

COSTING TECHNIQUES AND THEIR APPLICATION: A STUDY ON INDIAN PHARMACEUTICAL INDUSTRY

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ABSTRACT

After invasion into the world's business arena the pharmaceutical industry has overcome number of pitfalls and now it has become one of the successful and accomplished industries in the world. The current study is performed on the on- going profit driven pharmaceutical firms with the objectives of maximizing profitability by evaluating the installation of suitable costing systems, determine the degree of its success in achieving profit and profitability, and the hurdles that come across the way of its implementation. Collection of data from number of pharmaceutical companies have been made through structured questionnaire, and analysis has been made by the application of descriptive statistics and the graphical method.

The significant part of the outcome of the study is that majority of the companies have preferred to use Marginal costing system and most of the managers are satisfied with this costing system.

Keywords: Pharmaceutical Industry, Costing System, Marginal Costing, ABC Costing.

Introduction

The current regime of global competition has compelled the manufacturing and services organization to become more integrated, flexible and adopting in terms of automation in their operating system to optimize the cost by increasing productivity for their survival. It is essential to sustain and grow cost optimization, for this selection and practice of suitable costing technique is equally important.

There are three major systems of costing:

- (i) Traditional methods,
- (ii) Marginal costing methods, and
- (iii) ABC costing method.

The current study is about the costing system used by Indian pharmaceutical companies.

The relevance of pharmaceutical companies is vital for the society as a whole. It provides varieties

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of essential life-saving products for human beings. In this perspective, it has the ambit of exploring the development of new pharmaceutical products with its safe and hassle-free distribution to the end users.

The scope of pharmaceutical manufacturing is broadly two folded:

1. Research and development;
2. To convert the raw material in the form of natural and organic substances into end pharmaceutical products through extraction, & necessary chemical processes.

Previously in India the first function was not performed; only the pharmaceutical products were produced. But by the advent of globalization, emphasis was given to research and development with augmenting the facilities for necessary processing of pharmaceutical ingredients so as to produce the requisite pharmaceutical products.

A wide range of pharmaceutical products are currently being produced across the industries in the current scenario, which includes: disinfectants, anaesthetics, muscle relaxants, water soluble salts, antibiotics, anticoagulant agents, antihypertensive diuretics, anti-infective, analgesic, vitamins and antidepressants in the form of tablets, oral suspension, lotion and ointment, capsules, creams, syrups, and injectable substances with their respective trade names.

The materials for manufacturing the products are partly imported and partly procured from domestic circuits. Some of these materials include: - methanol, ethyl acetate, di-chloro ethane and methylene chloride. A broad range of pharmaceutical products and drugs have been produced and sold by the Indian pharmaceutical companies & currently these companies are playing a vital role in contributing to Indian economy. .

However, the current study is about the application of proper costing techniques for pharmaceutical sector. Number of study reveals that there is no concern about research and development on management practices particularly on the practice of accountancy in the non-western emerging economy.

The reason is the lack of knowledge and technology. It is being argued that the work of the so called traditional manager, is in line documented without conceptualizing innovation, creativity & is very difficult to accommodate the sophisticated and prone to change western concept in the business environment of non-western countries. There are lots of studies conducted on the costing techniques in the developed counties, but there is scant research available on the costing techniques in India.

Like profit making organizations, the prime aim of pharmaceutical companies is to maximize profit, by applying proper costing technique for minimization of cost. In the prevailing era costing techniques have become more significant as they provide accurate results. However, choosing the

right techniques is a herculean task considering the degree of competition and volatility in the macro economic scenario.

The current paper shows and evaluates the costing system used by the pharmaceutical companies in India through a questionnaire survey conducted on the pharmaceutical companies which are working in India.

Review of Literature

First of all, we examined the following questions regarding the costing system in the pharmaceutical sector:

- (i) What is meant by cost model?
- (ii) What is the significance of this model for the pharmaceutical sector?
- (iii) What are the major costing systems?

A cost model is used by the companies to have a better understanding regarding the costs, in order to run their business effectively (Kaplan, 1984). The cost model performs the following functions:

- i) The assessment of inventory and cost of goods sold;
- ii) The estimation of the cost of products, services, customers and activities
- iii) The provision of feedback to the manager about the efficiency of the process.

Hatzis et. al. (2011) is of the view that the other purpose of the cost model is to provide useful information for decision making, after getting and analyzing of the data. The effectiveness of data depends on the right information for making the right decision.

Mehmood et. al. (2009) stated that in the current era the pharmaceutical sector is having a more multifaceted and dynamic environment. There are lot of changes in this industry, like the amplified buyer cost sensitivity, the new market, the technological advancement and the global competition, which has increased the level of uncertainty. The patient's expectations are higher, the healthcare cost has also increased and the incapacity of the economy to meet the increased cost is the major challenge for the pharmaceutical industry. Like other profit driven industries the main objective of the firm is to maximize the profit, to accomplish it, a proper procedure of costing is inevitable; therefore, the costing techniques have a great importance for the pharmaceutical sector.

The main costing systems can be categorized based on the product process and the production processes as follows (Kaplan, 1984; Cooper and Kaplan, 1988).

Product Cost

The costing methods concerned with product costing are: · Variable/ marginal/ direct costing; · Full/ absorption costing.

Production Process Cost

The costing methods concerned with the production process cost are: · Process costing, Job order costing.

This article is concerned with the product cost and not with the production process cost.

According to Garrison, Noreen and Brewer (2004), in the manufacturing organizations, two most common techniques are used for the valuation of the inventory and cost of goods sold. The absorption costing is used commonly for the external purposes and the marginal costing is used for the internal decision making by the management.

The two techniques provide a different net operating profit, while the difference may be quite high.

Garrison, Noreen and Brewer (2004) define the variable and absorption costing as below.

The absorption costing considers all the manufacturing overhead as part of the product cost, whether it is fixed or variable. In the absorption costing, the per unit cost consists of direct raw material, direct labour and both fixed and variable overhead.

It means that in the absorption costing the fixed part of the manufacturing cost also becomes a part of the product cost, in addition to the variable manufacturing cost. Direct material is a primary part of the product and it can be easily traceable in the product (e.g. wood in furniture, hard drive in the computer); direct labor can be easily traceable in the product, it is called touch labour (e.g. the labour of the carpenter); the manufacturing costs include all costs which were incurred on manufacturing the product, except the direct material and the direct labour (Garrison, Noreen and Brewer, 2004).

The natural and organic substances become material for the pharmaceutical companies and the persons who are directly involved in the production of pharmaceutical product becomes the part of direct labor.

There are the following advantages of the absorption costing (Garrison, Noreen and Brewer, 2004).

- (i) Fixed cost of manufacturing is also recovered;
- (ii) Total cost is recognized;
- (iii) It is useful for pricing decisions and prediction of profitability;
- (iv) It is used for external purposes.

In variable costing, only that part of the cost is considered in the product which varies with the level of activities. It consists of direct material, direct labour and the variable manufacturing overhead cost.

Fixed cost is not considered a part of the product cost in variable costing. The fixed manufacturing cost becomes a part of the period cost, like the administrative and selling expenses, thus in the variable costing the inventory and cost of goods sold does not consist of any fixed cost of production.

Variable costing has a number of advantages (Garrison, Noreen and Brewer, 2004):

- i) Data can be taken directly from the variable costing for Cost-Volume-Profit (CVP) analysis; however, in absorption costing it is not easily available;
- ii) Profit is not affected by the change in inventories;
- iii) The manager often assumes that the per unit cost is the variable cost, but in absorption costing both fixed and variable costs are treated in per unit cost;
- iv) In the variable costing, the fixed cost is clearly shown in the income statement; in this way we can emphasize fixed costs to become truly profitable;
- (v) Variable cost profit is close to the net cash flows;
- (vi) Variable costing provides a better prediction of the profit, because there is no subjective allocation of fixed cost.

How much profit is different in both costing techniques is depending on the following two things.

- i) The difference between the absorption and the variable cost per unit (level of fixed cost per unit).
- ii) The value of closing and the opening inventory.

The Table below indicates the potential effects of both costing methods on profit. No method has a complete negative or positive effect on profit. If we change the costing method, the profit can increase or decrease depending on the stock adjustment (Pong and Mitchell, 2005)

Table - 1: Stock valuation & its impact on profit

Stock valuation method	Increase in stock	Decrease in Stock
Marginal costing	Low profit	High profit
Absorption costing	High profit	Low profit

Table - 2 : Difference between Absorption Costing & ABC

Traditional Costing System / Absorption Costing	ABC System of Costing
Only manufacturing costs are allocated to the product.	The manufacturing and non-manufacturing costs can be allocated to products (some manufacturing

	costs might not be included in the product cost, it varies from situation to situation)
Administrative, selling and general expenses are considered as a period cost.	Administrative, selling and general expenses can be considered as product costs if they have a direct relationship with the product cost.
The factory overhead is charged to production on the basis of a single overhead rate for the entire factory. The base may be direct material cost, direct labour hour, direct labour cost and machine hour etc.	There are many factory overhead costs based on the multiple allocation basis.
Unused capacity costs can be considered as product cost.	Idle capacity costs cannot be considered as product cost.

Objectives of the Study

The objectives of the study are to

- Identify the costing systems that the pharmaceutical companies are currently using.
- Assess the degree to which managers are satisfied with different costing techniques.
Identify the problems regarding the existing costing systems.
- Assess how indirect costs are charged to the product.

Relevance of the Study

This study will help the academic and industry:

- To know the costing system applied by the pharmaceutical companies in India.
- To know the role and relevance of cost accountant/ manager/accountant in Indian Pharmaceutical Industry.
- To know the basis of overhead allocation to production in the pharmaceutical firms.
- To know the performance evaluation criteria adopted by pharmaceutical companies.
- To know the extent to which accounting software package have used as a supporting tools in the process of costing.
- To know the major problem faced by the pharmaceutical companies while dealing with the costing process.
- To know the satisfaction level of Managers with prevailing costing system adopted by their respective pharmaceutical companies.
- To know the best system of costing for Managerial decision making.

Method of Study

The research study is made on the Pharmaceutical companies of India. Data collection is made through a structured questionnaire from the employees of Pharmaceutical companies.

The questionnaire was designed for the target respondents which consist of Managers, Accountants & other executives of the pharmaceutical companies operating in the India.

A simple random sampling technique was used for distribution of the questionnaires. The size of targeted respondents is 150 out of which 112 respondents have made their response at a rate of 74%. The descriptive and graphical analysis have used for analyzing the data collected from the above sources.

Data Collection and Analysis

Participants:

The participants to the survey are managers or accountants or any persons who are dealing with the costing system in the pharmaceutical sector in India. The demographic information of the participants is presented in the below mentioned table.

Particulars	Range	Frequency	Percentage	Cumulative Percentage
Gender	Male	98	88	88
	Female	14	12	100
	Total	112	100	
Age	18-24	7	6.2	6.2
	25-31	53	47.5	53.7
	32-38	30	26.7	80.4
	38-44	14	12.5	92.9
	45-51	6	5.3	98.2
	Above 51	2	1.8	100
	Total	112	100	
Education	Undergraduate	10	9	9
	Graduation	22	19.6	28.6
	Post Graduation	73	65.1	93.7
	Above P,G	7	6.3	100
	Total	112	100	
Job Experience	1-6	47	42	42
	7-13	27	24	66
	14-20	20	17.8.	83.8
	Above20	18	16.2	100
	Total	112	100	

- Demography has no longer been the objective of our study. It only reflects the composition of respondents.
- The above table indicates gender disparity as the male respondents are dominated with 88% compared to the female which stood at only 12%.
- The majority of the respondents are in the age of 25-31, which shows that young people are involved in the pharmaceutical sector; however, the table shows that all age groups are included in our sample.
- It is also clear that majority of the respondents hold a master degree and is also experienced in the pharmaceutical sector.
- The different age group, both genders, low to high qualification personnel and experienced respondents show that the data is the true representation of the population involved in the costing activities in the pharmaceutical sector.

Costing systems

The below mentioned table indicates the costing system adopted by different Pharmaceutical industries as has been mentioned in the first objective. The data collected revealed that majority of the Pharmaceutical companies in India (47%) are using Marginal costing system to expedite the process of making decision for capacity utilization in different situation. On the other 37% of the firm have used the traditional pattern of Absorption costing system and 16% of the firm have used the ABC system of costing which seems to be more cumbersome.

Table - 3: Costing methods used in the Pharmaceutical Industries.

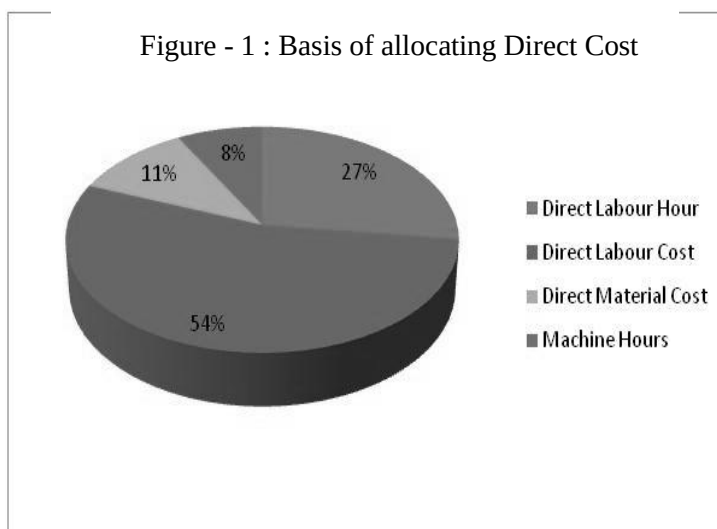
Costing Systems	Frequency	Percentage
Absorption costing	41	37
Marginal Costing	53	47
ABC System of Costing	18	16
Total	112	100

Source: Author's own compilation

Indirect Costs

Allocating indirect cost to different heads of expenditure is a crucial decision making process. It differs from organization to organization, Industry to Industry and so on. Generally the basis of allocating indirect cost may be Direct labour Hours, Direct labour Cost, Machine Hours, Material cost, or Prime Cost.

However, in Indian Pharmaceutical sector (as per the revealed data) most of the Companies are allocating their Indirect cost on the basis of direct labour cost as this has been treated as the major element of cost by the Indian Pharmaceuticals, while some firms are applying direct labour hours method and very few firms have used direct material cost and machine hours as the basis of allocating indirect cost.



The graph shows the basis of allocating indirect cost in Indian Pharmaceutical industry.

Standard for Cost

The basic objective of installing a prudent costing system is to evaluate the performance of the organization for increasing profitability. In this regard, they have to determine specified standards considering this, most of the Indian Pharmaceutical companies (75%) have set a standard for themselves to evaluate their performance.

Cost Accounting Manager

Finance is the respiratory system of an organization, to ensure a smooth respiration organization has to give utmost relevance to this department by appointing appropriate professionals, segregating each aspects and sub aspects of the department from another. Realizing this most of the Indian Pharmaceutical companies (66%) have created the position of Cost accounting Managers while the rest (34%) have managed their costing system through others.

Accounting Software

In the context of present day technological savvy society, organizations across the sectors are compelled to adopt technology with its subsequent modernization. Pharmaceutical Industry in India has no exception to this. As per the data collected, majority of the Indian pharmaceutical

companies (82%) have used the modern and sophisticated technology (Accounting Software) for their costing purpose while rest (18%) uses no software for their costing purpose.

Problems in the costing system

As per the survey through the structured questionnaires from the employees of the Pharmaceutical companies the under mentioned problem areas were defined regarding the costing system they used.

- Allotment of indirect cost to production
- Delays and difficulties in obtaining accurate costing information.
- Difficulties in assembling of raw data.

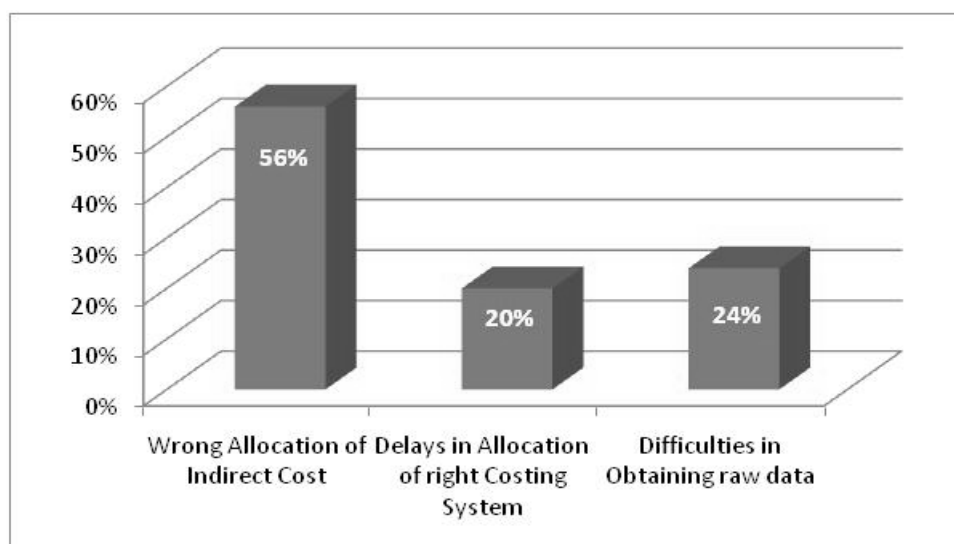
Out of the above problems majority of the respondents (62 out of 112) have raised concern over the basis of allocation of indirect cost to production followed by difficulties in assembling of raw data (27 out of 112) and delays and difficulties in obtaining accurate costing information (23 out of 112).

Table - 4: Managers' responses regarding the problems faced by the pharmaceutical sector

Particulars	Frequency	Percentage
Wrong Allocation of Indirect Cost	62	56
Delays in Allocation of right Costing System	23	20
Difficulties in Obtaining raw data	27	24

Source: Author's own compilation

Figure - 2



Satisfaction level

This is another major objective of the survey where the satisfaction level of respondents has been measured in reference to the costing system they used in their respective entities. The three point rating agenda was served in this regard through the questionnaire such as:

- Satisfied with the prevailing costing system
- Neither satisfied nor dissatisfied with the prevailing costing system
- Dissatisfied with the prevailing costing system.

The resultant data revealed that 64% of respondents are satisfied with the system that they are using, 25% are neither satisfied nor dissatisfied and 11% are not satisfied with the system. In addition to this it has also observed that the satisfaction level of employees is high where ABC system of costing is applied followed by Marginal costing system and traditional costing system respectively.

The graph shows the level of the respondents' satisfaction, neutral position and dissatisfaction.

(Respondents Satisfaction level with regards to the Costing system they used.)

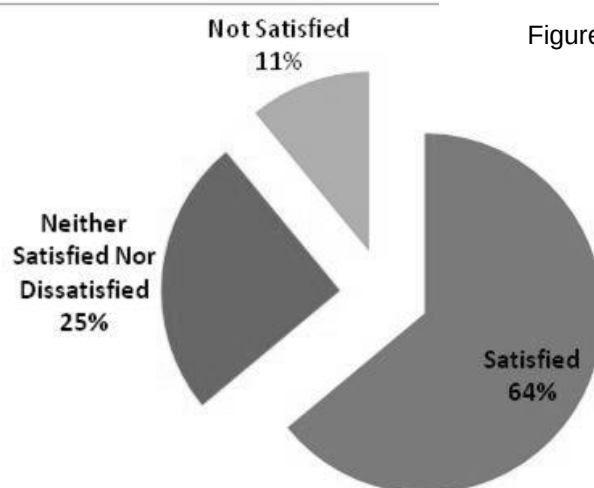


Figure - 3

Decision Making

This is the most important objective of the research study where responses obtained from respondents with regards to the installation of costing system in their respective entities for decision making purposes. As per the survey most managers (60%) are of the opinion that

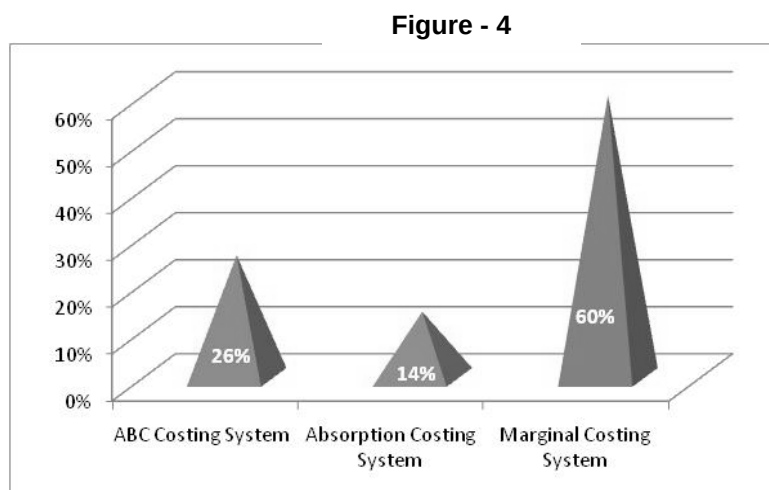


Figure - 4

Marginal Costing System is better for decision making purpose in comparison to Absorption Costing System (14%) and ABC costing system (26%).

Findings & Conclusions

From the survey the following have been revealed.

- Most companies in the industry use the marginal costing, instead of the absorption or ABC costing. ·
- The managers of the companies that are using the ABC system are more satisfied with the costing techniques, as compared to those using any other costing techniques. ·
- The companies have standards for costing and also use software for costing. ·
- Most managers are of the view that the marginal costing is better for decision making as compared to any other techniques. ·
- The major problem which the organization is facing in the costing system is the incorrect allocation of the indirect cost.

In the current era, there is great importance of the pharmaceutical companies, because they deal with the human life. The pharmaceutical companies try to provide quality products along with minimizing the cost. The profit of the organization depends on the costing techniques which the organization uses. Therefore evaluation and identification of a proper costing system, and other relevant issues which are of great importance for the costing system should be seriously considered and used by the pharmaceutical companies in India.

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