

Cost Accounting Practices in Bangladesh: A Study of the Pharmaceutical Sector

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ABSTRACT

This study purports to present an investigation of the current cost accounting practices in the selected pharmaceutical companies of Bangladesh. Through a combination of illustrative and cumulative case study of five randomly selected pharmaceutical companies, this study finds that the sampled companies, in general, have a high ratio of product costs to period costs, a higher degree of operating leverage, a number of discretionary costs, absence of activity based management, reliance on budgets for planning and controlling costs and primarily apply process costing method for product costing, absorption costing for internal reporting and tend to avoid complex methods in favor of simply understandable methods even at the cost of accuracy. This study recommends the introduction of the concepts of activity based management, total quality management, life cycle costing, six sigma principles and balanced scorecard to reflect the recent developments in the cost accounting of the pharmaceutical companies to ensure better control, greater effectiveness and a more informed management. The major limitations of this study involve the lack of previous research concerning the same topic in Bangladesh, the unavailability of cost accounting information and inadvertence of management to share internal data on grounds of confidentiality. An important finding is that managers, in general, are less informed about the overall organizational practices of cost accounting and tend to concentrate on own areas. This study is expected to add value to the cost accounting stakeholders of the country along with academicians, corporations, management, students and the public in general through refining their views about the cost accounting practices in Bangladesh.

KEYWORDS: Financial Reporting, Cost Accounting, Cost Accounting Methods, Costing, Budgeting

1. INTRODUCTION

Cost accounting, being the promoter of proper utilization of resources and efficiency has been evolved after World War II. After World War II, economics from every economic structure laid more emphasis than ever in order to ensure that all the business organization those are handling any sort of resources, irrespective of organizational or state must follow cost accounting principles. Costing information of an organization is the feedback that an organization can get based on their past performance as well as the basis of the motivation of their future performance.

Cost accounting is an art as well as science in order to record, classify, summarize, and analyze, various costs with a view to helping the top management so that they can take decisions more efficiently (Waingankar, 2019). The purpose of financial accounting is to help all the stakeholders to see the clear picture of an organization, whereas cost accounting aims to determine unit cost of a product thus project the true image of the operational activities of an organization. Cost accounting is mainly an internal activity which differentiates between the actual and the estimated amount of cost of any transaction. Cost accounting is a precondition for managerial decision making (Padhy, 2019). Cost accounting, although being professed as a costing method consists of various components beyond that, such as bookkeeping, development

of a system, analysis of the input etc. However, determining the selling price of the product is the primary objective of cost accounting (Mazumdar, 2016).

Bangladesh, being a densely populated country has very limited resources of its own. At present Bangladesh is desperately trying to develop its economy and change the scenario of poverty (Islam, 2005). In order to develop and make progress, it needs to make the best use of its limited resources. Because of its resource constraints increasing productivity is very important. Productivity is the ratio of inputs and outputs, where inputs are all sort of costs that have been incurred in order to obtain goods and services. Since costs are associated with all types of inputs cost accounting is associated with all types of organizations. All sorts of business industries are facing intense competition in this era of globalization. Decision making and making a profit is becoming more and more difficult and complex with each passing day (Bhuiyan, 2014). In these circumstances, cost accounting could really be helpful for efficient decision making. Since the main objective of cost accounting is to determine the selling price of the product that is competitive enough, proper costing of the product is very important to the top management to make decisions that are appropriate for the current situation.

The Pharmaceutical industry in Bangladesh is one of the most developed sectors of the country. Manufacturers produce insulin, hormones, and cancer drugs. Pharmaceutical industries also export drugs to international markets including Europe. The objective of the pharmaceutical companies behind expanding their business is to expand in the export market. There are 31 companies listed in the Dhaka Stock Exchange in total.

Costing techniques of pharmaceuticals companies is a vital issue. Like most of them, they try to conceal it in this intensely competitive industry. The pharmaceutical sector is facing various challenges such as increasing price of raw materials in the global market, high domestic inflation rate, which makes cost accounting even more important for this industry. This study has chosen Beximco Pharmaceuticals Ltd, ACI Limited., Renata Ltd., Central Pharmaceuticals Limited, and Beacon Pharmaceuticals Limited of this sector in order to assess the cost accounting practices.

The rest of this paper has been organized in the following ways. The next section explains the primary and secondary objective of the study. The following section discusses the scope of this study. Then the next part explains the literature review of this study. The next section after literature review discusses the methodology that has been followed in order to prepare this study. The next two sections discuss the overview of the Pharmaceutical Industry along with the overview of the chosen companies respectively. The next section explains the cost accounting practices of the five companies which consist cost classifications, product costing methods, departmental cost allocation methods, overhead allocation methods, inventory costing methods, budgeting methods and other cost accounting concepts. The following section highlights the limitations of this study. Next section summarizes the study with a conclusion and the last part of this study recommends some modern cost accounting techniques that should be adopted by these companies.

2. Objectives of the Study

Financial accounting and cost accounting can be differentiated on the basis of the users of the reports generated by these two accounting systems. Financial accounting aims to provide information to those who don't have access to the internal affairs of an organization such as investors, regulators, and shareholders. On the other hand, cost accounting concentrates on the insiders of an organization with the intention of assisting them in the decision-making process. Financial accounting reports to the external parties. As a result, it has uniform and structured standards of reporting and every organization is bound to comply with these standard while reporting to the external parties. Since cost accounting basically an internal affair and managers are the users of these reports, there is no uniform standard available for presenting the cost accounting reports. That's why cost accounting reports lack uniformity, and different organizations find their suitable ways for presenting their cost accounting reports to the managers.

The objectives of this study can be divided into two broad categories which are primary objectives and secondary objectives.

2.1 Primary objectives

The primary objective of this study is to explore the cost and management accounting practices adopted by the

manufacturing companies that operate in Bangladesh. More specifically, the main objective of this study is to explore the cost and management accounting practices of the Pharmaceutical companies operating in Bangladesh. This study intends to investigate the following issues-

- Which product costing methods such as process costing, job costing, and throughput costing are used in these companies.
- Whether they follow Activity-Based Costing or not.
- Whether the concepts of quality costing are applied in the pharmaceutical sectors.
- The areas of other costing information and the cost accounting techniques.

The above mentioned objectives are considered to fulfil the main objective which is to investigate the overall cost accounting practices prevalent in the pharmaceutical sector of Bangladesh.

2.2 Secondary objectives

There is a lack of research regarding the cost accounting practices of manufacturing companies operating in Bangladesh. Unavailability of data, absence of any standard, and lack of uniformity in reporting have forced many researcher to stay away from this area. So this study aims to minimize the inadequacy by contributing to the existing literature regarding cost accounting practices in Bangladesh.

3. Scope of the Study

This study tents to observe the cost accounting practices in Bangladesh through close observation of listed companies in Dhaka stock exchange. Among more than 300 listed companies categorized in 22 industries in DSE, this study targeted the pharmaceuticals industry. And to reach the conclusion this study randomly selected 5 companies under this pharmaceuticals industry. The companies are - 1. ACI Limited, 2. Beacon Pharmaceuticals Limited, 3. Beximco Pharmaceuticals Ltd., 4. Central Pharmaceuticals Limited, and 5. Renata Ltd.

Various published as well as insider information regarding the costing and recording method of these five companies have been collected to deeply observe the cost accounting practices among these companies. It is to be mentioned that there is no universal standard for the costing techniques rather there are a lot of alternatives that can be followed by companies. The companies select the method which is the most suitable for their structure. Thus, it is possible that even in the same industry different company may find different method of cost estimation or cost allocation to be most suitable and effective for their own. Furthermore, the companies often choose cost accounting methods which better comply with their business strategies. Therefore, it is very likely that there may be significant variation in the costing method of the companies that is not selected as samples in this study.

This study drew the conclusions on the basis of these 5 listed companies under pharmaceuticals industry in DSE. Though this study tends to take the samples so that it is the best representative of the scenario of Bangladesh, any significant differences in other non-selected companies are beyond the scope of this study.

4. Literature Review

Institute of Cost and Management Accountants of Bangladesh has provided cost accounting standards for the

proper application of costing standards in the companies and industries in aggregate. ICMAB has provided a Generally Accepted Cost Accounting Principles (GACAP) which is a coherent system of interrelated objectives and fundamentals that expects to provide a more consistent application of cost standards among the companies. Instead of providing any rules, this framework provides a simple guideline for the companies to follow in case of cost estimation, cost allocation, cost reporting etc.

For the purpose of internal decision-making process, the Bangladesh Cost Accounting Standards has suggested for three tools or techniques which are Activity Based Costing, Target Costing, Life Cycle Costing, and Benchmarking. These techniques are regarded as Instruments to make internal decisions within the companies. The cost accounting standards has also defined the concepts which must be used by the companies for cost measurement, designing cost structure and modeling etc. These concepts are resources, objectives, costs, responsiveness, traceability, capacity etc. The resources of the companies are utilized by them for making revenues whereas the objectives are the goals or aims of the companies which is also the outcome of the utilization of resources. The cost represents the measurement of consuming resources, responsiveness facilitates accurate measurement and estimation. Traceability helps the companies to determine the cost allocation bases.

In Otley's study (1980), Contingency Theory was applied to accounting practices and he explained the observation that generally accepted accounting policies may not apply to all organizations. Each organization will have its own accounting practices that best suits its circumstances. This theory is not limited to examining certain influential factors that help managers choose the appropriate accounting management method. According to Sine and Krisch (2006), accounting policies differ from one institution to another due to special operations and the environment. Technology has a very significant influence on the choice of operating accounting process in the company. For example, Szchta (2002) found that technology had a significant impact on the adoption of modern management accounting practices in Polish companies, while AL-Omiri and Drury (2007) found that a higher cost system was an advanced option, the importance of cost, size, competitive strength, and the financial sector. In this context, they stressed that cost-based activities were also linked to new accounting practices for innovations such as lean production and "just in time" in the services sector. As companies compete in different sectors such as quality, price, reliable delivery, and customer service, auditors have difficulty in leveraging new accounting practices and adapting them to more relevant profitable competition criteria. If auditors fail to adapt to new effective approaches, this should lead other professionals to fill the gaps and, in the long run, to less operational accounting (Binnersley, 2008). The accounting management method adopted by the companies should be the most efficient way to provide the necessary information from the internal and external environment. In the Australian survey, Birkett (1989) found that the purpose of cost accounting management was to "provide executives with the necessary key information as quickly and accurately as possible in order to take appropriate measures in a timely manner". According to Mbogo (2011), sound cost accounting

management that takes into account factors such as information analysis and the integration of training levels and managerial accounting skills of SMEs and managers leads to a stronger and more positive impact. Decision-making process is therefore important for the growth and survival of SMEs.

Traditional accounting practices have been criticized for lack of efficiency and their ability to respond to the needs of the environment that have changed over the past two decades. This criticism refers to the inability of traditional accounting practices to provide detailed information on the important activities of organizations (Askarany & Smith, 2004; Beng et al., 1994; Bork & Morgan, 1993; Chenhall, 2003; Gosselin, 1997; Hartnett & Lowry, 1994; Lefebvre & Lefebvre, 1993; Spicer, 1992). Lawrence and Ratcliffe (1990) support this view by demonstrating the dissatisfaction between auditors and executives with regard to industry management accounting practices. Bork and Morgan (1993) echo this observation, suggesting that traditional management accounting systems have not kept pace with the growing demands of technical changes in the production environment. They also point out that research has shown that publishers and users of operational accounting information are not satisfied with cost accounting and management techniques. It is therefore not surprising that the literature on operational accounting has increased interest in introducing innovation to innovation in operating accounts (Anderson & Young, 1999; Askarany, 2003; Askarany & Smith, 2001, 2003b; Booth & Giacobbe, 1998; Chenhall & Langfield-Smith, 1998; Cooper & Kaplan, 1991; Gosselin, 1997; Johnson, 1992; Johnson & Kaplan 1987; Hartnett & Lowry, 1994; Maiga & Jacobs, 2003; Malmi, 1999).

Björnenak and Olson (1999: 327) have examined innovations in the cost & management accounting in the last two decades and defined that following accounting methods recently developed in the literature which are as follows: Function management (AM) and Activity Based Management (ABM); local information systems (LS); balance dashboard (BS); Life Cycle Cost (CCV) and Target Cost (TC); Strategic Management Accounting (SMA). According to Björnenak and Olson (1999), Chenhall and Langfield-Smith (1998) suggested that the most popular new accounting bases in Australia could be defined as costs, estimated concepts, general quality management, strategic management, risk management, benchmarking, economic added value and target cost.

In a study of 40 Egyptian manufacturing companies, Van Triest and Elshahat (2007) came to the conclusion that cost accounting information in Egypt is available at a core level and used more for external & internal purposes (returns). They also found that the use of sophisticated cost accounting methods, such as the operation of system costs, appears to be absent. The Comparative Study by Joshi (2001) found that Indian manufacturing companies rely heavily on traditional management accounting methods, such as variable costs, the budget for daily operations, financial costing tools, and more. However, the percentage of recent development methods such as shareholder benchmarking, performance evaluation (qualitative measures), life cycle cost, financial cost, balance sheet based on activity, value chain analysis, benchmarking and balance scorecard were rather weak and slow. Meanwhile, some studies have shown that size has a decisive

effect on the adoption of new accounting and accounting practices. The recording rate is much higher in large companies (Joshi, 2001; Chenhall, and Langfield-Smith, 1998).

In addition to developments in other countries, cost accounting and cost management are being implemented frequently in Turkey. The number of books and newspaper articles published on the subject increases every day as part of this evolution. Here have been many published cost and management accounting books since 1950s. Following works can be cited among them: Akdoğan (2009), Altug (1982, 1985), Bursal (1968, 1990), Buyukmirza (1977, 1985, 1987, 2007), Sevgener (1986), Karakaya (2007), Ustun (1984, 1985, 1988), Caldag (2008), Gursoy (1999), and Guredin et al. (2007). In addition, researches on cost accounting and practices conducted by academics in national academic journals were published. A Turkish study of 51 companies from the 500 largest industrial enterprises in 2002 (1) showed that 29.5% of respondents use process costing, followed by activity-based costs (25.5%) and job costing (23.5%), (2) the cost of direct materials is the largest portion of production costs, followed by general production costs and direct labor costs, direct labor hours (23%), sometimes direct use of the machine (15%), (4) the most commonly used cost accounting practices are cost-benefit-benefit analysis (72.6%), analysis of strategic profitability (47.1%), flexible budget (45.1%) and customer analysis profitability (45.1%) (Ersoy et al., 2006).

However, according to Chenhall and Langfield-Smith (1998), these innovations in cost accounting have been widely used. For example, the results of Chenhall and Langfield-Smith (1998) showed the classification of these new technologies in Australian companies: cost is based on classification (24), management by activity (21), life cycle analysis (20) and cost estimate. Chenhall and Langfield-Smith compared this classification with some traditional management accounting methods, such as budget analysis (1), financial position, state budget (2), and performance evaluation on investment (3). In comparison, they estimated that the utilization rates of newly developed methods in other countries such as the USA, UK, and Continental Europe are still lower than those applied in Australia. Askarany and Smith (2003) supported this view, especially with reference to ABC, but found that only 19% of organizations registered with the CPA in Australia had ABCs in place and accepted. At the end of 2002 (1998), the acceptance ratio of ABC was generally less than 14%. Other researches on cost accounting management methods assume that the adoption of new approaches is consistent with the same model abroad. For example, Ines and Mitchell (1995) in the UK found that the acceptance ratio of new cost accounting methods was generally less than 14%.

5. Methodology

5.1 Research Method

In order to achieve the objectives of this study, the research method that has been applied is case study where the sampled companies have been thoroughly studied, within the limited time, to come up with the insights that build on the research in later sections. In the social sciences and life sciences, a case study is a research method involving an up-close, in-depth, and detailed examination of a subject of study (the case), as well as its related contextual conditions.

As to the type of the case study, this study applied a combination of illustrative and cumulative case study.

By illustrative case study we mean primarily descriptive studies that typically utilize one or two instances of an event to show the existing situation. Illustrative case studies serve primarily to make the unfamiliar familiar and to give readers a common language about the topic in question. The justification of using illustrative case study lies with the fact that this study seeks to bring to light the existing practices of cost accounting in the selected companies of the pharmaceutical industry of Bangladesh without making any comment on what an ideal state in this regard should be. That is, a positive, rather than a normative analysis builds the ground of this study.

Simultaneously, this study captures the nature of cumulative case study as well where it serves to aggregate information from several sites collected at different times. The idea behind applying cumulative case study is that the collection of past studies will allow for greater generalization without additional cost or time being expended on new, possibly repetitive studies. This is justified in this study by the inclusion of a literature review about cost accounting practices in general.

In short, this study applies Case Study method to derive the objectives set aside at the beginning of the study and under the broad method of case study, a combination of illustrative and cumulative case study has been applied to conduct this study.

5.2 Sampling

The sampled companies examined in this study include five randomly selected pharmaceutical companies that are listed with Dhaka Stock Exchange (DSE) under the pharmaceutical & chemical sector of Bangladesh. There are a total of 31 companies listed with DSE under this sector. This makes the sample of this study approximately 16% of the listed population. The companies vary in size, age and market impacts. This variety adds more insights to the findings. Following are the sampled companies that have been investigated to derive the results of this study.

1. ACI (ACI Limited)
2. BEACONPHAR (Beacon Pharmaceuticals Limited)
3. CENTRALPHL (Central Pharmaceuticals Limited)
4. RENATA (Renata Ltd.)

5.3 Data Collection

The data used in conducting this study have been collected from a wide range of internal, external, official, unofficial, primary and secondary sources. As cost accounting is a managerial branch of accounting that focuses on provision of information to managers for internal use, most of the data collected are not publicly available. In some case, data are not made available due to privacy and competitive concerns and kept confidential. The timeframe of the data collected is the most recent year for which the sampled companies have their annual reports available- that is 2018. However, there have been arrangements of several semi-structured interviews and survey questionnaires which provided data for the practices that are in place in the first quarter of 2019. To facilitate data collected, this study circulated a likert scale

questionnaire consisting of 20 questions about various cost accounting practices in the sample companies. Also, a series of 5 semi structured interviews accompany a vast majority of private data used in this study.

6. Industry Overview

The pharmaceutical industry in Bangladesh is one of the most developed technology sectors within Bangladesh. Manufacturers produce insulin, hormones, and cancer drugs.

According to Bangladesh Association of Pharmaceutical Industries (BAPI) and Directorate General of Drug Administration (DGDA), approximately 257 licensed pharmaceutical manufacturers are operating in Bangladesh and about 150 are functional. This sector provides 97% of the total medicinal requirement of the local market. 80% of the drugs produced in Bangladesh are generic drugs, rest 20% are patented drugs. According to Director General of Drug Administration (DGDA), the industry has 3,534 generics of allopathic medicine, 2,313 registered Homeopathic drugs, 5,771 registered Unani Drugs and 3,899 registered Ayurvedic drugs. There are 5 types of medicine manufacturing companies in Bangladesh.

Type of Drug Manufacturer	Number of Manufacturing Companies
Allopathic Drug Manufacturers	199
Ayurvedic Drug Manufacturers	172
Unani Drug Manufacturers	269
Herbal Drug Manufacturers	29
Homoeopathic & Biochemic Drug Manufacturers	28

According to Bangladesh Bureau of Statistics, the industry has contributed 1.85% to the GDP in 2016-17. Pharmaceutical industry of Bangladesh is largely protected from external competition, as there is a restriction regarding import of similar drugs that is manufactured locally. This industry is the second largest contributor to national exchequer. At the same time, the industry provides the largest white collar (note) intensive employment. According to industry experts, market size of pharmaceuticals may reach about BDT 330,000 million by 2020. The industry also exports medicines to global markets, including Europe. Pharmaceutical companies are expanding their business with the aim to expand the export market.

Pharmaceutical companies in Bangladesh usually provide branded generic products as a result of which established brands are able to charge premium price for its products. According to IMS Health Care Report Q2, 2017 top 10 companies hold 68.49% of Pharma market share. Companies that secured position ranging from 11th to 20th on the basis of their relative market shares hold only 17.84% market share. Summing up, top 20 companies hold 86.33% market share, leaving 13.67% market share to other existing companies. It is to be noted that top 20 companies held 85.97% market share in 2016 Q2. Aggregate market share of top 20 companies has increased. The Pharmaceuticals market is concentrated among few local companies only and entry barrier is higher due to large capital investment and legislative bindings. Square Pharmaceutical is the market leader having 17.73% market share followed by Incepta,

Beximco, Opsonin and Renata. Multinational companies hold only 9.39% of market shares.

According to Bangladesh Association of Pharmaceutical Industries (BAPI), approximately 1,200 pharmaceutical products received registration for export over the last two years. According to Bangladesh Export Promotion Bureau, Bangladesh exported pharmaceuticals product to 107 countries in the fiscal year 2016-17. Among 107 exporting countries, top 7 countries (Myanmar, Sri Lanka, Philippines, Vietnam, Afghanistan, Kenya and Slovenia) constitute 60.32% of total pharma export. Rest 39.68% comes from other countries. During this period, Bangladesh has exported pharmaceutical products worth USD 89.17 million as against USD 82.11 million in 2015-16 (Source: Bangladesh Export Promotion Bureau). From July to October 2017-18, Bangladesh exported USD 32.1 million worth of Pharmaceuticals products. Pharmaceuticals Company of Bangladesh can only sell different medicine to other country when they get approval of the particular medicine from the drug authority of that particular country. Approval from developed countries signifies that the local medicine has international standard which helps them to build a strong position in local market. In recent time, the Government of Bangladesh has given huge emphasis on the export of Pharmaceutical products from Bangladesh. It is targeted that Pharmaceutical will be the second exporting product after readymade garments.

Pharmaceuticals industry of Bangladesh has tremendous opportunity to grow in the future. According to Zion Market Research, Global generic drug market is expected to grow at a CAGR of 10.8% from 2016 to 2021 and reach at USD 380.60 billion by 2017. In 2016 alone, patented drugs worth \$60 billion are going off patent which opens up opportunities for generic manufacturers around the world.

7. Company Overview

7.1 ACI Limited

Imperial Chemical Industries, a British multinational established a Branch in the then East Pakistan which was converted into a company after liberation, named ICI Bangladesh Manufacturers Limited. In 1992 ICI divested its investment in Bangladesh to the Management, when its name was changed to Advanced Chemical Industries (ACI) Limited. Advanced Chemical Industries (ACI) Limited, being one of the largest conglomerates in Bangladesh with a multinational heritage operates across the country through its four diversified strategic business units. 'ACI Pharmaceuticals' is dedicated to improve the health of people of Bangladesh through introduction of innovative and reliable Pharmaceuticals products. The company operates through three reportable segments: Pharmaceuticals, Consumer Brands and Agribusiness. ACI established as the subsidiary of Imperial Chemical Industries (ICI) in 1968. It has been incorporated as ICI Bangladesh Manufacturers Limited on 24 January 1973. The company was renamed as Advanced Chemical Industries Limited (ACI Limited) on 5 May 1992. The company sold its insect control, air care and toilet care brands to SC Johnson & Son in 2015. 'ACI Consumer Brands' is adding value to the daily life of consumers through its Toiletries, Home care, Hygiene, Electrical, Electronics, Mobile, Salt, Flour, Foods, Rice, Tea, Edible Oil, Paints and International businesses. 'ACI Agribusinesses' is the largest integrator in Bangladesh in

Agriculture, Livestock, Fisheries, Farm Mechanization, Infrastructure Development Services and Motorcycles. 'ACI Retail Chain' is the largest retail chain in the country operating through its 73 SHWAPNO outlets across the country by touching the lives of over 35,000 households each day. The company contributed Taka 3,625 million to the National Exchequer during FY 2017-2018 in the form of corporate tax, custom duty and value added tax.

7.2 Beacon Pharmaceuticals Limited

Beacon Pharmaceuticals Limited is a Bangladeshi pharmaceutical company that develops generic version of drug and commercializes therapeutics. Beacon manufactures more than 200 generic drugs and 65 oncology products. In each year, Beacon is introducing more than 15-20 Hi-Tech new products. Beacon is the first company in Bangladesh to start export of cancer drugs. The company is exporting its products in Asia, Africa and Latin America. After meeting the local demand, Beacon is exporting its medicine to many countries of Asia, Africa, Europe & Latin America. Beacon is public limited company listed in Dhaka & Chittagong stock exchange. About 2000 people are working in this company.

The vision of this company is to be regarded as one of the best value-driven pharmaceuticals companies in the country. And the mission is to improve the quality of human life by providing innovative pharmaceutical products through continuous research and development ensuring stakeholders' satisfaction.

7.3 Beximco Pharmaceuticals Ltd.

Beximco Pharmaceuticals Ltd. is a leading manufacturer and exporter of medicines in Bangladesh. Incorporated in 1976, the company started its operation by importing products from Bayer, Germany and Upjohn, USA and selling them in the local market. In 1980 Beximco began manufacturing of these products under licensing arrangement and launched its own formulation brands in 1983. From that humble beginning, Beximco Pharma has grown from strength to strength, and today it has become an emerging global generic drug company from the region. Beximco's manufacturing facilities have been accredited by the leading global regulatory authorities, and medicines manufactured by the company are now being exported to more than 50 countries including the highly regulated markets of USA, Europe, Canada and Australia. The company has won the National Export (Gold) trophy a record 5 times and remains the only company in the country to win the highly prestigious SCRIP Award as the Best Pharma Company in an Emerging Market. It also has the unique distinction as the only Bangladeshi company to get listed on the AIM of London Stock Exchange. In Bangladesh, the company is listed with both Dhaka and Chittagong Stock Exchanges. Beximco Pharma also has a majority stake in Nuvista Pharma (formerly Organon Bangladesh), a leading hormone and steroid manufacturer in the country. The company currently employs more than 4000 employees including doctors, pharmacists, engineers, chemists, accountants, business graduates and other white collar professionals.

7.4 Central Pharmaceuticals Limited

The Company first got the Drug Licence from Drug Administration of Bangladesh on 12-10-1976. Then the Company applied for registration at Registrar of Joint Stock Companies & Firms of Bangladesh and accordingly the Company was incorporated on 13 November, 1980 as a 'Private' Company limited by shares and registered with the RJSC under the Companies Act, 1913 vide Registration No. C-8514(353). The Company started its commercial operation from 01 December, 1980. On 20 December, 2010 the Company registered itself as a Public Limited Company under the Companies Act, 1994.

This company was actually established by GETCO/ Bangla CAT (Represents the world famous USA based Caterpillar Company) in 1980s. The founders of Central Pharmaceuticals Ltd. were six renowned businessmen of Bangladesh. Mr. K.M. Khaled and Mr. Aminul Hoque are the eminent industrialists in our country among the six magnets. Basically their core business is to deal with different kinds of heavy duty construction machineries & equipments, industrial generators and so on. They are successfully engaged in telecommunications, banking (Prime Bank) and leasing sectors etc. Despite huge scopes in pharmaceuticals industry, they could not pay much attention on Central Pharmaceuticals Ltd. and decided to sell it. Afterwards a renowned group named METRO GROUP purchased the company at the end of 1993 and started its operation from the beginning of 1994. Our first Managing Director was Mr. Anisul Islam who was also the Managing Director of Essential Drugs Ltd. owned by the government. Dr. Ehsanul Hoque was the first Executive Director of the Company (Who is the former Production Manager of Fisons and retired from BEXIMCO Pharmaceuticals Ltd). The vision of the company is to make contribution in national economy by reaching to the summit of manufacturing pharmaceuticals finished drugs.

7.5 Renata Ltd

Renata Limited (formerly Pfizer Laboratories (Bangladesh) Limited), also known as Renata, is one of the top ten (in terms of revenue pharmaceutical manufacturers in Bangladesh. Renata is engaged in the manufacture and marketing of human pharmaceutical and animal health products. The company also manufactures animal therapeutics and nutrition products. Renata currently employs about 2300 people in its head office in Mirpur, Dhaka and its two production facilities in Mirpur, Dhaka and Rajendrapur, Dhaka. Recently, Renata Limited has received the UK MHRA approval for its Potent Product Facility. This facility currently manufactures hormone, steroid and cytotoxic drugs, and is exporting prednisolone to the UK. Recently, GAIN (The Global Alliance for Improved Nutrition) provided US\$2.9 million to Renata Limited and BRAC, one of the biggest NGOs in the developing world, to build and operate an innovative business model to produce and deliver multi-nutrient powders to vulnerable infants in Bangladesh. The vision of this company is to establish Renata permanently among the best of innovative branded generic companies. And the mission is "to provide maximum value to our customers, and communities where we live and work". The financial conditions of these five companies are shown at a glance through the following table:

	2015-16	2016-17	2017-18
1. ACI Ltd.			
Sales	14,566,843,648	18,305,730,559	21,387,105,125
Total Assets	19,358,574,511	27,056,535,723	35,686,620,088
Net Profit	3,183,531,914	1,035,948,452	410,550,142
EPS	17	26	27
2. Beacon Pharmaceuticals Limited			
Sales	2,052,938,834	2,491,804,435	2,948,456,509
Total Assets	4,738,697,597	5,014,603,610	5,105,979,654
Net Profit	38,555,691	61,402,979	103,734,641
EPS	0.17	0.27	0.45
3. Beximco Pharmaceuticals Ltd.			
Sales	12,965,506,873	15,508,776,972	17,380,728,001
Total Assets	31,148,907,975	34,084,132,870	42,165,015,439
Net Profit	1,954,284,516	2,226,695,124	2,558,971,263
EPS	5.06	5.49	6.31
4. Central Pharmaceuticals Limited			
Sales	660,793,414	416,734,089	455,678,564
Total Assets	1,999,918,124	2,129,057,555	2,290,446,992
Net Profit	143,424,235	97,788,692	109,086,240
EPS	1.52	1.04	1.05
5. Renata Ltd			
Sales	7,318,104,009	16,043,431,021	18,603,708,906
Total Assets	16,760,346,726	18,124,345,942	20,811,679,485
Net Profit	1,143,352,523	2,612,142,414	3,196,950,533
EPS	21.59	37.3	45.65

8. Cost Accounting Practices

8.1 Cost Classifications

8.1.1 Product Cost versus Period Cost

For a manufacturing firm, product costs basically deal with the costs that are necessary to complete the product such as direct materials, direct labor, and factory overhead. On the other hand, all other costs that are necessary for managing the organization and selling the products are known as period costs. They are expensed in the period in which they are incurred, that's why they are called period costs (Blocher, Stout and Cokins, 2005).

All the selected pharmaceutical companies maintain the specific cost classification on the basis of product costs and period costs. Since Pharmaceutical companies involve in manufacturing, it is expected that the portion of product cost should be higher than the period costs. The following discussion represents the analysis of product and period Costs of the selected pharmaceutical companies based on the 2017-2018 annual reports.

ACI Limited: The product costs and period costs for ACI Limited have been reported 12,144,878,812 taka and 7,659,725,997 taka respectively. The product costs represent 61.32 percent of the total cost and the period costs represent 38.68 percent. It is clearly visible that the portion of the product costs is much higher than the portion of period costs.

Beacon Pharmaceuticals Limited: It has been found from the analysis that the Product and period costs for Beacon Pharmaceuticals Limited are 1,927,331,673 taka and 1,563,846,092 taka respectively. The product costs occupy total 55.21 percent of the total cost. On the other hand, the period costs represent 44.79 percent of the total cost.

Beximco Pharmaceuticals Ltd: The product costs of Beximco Pharmaceuticals Ltd have been reported 9,430,737,431 taka which 68.89 percent of the total cost. On the other hand, the period costs are amounted 4,259,811,440 taka and can be represented as a

Company Name	Product Costs	Period Costs	Total	% of Product	% of Period
ACI	12,144,878,812	7,659,725,997	19,804,604,809	61.32	38.68
BEACONPHAR	1,927,331,673	1,563,846,092	3,491,177,765	55.21	44.79
BXPHERMA	9,430,737,431	4,259,811,440	13,690,548,871	68.89	31.11
CENTRALPHL	170,865,089	50,740,307	221,605,396	77.10	22.90
RENATA	9,257,239,128	4,722,567,721	13,979,806,849	66.22	33.78

8.1.2 Fixed Cost versus Variable Cost

This is the most common cost classification that is maintained by almost all the companies from our sample. All of the companies manufacture their products using their own production plants. So it is expected that the portion of the fixed costs should be very high. A table representing the locations of the manufacturing plants of the companies is presented below –

Company	Locations of Manufacturing plants
ACI Limited	Narayanganj
Beacon Pharmaceuticals Limited	Bhaluka
Beximco Pharmaceuticals Ltd	Tongi site, Kaliakoir site, and others.
Central Pharmaceuticals Limited	Mirpur-1
Renata Ltd	Mirpur site, Rajendrapur site, and Bhaluka site

From the above table, it is clearly visible that all of the companies maintain their own dedicated manufacturing plant to continue with their production and research. As a result, the portion of fixed costs gets bigger for these companies. That's why, these companies find it mandatory to maintain this cost classification based on fixed and variable costs to find the amount of cost in both categories. The whole compliance situation with this specific cost classification is presented in the following table-

Company Name	Cost Classification Based on Fixed and Variable cost
ACI Limited	✓
Beacon Pharmaceuticals Limited	✓
Beximco Pharmaceuticals Ltd	✓
Central Pharmaceuticals Limited	✓
Renata Ltd	✓

8.1.3 Discretionary Costs versus Non-Discretionary costs

The selected Pharmaceutical companies are also expected to maintain the cost classification on the basis of discretionary and non-discretionary expenses. Discretionary expenses are the costs that are not necessary for the operation of a business such as advertising, employee training, and others (Kagan, 2018). On the other hand, non-discretionary expenses are the payments or amounts which are not under the control of the company or managers such as utility charges, payments of principal and interest on loans, taxes, insurance, and others (Lawinsider, 2019).

The selected companies have to deal with both of these discretionary and non-discretionary expenses. One of the major discretionary expenses for the pharmaceutical companies is the Research & Development. For each company, the research and development turns out to be huge monetary amount. Another major discretionary expense for the pharmaceutical companies is advertising. All the selected companies spend huge amount of money with a view to advertising their products. These companies have to deal with various non-discretionary expenses as well as discretionary expenses. The common non-discretionary expenses for these companies are salary, insurance, utility bills, interest, and others.

These kinds of costs are very much common for the five selected pharmaceutical companies as well as other companies. So it is expected that the companies maintain this cost classification in order to manage their costs more efficiently. The following table summarizes the status of the companies regarding this specific cost classification.

Company name	Cost Classification Based on Discretionary and Non-Discretionary Costs
ACI Limited	✓
Beacon Pharmaceuticals Limited	✓
Beximco Pharmaceuticals Ltd	✓
Central Pharmaceuticals Limited	✓
Renata Ltd	✓

8.2 Overhead Allocation Methods

Activity-based costing (ABC) is a costing approach that assigns resource costs to cost objects such as products, services, or customers based on activities performed for the cost objects. Activity-based costing system identifies activities in all functions of the value chain, calculate costs of individual activities, and assign costs to cost objects (Blocher, Stout and Cokins, 2005).

On the other hand, traditional costing system allocates indirect costs to products or services on the basis of a predetermined overhead rate. The traditional costing system considers the overhead costs as a single pool of indirect costs. The traditional costing system allocates the indirect costs to the products or services on the basis of labor hours or machine hours (Wilkinson, 2019). Activity-based costing is much more complex than the traditional costing system. That's why the selected pharmaceutical companies depend on the traditional costing method for allocating their overhead expenses. But some of the companies are planning on implementing activity-based costing method in their organization such as Beximco Pharmaceuticals Ltd and Renata Limited.

Company name	Traditional Costing	Activity-based Costing
ACI Limited	✓	✗
Beacon Pharmaceuticals Limited	✓	✗
Beximco Pharmaceuticals Ltd	✓	✗
Central Pharmaceuticals Limited	✓	✗
Renata Ltd	✓	✗

The above table shows the dependence of all the selected pharmaceutical companies on traditional costing system. At present, none of them has applied the Activity-based costing method. The use of ABC method for cost allocation has not become very popular in companies operating in Bangladesh. But with time, it can be expected that the selected companies as well as others will adopt the Activity-based costing to allocate their overhead costs.

8.3 Product Costing Methods

8.3.1 Process Costing

Process costing is a term used in cost accounting to describe one method for collecting and assigning manufacturing costs to the units produced (Horngren et al., 2002). A processing cost system is used when nearly identical units are mass produced. Pharmaceutical companies produce drugs in large quantities that are standard products capable of being produced in batch processing system as each of the product units (drugs) under a same category consume homogenous amount of resources and require same production systems. This has led to all the sampled companies to use process costing method to account for product costing. However, the processes differ across the sampled companies and so does the costing. But overall, process costing is uniformly applied in all the five sampled companies throughout the years.

8.3.2 Job Costing

Job order costing or job costing is a system for assigning and accumulating manufacturing costs of an individual unit of output (Chapman et al., 2006). The job order costing system is used when the various items produced are sufficiently different from each other and each has a significant cost (Horngren et al., 2010). As already discussed, all the five sampled pharmaceutical companies investigated under this study apply the process costing method to account for product costing. However, some of the sampled companies such as Beacon Pharmaceuticals Ltd, Central Pharmaceutical Ltd and Renata Pharmaceuticals Ltd are found to have been in a practice of using job costing method to account for especial contracts during times of idle capacity. That is, sometimes, these companies have their capacities left idle and in order to utilize that capacity they produce custom products according to contractual manufacturing setting. These contracts are cost using job order costing methods by these companies as they require capacity usage and resource consumption that differs from the normal production process of the companies.

Company name	Process Costing	Job Costing
ACI Limited	✓	Not disclosed
Beacon Pharmaceuticals Limited	✓	✓
Beximco Pharmaceuticals Ltd	✓	Not disclosed
Central Pharmaceuticals Limited	✓	✓
Renata Ltd	✓	✓

8.4 Departmental Cost Allocation Method

All the pharmaceutical companies have various support departments such as Finance & Accounting, R&D, Procurement, Sales and Distribution, Maintenance, IT and so on. The costs accumulated in these departments must be allocated to the operating (manufacturing) department in one way or another so that products are not underpriced and they reflect the total cost of the business, direct as well as indirect. There are three common methods of allocating service or support department costs to the operation departments. However, this study finds that sampled companies differ in using these methods as described below.

8.4.1 Direct Method

According to Horngren et al. (2010), the direct method allocates costs of each of the service departments to each operating department based on each department's share of the allocation base. Services used by other service departments are ignored. This is the simplest method of cost allocation and according to the study Central Pharmaceutical Ltd and Renata Pharmaceuticals Ltd use direct method to allocate the service departments cost incurred by them to the production departments. The rationale behind the companies in adopting this method, as stated by the interviewees, lies in their simplicity and understandability. When asked about the limitations of these methods, both the interviewees agreed that this method is somewhat less logical in allocation of service department costs as they ignore the value of services taken by one department from another. However, they said that this is immaterial in their case and saves both time and efforts for them causing it to be used in their companies. However, the study finds out that Renata Pharmaceuticals Ltd has intentions to switch from direct method to step-down method of departmental cost allocation in the near future as agreed by its CFO and the accountants.

8.4.2 Step-Down Method

This method allocates service costs to the operating departments and other service departments in a sequential process. The sequence of allocation generally starts with the service department that has incurred the greatest costs. After this department's costs have been allocated, the service department with the next highest costs has its costs allocated, and so forth until the service department with the lowest costs has had its costs allocated. Costs are not allocated back to a department that has already had all of its costs allocated.

Three of the five sampled pharmaceutical companies use the Step-Down Method of departmental cost allocation method. These companies are Beacon Pharmaceuticals Ltd, ACI Limited and Beximco Pharmaceuticals Ltd. While asked about the rationale behind employing this method of service department cost allocation, one interviewee from the Beacon Pharmaceuticals Ltd said that they have recently switched from the direct method as their interdepartmental transfer of services recently increased. As a result, direct method was failing to show proper resource consumptions of the individual service departments which necessitated the adoption of the Step-Down Method. Another interviewee from the ACI Limited said that this method is used due to balance the difficulty that arises with the complexity of reciprocal method and the inability of the direct method to reflect departmental cost appropriately.

8.4.3 Reciprocal Method

The reciprocal method allocates services department costs to operating departments and other service departments. Under the reciprocal cost, the relationship between service departments is recognized and cost is allocated to and from each service department for services provided (Hansen et al., 2007). Despite being the most accurate service department cost allocation method, the reciprocal method is not used by any of the four sampled companies. While asked about the reason behind doing so, the respondents responded by highlighting the degree of complexity of this method and they said that the cost center wants to keep costs simple and understandable. However, primary investigations suggested that Beximco Pharmaceuticals Ltd will soon take attempts to switch from the Step-Down Method to the reciprocal method realizing the need to ensure accuracy of cost allocation.

8.5 Inventory Costing Methods

Management needs to estimate the cost of the product due to control purposes. The management accountant can check regularly whether or not units are costing beyond the estimated amount. Hence they can take corrective measures whenever it is necessary. The Management Accountant's Profit Statement is the product of this particular concept that differs from the Financial Accountant's Income Statement. Inventory costing methods helps the management to determine which costs should be treated as inventoriable costs. Inventoriable costs are those costs of a product which are taken into account as assets whenever they are incurred and expensed as cost of goods sold when the particular product gets sold. Inventory costing methods helps the management to assess profit in a period. The Management Accountant's Profit Statement or Operating Statement is usually prepared monthly that aims to show whether the profit is higher or lower than the estimated amount and if so then list the reasons behind the differences. Absorption Costing Method and Marginal Costing Method are used with a view to estimating that budgeted profit of an organization.

8.5.1 Absorption Costing

Absorption costing is the method of inventory costing in which all variable manufacturing costs, as well as all the fixed manufacturing costs, are included as inventoriable costs which means that inventory absorbs all manufacturing costs. In absorption costing system an amount of absorbed fixed production overhead is included in the inventory valuation. Management does this on a per-unit basis by simply dividing fixed costs by the numbers of units manufactured and sold during the period.

Beximco Pharmaceuticals Ltd. uses the Absorption Costing Method. They do not sell all of their manufactured products during the same accounting period they got manufactured. The amount of their Finished Goods Inventory is the second highest for the period 2017-2018 amongst these five Pharmaceutical companies. They assign a per unit amount of fixed expenses, every product that is in their inventory has a value that includes part of fixed overhead. In Absorption Costing Method this part of fixed overhead is not reported until or unless the product gets sold which helps them to improve their profit for that particular accounting period. Beximco Pharmaceuticals Ltd.'s net profit after tax is the highest one among these five companies.

ACI Pharmaceuticals Ltd. also uses the Absorption Costing Method. Their Finished Goods Inventory amount is the highest one for the period 2017-2018 amongst these five companies. Their amount of Finished Goods Inventory also proves that they do not sell all the products they manufacture in the same accounting period which helps them to linger all those per unit fixed overhead that is allocated to those products to the next accounting period and report a handsome amount for the profit.

Beacon Pharmaceuticals Ltd. has adopted Absorption Costing Method. Beacon Pharma's Finished Goods Inventory is also high. They do not sell all the products manufactured in the same accounting period. Every product in their inventory bears a portion of fixed overhead that has been incurred in that particular accounting period but will not be reported until the product gets sold. This technique helps them to improve their amount of profit.

8.5.2 Marginal Costing Method

Marginal Costing Method is an alternative costing system to Absorption Costing Method. In the case of Marginal Costing Method, only variable production costs are included in the valuation of units as some companies want to know only the variable costs of the products they have made. With Marginal Costing System, all the fixed costs that have been incurred by the companies are treated as period costs and are charged against the sales revenue in the profit statement of that period. Only variable production costs are included in the cost per unit hence treated as product costs. The Marginal Production Cost per unit usually consists of variable materials, variable labor, and variable production overheads. One of the most important concepts in Marginal Costing is Contribution which is the short form for 'contribution towards fixed overheads and profits'. It is the difference between selling price and all the variable costs incurred including nonproduction variable costs and usually expressed as a per unit basis.

Central Pharmaceuticals Limited has adopted the Marginal Costing Method. As they do not want to show any sort of artificially inflated profit amounts in any accounting period. So they deduct the entire fixed overhead even if they have not sold all the products they have manufactured in that particular accounting period. They want to show all the expenses they have incurred in that particular accounting period. When they will finally sell the finished product in other accounting periods, they will have surplus income.

Renata Pharmaceuticals Ltd. uses Marginal Costing Method. They aim to show the exact amount of profit they have made in that particular accounting period to their stakeholders with a view to help them with their investment decisions. They don't

want to inflate their amount of profit artificially hence deduct all the fixed expenses from the sales revenue of that accounting period even if they have not sold all the products they manufactured. They treat all their fixed costs as period costs. Renata's Finished Goods Inventory for the period 2017-2018 is the lowest amongst all these five pharmaceuticals.

Marginal Costing and Absorption Costing both are techniques for assessing the profit of an organization. During a period, if there are changes in inventory then the profit will differ. And if the levels of opening and ending inventory are the same, both of these techniques will provide the same profit amount given a constant unit cost. Although in the long run, the total profit amount of an organization will exactly be the same regardless of these two methods since it is assumed that all the inventories of an organization will be sold in the long run.

Name of the Companies	Absorption Costing Method	Marginal Costing Method
ACI Limited	√	
Beacon Pharmaceuticals Limited	√	
Beximco Pharmaceuticals Ltd	√	
Central Pharmaceuticals Limited		√
Renata Ltd		√

8.6 Budgeting Methods

8.6.1 Financial budgets

The pharmaceuticals organizations prepare the financial budget to manage the cash flows in a better way. This budget gives the companies a better control and efficient planning mechanism to manage the inflows and outflows. To prepare a financial budget, it is important to prepare the operating budget first. It is with the help of operating budget that the organization can predict the sales and the production expenses. Therefore, the organizations prepare the financial budget only after the different financing activities in the operating budget.

ACI Pharmaceuticals Ltd: ACI Pharmaceuticals is one of the major participant in the pharmaceutical industry. This company prepares financial budgets for better allocation of financial resources within the company. This company prepares all the four major components of the broad financial budget which are budget of capital investments, cash flow budget, budgeted income statements, and budgeted balance sheet. ACI prepares the budget of capital investments which shows capital expenditure plan of the company indicating the sources of funding. The budget of capital investments includes both plans for the acquisition of fixed assets and intangible assets, as well as long-term investment projects. ACI prepares this budget by reviewing the budget balance and the income statement, taking into account the adjustment of indicators to reflect planned sources and cash consumption. This budgeted balance sheet prepared by ACI shows what means of financing the company has and how they are used. The change in the structure of the balance affects the cash flow. In addition, it also shows what means of financing the company has, how these funds are used, and describes the financial condition of the company on a specific date. It also prepares budgeted income statement which provides an estimate of how much the company would spend & how much it might earn from the activities.

Beacon Pharmaceuticals Ltd: Beacon Pharmaceutical Ltd is another major participant in this industry. This company also prepares financial budget. Information has been found that the company prepare budget of capital investments, cash flow budget & budget balance sheet. But the company does not prepare budgeted income statement as they prepare income and expenses budget under operating budget section. The budget of capital investments, budgeted income statement and budgeted balance sheet provides the company a tool for their monitoring and controlling activities. The company gets the necessary information on budgeted cash inflows and outflows from these budgeted financial statements, which is why it does not prepare budgeted income statement.

Beximco Pharmaceuticals Ltd: Beximco Pharma is a leading pharmaceutical company in Bangladesh. This company places greater emphasis on its budgets as they provide a mean for monitoring & controlling the costs in certain aspect. This company prepares all the components of a financial budget. The company prepares cash flow budget, budgeted income statement, budgeted balance sheet, and budget of capital investment.

Central Pharmaceutical Ltd: Central Pharma is another major pharmaceutical company of Bangladesh. This company prepares only budgeted balance sheet and cash flow budget as per the collected information.

Renata Pharmaceuticals Ltd: Central Pharma is one of the leading pharmaceuticals company. This company is also concerned about its budgets. Like Beximco and ACI Pharmaceuticals, this company also prepares each & every components of financial budget.

Name of the companies	Budgeted Balance Sheet	Budgeted Income Statement	Budget of Capital Investments	Cash Flow Budget
ACI Limited	√	√	√	√
Beacon Pharmaceuticals Limited	√		√	√
Beximco Pharmaceuticals Ltd	√	√	√	√
Central Pharmaceuticals Limited	√			√
Renata Ltd	√	√	√	√

8.6.2 Operating budgets

An operational budget is a charted budget that outlines all of the money required to make the business operate effectively and successfully. An operating budget includes both the money coming in through sales and investors and the money going out in terms of expenses and product development.

ACI Pharmaceuticals Ltd: ACI Pharmaceuticals prepares sales budget, production budget, cost of goods sold budget, sales & administrative budget, direct materials & overhead budget. Sales budget is generally the sales forecasts of the company whereas costs of goods sold budget that prepares budgeted information on the costs that are related to the goods which have been sold in the market.

Beacon Pharmaceuticals Ltd: Beacon Pharma prepares sales budget, costs of goods sold budget, production budget and sales & administrative budget. The company places more importance on production budget & costs of goods sold budget because these two budgets also work as benchmarks for their direct materials, labor and overhead related costs.

Beximco Pharmaceuticals Ltd: Beximco Pharmaceuticals prepares production budget, costs of goods sold budget, sales budget, direct materials budget, overhead budget, and sales & administrative budget and also purchase budgets. The company places significance on each type of budget and adopts extra care while preparing them since the company uses them as monitoring tools over the year.

Central Pharmaceutical Ltd: Information on this company suggests that it prepares sales budget, production budget and costs of goods sold budget. The management of the company believes that they preparing these three major components of operating budget would also provide them the budgeted amounts of direct materials, labor, and overhead etc.

Renata Pharmaceuticals Ltd: Renata prepares production budget, costs of goods sold budget, direct materials budget, sales budget, and administrative budget etc. Renata places emphasis on production, costs of goods sold, and sales budget because these three budgets eventually forecasts the costs and income to be earned from manufacturing the products.

Name of the companies	Production Budget	Sales Budget	Costs of goods sold Budget	Direct Materials Budget	Overhead Budget	Selling & Administrative expenses budget
ACI Pharmaceuticals Ltd.	✓	✓	✓	✓	✓	✓
Beacon Pharmaceuticals Ltd.	✓	✓	✓			✓
Beximco Pharmaceuticals Ltd.	✓	✓	✓	✓	✓	✓
Central Pharmaceuticals Ltd.	✓	✓	✓			
Renata Pharmaceuticals Ltd.	✓	✓	✓	✓		✓

8.7 Cost Accounting Concepts

8.7.1 Activity Based Management:

Activity-based management (ABM) is used to determine the profitability of every aspect of a business, so that those areas can be upgraded or eliminated. The intent is to achieve a more fine-tuned organization with a higher level of profitability. The information used in an ABM analysis is derived from activity-based costing, where general overhead costs are assigned to cost objects based on their use of activity drivers. A cost object is anything about which a business wants to collect cost information, such as processes, customers, products, product lines, and geographic sales regions.

The interviewees of Beximco, Renata, and ACI Pharmaceuticals have stated that their companies apply activity-based management mainly to seek out areas where a business is losing money so that those activities can be eliminated or improved to increase profitability. This ABM helps their companies to analyze the costs of employees, equipment, facilities, distribution, overhead and other factors in business to determine and allocate activity costs. This is also used to accurately forecast and prepare financial budgets for the companies. The interviews of these three companies have also expressed that the main reasons for which the ABM is applied is determining the total profitability of a customer, based on its purchases, sales returns, and use of the time of the customer service

department and determining the total profitability of a new product, based on its sales, warranty claims, and repair time required for returned goods.

The other two companies i.e., Beacon & Central Pharmaceuticals do not follow Activity-Based Management though the managers have stated that they are thinking about applying this method within their organizations.

8.7.2 Quality Management:

Quality management is the act of overseeing different activities and tasks within an organization to ensure that products and services offered, as well as the means used to achieve them, are consistent. It helps to achieve and maintain a desired level of quality within the organization. Quality management has four components which are quality planning, quality improvement, quality control and quality assurance.

Almost all of the interviewees from this five companies have stated that their companies follow Quality Management for the production of medicines. They apply quality management where they determine the target quality of the products and also determine the acceptable range of deviations from the target quality. However, they did not disclose the acceptable range of the deviations from the target quality due to confidentiality. They have also informed that companies also improve or change the target quality of

the products during the production process if the market situation changes or the demand from the customer changes. They have opined that following this Quality Management in the manufacturing process helps their companies to offer sufficient reliability that a particular service or product will meet the specified requirements. The companies cannot apply Total Quality Management due to cost constraints and other circumstantial reasons.

8.7.3 Balanced Scorecard:

The aim of the Balanced Scorecard is aligning business activities to the vision and strategy of the business, improving internal and external communications, and monitoring business performance against strategic goals. The balanced scorecard is used to reinforce good behavior in an organization by isolating four separate areas that need to be analyzed. These four areas, also called legs, involve learning and growth, business processes, customers, and finance.

Among the five selected companies, the interviewees from only three companies have apprised that they follow Balanced Scorecard to attain objectives, measurements, initiatives, and goals that result from these four primary functions of a business. These companies can easily identify factors hindering business performance and outline strategic changes tracked by future scorecards. The interviewees from Beximco & Renata Pharmaceuticals have apprised that the learning & growth leg of the balanced scorecard helps their companies to examine how well information is captured and how effectively employees utilize the information to convert it to a competitive advantage over the industry. The business perspective leg helps these companies to track any gaps, delays, bottlenecks, shortages, or waste. The interviewee from the ACI Pharmaceuticals has informed that the major reasons for applying balanced Scorecard in the company are to gauge customer satisfaction with quality, price, and availability of products or services & to understand financial performance through sales, expenditures, and income information.

On the other hand, the interviewees from Central & Beacon Pharmaceuticals have informed that their companies do not apply Balanced Scorecard rather they rely on other techniques like market research, marketing strategy etc. for understanding customers' satisfaction, business process etc.

9. Limitations of the Study

This study aims to explore the cost accounting practices of companies operating within pharmaceutical sector of Bangladesh. So, one of the major limitations of the study is that it considers only five companies from the Pharmaceutical sector of Bangladesh. This study doesn't consider other companies from the industry. It also fails to include companies from other manufacturing sectors in its analysis of cost accounting practices.

Unavailability of data is another problem which the study has to encounter during its preparation. Since the cost accounting reports are prepared for serving the decision-making purpose of the management, they are considered very much personal to the organization. For maintaining the confidentiality, executives of different companies feel less interested to share the cost accounting information.

10. Conclusion

After the World War II the concept of cost accounting evolved as a promoter of proper utilization and effective use of resources. Cost accounting is both an art and science which helps the management to more effectively record, classify, summarize and analyze various costs incurred directly or indirectly for any organization (Waingankar, 2019). Being one of the poorest as well as fastest growing developing countries, Bangladesh needs to properly utilize its limited resources. Proper cost accounting techniques can contribute significantly through helping the management so that they can take decisions which lead them to a position of competitive advantage. Among all the developed sectors of the country the Pharmaceuticals industry is the most developed one. It meets 97% of the local demand and earns a huge amount of foreign money through sustainable growing exports. The costing techniques in this industry is one of the most vital issues and companies keep these very confidential, since the competition in this industry is very high. The recent challenges faced by this industry have increased the necessity of effective cost accounting system among the companies.

The cost accounting is different from the financial accounting in the sense that cost accounting is done mainly for the insiders, management, and it is used for decision making process. This study explored the cost and management accounting practices adopted by manufacturing companies in Bangladesh. However, only five listed pharmaceutical companies have been considered as the sample of this study. But, a vast illustrative case study has been conducted on these five companies. Descriptive as well as quantitative data have been collected and analyzed to conclude on the classification of costs that are followed by the companies. This study found that companies emphasize more on product costs than period costs, since the product cost found to be higher in all the companies. Study also found that companies also classify their cost based on fixed & variable cost, discretionary & non-discretionary cost which indicates a good implementation of cost accounting. However, companies still follow the traditional method to allocate the overhead costs instead of the modern Activity Based Costing. Companies most often follow the process costing method and sometime job costing method is also used based on the production demand on the companies. Furthermore, study found that companies do not follow the Reciprocal method of costing yet, rather they use Direct or Step-Down approach. It is also observed that most companies follow absorption costing method than the marginal/variable costing method. However, companies are rich in their budgeted financial statement practices. Almost all the companies are found to be reporting budgeted balance sheet, budgeted income statement, budgeted capital investment, cash flow budget, production budget, sales budget, COGS budget and so on.

Since the cost accounting reports are prepared for serving the decision-making purpose of the management, they are considered very much personal to the organization. And thus the executives generally feel less interested to share the cost accounting information to students like us. Again, it is very rare to find a manager who knows all the pros and cons of cost accounting of his/her company. Most of the cases it was found that a single person, manager, knows only about the department that he/she works on and don't know much about the actual costing techniques of the other

departments. Furthermore, the time allocated for this research was limited which is another limitation of this study.

Above all, this study is expected to add value to the cost accounting stakeholders of the country along with academicians, corporations, management, students and the public in general through refining their views about the cost accounting practices in Bangladesh.

11. Recommendations

11.1 Total Quality Management (TQM)

TQM should be followed by these Pharmaceutical companies. TQM reflects the process of continuous improvement with a view to achieving ultimate customer satisfaction. Instead of inspecting all the products at the very end of the bottom line of production or aiming to maintain an acceptable limit of tolerance, Total Quality Management's objective is to eliminate all the waste. As pharmaceuticals are intensely related to public health they strive to maintain their product's quality with great care. Pharmaceutical industry of Bangladesh is a highly competitive one hence the top management of these companies needs to be very careful regarding their product quality and make sure that their quality matches up with that of others. Also, total quality management will be able to reduce cost in the sections of scrap, rework and field service. In the case of pharmaceutical companies, customer satisfaction is one of the most important elements. If the customers are not satisfied with the effectiveness of the drugs they produce it may cost them their reputation as well as many potential customers. Hence it is advised to adopt this technique in order to ensure the effectiveness of the drugs hence keep their customers satisfied.

11.2 Life Cycle Costing

LCC is a system that accumulates and tracks down all the costs of a product and service from the very scratch. A product's life-cycle costs include all the cost from its research and design stage through development to market launch, production and sales, and finally to its eventual withdrawal from the market. In Pharmaceutical Companies this type of activities could be done by their Central Product Management Department which deals with raw materials management, materials acquisition costs etc. The life cycle cost of a drug includes research and development costs, costs of purchasing the technical data, production costs, marketing costs, inventory costs, and finally retirement and disposal costs. Same as TQM, Life Cycle costing also helps to keep the customers satisfied. Research and development of any drug and testing that drug is a must in order to enhance its effectiveness which could be measured and ensured under Life Cycle Costing. Life Cycle costing can also help the top management of the pharmaceutical companies to make better decisions that will reward them in the long term. It will also hand them a complete cost framework that will be needed to design an effective drug.

11.3 Activity Based Costing (ABC)

ABC has been developed with a view to providing more accurate ways to assign the costs of indirect and support resources of business activities, business processes, customers, services, and products. Activity Based Costing is one of the best tools to refine the costing system of organizations. It is an approach to costing that focuses on

individual activities as the fundamental cost objects. It aims to assign costs more accurately to each product by identifying all the major operating activities within an organization. ABC is important to activity-based management. Though ABC is not implemented in these selected five companies, they should try and follow this innovative costing process as all the pharmaceutical companies have many major cost drivers in case of manufacturing the drugs. Pharmaceutical Industry of Bangladesh is very competitive. In order to maintain their position in the market, they need to be really careful about their costing system. This study suggests these Pharmaceutical companies adopt Activity Based Costing System as it will help them to identify inefficient processes and will magnify the scopes of improvement to produce an effective drug.

11.4 Balanced Scorecard

Balanced scorecard is a performance metric that is mostly used in strategic management with a view to identify and improve various internal operating activities of the organization and their external outcomes. It is mostly used to measure and provide feedback to the organization and align between the operational activities and organizational goals. Information gathered by the balanced scorecard will help the managers to make a better decision for the organization. Maintaining a balanced scorecard will help these pharmaceutical companies to plan and go for better strategies as well as communicating those strategies within the organization. Balanced Scorecard will help the pharmaceutical companies to align their organization structure with the strategic objectives in a more efficient way. It will also help to align processes such as budgeting, risk management, with priorities such as the effectiveness of the drugs. Thus it is highly recommended to the Central Pharmaceutical Ltd. and Beacon Pharmaceutical Ltd.

11.5 Six Sigma

Six sigma is a strategy that is based on measurement which aims to improve the overall process. The concept behind the approach of six-sigma is to lessen the variation in the process and produce something perfect. It also helps to increase customer satisfaction which is an unavoidable element of any pharmaceutical company of Bangladesh. In the process of producing a drug, any mistake is unacceptable. By reducing the variations in the process of producing drugs Six Sigma will lead the organization towards its desired outcomes. Six Sigma follows the DMAIC model to improve the quality and reduce the problem for any existing process. DMAIC model consists of five phases which are Define, Measure, Analyze, Improve, and Control. Six Sigma will aim to continuous process development and lower amount of defects in producing drugs which will pave the way to the ultimate customer satisfaction which is why this study is suggesting this technique to all the pharmaceutical companies.

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