

# Pricing Determination in Library Services

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## **ABSTRACT**

Pricing is the most flexible, independent and controllable elements of the library management system, which plays an important role in international marketing management. It is based on the fact that, pricing changes appear to promote an immediate response in the environment. Despite the apparent simplicity of using pricing as a major marketing tool, many managers find pricing decisions difficult to make. So in this article internal, external factors which affects the international pricing decisions, role that pricing plays in developing strategies to meet corporate objectives, and the relationship between the different activities of the libraries, developing comprehensive international pricing policy, specific problems have been discussed along with the benefits.

**KEYWORDS:** Pricing models, Pricing determination, Pricing library Services

## **0. INTRODUCTION**

Library is a set of interacting components, which operates together to accomplish a purpose, like human system, which plays a role in our daily lives that may include circulatory and digestive system as well as society as transportation and communication system. But the library as a major system with some subsystem where a component of subsystem, work together. Again some of the subsystem in the library system helps the staff to perform the work and reinforce the division of labor within the larger system by helping coordinated tasks. The information in the library system potentially takes a variety of forms including numbers, text, and sounds, pictures and even video, where data are facts, images or sounds that may or may not be pertinent or useful for a particular task. We receive data in everyday life, from newspaper, television, and cinema and from other people. But information is data whose form and content are appropriate for a particular purpose, so converting data into information by formatting, filtering and summarizing is a key role in information system management. Knowledge is the combination of instincts, ideas, roles and procedures, which guides our actions and decisions. Thus, the distinction between data and information is easy to remember, but it is often felt that, though the library collects vast amount of data, but often fails to satisfy management information needs. So information analyst must design a problem solving process, where he is responsible for analyzing work methods and procedures to simplify work and to improve work flow. The process of analysis involves a number of steps that can be applied to the information analysis study in order to know the economic feasibility of various system designs we can adopt. Pricing analysis is one of the best way of measuring financial impact of information system design.

## **1. NEED OF PRICING SYSTEM**

- For many organizations pricing decisions are based on the relatively straight forward process of allocating the total estimated cost of producing, managing and marketing a products or service between forecast total values of sales & adding an appropriate profit margin.
- In international market pricing decisions are much more complex, because they are affected by a number of additional external factors, such as fluctuation in exchange rates, accelerating inflation in certain countries and the use of alternative payment methods such as leasing, barter & counter-trade.
- In the modern age it has become more apparent that users tastes have become much more sophisticated, so any decision are less dependent upon product performance & perception.
- Information service is internal to a library organization, which works as a non-profitable & servicing center. But, if a library extends any job for external agencies then that job costs some price and at that time center works as a profit center. In both the cases defining the cost for each job & pricing for the jobs received become important. So, there is a need of pricing policy to determine the budget of an academic center as a profitable center
- Each academic institution has various departments & sections where each one uses different types of application. There must be a method by which we can allocate computer resources among users, so that total benefits of these services for the organization as a whole will be maximized. By fixing prices for all activities we can find out the profit.

## 2. CONCEPT OF PRICING

- Price is the amount that a user pays for having the job processed.
- Price is defined as the ratio between the amounts of something that must be given up to obtain a unit of some thing.
- Price is defined as the amount of some resource that the user gives up in order to obtain data processing service. If the user does not give up anything in exchange for the computing service he or she does not pay a price for this service.
- Pricing policy of the academic library system deals with goal of achieving optimal allocation of the sources.
- Costs in pricing system include hardware, software & personnel. So the returns must be evaluated using cost-benefit analysis.
- It is necessary to consider the pricing policy for the internal users by keeping the priority levels for various jobs.

## 3. OBJECTIVES OF PRICING

Pricing analysis emphases to estimate benefits & costs, which can be expressed in rupees. If the benefits are substantially greater than the cost then the system may be worth pursuing. The following objectives are filled up through pricing analysis of any information management institution.

- It helps to improve product awareness
- It helps to define the users requirements.
- It helps the user to identify the products that fits best.
- Customize the product to fit the user's need.
- Improve timeliness of product availability.

## 4. TYPES OF BENEFITS IN THE LIBRARY

Benefits are classified into two categories: tangible & intangible benefits. *Tangible benefit* includes,

- Increased revenue & decreased costs.
- Ability to reduce processing errors.
- It reduces inventory cost, reduced administrative expenses & reduced cost of paperwork processing.
- It includes reduction in the time per phone call, improvement in response time,

For example, let us consider a university library office that processes 6,000 applications in a year. In the current manual system the time it takes to retype & recompile the same data about 30 minutes per application or about 180,000 minutes a year. If the average secretary makes Rs. 12 an hour, the cost of the problem is Rs 36,000 a year.

### **Intangible benefits**

It is a benefit on performance. It is difficult to measure because they refer to comparatively vague concepts. Intangible benefits cannot be measured in terms of monetary savings. Intangible benefits include better condition, better supervision, better morale, better information for decision making, ability to evaluate more alternatives ability to respond quickly to unexpected situation, & organizational learning. It is hard to quantify intangible benefit, but it should not be ignored in information system as it helps to improve the employee job-satisfaction & other decision-making.

### **Identification of Benefits**

Benefits, accurately estimate the value of the system.

- a. Result form reduction in current costs, i.e. improvement in revenue that is greater than increase in the cost or reduction of waste. It is said as cost-saving benefit.
- b. Benefits result from elimination of the need for future expenditure or avoidance of the need to expend cost. It is said cost-avoidance benefits.
  1. When a result is for improvement in performance or increase in the time spent on high-value activities is called cost adding benefit

### **Source of cost of information system**

To make pricing analysis, it is important to identify both direct & indirect cost benefits. Direct cost benefits are visible i.e. consultant fees, new equipment, Indirect cost include over head costs or the costs of positive consequences that flow from good & lasting solutions to problems. The price of information system includes a) development cost, b) equipment costs, c) operations & maintenance cost (O&M).

**Development cost-** This includes one-time costs of system analysis, system design & implementation, cost of training, cost of conversation & testing.

**Equipment Cost-** Equipment cost includes cost of new equipment, packaged software, equipment installation, computer acquisition, air-conditioning, & space.

**Operation & maintenance cost** – It is recurring cost & starts when system is installed. It includes costs of computer usages overhead costs such as power, insurance, cost of supplies, salaries of supervisors, clerical staff, maintenance programmers etc.

Information for cost estimates can be obtained from the following materials:

- Organizational resources (Internal)
- Organizational resources (External: Vendor)

- previously conducted cost analysis report
- Work performance record
- Work output record.
- Result of questionnaire

## 5. PHASES OF EFFECTIVE USE OF PRICING ANALYSIS

There is a common error of pricing studies i.e. the understatement of costs. The cost analysis often includes the cost of hardware, software & programming, but omits other costs related to problem analysis, training, ongoing operation of the system. There are four phases of the information system. i.e.. Initiation phase, ii. Development phase, iii. Implementation phase, iv. Operation & Maintenance phase.

- i. **Initiation phase** – It includes salary & overhead expenditure on staff, cost of communication & travels related to the library consulting fees.
- ii. **Development phase** – It includes salary and over head for staff, equipment purchase & installation cost, purchase of system or application software,
- iii. **Implementation cost** – It includes salary & overhead for staff, equipment purchase & installation, cost of communication & travel related to the library
- iv. **Operation & Maintenance** - It includes salary as well as software license fees, of hardware etc.

### ★ Components of Pricing Analysis

- The Pricing analysis includes the cost of operating the old & new system & the cost of installation.
- **Cost Analysis of Present System** – Here the information is obtained by adding all cost associated with the operation of present system. The operation of the present system can be of two types, (a.) If the work is done manually the cost involved will be the salary paid to the employee (b) If the work is done through computer then the cost includes personnel, hardware, software, communications and other department costs.
- **Operating costs of Proposed System** It is to be obtained by estimating the costs of operating proposed system..
- **Installation Cost** – It is the cost of one time cost associated with installing system. They include personnel cost, costs involved in changing the intra-structure, incremental hardware costs for program testing, conversation & other resources required to move from the present system to the proposed system.

### ★ Price consumption curve & Elasticity of Demand

Based on the price consumption curve, the shape of price curve is drawn to show the degree of elasticity of demand of users. It says that the elasticity is unitary, greater than or less than one. When the price consumption in a library is horizontal, i.e. (parallel to X axis) has zero slope, (ii) the elasticity of demand for materials X is unitary i.e. the total outlay on X remains the same even though price of X rises, (iii) If the price consumption curve is upward sloping, the demand for the good X is inelastic, & it is downward sloping, the demand by the user is elastic.

- **Effect of Price on users**  
Effect of price on the reader can be categories in two ways, (a) Income Effect, (b) Substitution Effect.

### ***Income Effect***

It says if a reader income has increased & the price of both the goods has remained the same then it is called income effect. So there is an increase in the potential purchasing power of the reader's income following a relative fall in the price of X. The movement of the reader along the price consumption curve, such as from equilibrium point  $P_1$  to P as a result of a fall in the price of X is in the reality a resultant of two forces viz. Income Effect & substitution Effect.

### **Substitution Effect**

In most of the cases, the reader substitutes cheaper good for the dearer one. If X is cheaper than before while the price of Y has remained unchanged there will naturally be a tendency on the part of the reader to buy more of the cheaper good and less of the relatively dearer one.

This splitting up of the price effect into substitution effect and income effect is very useful in bringing out clearly the response of a reader to a change in price of a service. This response can be studied either through substitution effect and the income effect. The substitution effect is always treated as positive. That is if the price of a good falls more of it will be purchased and substituted for other goods whose prices have not fallen, (ii) The direction of the substitution effect is very clear and certain, (iii) But we can't be sure of income effect because the income effect may be positive i.e. (more of the good may be purchased if the income goes up) or it may be negative i.e. increase in income may lead to less being purchased of a good one may happen if the reader regards it as an inferior information, (iv) The substitution effect and income effect may move in the same direction i.e. they may both be positive. In that case positive income effect will reinforce the positive substitution effect in increasing the demand for a good, the price of which has fallen, (v) In some cases the substitution effect & the income effect pull in opposite directions. That is if the substitution effect is positive but the income effect may be negative in this case the negative income effect may make negative altogether the positive substitution effect. That is the demand for the commodity, whose price has fallen may not much increase of it, or it may diminish instead of increasing. Hence, the direction in which the quantity demanded of a good will change as a result of a fall in its price depends on the direction & strength of the income effect on one hand and the strength of the substitution effect on the other.

### **Pricing System in an economic structure**

In a mixed economy like India, where a substantial part of economic activity is in the private sector, the price mechanism has an important role to play. Decision regarding what to produce, how much to produce are based on prices of different products, materials in the market environment. So the prevailing price structure is the after result of market imperfections & rigidities, changes in relative price by themselves, which always bring about the necessary re-allocation of resources quickly or adequately.

- In a developing economy the basic trend of government operation in the fiscal & monetary fields is inevitably expansionary. So economic policy in a planned economy must influence the allocations, taxations, & subsidies, so that it conforms more closely to the objective of planning. Thus the market has to play a positive role in using the price-mechanism for purpose of planning.

### **Shortcomings of Pricing System**

The pricing system enables the community or society or organization to tackle the fundamental problems of the economy viz (a) what to produce (b) how much to produce (c) how to produce (d) for whom to

produce (e) to adopt itself to change for flexibility But still then the pricing system is criticized on the following grounds.

- The economic freedom permitted by the price system kills wholesome competition among the different libraries, which is beneficial to users & staffs.
- The self-seeking profit making firms extract highest prices & pay lowest wages to the workers.
- The sovereignty of the producer kills the sovereignty of consumers.
- Clash between private center & social welfare exists.
- Users are hypnotized through high-pressure salesmanship to buy goods, which the producer thinks most profitable to produce.
- Price system does not help the economy of the country to adjust quickly to drastic change in the community's production targets.
- Price system has proved to be an imperfect mechanism for achieving full employment; unemployment persists even in highly developed & prosperous society.
- Price system has proved to be an imperfect mechanism for achieving full employment.

## 6. CRITERIA OF PRICING

Though price mechanism in a library system, the service demand intentions of the user and the product supply decision of the households establish a series of resources. Price system performs the different function for the better environment.

### *a. Co-ordination*

The price system in a library functions in such a manner that the adjustment in the economic system takes place automatically without any direction from higher authority.

- i. Price is the co-ordination both of production and consumption,
  - ii. The reader are able to convey their prefer
  - iii. If the price rises it checks demand and stimulate supply & vice versa.
  - iv. If there is a greater demand for a book than the supply thereof then the adjustment between the two will be brought about through a rise in price.
  - v. Conversely, if the supply is greater than the demand, the price will fall and bring about equilibrium between the two.
- The users are able to convey their preferences through the prices they are willing to offer.
  - The organizers are able to indicate the scarcity or abundance of a commodity by means of the price they are willing to accept.
  - If prices rises it checks demand and stimulates supply.
  - If there is a greater demand for a commodity or a service than the supply thereof then the adjustment between the two will be brought about through a rise in price.
  - Conversely, if the service is greater than the demand, the price will fall & bring about equilibrium between the two.

### *b. Guides economic activity*

- The Price structure of a commodity or a service constitutes an income through which its purchasing power, determines the extent & direction of the economic activity of a library.
- Price system collates and transmits to million of users & managers the required information. Thus price system elicits appropriate response from the users as well as resource allocation.

**c. Harmonizes conflicting interests**

- i. The price mechanism is supposed to harmonize the interests of both reader and supplier.
- ii. It helps to harmonize the desire of reader by satisfying their wants as fully as possible.

**d. Allocation of work force**

- i. Everyone in the society has his own desire over preference to job. One may like to be a top of any profession but he cannot. He must be put in his proper place. But it is in pleasant task of the price system to assign each individual a task, which benefits him. The price system allocates the available labour force of a country or office numbering different workers.
- ii. A change in wages and terms of employment matches the demand for, & supply of each type of the workers.
- iii. By adjusting the economic activity, the price system balances the relevant supply & demand. There is no favoritism.

**e. Allocation of Resources**

- i. Usually human & materials are treated as productive resources of the community if they were allocated among the various users in such a manner that each makes a maximum contribution to the total output.
- iii. Any misallocation can be rectified by transfer of job from one to another through the price-product indicator. For example – if reference unit can make more valuable contribution, when they equipped with more reference tools etc. similarly a land can produce more valuable contribution, when the land devote to the cultivation of food crops and the object may be accomplished.

**f. Making an adaptability**

- i. With a flexible price structure a quick adaptation of a new situation can be possible. It is the price system which helps to know consumer's tastes & preferences change,
- ii. If certain goods are in greater demand and the price must rise to fetch more profits in this way, the library expands to meet increase demand.

**7. METHOD OF PRICING**

There are two types of methods usually followed in pricing system. a. Average cost method b. Flexible cost method

**Average Cost Method**

- i. This method helps to predetermine the cost per unit in terms of time & performance.
- ii. Every job is priced according to the number of units of the components consumed, where the number of unit is multiplied by the charge per unit.
- iii. Total cost is determined by calculating its direct cost.
- iv. The cost per unit is obtained by dividing the total cost by the number of units projected.

The formula of average cost method is as follows.

$$R_i = T_i/P_i = D_i + I_i/P_i \text{ and } C_j = \sum_i R_i U(ij)$$

Where  $R_i$  = charge per unit produced by  $i$

T<sub>i</sub>= Total cost per given time of billing component i  
P<sub>i</sub>= Projected production for given period of time i  
D<sub>i</sub>= Direct cost for given time period of i  
C<sub>i</sub>= Indirect cost for given period of time allocated to i.  
U (ij)=Number of units consumed by job at billing component

Say in an academic library,

1. The direct Cost per minute of use of computer is Rs. 2 and indirect cot per minute is Re 0.40
2. Say, the projected production number is 3 then we get R<sub>i</sub> i.e. charge per unit produced in one minute =  $\text{Rs. } 2+0.40 = \text{Re. } 0.80$
3. Now we have the total charge for any job in the library will be the multiplication of the charge per unit produced i.e. Rs. 0.80 as calculated above and the number of units consumed by the particular job. Further the above all total charge will be the summation of the above calculated charges for individual jobs.

In this method all the users are presumed to be charged uniformity per unit of computer service.

### **Flexible Pricing Method**

When the resources are limited, a priority system is necessary for dividing the problem or job. Average cost method uniformity bills all users at all times where as flexible pricing method establishes priorities.

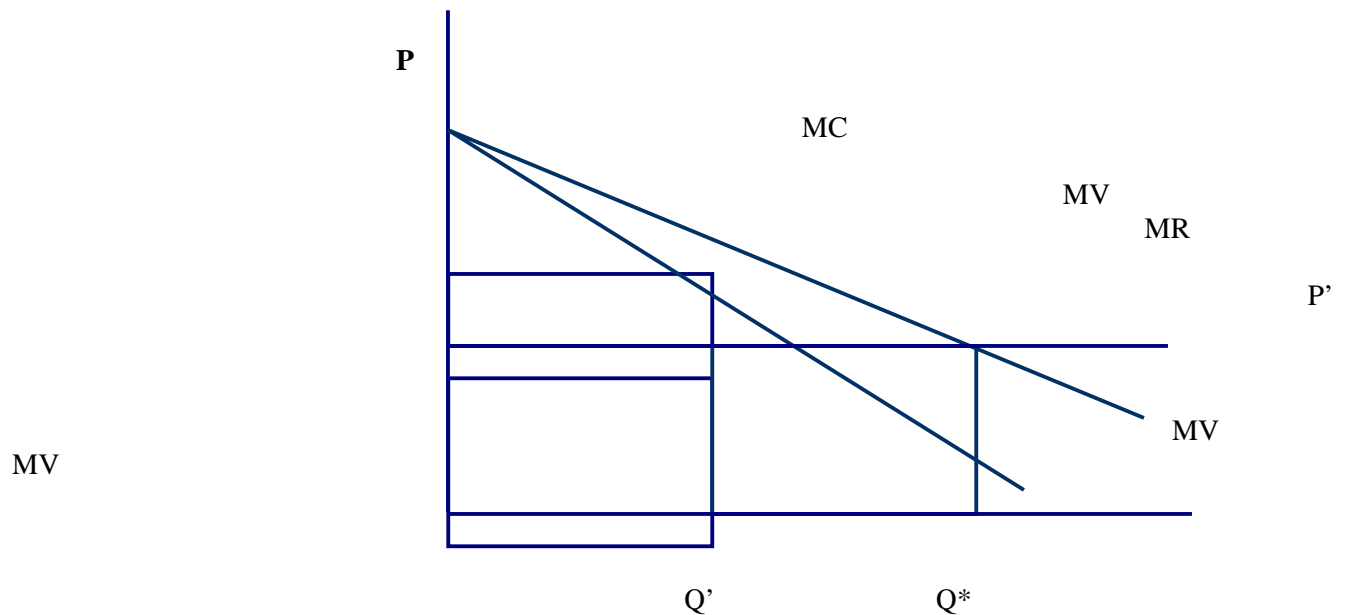
- A priority system is established by administrative decision maker which does not guarantee optimal allocation. It is used for internal pricing for an efficient allocation of computer service.
- It can be down by asking the user that the amount they are ready to pay for every job submitted in the library, which will determine the priority level. The higher the priority the higher the price.
- Priority method makes the user to face uncertainty towards the performance they get, since the prices are unpredictable.
- User who demands the completed time and commitment to pay the price to execute the job by the specific time.
- Some user who indicated the maximum price that they are ready to pay.

## **8. CLASSICAL MODEL**

Classical model of microeconomic theory for pricing determination of computer service is based on supply and demand function, where a key to internal pricing is the consideration of academic center as an information profit center. So the unit price for a job can be computed through calculation of the salaries of the employees, cost of equipment and its annual depreciation along with the software cost in order to make the academic library center as profitable or marginal profit center where the data of the users on quarterly basis or of the past few years, if available, must be tabulated so as to arrive at a profitable charged price to recover from the users.

Thus taking price in the Y-axis and the quantity of the job on the computer service on the X-axis we may draw a graph as shown below. Now the total cost curve (TC), a marginal cost curve (MC), and users marginal value curve of computer service (MV) can be drawn on a sheet of graph. The intersection of the curves MC & MV gives the corresponding optimal quantity of computer service and the corresponding price in the Y-axis shows the optimal price. Thus, the solution gives us the quantity in which the total profit of the organization is more, and beyond or below which the profit of organization as a whole will be less.





MC= Marginal cost

MV=Marginal value of a service

P\*= Optimal price

Q\*=Optimal quantity of computer service

- a. Here optimal price must be equal to marginal cost of the center.
- b. The price must be determined the optimal out put of the center which must be allocated judiciously among the various user.
- c. To achieve optimal allocation price has to be identical for all the users of the organizations.
- d. Every user must equate the marginal value of the computer service with the price demanded from him.
- e. If a certain user faces a price higher than that of another user the marginal value of service of him or her will be higher than that of other user, in this case new allocation of computer service and allocation of larger quantity to the user paying the higher price will increase the total out put of the computer service in the organization.
- f. So in this condition we should consider the priority of job from users point of view where some user may need the report within a specific time where others are not, so equal pricing leads to first come first serve policy.
- g. Some times user may not require information if it comes late so the pricing differs due to priority fixation.
- h. The time when the job is taken up and the time when it has to be completed are considered and then the prices fixed. So if the job within the time limit without giving priority usually pricing method should be used, other wise we should go in for higher cost for that particular job.

### Steps in Pricing Policy

An understanding of pricing making is essential because academic systems are designed to support decision-making in one way or another. The phases of pricing making policy is covered first, followed by rationality. It combines several models, which have different steps for describing decision process.

Pricing policy is represented as a problem solving process preceded by a separate problem finding process.

- **problem finding** is the process of identifying and formulating problems that should be solved. Problem finding is the key to effective decision-making because a seemingly good solution to the wrong problem may miss the point. For example, we might come up with much solution to the problem of how to expand one item, but it might be better to formulate the problem by using substitutes.
- Problem solving is the process of using information, knowledge & intuition to solve a problem. Problem solving portion says that most decision process can be divided into four phases: intelligence, design, choice & implementation.  
**Intelligence** – Intelligence of a policy manner includes the collection & analysis of data related to problem identified in the system finding stage. Key challenges in the intelligent phase include obtaining complete & accurate data & figuring out what the data imply for the decision at hand.  
**Design** - Design Includes systematic study of the problem, creation of alternatives, and evolution of outcomes. Key challenges in this phase include boundary of the problem to make it manageable, creating real alternatives & developing criteria & models for evaluating the alternatives.  
**Choice** – Choice is the selections of performed alternative, which is a key challenge, include objective, incorporating uncertainty & managing group decision process.  
**Implementation** – It is a process of putting the policy into effect. It includes explaining the decision to the appropriate people, building consensus.

## 9. CONCLUSION

Thus price is determined by the intersection of demand and supply. Equilibrium price is established at the level at which demand curve intersect the supply curve or at which the quantity demanded is equal to the quantity supplied at any price higher than the equilibrium price. The quantity supply will exceed the quantity demanded. Competition between sellers will force the price down to the equilibrium level similarly at any price lower than the equilibrium, once the quantity demanded would be greater than the quantity supply. Then the competition will push the price up to the equilibrium level. In this regard the element of time plays an important role in the determination of price. As per the view of the Marshal, price level can be determined in three ways: a. very short run or momentary equilibrium when supply is fixed or limited by the total stock on hand, b. short run equilibrium when output can be varied within giving fix plans and firms, c. long run equilibrium when both the size of the organization and the number of user can adjust himself to the new level of demand. For the pricing structure in the academic library system, following information are essential to draw the judicious plan.

- an estimate of the cost of operating the current system.
- an estimate of the cost of the proposed system.
- an estimate of the cost of subsequent phases of the development project.
- a description of tangible benefits.
- an identification of risks associated with either doing or not doing the project.

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