wages, vi) stationery, postage, etc. Depending on the size of the information centre and nature of its parent organisation, the complexity of budget and budgetary control system may vary from a simple fairly fixed (constant) voted grant of budget for books, journals from parent organisation and other reading materials to a most complex situation where grants are received from parent institution and other agencies in addition to certain revenues earned. These sources of finance may have several restrictions in their deployment. Allocation has to be done to all heads as explained above and by type of material (i.e., books, journals, reports, etc.), subjects, or departments and so on. An "effective budgeting can display endless variety". The parent institution normally decides the budgeting method used by an information centre.

13.3.; Need for Budgetary Control System

Having known what a budgetary control system is, let us try to understand the need for budgetary control system. We have already noted that a control system is required to measure progress made towards attainment of goals stated in plans, to uncover deviations, if any, to indicate corrective actions and to affect corrections to the organisation before the deviations become serious. As budget is only a futuristic plan, how far the actual operations of the information centre have conformed to the budgeted programme will be known only after completion of the budgeted period (i.e., financial year). Knowing post-facto how much deviation or underspending or ineffective utilization of resources has taken place is, like discussing the ways of avoiding an accident after the accident has occurred. Hence, continuously monitoring the operations to examine how the operations

are carried out, whether there are any deviations, the causes for deviations and ways to rectify deviations within a week or a month will be of immense help. Though a budget is prepared once in a year, the budgetary control process is a day-to-day, week-to-week, fortnight-to-fortnight, month-to-month and quarterly-to-quarterly activity for a check on all revenues and expenditures budgeted and stated before hand. Continuous review of the situation is done taking into account the actual as well as committed expenditure till date so that the goals are reached by the end of the year rather than leaving it to chance.

13.4 : Budgeting and Budgetary Control in Service-Oriented

Information centres are paternalistic, service-oriented and not-for-profit organisations. Budgeting and budgetary control in such organisations are more important than in profit-oriented organisations. The operating manager of profit-oriented organisation can safely be allowed to modify plans provided that the revision plan promises to increase profits. In other words, budgeting becomes the most important part of management control where the annual revenue is almost fixed. As such, operating managers of such institutions are expected to strictly adhere to plans as expressed in the budget.

Money management in service-oriented and not-for-profit organisation involves systematic planning, getting funds, judicious spending of funds and meticulous accounting. There are certain difficulties in budgetary control of service-oriented and not-for-profit organisations. The characteristics of such institutions and the difficulties in budgetary control are discussed below. The problem becomes acute if budgets of such institutions are not planned as part of planning of parent body, and if they worry more about accounting than planning.

13.4.1: Characteristics of Service-Oriented and Not-for-Profit

- i) Compared to profit-oriented organisations, service-oriented and not-for-profit organisations will not have *inventory* and if there are any resources available for sale, they are essentially fixed assets. In other words, services cannot be stored and if they are not sold, the revenue from those unsold services are lost for ever.
- ii) Such organisations are normally *labour intensive* organisations.
- iii) There will be dominance of professionals in service-oriented and not-for-profit organisations.
- iv) They exist primarily to render a service and hence tend to be service organisations. There will be difficulty in measuring the quantity and quality of services. The success of these organisations is measured primarily by how much service and how

well they render it. In other words, their success should be measured by how much they contribute to the public welfare.

- v) The quality of service cannot be inspected and measured in advance i.e., before rendering the service.
- vi) In view of (iv) and (v) above, there appears to be lack of a profit measure. Generally there is no single criterion to measure success of such organisations. Multiple objectives, lack of relation between cost and benefits, and difficulties in measuring performance and comparing performance of different units of the same organisation, are some peculiarities of such organisations.
- vii) Market forces play a less significant role in service-oriented and not-for-profit organisations.
- viii) Due to lack of shareholders, there appears to be differences in ownership and power. Consequently there is a tendency for service-oriented and not-forprofit organisations to be political organisations.
- ix) Historically, the cost accounting and other control techniques were developed for manufacturing (i.e., profit-oriented) companies, and hence less applicable to service oriented and not-for-profit organisations. Further, inadequate management control has become a tradition in such institutions.
- x) Lastly, most of the service organisations are relatively smaller and operate on a single location.

13.4.2 Problems of Output Measurement

Apart from other disadvantages of budgetary control system (to be discussed later), the absence of profit measure is quite typical to service-oriented and not-for-profit organisations. "The absence of a single, satisfactory and overall measure of performance that is comparable to the profit measure is the most serious management control problem in a not-for-profit organisation".

Since service-oriented and not-for-profit organisations have multiple goals and these goals usually cannot be expressed in quantitative terms, often there is no clear cut objective function that can in turn be used in analysing proposed alternative courses of action. Secondly, there is no plausible way of estimating the relationship between inputs and outputs. There appears to be no direct relationship between costs and benefits. There is a clear difficulty in measuring the performance of service-oriented and not-for-profit

organisations. Further, due to dissimilar functions, the organisational units cannot be compared in service-oriented and not-for-profit organisations.

Profit-oriented organisations measure their output by the amount of revenue earned based on prices charged for goods and services sold. For individual profit centres, revenue is measured by transfer prices. Service-oriented and not-for-profit organisations either should; device similar monetary measures of output or rely on non-monetary measures.

Information centres have not given adequate attention to their pricing policies. It is not relevant here to discuss or debate on the merits and demerits of charging for information services. If charges are introduced on information services and suitable pricing policies are developed, it becomes easy to measure the efficiency and effectiveness of information centre and its responsibility as a cost centre. The general rule should be that prices are equal to full cost (Full cost pricing). If price exceeds its cost, the information centre becomes profit-oriented organisations. If the price is below full cost, it results in misallocation of resources in the economy. Secondly, "the smaller and more specified the unit of service that is priced, the better the basis for decisions about the allocation of resources and more accurate the measure of output for management control purposes", provided the cost of paper work does not outweigh the benefits and the pricing policy is consistent with the overall policy of the organisation. The management control process is further facilitated if price is set prior to the performance of the service (prospective pricing). The transfer pricing concept should be adopted to measure the output of any responsibility/cost centre within the information centre. .

The non-monetary output measures could be classified in many ways. They can be subjective or objective, discrete or scalar, quantitative or qualitative. Generally, there are three important categories of non-monetary output measures. They are identified based on what they intend to measure.

- i) *Result measures:* A result measure tries to express output in terms that are supposedly related to an organisation's objectives. It is an ends-oriented, surrogate or proxy measure and tells directly the impact of the organisation on the outside world.
- ii) *Process measures:* A process measure which is means-oriented relates to an activity carried on by the organisation, and measures the output of a responsibility centre or an individual. There is an implicit assumption that, what the responsibility centre does is congruent to the objectives of the organisation. Process measures, measure

efficiency but not effectiveness, and are most useful to measure current and short term performance.

- iii) *Social indicators:* A social indicator is only a rough indicator of accomplishment of an organisation and is affected by any uncontrolled extraneous factors. Social indicators take into account the result of the work of the organisation and they are useful for long-range analysis of strategic problems. They are nebulous, difficult to obtain on a current basis, little affected by current programme effort and susceptible to external influences and hence of little value in day-to-day management.

Lastly, inputs themselves are used as proxy output measures with the assumption that inputs are often a better measure of output than no measure at all. The classical example is, the money spent on research projects is used as proxy output measure. One should be careful and as far as possible, avoid reliance on such measures.

13.5 : Budgetary Control Process in Information Centres

The three basic steps in the control process are establishing standards, comparing results with standards and taking corrective action. Preparation of budgets is nothing but establishing cost standard. This process begins with top management setting goals and objectives and the lower level managers developing budgets for their units and the same successively reviewed and integrated at each higher level.

The starting point for budgetary control process in information centres is the income derived from known funding sources. In other words, the process of budgeting and budgetary control starts with estimating the amount of revenue that the information centre is likely to receive for operating purpose for the year. The next step is to budget expenses that equal this amount of revenue. Unlike profit-oriented organisations where budget for marketing expenses can influence the amount of revenue, the service-oriented and not-for-profit organisations should have a different kind of simple matching of revenue and expenses. The expenses planned should be approximately equal to the revenue. If budgeted expenses are lower than the expected revenue then the quantity of service cannot be provided to those who have provided revenue and have a right to expect service. If budgeted expenses are in excess of revenue then it may lead to undesirable actions of drawing down endowment or other capital funds that are intended to provide services to future generations. The prudent course of action usually is to reduce expenses rather than to anticipate that revenue can be increased.

As stated earlier, budgetary control process is a day-by-day, week-by-week, fortnight-by-fortnight, month-by-month, quarter-by-quarter, year-round process. Both revenue and expenditure have to be monitored as proposed in the budget document. Often, in practice, the budget document does not specify the exact dates on which the revenue and expenditure are incurred during the year. Based on the programme for the year and costing analysis, target for each period (week or fortnight or month) has to be fixed in advance. As the budget for library and information centre is essentially the expenditure-oriented budget, the expenditure has to be divided by subjects, by departments, by groups of users, by languages, by formats, by type of reading materials in case of collection development, and other usual heads like maintenance and service charges, equipment, furniture, building, wages and salaries etc.

Most of the practitioners are much concerned and are more serious about the phases of actual use of funds, accounting, auditing and financial control. This phase in itself involves allocation of funds as envisaged in the budget, encumbering funds under each head, fund accounting and financial audit. Allocation of funds might have been based on past practices and performances, differential publication rate and inflation rate, level of demand, actual use and the total programme of the information centre. Actual allocation could be by departments units, by subjects, by type of material, by users, by language or by format. Such an allocation of funds provides better control and more effective way to monitor funds and has the best chances to achieve a fair balance in development of programmes and services. However, a rigid allocation, particularly for collection development, may lead to difficulty in transferring funds from one account to another and consequently underspending in some cases may occur even when the other heads starve for funds. In addition to such ineffectiveness, approval, blanket and standing order plans as well as development of reference, general and special collections may not fit into any heads. Further, matching the needs and 'monies' available becomes complicated, time consuming and it may be difficult to develop models even after massive efforts. However, it may be noted that such formal allocation of funds may not be necessary in a small library.

In the weekly or monthly budget report, for each item of expenditure the total expenditure amount budgeted, the actual expenditure and the commitments (encumbering of funds) made both during the period as well as till the end of the week or month have to be shown. In addition, if the budget contains identification of foreign exchange (FE) component of the expenditure, the same should also be provided. Here, the actual expenditure refers to the expenditure amounts for goods and services received and for

which invoices or bills have been received and paid for. Normally the bill register of the information centre provides the actual expenditure. The total actual expenditure for a given week or month has to be broken down and distributed to various subjects, departments and other heads either manually or with the help of a computer. Committed expenditure refers to the outstanding expenditures for goods and services which have been ordered but not yet paid for. The goods or services may or may not have been received by the library. Usually, committed expenditures are worked out by maintaining a separate record regarding the value of orders released and these records have to be updated for adding information on new orders and deleting part or complete supply of items of outstanding orders. At times, the total expenditure till date is arrived at by adding the actual expenditure to that portion of committed expenditure which is expected to fructify during the financial year.

The most difficult task in budgetary control process in information centres is encumbering funds. Encumbering funds is a complex process that allows one to set aside 'monies' to pay for ordered items. The process of encumbering funds is difficult and complicated for various reasons. Firstly, it is common that there will be underspending and overspending in some heads. Secondly, there are some uncertainties about funds left unencumbered. Thirdly, there are uncertainties about supplies (delayed supplies and non-supplies). Information centres make several orders for documents under many heads in a given financial year and supplies are received continuously at non-fixed intervals. Generally there is no automatic cancellation of unbilled orders, and hence no discounts and handling charges of documents. Moreover, exchange rates for foreign currencies keep changing frequently causing variation in the value of funds encumbered. Lastly, moving 'monies' back and forth by encumbering and disencumbering in a manual system can lead to errors.

Statements relating to commitments and actual expenditure should be regularly checked and continuously reviewed to control the budget. Any anticipated increase in expenditure over and above the amount identified in the budget must be offset by a decrease in expenditure in that area during the rest of the period. Unexpected and inevitable increases should be absorbed by reallocation of funds from other heads with the approval of a competent authority. A model called corporate financial model should be designed incorporating budget and financial data to report on what has happened and to project what might happen assuming certain changes. Such reporting and budgetary control should cover the capital expenditures also.

In the actual practice of budgetary control system, operating statements have to be

prepared for each of the budget centres (or heads or items) involved. These statements should form part of the management information system (MIS) used to control the performance of information centre against the budget plan. A good budgetary control system should follow the theory of 'management by exception' and focus its attention on matters that are adverse or show an unusual favorable variance in addition to providing full details of budget statements. Though there are differences in the degree of details to be provided to management through budgetary control system, it may be better to breakdown the operating statements into 'controllable' and 'uncontrollable' variations. Each individual centre may decide on the frequency or interval at which data is best controlled. In practice, it may suffice to have monthly reporting in the beginning of a financial year and changing it to fortnightly during later part of the year. However, the unit heads may have data on daily or weekly basis throughout the year to facilitate operational control and the same need not be sent to the head of the information centre.

The purpose of fund accounting or financial accounting for not-for-profit organisation is to assure proper use of 'monies' provided and to make it possible to track expenditures. The major part of the fund in an information centre is operating fund. For fund accounting purposes it can be divided into two categories: i) restricted funds, and ii) unrestricted funds. Unrestricted funds allow flexibility in use of funds whereas restricted funds like grants for specific purposes cannot be used for purposes other than that specified. The cardinal principle of fund accounting is that every financial transaction is charged to some account and a record exists of what the transaction involved. Fund accounting system should allow for verification of the transactions and providing accurate report. Proper fund accounting by allowing one to know how much money is spent, how much is left and how much is encumbered or committed, aids the budgetary control process, and enables continuous checking and reviewing of the situation and examining the need for reallocation or reappropriation of funds.

Lastly, the financial audit part of the process enables meticulous but sample scrutiny of financial transactions to have proper control over irregular, inappropriate and wasteful expenditures. Information centres normally have post-audit by external/ central/statutory auditors, who usually look into loss of reading materials, irregularities in procurement processes and outstanding advance payments and supplies.

Budgetary control system often raises fear or apprehension among professionals who are responsible for the budgets. One may even develop skepticism or mistrust for having taken up measuring his or her performance based on standards. Head of the information centres may have to clear these doubts and fears by clarifying and emphasising that establishing budget, monitoring and controlling it are essential activities in the modern

management of library on information centre.

13.6 : Advantages and Limitations of Budgetary Control System

We have already seen the need for a budgetary control system. In this section let us know about the problems of the control process, the advantages and limitations of the budgetary control system.

Some of the basic limitations and problems of control system itself are as follows. A control system is normally designed to handle a certain magnitude of change or deviations and hence if there is dramatic change the control system may not be appropriate. Delays or time lags in providing feedback may slow down the adaptive process and increase the time required for control system to respond. If a control system fails to identify only deviations and exceptions and report it to appropriate persons, there could be a flood-of information on everybody's table causing sickening out of 'information overload'. If the standards themselves are erroneous, the whole purpose of control system is defeated. Workers concerned may perceive the control system as a tool to exert pressure on them and as an unwanted check on them.

13.6.1: Advantages of Budgetary Control System

It is necessary for a manager of an information centre to understand the strengths and weaknesses of budgetary system in general, and budgetary control system in particular, to enable him to use it as a proper tool of management.

- i) The greatest strength of budgeting lies in its use of Rupee language i.e., Use of a single common denominator for a great many diverse actions and things. It defines the objectives of an organisation as a whole and in financial terms.
- ii) Budget deals directly with efficiency which is the main concern of every organisation. It provides yardsticks to measure efficiency of various units of the organisation.
- iii) Budgeting the formal organisation should be clear, the department or unit should have clear financial responsibilities and accounts and planning should be highly specific and must be done well in advance. Further, budgeting may become the basis for long range planning. It promotes overall perspective, cooperation and team spirit the employees as it bri the employees as it brings together the activities of various divisions. Budgeting helps to have improved communication.

- iv) Budgetary control system reveals the extent by which actual results have varied from defined objectives.
- v) For having detected the deviations from the predetermined standards, it provides a guide for corrective action and hence minimises wastage and losses.
- vi) It facilitates centralized control with delegated responsibility,
- vii) Budget under various functional units indicates the limits for expenses and results to be achieved.
- viii) Since managers of different levels are involved in setting budgets, the organisation is bestowed with the collective wisdom.
- ix) Budgetary system helps managers to learn from past experience.

13.6.2: Limitations of Budgetary Control System

We have already seen some of the limitations of a control system. Now let us look at the limitations of a budgetary control system.

- i) Budgetary control system in service-oriented and not-for-profit organisations may lead to unhealthy emphasis on easily observable factors ignoring more important areas like services.
- ii) Budget and budgetary control systems tend to create internal conflicts and pressures among different departments or units.
- iii) Another limitation of budgetary control system is that by involving itself in a number game, it may treat symptoms rather than the basic problems. Reports of budgetary control do not and should not be expected to reveal the real cause of any difficulty.
- iv) Budgetary control system may open up the way for dictatorial behaviour on the part of the top management. This can be seen in setting standards, calling for an arbitrary cut in expenses, etc.
- v) In case of line item type budget, the organisation might go through the process of budgetary control without giving any real thought as to how the operations might be improved.

- vi) Budgetary control system tries tying everything to Rupees and ignores the quality of services and hence poses serious problems to service-oriented and not-for profit institutions like libraries and information centres.
- vii) A budgetary control system may sometimes become very cumbersome, time consuming and unduly expensive, and require additional efforts, costs and manpower to perform.
- viii) Inefficient employees may feel suspicious of budgetary control system that it is used to evaluate the results or consider it as a way of implementing cost reduction programmes and hence fail to cooperate wholeheartedly.
- ix) The process may become routine with complacency of paper work and little notice or action taken. As such budgets may not help in solving day-to-day problems of supervisors but help to analyze the past performance and projecting the possible future.
- x) Sometimes the budgetary control system may turn out to be ineffective if budget estimates turnout to be grossly inaccurate.
- xi) Budgets are mostly inflexible and rigid and do not respond to internal or external environmental changes. Budget standards may not be revised as frequently as required.
- xii) Budgets have a way of growing from precedent. An amount once spent becomes a floor for future budgets. In such situation a good manager is discouraged from taking initiative and undertaking new activities for which provision has not been made in the budget and a bad manager can hide his inefficiency behind the budget.
- xiii) Not all expenditures can be controlled by way of a budget. The actual expenditures may not differ much from budgeted expenditure but the department would have performed little constructive work.

13.7 : Flexible Budgetary Control

The budgets are, after all, estimates based on the result of intelligent judgments and hence are alterable. The budget is increasingly being used as a control device in both profit oriented as well as service-oriented and not-for-profit organisations. An information

centre, like any other enterprise, is a dynamic entity required to adjust to changing environmental factors and economic forces. As such the budget of an information centre should be self-adjusting to reflect the new conditions of operations. Such a self-adjusting budget is known as the flexible budget. It is a marginal approach to allocating resources and incorporates all the disadvantages and difficulties associated with marginal analysis. It is not a passive approach to budgeting and it justifies change provided the relationship of expenses is maintained rather than force a change in the composition of capital and labour to achieve a more efficient product curve (or level of production). Nevertheless, the flexible budget is one of the best control devices available to management. It is an effective tool, provided it does not attempt to measure radical changes from normal operating levels. In other words, budgets should not be rigid, but responsive to political and economic changes as well as changes in needs of the customers. They should be sufficiently flexible to meet rapid shifts in the needs. As actual conditions may not match with the conditions assumed while preparing a budget, there could be differences between actual costs and budgeted costs. To mitigate the situation, the flexible budgetary control is introduced in business. Flexible budgetary control may be less relevant to information centres which do not earn substantial revenue from their services. One of the basic principles of budgetary control is to fix responsibility to the manager for costs over which he control. If the variances in costs are due to factors on which he has no control, then to that extent he should be relieved from the responsibility. Such uncontrolled variances can occur due to variations in prices, volume, etc, flexible budgeting is thus extremely useful for getting behind the causes for variances.

13.8 : Summary

While budget is a financial statement which provides details of the proposed revenues and their utilisation for expenditure for a specific period, the budgetary control is the process of comparing what was planned with what has been accomplished during the period. A budgetary control system helps to measure the progress made towards goals, to uncover deviations, to initiate corrective actions, to know the causes for deviations and hence to avoid leaving things to happen as they happen. Information centres have certain peculiarities as service-oriented and not-for-profit organisations and hence implementation of budgetary control system in each institution is more difficult than in profit-oriented organisations. The major difficulty is the problem of measuring the outputs, in order to set standards for budgets.

The process of budgetary control system in an information centre starts with estimating the revenues expected for the year, followed by planning the expenses that equal revenues and then trying to prepare time schedule for both revenues (grants) and expenses with all the restrictions relating to allocation and use of funds with provision for reallocation. An operating statement with time targets is prepared by giving detailed breakup of revenues and expenses by departments, subjects, head of account etc., as required for monitoring the expenses. This statement is used as a monitoring tool to check the noticeable variations in the expenses. If variations are serious enough then they are suitably rectified either by adjusting in the subsequent periods or by reappropriation of funds from other heads.

Budget and budgetary control system have many merits like use of the Rupee as a common denominator, dealing directly with efficiency of the organisation, stimulating good management practices, detecting deviations, suggesting corrective actions, facilitating centralised control and availing collective wisdom of people involved. At the same time budgetary control system suffers from drawbacks like creating conflicts and pressures among departments, overemphasis on observable factors and number games, possibility of dictatorial behaviour of top management, ignoring the quality of services, possibility of becoming a cumbersome, time consuming and unduly expensive affair, creating suspicion among inefficient employees, complacency of paper work, leading to ineffectiveness where estimates are erroneous, not responding to environmental changes, etc. A relatively new flexible budgetary system is put forth as an alternative self-adjusting budget which takes into account changes in environmental factors and economic forces and does not hold a manager responsible, for variations due to changes on which he has no control.

Unit-14: Costing Techniques

14.0 : Objectives

After reading this Unit, you will be able to:

- understand what costing is;
- explain why costing is needed in libraries;
- enumerate the different types of costs involved;
- project the costing techniques commonly used; and
- explain how library operations/activities can be costed.

14.1 : Introduction

Libraries are no longer treated as part of the overhead or as a spending &pal talent which is granted a budget from centrally deployed resources. Rather, they have become 'cost centres'. Libraries like other institutions are supposed to achieve certain objectives within the set financial constraints and it is desirable that they operate as effectively as possible to achieve their objectives. The hard core of any system that aims at measuring and monitoring progress towards stated objectives is costing.

Anyone connected with the activities and services of libraries knows that library budgets are shrinking year after year. Of course, they do not do it willingly; they are compelled to do so due to the overall financial constraints of the organisation in which the library functions. Added to this problem is the frequent escalation of prices of publications, and other materials required by libraries. The librarian, therefore, faces a tough problem in securing adequate funds allocated for his/her library. Usually requests for funds that are supported by facts and convincing justification, fetch more favourable consideration by the authorities. These facts are usually based on costs of operating various library services and the benefits accrued to the organisation, or in other words a measure of cost-benefit. Apart from this, costing also helps in pricing the information services and products. Therefore, it would be of great help for the LIS professionals to be acquainted with the costing methods and techniques in the overall management of the library.

14.2 : What is Costing?

Costing is the process by which an organisation obtains estimates for producing a product, providing a service, performing a function, or operating a department (Encyclopaedia

Britannica, 1974). Cost accounting means measuring an organisation in terms of money or cost. The concept can be represented as follows (Narayana, 1991).

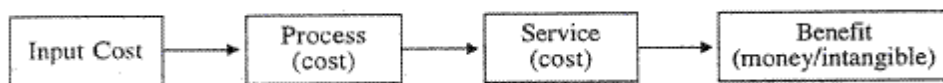


Fig. 14.1:

Costing

Bob McKee defines costing as a process of analysing costs in detail - often at the level of unit cost (that is, the full cost, in detail, of a single process or action) in order to apportion expenditure to specific areas of activity. According to Jain and Narang (1974) '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'.

14.3 : Why Costing in Libraries?

Any library incurs some expenditure either in terms of money or other resources like manpower, equipment, transportation, postage, etc., for providing services or information products. Costing of them becomes necessary for determining the best product or service at a minimum possible cost. A library provides different services or products. By costing each of them and judging them in terms of its contribution towards meeting the objectives of the library, it should be possible for the library to select the best possible service at minimum possible cost. For this it must know the costs of various components of the library, and those of its various activities, services and products.

Costing of all these is important because:

- (1) It helps in determining the productivity of different staff members and in effective supervision of various operations/activities and for controlling them effectively.
- (2) It helps in developing performance indicators which would measure the 'success' of the service.
- (3) It helps in fixing prices for various library services and information products (retrospective searches, SDI services, abstracting services, bibliographies, databases, etc.).
- (4) It can be used for comparing costs as a measure of efficiency or in achieving cost effectiveness of services and for deciding alternatives to make the best use of resources.
- (5) It helps in convincing funding agencies about the cost effectiveness of the library services and for securing necessary funding for the library. Thus it helps in budget formulation and presentation effectively.
- (6) It helps in decision-making about whether to carry out certain functions or services within the system or not.

- (7) It helps in forecasting costs in planning a new or reorganising an existing information system.
- (8) Cost information prevents from jumping to wrong conclusions.
- (9) It helps in identifying priorities and setting objectives and targets for service delivery.

In spite of these advantages library staff and managers are generally not inclined to adopt the costing or cost accounting approach mainly because of. (i) lack of adequate understanding of the costing methods, (ii) apprehension that detailed cost analysis may not support their demands for additional resources for the library, and (iii) the apprehension that costing system will bring in too much of accountability by the library staff. However, by adopting the costing approach, they will find that this approach is helpful in enhancing their efficiency and also in supporting their demands for grant of adequate human and material sources by the authorities.

14.4 : Types of Costs

In the costing of library operations and services we generally come across two types of costs: (i) direct and indirect costs and (ii) fixed and variable costs. The first type covers the elements of cost while the second gives the classification of cost according to variability i.e., the behaviour in relation to changes in the level of activity or quantity of production. Direct costs are those which can be directly attributed to a particular activity like the cost of materials, labour, transportation and mailing costs used for the activity. Indirect costs are the overhead costs like those of buildings, electricity, water and other such facilities which are not exclusively used for a particular activity. Similarly, in the second type, fixed costs are those which do not change with the volume of production or size of activity while variable costs are those directly related to the volume of production or quantum of an activity. These two types of costs are again sub-divided into components as shown below:

14.4.1 Elements of Cost

Material Cost

The cost of materials used for providing a product or service is termed the material cost. The direct material costs are those which can be assigned to specific physical units of a product. For example, paper used for the product, the packaging used

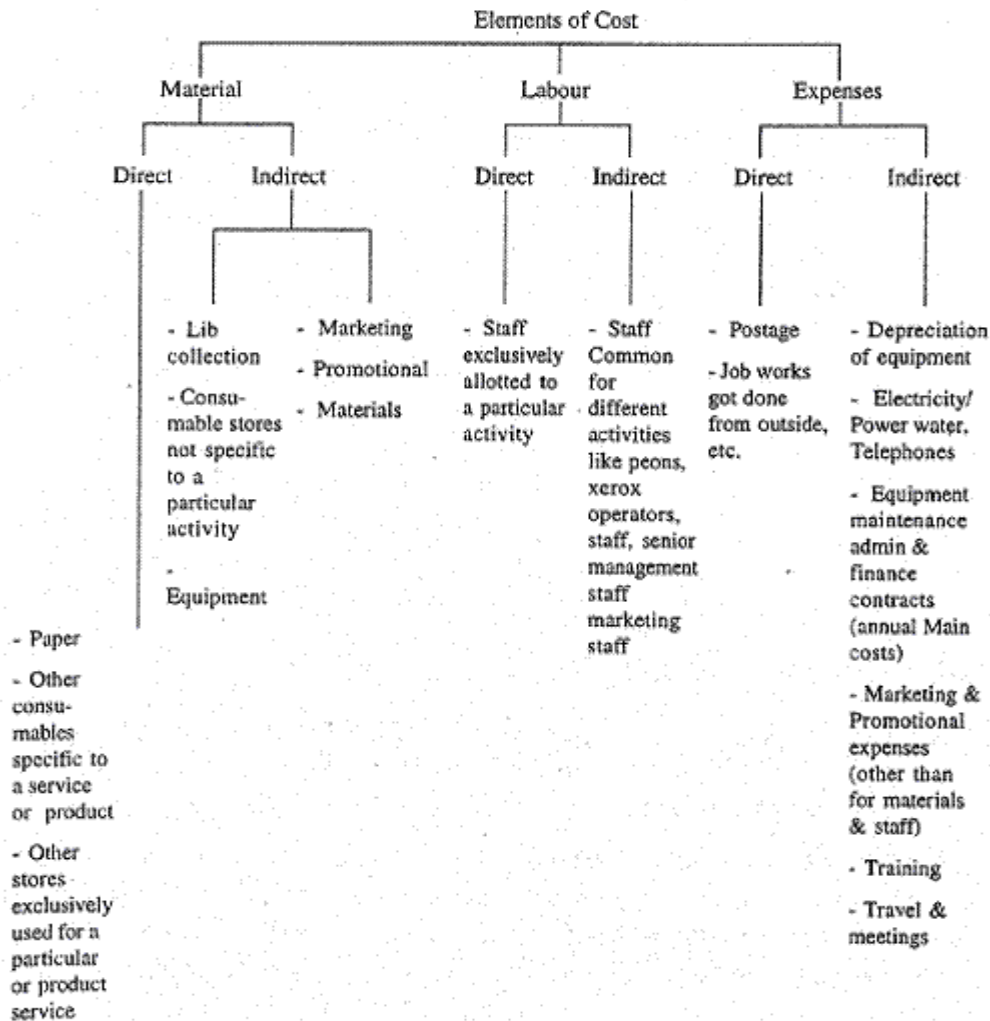


Fig. 14.1: Elements of Cost of Library Services or Activities

and so on. The indirect material costs are those which cannot be conveniently assigned to a specific product or service. These may include library collection, equipment, common consumable items, stationery, etc.

Labour Cost

For preparing the information products or providing services, human effort is needed. The cost of such human effort is called the labour cost. Direct labour costs are the costs of human effort which include the proportionate costs of the staff wages (the costs of their perks may not be included in the Indian situation at present). Indirect labour costs are those costs of staff which cannot be conveniently approved to a particular product or service. Wages of the administrative, stores and finance staff, etc., are examples of this cost.

Expenses

These can also be direct and indirect expenses. Direct expenses are those which can be conveniently allocated to specific cost centres (these are explained below). Examples are postage and freight charges incurred for mailing information products. Indirect expenses are those which cannot be allocated to cost centres. They include depreciation costs, equipment

maintenance costs, electricity, telephones, management and administrative expenses of the organisation, marketing and promotional expense and so on.

Capital Cost

Apart from the costs stated above, there is yet another cost which has a bearing on the total cost of a product, service or activity. It is the Capital Cost. This includes the cost of items which are used over a long period. They include the cost of buildings, equipment, library collection, furniture, transport vehicles and other fixed assets. For costing purposes, depreciation of these items is to be considered which is grouped under Expense-indirect.

In the Indian situation, if the costs on land, buildings and equipment, etc., or the depreciation on these items is included in the costing of the library services or products, they could be quite costly for the users as the Indian users are still not used to paying high prices for documents or information. Apart from, this managements of Indian organisations in which libraries function, also do not seem to expect returns for the expenditure incurred on these items, at least in the present times. So, Indian libraries, particularly the government libraries may not have to consider the capital costs in costing their services even though the government does want the libraries also to earn some portion of their expenditure through their services.

14.4.2 Classification of Costs

Costs can be classified as i) Fixed ii) Variable iii) Semi-variable and iv) Step costs. A cost which varies directly in proportion to every increase or decrease in the volume of output in terms of products or services is known as variable cost.

A cost which does not vary but remains constant within a given period of time and range of activity inspite of the fluctuations in output is known as semi-variable cost or semi-fixed cost. Apart from these, certain costs remain fixed over a range of activity and then jump to a new level as the activity changes. Such costs are called step costs.

Fixed Costs

Management salary, administrative overheads of the organisation in which the library functions (the marginal increase due to promotions or certain staff or DA revision are not considered).

Variable Costs

Cost of direct material, electricity, wages of library staff, cost of online searches, cost of information products, etc.,

Semi-Variable Costs

Depreciation, repairs, etc.

Step-Costs

The salary of additional staff member when a particular work exceeds the capacity of one staff member.

14.4.3: Components of Total Cost

Prime Cost: This consists of direct material, direct labour and direct expenses. It is known as basic cost.

Production Cost: This comprises the prime cost and the costs of indirect material, indirect labour, and indirect expenses of the cost centre (apportioned).

Office Cost: This includes office and administrative overheads together with services and distribution cost. This can also be called the total cost of production (Maheswari & Mittal, 1988).

Total Cost of a Cost Centre: This includes the prime cost, production cost and the office cost and distribution costs. This usually represents the cost of an activity, a service or a product in a library. This can also be represented as shown in Fig. 14.2.

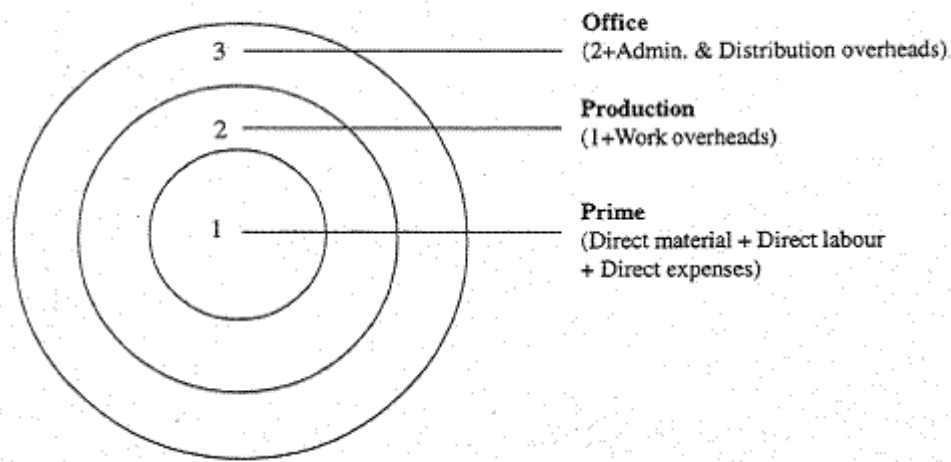


Fig. 14.2: Components of Total Cost of a Cost Centre

14.4.4 : Depreciation

The value of capital items like buildings, machinery, library collection, transports vehicles, etc., decreases with time due to wear and tear, and obsolescence. This reduction in value is called depreciation. Calculation of depreciation and including it in the cost structure, helps in recovering the cost of these assets over a period and in effecting replacements for these items in due course of time.

Calculation of Depreciation

Two methods are commonly employed (Narayana, 1991) for calculating depreciation. These are : i) the straight line method and ii) the sum-of-years methods. These are as follows:

i) Straight-Line Method

$$\text{Depreciation per year} = \frac{\text{Purchase price} - \text{Salvage price at the time of replacement}}{\text{Expected years of useful life}}$$

Page and Cannaway (1969) also suggest this formula. However, Narayana (1991) suggests that the sum of years method shown below, which is commonly used in industry, reflects the depreciation more accurately, since the depreciation would be more in the initial years than in the subsequent years. The sum-of-years method is:

i) Sum of years method

Depreciation

$$\text{for a given year} = \frac{\text{Purchase price} - \text{Salvage price}}{I} \times \frac{\text{No. of useful years left}}{\text{sum of years}}$$

The sum of years is obtained by adding serially all the years from the first year to the last year of the expected useful service of the equipment or other assets. For example, the sum of years for a photocopying or xerox machine whose useful service is five years is $1+2+3+4+5=15$. Yearly depreciation of an item with four years of useful life whose purchase price is Rs.1,00,000 and salvage price is Rs.10,000 is calculated as given below:

$$\text{Purchase price} - \text{Salvage price} = \text{Rs. } 1,00,000 - \text{Rs. } 10,000$$

$$= \text{Rs. } 90,000$$

Year of Depreciation	Useful years	Book value at the beginning of the year Rs.	Annual Depreciation Rs.	Book value at the end of the year Rs.
1	4	100,000	36,000	64,000
2	3	64,000	27,000	37,000
3	2	37,000	18,000	19,000
4	1	19,000	9,000	10,000

14.4.5: Cost of an Employee

The following formula can be used for calculating the productive days of an employee:
Productive days (working days) of an employee per year

$$D = A - (W + H + L)$$

Where,

D Productive days (working days in a year)

A Annual days (days in one year)

W Weekends

H Holidays

L Leave availed

In the context of a library in a Government of India organisation, assuming an employee has to work 5 day-week, gets 16 holidays, avails 40 days leave, the productive days should be:

$$D = 365 - (104 + 16 + 40) \\ = 205$$

$$\text{Salary/day*} = \frac{\text{Total annual salary}}{(\text{productive days per year})}$$

14.5 : Costing Methods

Different approaches are made by different cost analysts of libraries. Some worked out 'unit costs' while some other determined direct costs and indirect costs. Hays and Becker divided the costs into two types: i) process costs, covering the costs of different specific processes, and ii) job costs, covering the costs of specific items being processed. Leimkuhler and Cooper divided the costs into direct costs (labour and materials) and indirect costs (service and overheads). Dutta and Chowdhury also divided the costs into direct costs covering labour and material used for different jobs and overhead costs covering administration, occupancy (rent, rate, etc.), depreciation on furniture, equipment/machinery and documents, communication charges (telephone, telex, fax, etc.), and stationery and travel. Misra and Phadke prefer calculation of unit cost for different items, say technical processing of a title (classification, cataloguing, etc) and worked out such a cost for a title in the library of IT, Bombay, which came to Rs.17.43 according to the salaries based on the Third Central Pay Commission recommendations. Lahiri and Mahapatra worked out the cost of operating the periodicals section of the Burdwan University Central library (West Bengal).

Apart from such studies, the Government of India instituted study workflow through its Staff Inspection Unit (SIU), Ministry of Finance (Department of Expenditure). The report of SIU was issued in April 1965 and a Memorandum was issued based on the recommendations of the report, for implementation in the government libraries. Costing of library activities was expected to be based on the SIU norms. These norms were considered impractical by the library professionals in the country and so were not implemented.

A survey of various approaches made by several cost analysts would reveal that the costing of library activities or services is done based on direct and indirect costs of individual activities or services, and of cost centres. In other words, it means how much it would cost to carry out a single activity like acquisition, classification or cataloguing of a document title or a service like supplying a unit of information e.g. an abstract of a document or an SDI printout, and also what would be the cost of each cost centre. For costing the various activities, products and services in a library through this approach, a step-by-step cost calculation, as described below, may be helpful. Flow charts may be developed for presenting work flow so that all the minor steps are also covered. Work sheets may be designed for collecting data at each step for each calculation. Some of the sample work sheets are given below. These may be modified to suit individual library situations.

14.5.1: Step-by-Step Costing Procedure

Step 1. List the activities and products/services of the library.

Work sheet 1: Library activities

	Activities	
	Acquisition	
	Technical processing	
	(Classification, Input preparation for catalogue database, etc.)	
	Collection maintenance	
	(binding, shelving, etc)	
		
		
		
		

* Calculation of cost per day would normally be good enough, as it is difficult to assess the number of productive hours).

Work sheet 2: Library Products Services

	Products/Services	
	- Circulation	
	- Reference service	
	- Current awareness bulletins	
	- SDI bulletins	
	- Online searching	
	- Digest service	
	- Abstracting	
	- Etc.	

Step 2 List the cost centres

Work sheet 3: Cost Centres

	Cost Centre	
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	- Acquisition - Technical processing - Reference Service - Collection maintenance - Circulation - Staff training - CAS - SDI service - Digest service - Etc.	
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Step 3: Define cost units at each cost centre

Work sheet 4: Cost-Centre-wise Cost Units

<i>Cost Centre</i> (1)	<i>Cost Unit</i> (2)
- Acquisition - Technical processing - Collection maintenance - Staff training (only training programme and not on-the job training) - Circulation - CAS - SDI - Etc	A single document A single document or a single record representing a document A single document Employee-day of training A single document A single bulletin(issue) A single bulletin(issue)

Step 4: List indirect costs

Work sheet 5: Indirect Costs

<i>Indirect Materials</i> (1)	<i>Indirect labour</i> (2)	<i>Indirect expenses</i> (3)
- Typing - Typing ribbon	- Administrative office staff	- Equipment

- Writing pads - Computer paper - Computer ribbon - Toner for copying machine - Etc.	- Managerial staff - Marketing staff - Etc.	- depreciation - Electricity/power - Water - Telephones - Equipment - maintenance contracts - Etc.
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Note: See Fig.1 for sample list. Expand them as necessary

For calculating the indirect costs which will be apportioned to the various cost centres, the following work sheets may be used.

Work sheet 6: Cost of Materials

(Indirect -consumables)

Materials (Indirect - <i>consumables</i>) (1)	Qty used <i>per week</i> (2)	Qty used <i>'per day</i> (3)	Unit Cost (4)	Cost of <i>material used</i> (5)
- Typing paper - Typing ribbons - Computer paper - Computer ribbons * Define these units				
			Total: (col -5)	

Work sheet 7: Cost of materials

(non-consumables)

Materials(Indirect- <i>capital items</i>) (1)	Qty added <i>per year</i> (2)	Unit cost (3)	Cost of <i>Yearly addition</i> (4)
Computers (PCs)			
Copying machines			

Furnitures items (List item-wise)			
Books for library			
Other documents			
Etc..			Total: (co14)

Work sheet 8: Costs of labour-indirect

<i>Designation</i>	<i>No. employee</i>	<i>of Total Annual salary</i>	<i>Annual salary per employee/ Cost employee/</i>	<i>employee (average) day</i>
(1)	(2)	(3)	(4)	(5)
Librarian				
Dy. Librarian				
Documentation officer				
Professional assistant				
Machine operator				
Stenographer				
Peon				
Etc.				
			Total:(col-5)- m-	

Work sheet 9: Expenses-Indirect

<i>Items (of expense)</i>	<i>Annual expense</i>	<i>Expense/working day</i>
(1)	(2)	(3)
Depreciation of equipment		
(1)		
(2)		

(3)		
Electricity		
Water		
Telephones		
Equipment Maintenance contract		
Etc.		
Total:	(col-3).....	

Cost of indirect materials will be only the apportioned cost. That is, the cost of the total material of each type used in the work centre for all its activities, if separately available may be proportionately allocated to a particular activity. If such details are not separately collected, then the material cost of the next higher level, say, library section wise data or the data collected for the entire library may be proportionately allocated to a work centre which may further be sub-allocated to activities. Similar method is used for arriving at costs of indirect labour and indirect expenses.

Step 5: Determine direct costs for each cost centre. For collecting data on direct material costs the following work sheets may be used.

Work sheet 10: Cost of Material-Direct

Cost-centre-wise/ Activity-wise

Name of the cost center (For each activity, the worksheets in this category may be numbered as 10/01/04; 10/01/05 and so on)			
Activity			
Material used	Quantity used	Cost per unit	Total cost of material used
(1)	(2)	(3)	(4)
Printing paper			
Xeroxing paper			
Packing boxes			

Envelopes Etc.			
		Total: (col-4)	

For collecting data on wages of employees to determine the cost of direct labour, the following work sheet may be used.

Work sheet 11: Cost of Labour-Direct

Name of cost centre:	(for each activity, the worksheets in this category may be numbered as I I/01/04 11/01/05 and so on)	
Name of the activity		
Cost unit: Cost/day		
<i>Designation</i> (1}	<i>Total annual emoluments</i> (2)	<i>Cost per working day</i> (3)
Asst. Librarian Professional Assistant Etc.	Total: (001-3)	

The time spent by the employee in days, may be multiplied by his wages per day. This gives his cost on the activity. If more than one employee works on the same activity, the sum total of the wages of all such employees (labour cost) gives the direct-labour: cost of the activity. Similarly, the cost of the direct-labour for each work centre can be calculated by summing up the costs of the direct-labour of all the activities of the work centre.

For calculating data on direct expenses the following work sheet may be used.

Work sheet 12: Cost of Expenses-Direct

Name of the cost center:			
Activity:			
<i>Items of expenses</i> (1)	<i>Amount of work done</i> (2)	<i>Cost per unit</i> (3)	<i>Total cost of Expenses</i> (4)

Postage			Total: (<i>col-4</i>)
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Thus after collecting data on the costs of materials, labour and expenses - both direct and indirect- a summary sheet for each activity, as given below, would help in costing the activity.

Work sheet 13: Cost Summary Activity-wise

[illegible]

* The apportioned costs are obtained by dividing the indirect costs among the work centres and activities, services or products.

Similar work sheets may be used for each activity, service or product and a summary work sheet for each cost centre may be worked out.

Step-6: Determine summary of costs, cost-centre-wise.

Work sheet 14: Cost Summary Cost Centre-wise

<i>Name of Work Centre: Name of Activity/ product/services</i>	<i>Direct costs</i>	<i>Indirect costs</i>	<i>Admin & distribution overheads allocated to the cost centre</i>	<i>Total</i>
(1)	(2)	(3)	(4)	(5)
- Acquisition - Technical processing - Reference Service - Collection maintenance - Circulation - CAS - SOI Service - Digest Service - Etc.				
	Total Cost of Cost Centre: (Col.5)			

14.5.2: Costing of an Online Search

As an example, to show how the relevant cost elements are considered and classified for determining the costs of a library activity or service (which could be a cost centre), the costing of a single online search is discussed below. The summation of all the costs, per year, of the activities could be the yearly cost of the cost centre. The relevant cost elements for a single search are as follows:

Materials-Indirect

Capital

Microcomputer Communication software Modem

Printer

Voltage Stabilisers, System manuals, Thesauri

Furniture

Others

Computer paper

Computer ribbons

Other office stationery (for billing, correspondence, etc)

Labour - Indirect

Coordinator/Manager

Searcher

Supporting staff

Security

Expenses - Indirect

Telephone line

Training of staff

Travel to training

Promotional expenses (promotion literature, online demonstration, complimentary searches, etc)

Annual Maintenance Contracts

Expenses - Direct

Connect time

Telecommunication (call charge, data transfer charge)

Citation (downloading charge)

Prime cost can be obtained by adding the direct costs mentioned here. The indirect costs covering the items mentioned above, are calculated per year, then per day, and then allocated proportionately to this single search (apportioning). These two elements of cost (direct and indirect) together give the Production Cost. The total cost of the search is then obtained by adding the production cost to the information distribution (mailing) cost and the apportioned administrative overheads of the Library.

14.6 : Summary

In this Unit we introduced you to the benefits of costing the activities and services in a library. Their Costing would help in convincing the authorities for allocating the required budget and other infrastructural facilities and would also help in measuring the productivity of the library, and give a very good idea of the cost-benefit aspects of its services. You were also introduced to the elements of cost in a library like the direct and indirect costs and also their classification into certain components like fixed and variable costs. Then you were shown how to proceed, step-by-step, to calculate the costs of an activity, service or product or of a cost centre by collecting data using certain work sheets. You were told that in the Indian context, it would suffice if costs per year are calculated and then the costs per day are determined. You were also told that the work sheets given are only indicative and are to be modified, if necessary, to suit specific costing exercises. In conclusion, you were shown, as an example, how to cost an online search.

Unit-15:Cost Analysis

15.0 : Objectives

After reading this Unit, you will be able to:

- understand the concept of cost analysis;
- describe the different approaches to cost analysis;
- explain the methods of cost analysis; and
- apply the cost analysis methods in Library and Information Centres.

15.1 : Introduction

Libraries and information centres are gradually becoming cost conscious. In today's environment of budgetary pressures and financial crunch in libraries and information centres, it has become pertinent to take detailed account of the costs involved in running different services and the alternatives available there of. In this regard cost analysis approaches are becoming very popular. They not only help in analyzing the costs involved, but also the effectiveness, benefit, utility and the feasibility of such systems. In the earlier Unit (Unit 14) you were introduced to the various costing techniques for library and information centres. In this Unit we will discuss the various approaches to cost analysis and their applicability in library and information centres.

15.2 : Meaning of Cost Analysis

Cost analysis is the basic tool of cost study. It is the primary mode of study which helps in carrying out other descriptive and analytical methods of cost studies. Moreover, data derived from cost analyses can be further used for accounting, budgeting, and performance measurement procedures. A sound and convincing presentation of a budget is generally based on underlying cost analysis of different alternatives.

Cost analysis is basically a measurement of monetary or time sacrifice made to achieve certain ends. Cost analysis involves measurement of the resource input to the system, understanding the nature of the work carried out, and the labour time needed to carry out the work. In cost analysis, the analyst isolates those areas of task which are considered relevant to the given end, and on which information is required for descriptive or decision making purposes. Cost analysis includes a number of broad conceptual and operational principles. It takes into account both cost and result (in terms of benefit, effectiveness, utility etc.) of a system as well as its alternatives. This method is very much applicable in library and

information centres. The use of this method in library and information centres can lead to a more efficient use of resources, reduce cost of reaching particular objectives, and it can also give an idea as to what can be accomplished for any particular budget or other resource constraint. Policy decisions in the library and information centres must be increasingly based on the cost and results of these decisions.

Before starting cost analysis it is essential to establish the analytical framework. The framework consists of: identification of the nature of the problem; clarification of the alternatives to be considered for analysis; identification of the primary and secondary audiences for the analysis; and selection of the appropriate method of the analysis. At the most detailed level monetary expense incurred is identified on a task by task, or operation by operation basis. It is a very flexible tool, in the sense that almost any part of the system can be scrutinized in detail. For effective cost analysis it is essential to define each and every unit that is being costed. These units are referred to as the cost centre or cost unit.

The steps involved in cost analysis are :

- **Identification and quantification of the process:** the process to be analysed must be named in a manner which will permit isolation of that particular item throughout the accounting process e.g. acquisition process, circulation process etc.
- **Division of the process into smaller component steps:** after identification of the process to be analysed, it is divided into smaller units or components to facilitate analysis, for instance, the acquisition process can be divided into book selection, ordering, purchase, accession etc.
- **Determination of resource requirements for each step:** identification of the resources required for each and every component step is essential for cost analysis purpose. Four resources that are generally associated with any process are - manpower, supplies, supervision and environment. Apart from that another important resource usually needed is equipment. Each resource type has its own typical characteristics that need to be studied thoroughly to see their impact on the cost of the process.
- **Identification of time and volume for a process and relate it to cost:** the process under analysis needs to be quantified in terms of time required or volume of work done in order to relate it to cost.
- **Cost analysis and alternates:** cost analysis involves not only the scrutiny of the activities involved in the process but also the alternate methods of doing the job. This way one can correctly judge the benefits derived from a particular process.

15.3 : Cost Analysis Approaches

There are a number of different but related terms or concepts used in the process of cost analysis; which are actually different approaches of cost analysis. Important approaches of cost analysis are:

- i) cost effectiveness;
- ii) cost benefit;
- iii) cost utility;. and
- iv) cost feasibility.

Though, these approaches are related to each other, they are distinguished by their unique characteristics and are required for specific application.

15.3.1: Cost Effectiveness Analysis

Cost effectiveness analysis refers to the study of the alternatives in relation to their cost and effects to achieve certain goal or outcome. The focus is, therefore, on the achievement of certain objectives or goals. The cost effective solution is the one which provides maximum output with the minimum cost possible.

Cost effectiveness is generally confused with cost efficiency study. The basic difference between the two is that while cost effectiveness is output oriented, cost efficiency is input oriented. In cost effective study the goal is to maximise output at a given level of cost which may not be necessarily the minimum cost solution. The aim of cost efficiency, on the other hand, is to minimize cost at a given level of output which perhaps may not be the most effective solution in terms of output or performance.

The cost effectiveness approach has various advantages, the most important among them is the fact that it requires the cost and effectiveness data which are easily available in systems like library and information centres. Moreover, it takes into account the alternative solutions for a particular goal, making the study more exhaustive. However, the major disadvantage is that it can take into account only those alternate solutions which have similar goals or objectives. It cannot compare alternatives with different goals or objectives. Moreover, one cannot judge the usefulness of the programme in relation to the benefits derived over the costs involved.

15.3.2: Cost Benefit Analysis

Cost benefit analysis is an important tool used by the welfare economists. It refers to the evaluation of alternatives in relation to their cost and benefits measured in monetary terms. Thus it tries to evaluate social costs and benefit of a particular project and helps in deciding whether to go ahead with the project or not. Cost benefit analysis tries to measure the value of cost and benefit of each alternative. The alternative that provides the maximum cost-benefit may not necessarily be the most cost effective solution. The emphasis is more on the social benefit rather than-on economic benefit. Cost benefit analysis is an essential tool for long term decision making as it is not confined to the immediate impact of the production of goods and services.

The advantages of cost benefit analysis are that it helps in:

- i) ascertaining if any particular alternative has benefits exceeding its costs;
- ii) identifying the set of alternatives with different objectives which have the lowest cost benefit ratio; and

- iii) determination of the set of alternatives among different programme areas e.g. education, health, security, etc. having least cost benefit ratio for an overall analysis of investment for the welfare of the society as a whole.

The only disadvantage of this system is that it is difficult to measure the costs and benefits in pecuniary terms. One may face many difficulties in collecting data and the result may not always be accurate.

Cost benefit analysis is the most appropriate tool for decision making regarding the resource allocation in public welfare services like library and information centres, where the output derived may not be direct and tangible. While cost benefit analysis is a long term approach, cost effective analysis is a medium or short term approach. The cost benefit approach may be used for making a choice between different alternatives and the cost effective approach on the other hand can be used to determine the most cost effective means of production and delivery of goods and services.

15.3.3: Cost Utility Analysis

Cost utility analysis refers to the study of the alternatives in relation to their costs and the estimated utility derived thereof. While cost effective and cost benefit analysis requires use of quantitative data for decision making, the cost utility approach uses a wide range of qualitative and quantitative data for the purpose. Cost utility is an appropriate tool where subjective assessments are made e.g. the assessment of the possible outcome of a particular library service.

The major advantage of this approach is that it is not strictly based on quantitative data. It is possible to derive results with imperfect information and also tackle the problem of uncertainty. However, the disadvantage of this approach is that since most of the assessment is based on subjective analysis and not on any standard methodology, it is difficult to reproduce accurate results. Moreover, different evaluators will have different results for the same set of data. Further, there are no standard methods of deriving the social utility based on the combined utility of each and every individual.

15.3.4: Cost Feasibility Analysis

Cost feasibility analysis is an approach of estimating the cost of alternatives in order to ascertain whether they could be considered or not. If the cost of any alternative exceeds the budget or other resources then that alternative is not considered for further analysis. While other approaches like cost benefit, cost effectiveness and cost utility considers both the cost and result of the alternatives, the cost feasibility approach considers only the cost factor for the analysis purpose. Thus cost feasibility study is a limited form of cost analysis which can only ascertain whether the cost of the alternative is within the limit of the available resources or not, and does not determine which alternatives are to be selected.

15.4 : Methods of Cost Analysis

In cost analysis a series of measurements and observations are carried out around the course of a given process. The various stages of cost analysis measurement are:

- **Costing of the Input:** At this stage the quantities of various inputs i.e., labour, materials etc. required to carry out the process are identified and their costs are established. Costing

of the labour is a difficult task and it is generally done on the basis of the labour time expended at the appropriate labour cost rate. Input cost can be equated to the fixed cost and it provides a basis for the calculation of the minimum cost of a process.

- **Costing of the Throughput:** Throughput is the stage in which the actual work of production is carried out. At this stage cost indices are prepared on the basis of the input cost data and they are used to monitor and assess the performance of the process. Throughput cost eventually determines the actual cost involved in carrying out a process and is, therefore, involved with the variable costs of production.
- **Costing of the Output:** Output costing is the final stage of cost analysis. This is calculated on the basis of the summing up of input and throughput costs. Output cost also deals with the volume of production and the productivity of the resources used for a particular process. It further helps in measuring the performance of a process and determination of the price.

There are basically two methods of cost analysis:

- i) Work measurement, and
- ii) Estimation or ingredient method.

Work measurement attempts to measure the exact quantities of labour time used to carry out particular tasks under study. It is primarily based on the work and time study and uses various methods of data collection e.g. work diaries, activity or work sampling etc. Estimation or ingredient method, on the other hand, is the sub-class of work measurement study and is used wherever work measurement is not possible. In this method the quantities of resource inputs required to produce outcomes are first identified either through observation or through discussion with the staff. Monetary costs of these ingredients are then estimated on the basis of the gross annual expenditure incurred for the total system under various headings. Estimation method gives more accurate results for cost analysis and it is commonly used in library and information centres. However, in the long run, the estimation method needs to be complemented with not only the work measurement method but also with other costing methods like budgeting, accounting, performance evaluation etc., in order to get satisfactory results.

The costing of each and every unit is done to proceed with the cost analysis of the system as a whole. The ingredients required for any system can be broadly classified into four types: Personnel, Facilities, Equipments, Materials, and Other inputs. These five basic heads are further divided into smaller units to facilitate the costing process. However, the standard methods of cost analysis cannot be totally applied to the costing of library and information services because of their non profit making and service oriented characteristics. The next section provides a clue as to how this problem is to be tackled.

15.5 : Analysing Cost in Library and Information Centres

Library and information centres exist both for profit making and non-profit making organisations. The profit making organisations usually charge for the services provided by them. With the ever increasing demand for information, the non-profit making organisations

are also being forced to price their products, so as to make it possible for them to recover the costs incurred to some extent. Costing of library service or activity is one of the essential elements for determination of the prices for library and information services. Apart from the pricing of products and services; cost analysis of various library and information services has the following advantages:

- i) It helps in the estimation of expenditure for each service or operation.
- ii) Cost data can be utilised for the measurement of efficiency of an operation and the benefits derived from it.
- iii) It ensures optimal utilisation of the resources of the library.
- iv) It helps in evaluating the efficiency of the staff.
- v) Library managers can utilise them for decision making to determine the future actions.
- vi) It helps in controlling the library operations by keeping track of the inputs required and the output derived thereof.

Cost analysis for library and information systems can be categorized into two types: macro costing and micro costing. In macro costing the present cost of the system is determined in order to estimate the future trend. In micro costing the system is divided into units and the cost of each unit is determined. The unit costing method facilitates analysis of the cost of a specific unit of service.

For any library system the inputs can be summarised as follows:

I PERSONNEL

Supervisor

Professionals

Semi-professionals

Non professionals

Secretarial staff

II FACILITIES

Work place Furniture

III MATERIALS AND SUPPLIES

Stationeries

Books

Journals

Non-print media resources

Catalogue cards, floppies, CD's etc.

IV EQUIPMENT

Computers

Printers

Scanners

Servers etc.

V OTHER INPUTS

Energy e.g. lighting, airconditioning, heating etc.

Cleaning and maintenance of the workplace

Training of the personnel

The total cost of the library can be divided into two types : direct and indirect.

Total cost = Direct cost + Indirect cost

Direct costs include personnel, equipment, materials etc. Indirect costs on the other hand are those that are not directly related to an operation but are needed to carry out the operation eg., stationery, cleaning and maintenance of the workplace etc. The process of cost analysis of a library and information centre can be carried out in the following manner:

- Step 1: Determination of the unit of product or service to be measured e.g., circulation service, reference service etc.
- Step 2: Determination of the cost centres for each of the library operations. Cost centres can be further divided into: direct programme centres such as reference service, circulation service etc. or support service centres such as acquisition, administration etc.
- Step 3: Collection of cost data for each cost centre and its activities.
- Step 4: Appropriate allocation of the service costs to the programmes cost centres.
- Step 5: Determination of the unit cost by deviling the total cost of a cost centre by its appropriate unit of measurement.

For example:

$$\text{Unit cost of circulation} = \frac{\text{Total cost of circulation}}{\text{No. of circulation}}$$

Virgo suggests the following steps of cost analysis for Total cost approach:

- 1) Identify cost centres and break them further into sub-cost centres making sure that every possible task done in the library is accounted for.
- 2) Construct a list of activities or tasks performed by each employee and the total time taken by them to perform their duties. This should also include non-productive time such as tea or lunch break, leave, vacations etc.
- 3) Select the unit measures that describe each employee's outputs.
- 4) Record on a daily basis the time spent to do a task and the total units of output.
- 5) Summarise the time data and the output data every month.
- 6) At the end of the year, summarise the total time data for each employee and multiply it with the salary and other benefits received by the employee.
- 7) Consolidate data for all employee by task, activity and cost centre at the end of the year.
- 8) Allocate non-personnel expenses to each task, activity and cost centres.
- 9) Allocate indirect costs, both operating expenses and support service cost centres to the programme cost centres.
- 10) Determine appropriate average cost for each unit of measurement eg., books, catalogues, reference searches performed etc.

The cost finding approach on the other hand uses available financial data from the budget details, analysis of detailed transactions and interview with staff etc. The steps in this approach according to Virgo are:

- 1) Identification of cost centres.
 - 2) Determination of activities and tasks related to cost centres.
 - 3) Selection of unit cost measures appropriate to cost centre, activity or task.
 - 4) Collection of unit cost information through following steps:
 - Determination of hourly costs in term of the time spent by library personnel. Actual time spent by the staff to perform a task.
 - Direct supplies, materials required to perform various tasks.
 - Other direct expenses such as travel facility etc.
 - Determination of the total direct activity cost.
 - Determination of the indirect operating expenses such as utilities etc. and their allocation to direct activity cost.
 - Determination of indirect service costs eg, repairs, administration etc. and allocation to direct activity cost.
 - Determination of the total activity cost and the calculation of unit cost information.
 - 5) Analysis of the data
- The most difficult task in the costing of library operation is the cost of the labour. Calculation of the unit cost through the work and time study can facilitate cost analysis. Thus, work and time study methods should be used for cost analysis for library and information systems which further enables the measurement of effectiveness, benefit and utility of the system. To conclude, it may be noted that "Cost Analysis yields data, but it does not evaluate the quality of a service, the staff or the collection. It reveals cost information but it does not tell if a cost is too high or too low. Cost analysis can be a useful tool, when used by an effective, thoughtful manager" (Virgo).

15.6 : Summary

Cost analysis is the basic tool of cost study. It is the primary mode of study which helps in carrying out other descriptive and analytical methods of cost studies. Cost analysis is basically a measurement of monetary or time sacrifice made to achieve certain ends. It involves measurement of the resource input to the system, understanding the nature of the work carried out, and the labour time needed to carry out the work. The steps involved in cost analysis are:

- Identification and quantification of the process

- Division of the process into smaller component steps
- Determination of resource requirements for each step
- Identification of time and volume for a process and relate it to cost.
- Cost analysis and alternates

Important approaches of cost analysis are:

- i) cost effectiveness;
- ii) cost benefit;
- iii) cost utility; and
- iv) cost feasibility.

Though, these approaches are related to each other, they are distinguished by their unique characteristics and are required for specific applications.

In cost analysis a series of measurements and observations are carried out around the course of a given process. The various stages of cost analysis measurement are:

Costing of the Input

- Costing of the Throughput
- Costing of the Output

There are basically two methods of cost analysis:

- i) Work measurement, and
- ii) Estimation or ingredient method.

Cost analysis for library and information systems can be categorised into two types: macro costing where the present cost of the system is determined in order to estimate the future trend and micro costing where the system is divided into units and the cost of each unit is determined. The unit costing method facilitates analysis of the cost of a specific unit of service.

There are two approaches of cost analysis available:

- i) Total system cost approach and
- ii) Cost finding approach.

The most difficult task in the costing of library operation is the cost of the labour. Unit costing can facilitate cost analysis and help in the measurement of effectiveness, benefit and utility of the system.