

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).

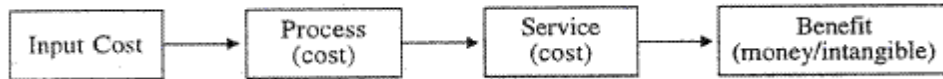


Fig. 14.1:

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

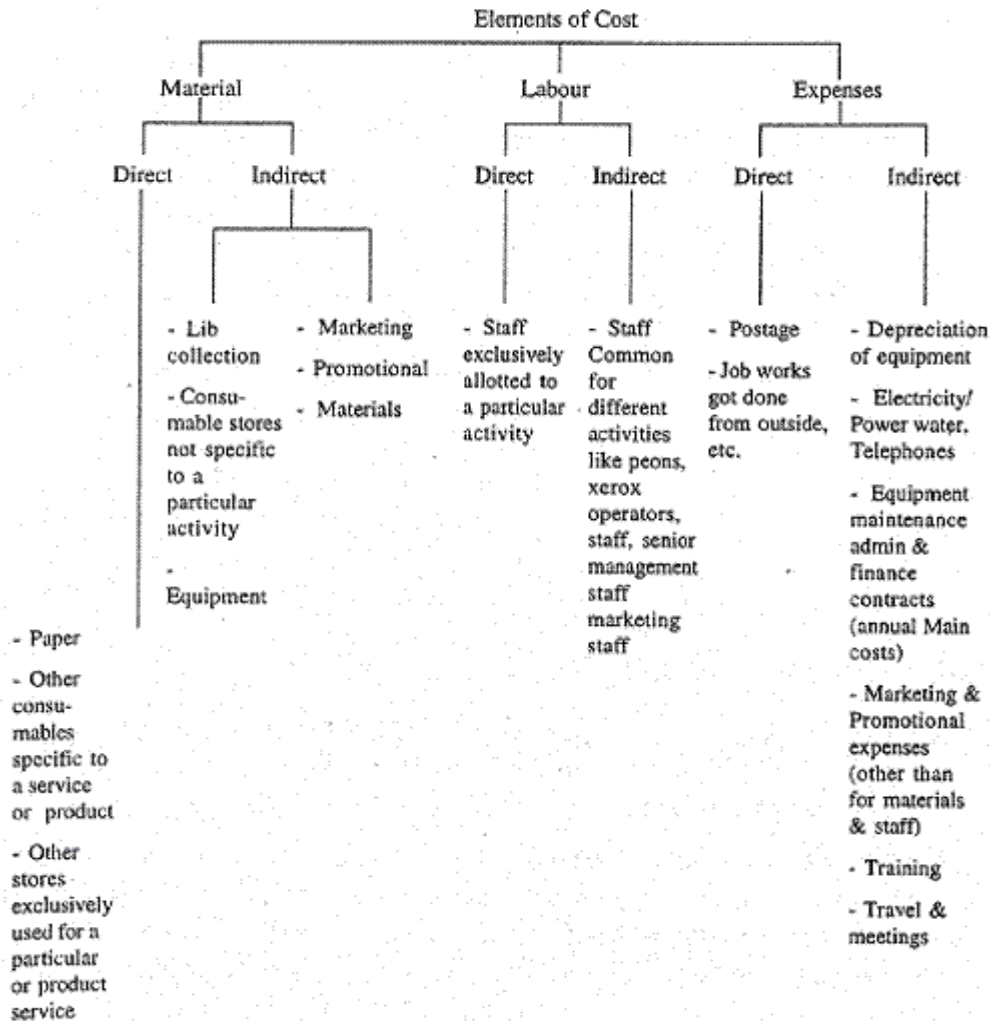


Fig. 14.1: Elements of Cost of Library Services or Activities

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.

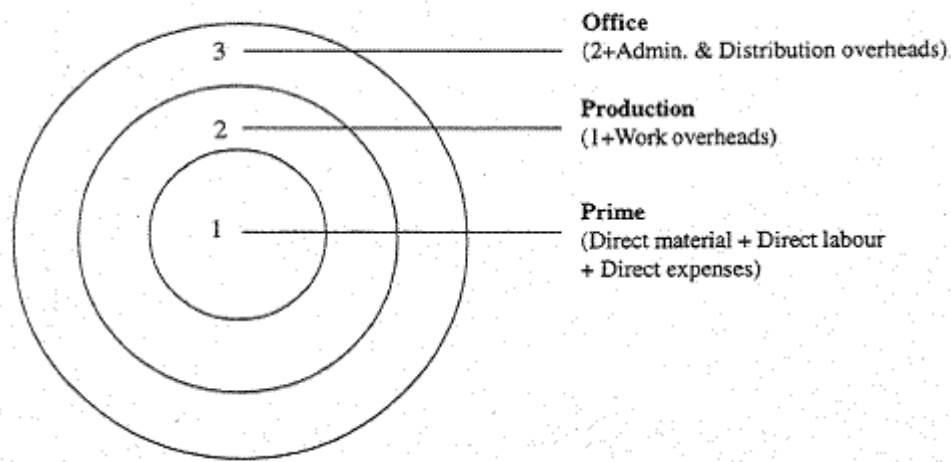


Fig. 14.2: Components of Total Cost of a Cost Centre

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, 199 1) 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:

$$\begin{aligned} D &= 365-(104+16+40) \\ &= 205 \end{aligned}$$

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

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. Leimkühler 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

	<i>Products/Services</i>	
	- 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

	<i>Cost Centre</i>	
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	<ul style="list-style-type: none"> - 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	A single document
- Technical processing	A single document or a single record representing a document
- Collection maintenance	A single document
- Staff training (only training programme and not on-the job training)	Employee-day of training
- Circulation	A single document
- CAS	A single bulletin(issue)
- SDI	A single bulletin(issue)
- Etc	

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: (col14)

Work sheet 8: Costs of labour-indirect

<i>Designation</i>	<i>No. of employee</i>	<i>Total Annual salary</i>	<i>Annual salary per 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 contract	Maintenance	
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

<i>Name of the cost center</i> (For each activity, the worksheets in this category may be			
<i>Activity</i> numbered as 10/01/04; 10/01/05 and so on)			
<i>Material used</i>	<i>Quantity used</i>	<i>Cost per unit</i>	<i>Total cost of material used</i>
(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: Name of the activity Cost unit: Cost/day	(for each activity, the worksheets in this category may be numbered as I I/01/04 11/01/05 and so on)	
<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 <i>cost</i> center:			
Activity:			
<i>Types 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: (col-4)	

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

Name of the cost centre							
Direct costs				Indirect cost (Apportioned)*			
Material	Labour	Expenses	Total (Prime cost)	Material	Labour	Expenses	Total
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
				Total: (Col- 8) m—m			

* 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

Name of Work Centre: Name of Activity/ product/services	Direct costs	Indirect costs	Admin & distribution overheads allocated to the cost centre	Total
(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.