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ADVANCED WORKING REPORT ON ACTIVITY BASED COSTNG AS A TOOL OF CONTROLLING COST & IMPROVED PROFITABILITY AT ACME LABORATORIES LTD

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ACME LABORATORIES LTD**

Submitted by,

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May10th 2012**

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ACME LABORATORIES LTD**

by,

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May 10th, 2012**

Letter of Transmittal

SABINA YESMINE

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Sub: Submission of the Internship Report

Dear Miss

In this advanced working report on identifying problems with traditional product costing and impact of Activity Based Costing (ABC) on subsequent implementation at ACME Laboratories Ltd., I have tried to implement my academic experiences in the practical field with due sincerity and would like to thank you for your cooperation. Despite many limitations I have tried my level best to address the major and in depth issues in making this paper accurate and reliable. If you have any further enquiry concerning any additional information I would be very pleased to clarify that.

I, therefore, hope that you will be kind enough to accept this report as fulfillment of the requirement for the course BBA-499.

Thanking you.

Sincerely yours,

Mahmuda Yesmin

ID: 0610186

Acknowledgement

At the very beginning, I would like to express my deep gratitude to almighty Allah for giving me the strength to finish the project within the schedule time. Preparing an internship report is a copious task. I required enormous time and attention in every step of it. However, it gives me a true feeling of creation and helps me to understand my ability of work.

For fear of sounding like a vote of thanks speech, I would like to take the opportunity, to thank all of those marvelous people who have contributed to this report. Of course, some very special people cannot go without mentioning. At first, I express my heartiest gratitude to my Supervisor Ms Sabina Yesmine Lecturer of Business School, IUB, for his kind cooperation in preparing this report. I would like to thank Mr. Zahangir Alam, for giving me opportunity to work as an intern. I am grateful to Mr. Zahangir Alam for his supervision and continuous support to do my internship. It would be injustice if I do not express my gratitude to Mr. Faruk Hossain, Senior Manager of cost & account information department; Mr. Iftekharul Islam, Manager of Business planning, without their support it was impossible for me to make such report.

I am also indebted to all of officers and staffs of Acme Laboratories and for giving time and advice to know and learn all activities of the company and prepare this report. During the preparation of the project work I have come to the very supportive touch of different individuals (respondents & seniors from Acme Laboratories) and friends, who lend their ideas, time and caring guidance to amplify the report's contents. To be honest to myself I must say that without their help it would be very hard for me to prepare such report. I am thankful to them with all of my feelings.

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Executive Summary

Activity-based costing (ABC) is a forward-looking product costing method. Unlike traditional volume-based approaches, ABC concepts guide managers in seeking the best strategies to pursue in the future. This product costing method can be a valuable tool in planning and managing costs not only in the manufacturing area, but also in all aspects of business operations, from product design to distribution. Although its main advantage is its ability to provide more realistic product cost information for financial reporting purposes, use of ABC can lead to a better understanding of the strategic linkages existing between the various cost areas in the organization. It enables managers to have a holistic view of cost management.

While conducting my research paper on “Activity Based Costing-as a tool of Cost Control & Improved Profitability” at The ACME Laboratories Ltd.”, I have tried to diagnose the problems persistent with existing costing system and subsequently sought the consequence after implementing more forward looking costing approach which is Activity Based Costing (ABC). I had thorough research on how ABC costing control the cost and thus improve profitability on a manufacturing setting. Acme Laboratories Ltd is one of the biggest pharmaceutical products manufacturing company. Therefore, I chose Acme Laboratories Ltd, where the costs segments are easily separable and the impact of ABC costing method on profitability is firmly realizable.

The research came into the findings that when the ABC system was implemented the percentage of controlling employees’ time devoted to data gathering decreased and the percentage of time devoted to analytical activities in aid of raising the value of the enterprise increased. Studying the statistical analysis, and other financial ratio analysis, it can be confirmed that The ACME Laboratories Ltd have progressed well especially in its internal system development and with better-cost control. While using the modern method, we have found that application of Activity based costing ensure true cost allocation using relevant cost drivers, which effectively facilitate product based decision making as well as over all cost awareness.

1. Introduction:

1.1 Origin of the report:

The report has been prepared as parts of accomplishing three months internship programmed with a view to stipulate the learning outcomes by conducting methodical research. As I worked mostly at cost accounting department during the period of internship, I hunted for problem areas in product costing and allocation of cost elements, if any. Being one of the leading pharmaceutical manufacturers, dealing with thousands of products ACME also face difficulties while determining actual product costs especially in allocating the overhead costs. I walked through the problems in depth and tried to approach appropriate solutions. Hence, this report is the outcome of action research throughout the organization.

1.2 Problem Statement:

The problem statement is as follows, *“problems with traditional costing system and how to overcome these by implementing more forward looking costing approach”*.

1.3 Purpose of the study:

The purpose of this study is to investigate which are the practical problems in traditional costing system and supremacy of Activity Based Costing (ABC) in controlling cost and improving profitability. Moreover, this will shed the light on the procedure for implementing ABC system within companies that handle everyday transactions through operational and financial information systems. ABC provides the tool with which to go beyond gross margins and penetrate the real economics of all aspects of cost and profitability, including that of servicing customers. Implementation of ABC in a manufacturing setting can provide solutions to many of the critical business issues the pharmaceuticals industry is currently facing.

1.4 Objectives of the study:

I segregated the purpose on further pieces and hence defined the objectives of the study. The objectives of the report have been given bellow.

- To analyze the existing cost accounting system.
- Identify the shortcomings in existing system.
- To develop the product costing on the basis of ABC
- To analyses Internal control system.

- To analyses accounting information systems as well as Profitability analysis on the basis of cost objects, i.e.; product based, geographic location.

1.6 Scope of the study:

My internship placement was in cost accounting department under accounts and finance division. Eventually, scope of the study concentrated in different sections of cost accounting department. Imported materials costing, calculation of institutional sales pricing, profitability grading for changes in material price and standard costs for finished goods were collected and analyzed from costing and pricing section. Batch wise actual cost calculation, standard costs and batch wise variance report were reviewed and collected from inventory section. Moreover, I had to work in close cooperation with factory accounts department to collect realistic cost data, monthly productivity report and identifying activity based cost drivers. I had to discuss with warehouse department and engineering division for determining cost driver for the service centers.

1.5 Methodologies of the study:

This study started from completing a questionnaire by the respondents (Appendix 1) – later, gathered information was made more detailed in the interview sessions of corresponding individuals; the information was also extended with problems which was beyond the scope of the questionnaire (for example methodological and institutional changes that occurred after implementation of the new management accounting concept – Activity-based costing). The interviews were conducted with people employed in operational and accounts divisions; most of the time was given to people responsible for functioning of the activity-based costing system. To verify and extend the collected information, the interviews were followed by telephone conversations and e-mail messages. Gathered information was confidential and for that reason, the interviews were not recorded.

Following methodologies are used for conducting the study:

- **Primary data:** On job observation and learning.
Personal interviews and discussion with concerned personnel
- **Secondary data:** The study based on secondary data. Data required for the study were collected from financial manual, inventory control manual, procurement manual, audit reports, financial press, web site of ACME and other texts book.

1.7 Limitations of the study:

The major limitations that I have encountered during the study and preparation of the report are as follows:

- Restrictions as per the organizational policies to disclose some of the internal information and financial data in public.
- The study based on the manual and other management reports within ACME.
- Vastness of the accounting and cost accounting procedures of a big organization like ACME, which is really difficult to understand in such a short span of time.
- Lack of adequate information and data.
- Had to rely on some published information
- cost constraints

2. An overview of ACME

2.1 Inception of ACME Laboratories Ltd.

ACME Laboratories Limited is leading Pharmaceuticals Company in Bangladesh established in the year 1954. The company has a very big manufacturing plant located at Dhamrai, 40 kilometer away from the central of Dhaka city. The company produces various types of dosages' forms which include tablets, capsules, oral liquids, ampoules, dry powder vials, powder for suspension, nasal Drops, eye drops, infusion, injection etc. Since its inception, ACME has been lunching and innovate products in order to fulfill unmet demand of the medical community. The focus has to bring more new technologically advanced molecules to this country.

The company operates in a single industry segment, it has its own manufacturing facilities, and the principal activities of the company are formulation, manufacturing and sales drugs in home and aboard.

2.2 Vision Statement:

Our vision to ensure Health, Vigour and Happiness for all and is on a Perpetual quest for excellence.

2.3 Mission Statement:

Our holistic approach is to ensure Health, Vigour and Happiness for all by manufacturing ethical medicines of the highest quality at affordable prices and expanding in the local

and global market. We view ourselves as partners with the doctors, healthcare professional, all other customers, our employees and harmonize with environmental issue.

2.4 Objectives of ACME:

- ACME wants to discover, develop and successfully market innovative products to cure diseases, to ease suffering and to enhance the quality of life.
- It wants to be recognized for having a positive impact on people's lives with our products, meeting needs and even surpassing external expectations.
- It strives to create sustainable earning growth. Ranking in the top quartile of the industry and securing long-term business success.
- It wants to build a reputation for an exacting workplace in which people can realize their professional ambitions.
- ACME strives for a motivating environment where the creativity and effectiveness are encouraged and where cutting-edge technologies are applied.

3. Research Questions & Hypothesis

Before starting the research, the following questions are formed in order to come up with the findings that can provide reasonable answers, is what does the company intent to achieve in terms of cost controlling and how it views its business? What are the objectives of implementing ABC in the organization and what are the road blockers in the implementation process? The success of the cost controlling method is measured against which standard?

The following sub-questions need to be answered:

- What are the problems in existing costing system?
- What are the benefits of ABC versus traditional methods?
- What are the limitations of ABC?
- What do literature studies reveal regarding the practical use of ABC?
- What are the steps involved in designing a model for implementing ABC?

4. Traditional Product Costing System

Under existing system, factory overhead cost is not included in product batch cost. Product costs are determined on the basis of direct raw materials and packing Materials cost. Under the traditional costing system, direct labor and factory overhead could not be ascertained to product directly. As consequence, these costs were apportioned as a percentage (%) of material cost for the product, which didn't really allocate the true cost for producing that particular product, i.e. did not consider the cost drivers.

As a result, costs for some products were over charged and some were under charged and accordingly priced without reflecting true cost for particular product, pursuing suboptimal decisions. Moreover, decisions making for contract sales under spare capacity were not appropriate because of failure to identify true production costs for relevant product.

In this persistent risk of taking suboptimal decision, the company's divisional head (accounts & finance) formed a team to look for more forward looking costing system which will facilitate true allocation of cost, thereby ensure optimal decisions regarding production mix or subcontracting sales. After comprehensive analysis of the problems, literature review and group discussion including me, it was proposed to introduce Activity Based Costing (ABC) to address this issue.

5. Literature review on Activity Based Costing (ABC):

Robert Kaplan and William Burns first defined the concept of ABC in the late 1980s. Peter F. Drucker later explained this technique in 1999 in his book called the Management Challenges of the 21st Century. Initially ABC focused on manufacturing industry where technological developments and productivity improvements had reduced the proportion of direct labour and material costs, but increased the proportion of indirect or overhead costs.

Lere (2000) mentioned that in order to comprehend the potential power of Activity-based costing (ABC) cost data in pricing, it is important to comprehend how Activity-based costing (ABC) cost data is different in contrast to the traditional method. The attribute of Activity-based costing (ABC) is that it does not vary with volume; however it may differ with some other measure of activity.

Work carried out by Kingcott (1991), John and Mitchell (1995), and David and Robert (1995), highlighted the benefits and advantages for the Activity-based Costing (ABC), which was also the new cost system targeting cost reduction, performance measurement and different cost object.

5.1 Overview of ABC

The concept of ABC was first defined in the late 1980s by Robert Kaplan and William Burns. Initially ABC focused on manufacturing industry where technological developments and productivity improvements had reduced the proportion of direct labor and material costs, but increased the proportion of indirect or overhead costs.

5.2 Comparison of traditional costing and ABC

According to AICPA (2004:2), the basic distinction between traditional cost accounting and ABC is as follows: traditional cost accounting techniques allocate costs to products based on attributes of a single unit. Typical attributes include the number of direct labor hours required to manufacture unit, purchase cost of merchandise resold or the number of days occupied.

Allocations, therefore, vary directly according to the volume of units produced, the cost of merchandise sold or the days occupied by the customer. In contrast, ABC systems focus on activities required to produce each product or provide each service based on each product or service's consumption of the activities. Using ABC, overhead costs are traced to products and services by identifying the resources, activities and their costs and quantities to produce output. A unit or output (a driver) is used to calculate the cost of each activity consumed during any given period of time.

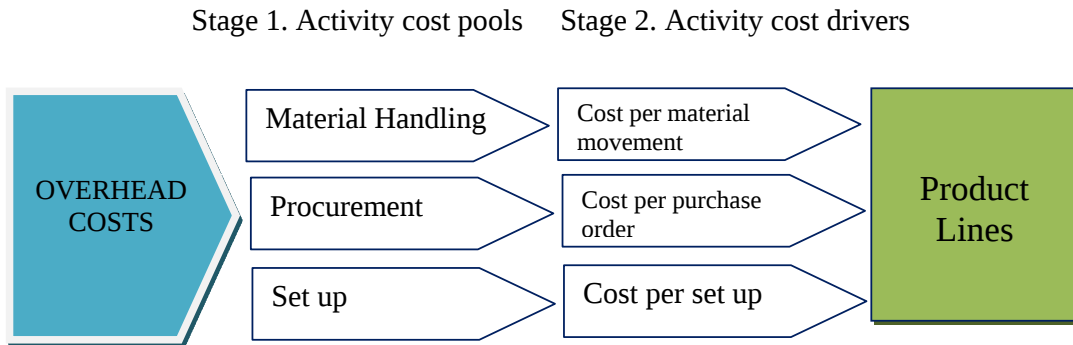
An ABC system can be viewed in two different ways. The **cost assignment view** provides information about resources, activities and cost objects. The **process view** provides operational (often non-financial) information about cost drivers, activities and performance.

The traditional method of costing system usually allocates costs based on a single volume measure, such as direct labor hours or machine hours. While using such a simplistic volume measure to allocate overheads as an overall cost driver, this approach seldom meets the cause-and-effect criteria desired in accurate cost allocation. This method of

costing become increasingly inaccurate as the relative proportion of overhead costs rises. This distortion of costs can result in inappropriate decision-making.

ABC is therefore an alternative approach to the traditional method or arbitrary allocation of overheads to product, services and customers.

Figure: Framework of ABC



5.3 ABC in practice

ABC focuses on accurate information about the true cost of products, services, processes, activities and customers. Using ABC, organizations gain a thorough understanding of their business processes and cost behavior during ABC analysis. Management then applies this insight to improve decision making at operating and strategic levels.

A study was carried out in July 2005 to determine the state of ABC within over 500 organizations across numerous industries of different sizes and locations. It provides a useful and interesting insight into how ABC is used in organizations which can be accessed on the website www.bettermanagemnet.com.

Reported benefits

- ABC provides a more accurate method of costing of products and services.
- It allows for a better and more comprehensive understanding of overheads and what causes them to occur.
- It makes costly and non-value adding activities more visible, so allowing managers to focus on these areas to reduce or eliminate them.
- ABC promotes process based thinking rather than spending based thinking and recognizes that all process have outputs.

- It supports other management techniques such as continuous improvement, scorecards and performance management.

Reported drawbacks

- ABC can be difficult and time consuming to collect the data about activities and cost drivers.
- It can be costly to implement, run and manage an ABC system.
- Even in ABC some overhead costs are difficult to assign to products and customers. These costs still have to be arbitrarily applied to products and customers.

5.4 Companies Adopted ABC in Bangladesh:

- Sanofi Aventis (Pharmaceuticals)
- Novartis (Pharmaceuticals)
- Novo Nordisk (Pharmaceuticals)
- General Motors (Cars)
- Hewlett Packard (Electronics)
- IBM (Electronics)

5.5 Developing an Activity Based Product Costing

ABC work plan are subdivided into following phases:

Phase 1: Preparing the company for ABC

- Annual budget
- Responsibility accounting

Phase 2: Planning & organizing to implement ABC

- Steering committee
- Workgroup
- Detail work schedule

Phase 3: Analysis Profiling the activities

– Activities are what actually go on in production process. A single activity can be performed by a number of functions in sequence i.e. it may have sub activities. Activities incur cost, create value in its products and in combination with other activities, provide a product, which earns revenue.

Phase 4: ABC model design

It focuses on designing the ABC model given the results of the analysis done and preparation of:

- Standard Operating Procedure
- Software

Phase 5: Cost driver rate application

ABC rates could then be used to generate product cost

Phase 6: Implementation

Four steps in implementation of ABC-

A. Identify activities

The organization needs to undertake an in-depth analysis of the operating processes of each responsibility centre. Each process might consist of one or more activities required producing an output.

B. Assign resource costs to activities

This involves tracing costs to cost objects to determine why the cost occurred. Costs can be categorized in three ways:

- Direct – costs that can be traced directly to one output. For example, the wood and paint that it takes to make a chair.
- Indirect – costs that cannot be allocated to an individual output, that is, they benefit two or more outputs, but not all outputs. For example, maintenance costs or storage costs.

Activity Based Costing Topic Gateway Series 6

- General/administration – costs that cannot be associated with any product or service. These costs are likely to remain unchanged, whatever output is produced. For example, salaries of administration staff, security costs or depreciation.

C. Identify outputs

Identify all of the output for which an activity segment performs activities and consumes resources. Outputs might be products, services or customers.

D. Assign activity costs to outputs

This is done using activity drivers. Activity drivers assign activity costs to outputs (cost objects) based on the consumption or demand for activities.

Making presentations to various managerial and cross functional steering committees about the result of the ABC analysis and the project plan for implementing the reengineered standard cost system.

Phase 7: System Review

Monitor the system result and review for excellence

Phase 8: Using ABC information

- Decision-making
- Performance evaluation

- Activity Based Management

5.6 Type of Activities:

Primary / Core Activities: Activities that are directly related to production, sales, marketing and distribution.

Secondary/Support Activities: Activities that support core activities.

Non-Value Added Activities: Activities that do not add value and are symptoms of failure within an organization.

5.7 Profiling the activities includes:

- Creating new activities
- Creating Sub activities
- Mapping activities
- Collect highest possible information regarding activities

5.8 Pooling the activity cost

Many cost may be directly attributable to activities, others will not. Here the issue of cost apportionment is likely to be relevant. The clear identification of apportioned costs at the level of product cost is therefore an attribute, which should perhaps be built into the ABC system. Cost may be pooled up to the sub activities. Ultimately the degree of cost pool segmentation will determine the level of detail of the system. The use of sub activity pools will allow increased visibility of costs.

Analysis & Selecting cost drivers: The costs of any activity cost pool will be influenced by a variety of factors called cost drivers. Cost driver analysis investigates, quantifies and explains the relationship between cost drivers and their related costs. ABC use cost drivers that are not used to allocate costs but to show that the cost demanded by outputs in each activity. Three types of cost driver have emerged:

Transaction drivers: Transaction drivers are the least expensive category of cost drivers because they reflect how many times an activity has been performed and are used when the activities are consumed in the same extent by cost objects, such as number of setup, number of inspection.

Duration: Amount of time required to perform an activity.

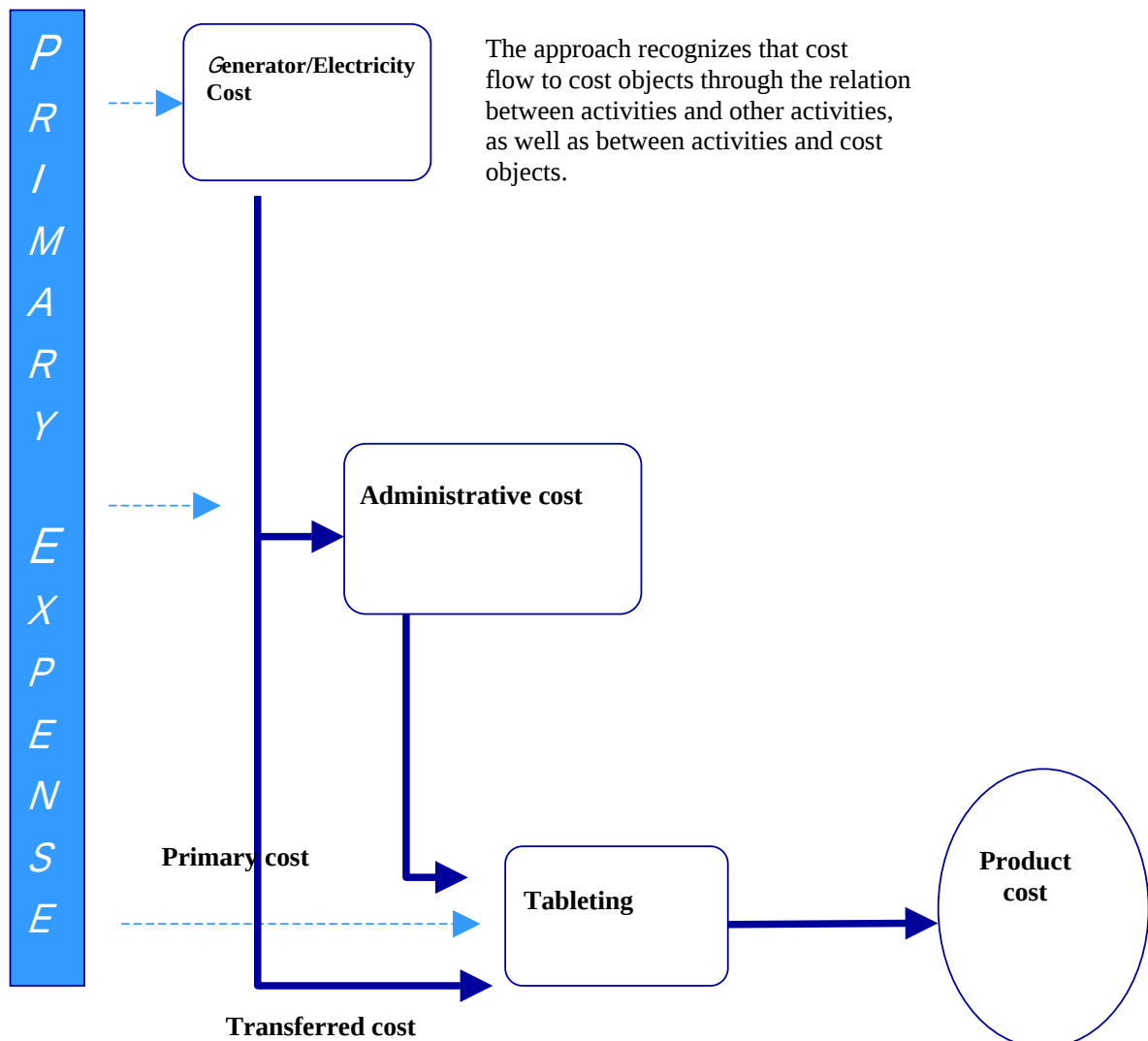
Intensity/situational: Intensity drivers directly charge for the resources used each time an activity is performed.

Table: Example of ABC based cost drivers

Activity based cost pool	Activity cost drivers
Set-up costs	Number of production runs
Dispatch costs	Number of customer orders delivered
Production scheduling	Number of production runs
Inspection costs	Number of inspections or inspection hours
Purchasing	Number of purchase orders
Receiving	Number of goods received notes

5.9 Multiple-stage cost assignment

Multiple-stage cost assignment



5.10 Pre-conditions for Implementing ABC

Any company can achieve excellence through ABC in about 3 – 6 months, depending upon their size, if they can assure themselves of:

- Top management's commitment
- A well-trained team
- Relevant software support
- Experienced people facilitating the implementation

5.11 Shortcomings

According to Rockford Consulting Group (1999), one of the basic issues surrounding ABC is the difficulty of implementation. Identifying activities or processes to be allocated properly is cumbersome and takes a lot of effort.

Difficulties in implementation include:

- Too many or too few identified activities and cost drivers
- Overly complex system design
- Reciprocal cost allocation
- Lack of technical expertise in the identification and analysis of activities
- Reliable information is needed; otherwise the whole ABC structure will be built on sand (at the study phase and also in course of practice).

6.0 Sample of existing batch costing system

A sample of existing batch cost system is as follows:

ACME Laboratories Ltd.
Dhamrai, Dhaka

Batch cost report

Product Code : 061037

Batch Size (pcs):17500

Product Name: Fast Syrup 60ml

Batch No. :

Batch Yield :17150

Code	Material Name	Unit	Rate	Qty	Value
Raw Materials:					
R-102	Paracetamol	KG	345	25.38	
R-508	Colloidal	KG	648	1.575	
R-605	Microcrystal	KG	747	3.15	
R-904	CMC Sodium	KG	455	1.575	

R-706	Essence Strawberry	LT	1115	1.05	
R-870	F.D & C Red color	KG	10000	.053	
R-565	Pineapple flavor	LT	670	1.05	
R-986	Sodium Benjoyet	KG	205	2.1	
R-788	Sorbitol	KG	59	262.5	
R-765	Sucose	KG	72	577.5	
Total Raw Material Cost					72748.6
Raw Material Cost per PC (a)					4.24
Packing Materials:					
P-1005	Bottle round 70ml	PC	2.25	17600	
P-1006	Carton	PC	1.95	17600	
P-1007	Plastic spoon	PC	.41	17550	
P-1008	Cap 25 mm	PC	1.2	17650	
P-1009	Insert	PC	.55	17600	
P-1010	Fast 60ml	PC	.75	17650	
P-1011	Ship. Box	PC	.31	1465	
P-1012	Gum Accas	PC	3.92	1465	
P-1013	Master gum	PC	390	2	
P-1014	Plastic tap	Roll	53	3	
P-1015	Master cap	PC	33.7	25	
Total Packing Material Cost					133191.5
Packing Material cost per pc (b)					7.77
Total Materials Cost (c) (a+b) per unit					12.01

Traditionally, direct labor and factory overhead were allocated as a percentage of material costs, i.e.; 25% of material cost.

Production cost per unit= Tk 12.01 + 25% of 12.01
= Tk 15.01

7.0 Application of ABC at ACME

Introduction of ABC system, manufacturing overheads substantially reduced and consumed within product cost. It facilitates true allocation of responsible costs within product cost and identifying more profitable and less profitable products. After implementation of Activity based costing, factory overhead are included in product batch costing. Consequently, the actual overheads are charge to the product. Cost control and decision-making have been enhanced, since ABC endeavors to identify the responsible drivers for occurring costs.

Work group members of Activity based costing to implement in the factory of The ACME, the following activities were undertaken for standard setting:

1. To fill up the Activity profiling form
2. To fill up the Machine hour form
3. To fill up the Labor hour form

7.1 Sample of Activity Profiling Form:

The sample of Activity profiling form is as follows:

ACME Laboratories ltd.

ACTIVITY PROFILLING FORM

A) (061037) **Name & Code of the Activity:** Fast Syrup 60ml

B) Cost Object: Syrup form Finished Products

C) Cost Objects Consumed by: Against Revenue in the form of COGS

D) Working Hour / Day (Single Shift):

Total hour	:	9.50 hrs
Downtime	:	1.50 hrs
Net working hour	:	8.00 hrs

E) Capacity (overall)/Day: 34,000 pcs / day

F)Primary cost:

Head/Item	Transferred from	Nature and Description
Raw Materials		
Packing Materials		

G) Transferred Cost:

Head/Item	Transferred from	Nature and Description
Electricity	Generator	
Quality Control	QO Activity	
Administrative	Plant Administrative	
Storage related exp.	Warehouse Activity	
Compressed Air	Compressor Activity	
Chiller	Chiller Activity	
Stream	Boiler	
DM Water	Dm Plant	
Normal Water	Deep tube well	
Building Depreciation		
Canteen	Canteen Activity	
Engineering Workshop	Engineering Workshop Activity	

H) Sub Activities:

Name	Function	Remarks
Materials Receiving & Checking	Materials receive from warehouse	Common for all process
Melting	To melt the raw materials	Common for all process
Mixing	Proper mixing of all ingredients	Common for all process
Tube Filling & Sealing	Fill into the tube	Common for all process

I) Manpower Required:

Sub activity	Permanent	Daily	Total
Materials Receiving & Checking	1	0	1
Melting	1	1	2

Mixing	1	1	2
Tube Filling & Sealing	3	1	4

J) List of Machineries (Main process only):

Name	No. Of Mach.	Sub activity	Total Working Hour/Day	Down Time	Net Working Hour
Vacuum Emulsifier	1	Melting & Mixing of all ingredients	9.5	4.50	5.00
Tube Filling & Sealing Machine	1	Tube Filling & Sealing	9.5	2.5	7.00

K) Possible Cost Driver:

Salary and wages related expenditure: Batch wise labor hour

Other expenditure mainly machine related expenditure: Batch wise machine hour

L) Way of Cost Drivers' Data Capturing:

i. Labor log books to total labor hours.

ii. Machine log books to record the net machine hours.

7.2 Sample of Labor hour Activities:

The samples of Labor Hour form are as follows:

ACME Laboratories ltd.
1/4, Kallyanpur, Mirpur Road, Dhaka

Product wise Manufacturing Process Time (In Labor Hour)

Section: Fast Syrup 60ml

Code	Product Name	Batch Size	Batch No	Materials Receiving & Checking			Melting & Mixing			Filling & Sealing			Total
				Man	Hour	Man Hour	M a n	H ou r	Man Hour	Man	Hour	Man Hour	
061037	A Cal – 500	17500	DB9017	1	1	1	2	2	4	3	7	21	26

7.3 Sample of Machine hour Activities:

The samples of Machine Hour form are as follows:

ACME Laboratories ltd.
1/4, Kallyanpur, Mirpur Road, Dhaka

Code	Product Name	Batch Size	Batch No	Melting & mixing	Tube Filling & Sealing	Total Hour
				Hour	Hour	Hour
061037	A Cal –500	17500	DB9017	2	7	9

7.4 Production cost per unit under ABC

Under activity based costing, material cost per unit is same at Tk.12.01, but the factory overhead will be allocated as per labor hours and machine hours used multiplying by respective rates.

During the production period, overhead absorbed for the batch of production at the rate of Tk 1153.8 per Labour hour and Tk 1240.7 per Machine hour.

So, total overhead = Tk 1153.8 * 26 + 1240.7 * 9
=Tk 41162.6 /batch

So, per unit OH =Tk 41162.6/17150
= Tk 2.40

Product cost per unit under ABC = Tk 12.01+ Tk 2.40
= Tk 14.41

Comparison of product cost per unit:

	Under existing system	Under ABC
Raw material cost	Tk 4.25	Tk 4.25
Packing material cost	Tk 8.22	Tk 8.22
Factory overhead	Tk 3.12	Tk 2.40
Product cost per unit	Tk. 15.59	Tk. 14.87

7.5 Different type of activities:

Activities are defined on the basis of form as following:

Form	Activity
Solid (Tablet, capsule & dry syrup, Liquid)	Dispensing
	Weight Checking
	Sieving
	Granulation
	Blending
	Syrup preparation (liquid)
	Filtration (liquid)
	Compression (Tablet)
	Encapsulation (Capsule)
	Sorting & polishing (Capsule)
	Filling & sealing (dry syrup)
	Blistering (Tablet & capsule)
	Blister packing (Tablet & capsule)
	Labeling (dry Syrup)
	Cartooning
	Shipping Cartooning
Injection (Ampoule, vial, infusion & insulin etc.)	Dispensing
	Compounding, Filtration
	Sterilization
	Cooling
	Filling & sealing
	Storage for Microbiological Test
	Visual Inspection
	Labeling
	Blistering
	Cartooning
	Shipping Cartooning
Cream & ointment	Dispensing
	Weight Checking
	Melting, Cooling and Mixing
	Tube Filling & sealing
	Cartooning
Suppository	Raw Materials Dispensing
	Weight Checking
	Charging
	Melting and Mixing
	Filling & Blister Striping
	Cartooning

Form	Activity
MDI & DPI (Inhaler)	Dispensing
	Weight Checking
	Mixing
	Filling
	Crimping (MDI)
	Gas Charging (MDI)
	Container Filling (DPI)
	Spray Checking
	Cartooning

Standard available/ achievable processing hour (man & machine) per year are calculated as per following schedule:

Particular	Labour	Machine
Gross calendar days	365	365
(Less) Weekends	104	104
(Less) National holidays	25	25
Net working days	236	236
(Less) Other paid vacant (annual, medical & casual)	11	-
Total day of attendance	225	236
(Less) General down time (repair & maintenance, cleaning, trail & test, education & training etc.)	3	3
Total available days per year	222	233
(Multiplied) Net working hour per day	8	8
Total available hours per year	1776	1864
(Less) Provision (5% & 25% of available hours for labour and machine respectively)	88	466
Standard achievable hours per year	1668	1398

Table: Allocation bases for traditional method and ABC

Indirect Cost	Activity-based costing	Traditional
Production control	No. of process operations	Direct labour hours
Inspection	No. of inspections	Direct labour hours
Warehousing	Stores Receipts and issues	Direct labour hours
Purchasing	Purchase orders	Direct labour hours

7.6 Production related costs:

Production related costs are including the following:

- Repairs & maintenance
- Power & electricity consumption

- Indirect materials
- Insurance of production equipment
- Insurance of production building
- Depreciation of production equipment
- Depreciation of production building

Above costs are determined in machine hour rate basis. Machine hour rate = $\frac{\text{Production related costs}}{\text{(Number of major machine X Standard achievable machine hours per year)}}$

A sample illustration has been shown below, distinguishing ABC from traditional costing in allocation of set up costs and their pitfalls in decision making as well effective cost control.

Table: Illustration of setup cost comparison between traditional method and ABC

	Product A	Product B	Total
Volume	1000	20000	21000
Direct labour hours per unit	400	300	700
Number of setups	30	40	70
Total setup costs If assigned:			4480
On labour hours (Traditional)	280	4200	4480
On number of setups (ABC)	1920	2560	4480
Traditional setup Cost per unit	0.28	0.21	
ABC setup cost per unit	1.92	0.13	
	Product A	Product B	
Change after ABC Versus traditional method	586%	-38%	

7.7 Material handling overhead costs:

Material handling overhead costs includes warehouse department costs and QC cost of raw & packing material costs. It is determined as per Kg/Ltr materials handled.

- Material handling overhead rate per Kg/Ltr = $\frac{\text{Total handling costs}}{\text{Total materials handled during the year on the basis of production plan}}$

Material handling overhead costs charge to batch on the basis of Material handled quantity (KG/LTR) of particular batch.

7.8 Quality assurance overhead costs:

Quality assurance department is built up in the following 4 sections:

1. Incoming raw & packing materials test and analysis which treated as materials handling overhead costs

2. In process control
3. Microbiological test and analysis
4. Finished product test and analysis

Total cost of Quality assurance department is allocated to above 4 sections on the basis of manpower engage in each section. In process control, microbiological test and analysis & finished product test and analysis costs are charged to each batch on the basis of per batch rate.

7.9 Journals & related forms:

Journals & related forms to implement ABC system in our cost accounting system are given in annexure.

8. Changes in management accounting after ABC

Two aspects of changes in management accounting in ACME observed after the activity-based costing had been implemented, namely: **methodological changes** and **institutional changes**. The above changes were presented in following Table.

Table: The changes in management accounting in ACME after ABC implementation

Area of changes	Before ABC implementation	After ABC implementation
Methodological Changes (new tools in management Accounting)	Decision- making through, management by trial and error”	Decision-making based on numerical data from ABC system
	Low accuracy of direct cost tracing to products	High accuracy of direct cost tracing to products
	Full absorption costing within direct cost settling „using the method direct costs + X”	Activity-based costing with indirect cost allocation according to various costs drivers
	Costs established only for a group of products	Costs established for products as variable cost according to activities and resources plus fixed cost according to activities and resources

	Profitability analysis of the whole company and very inaccurate analysis of products profitability	Profitability analysis of the whole company, products, groups of customers and customers, etc., established basing on activity-based costing
	No planning of the production capacity in order to determine its influence on the unit price(costs of unused resources not specified)	Costs of products calculated for normal production capacity (costs of unused resources allocated to profit and loss account)
Institutional Changes	Management accounting function distant from production and sales function	Management accounting function close to production and sales function
	Low approach to information delivery needed for decision making	Higher approach to information delivery needed for decision-making
	No specified responsibility Centers	Specified centers responsible for costs and profits
	Information from the management accounting rarely used by the managers of production, sales and other positions in the company	Information from the management accounting frequently used by the managers of production, sales and other positions in the company

9. Findings:

In a brief, the research results answer the research questions very well as well as demonstrate why companies should implement ABC costing methods in order to establish more control over the costing and thus, heads over increased profitability. The effects of the implementation of the activity-based costing system can be expressed as:

- The implementation of the ABC in ACME facilitated more accurate calculation of the costs of products,
- ABC resulted in more frequent usage of the information from the system by managers in production and sales departments,
- ABC allowed the controlling function to approach the production function,
- The changes in the job description and the organizational structure of the financial/controlling departments,
- Activity-Based Cost Management improved process through analyzing activities, cost driver and performance.

- By implementing the Activity–Based Costing to find out the non-value added activities. if non –value added activities reduce from overall function of the activities then company profitability may be improve.
- In present system of costing only raw and packing materials are included in product costing. But when the company implement the activity based costing then factory overhead are included in the product costing.
- In this time actual product cost are ascertained by using activity based costing.
- Company can offer competitive rate for institution, Hospital or other various institution. Now company provide rate Raw and packing materials cost plus 25% factory overhead plus 20% profit. But this is wrong idea. Because all products need not 25% overhead and some products need over 25% overhead.
- New responsibility cost center are open for cost accumulation. This responsibility center is help for implementation of activity based costing.
- Provisional expenses are not accounted properly in accounts.
- Though ACME has a very efficient reporting system, some time it would hamper for inefficiently working of ERP system and shortage of other resources.
- Sales forecast fluctuates rapidly which affects the production planning and scheduling.
- Imported materials price varies with the change of import quantity, exchange rate; so standard price fixing is very tough. As a result variance figure is very high or low.
- Capacity planning is very complex some time it gives erroneous result. Some time capacity planning would not be consolidated and supported with production schedule which can interrupt smooth production.
- In Production floor all department are not computerized. For activity based costing accurate data capture is must, so all departments in product floor must be under IT environment.

When the ABC system was implemented the percentage of controlling employees' time devoted to data gathering decreased and the percentage of time devoted to analytical activities in aid of raising the value of the enterprise increased. Studying the statistical analysis, and other financial ratio analysis, it can be confirmed that The ACME Laboratories Ltd have progressed well especially in its internal system development and with better-cost control. While using the modern method, we have found that application of Activity based costing ensure true cost allocation using relevant cost drivers, which effectively facilitate product based decision making as well as over all cost awareness.

10. Significance of the Research:

In today's competitive world of business, having accurate information may be the key factor in distinguishing between the loser and the winner. Using more accurate cost information while determining the optimal product mix of a company, may lead management to make better decisions, and as a result, may have a great effect on the success of a company. The purpose of this study is to investigate the practical problems in implementing an ABC system within companies that handle everyday transactions through an operational and a financial information system.

ABC provides the tool with which to go beyond gross margins and penetrate the real economics of all aspects of cost and profitability, including that of servicing customers. The analyses provided by ABC can provide solutions to many of the critical business issues facing the manufacturing industry.

11. Recommendations

As the research findings suggest, it is recommended that as ABC costing method can bring huge positive changes in cost controlling process for an organization, following more cautions can make the profitability even higher. Besides, the following recommendations would make the costing approach even successful:

- Key user of ERP system should be more careful in inputting data from his end to reduce errors in output data.
- If company implement activity based costing then actual costing of the product can be done. Companies profitability can be improve in future.
- Budget should be made more authentic and adjusted with planed production volume.
- More capacity utilization is required to minimize idle capacity cost. Bottleneck optimization can be pave the way of minimizing cost.
- The company should reduce its overhead cost. More effective budgetary control and standard costing systems have to be introduced so that persons can be identified with responsibility for the work done improperly and wrongly.

- All information of ACME should be integrated so that management can get decision making information in due time.
- If Company is not quite efficient in inventory management, a huge amount of their products will be unsold. It will effect on their share price and the wealth maximization objective.
- As Pharmaceutical products are perishable goods they should be more conscious in the management of their inventories. They should determine how much inventory they needed in the beginning of the year and then follow it through out the year.

By making the above areas efficient the company can reduce it cost of production and production time hence making it ready to offer competitive prices and better services to its customers. This will ultimately help the company to attract the new local and international market as a result increased its business.

12. Conclusion:

One of the most important decisions that a manufacturing company should make is to determine the product mix that will maximize profits. Given that a company has capacity constraints, it may not be able to produce every unit of product demanded by the market. The best action to take in this case is to focus on the most profitable products for the company and to use all the existing resources of the company to produce these products. In this way the company can increase its profitability because it will use its existing resources to produce the most profitable products. It is also clearly apparent in ACME laboratories ltd. that production and selling of most profitable products can impact net profit substantially given the same revenue. That is how ABC contributes in value creation process under constraining factors.

With regard to the empirical study conducted, all the respondents categorically stated that ABC is more accurate and complete as it encompasses the entire value chain as opposed to traditional costing methods such as standard costing, which excludes taking the product through the value chain. Traditional overhead costs are allocated to products and services by volume, therefore penalizing high volume products and subsidizing low margin/high cost products. ABC cost allocation is driven by volume and other relevant cost drivers, for

example setups, number of orders, number of batches, process time etcetera. Identifying and understanding the cost drivers, lead to better management decisions and controls.

In competitive environments, managers require better information, not only about their products and services cost, but also about the cost of the different activities needed to create these products or services. Traditional accounting systems do not provide this information. The activity-based management approach allows everyone in the organization to understand where costs are being incurred, why they are being incurred and how these activities contribute to a higher value added to customers. Additionally, ABC seeks to identify activities that can be eliminated or improved. It can also be added that, if all company employees follow the activity-based approach, communications improve and changes are easier to make.

As the part of our study, we have selected to analyze the problems with existing costing system and how to overcome these by using activity based costing-as tool of cost control and improved profitability. ABC is a practical tool that can be used by companies of all sizes not only to better determine the cost of their products, but also to better understand why they cost what they do. But successful implementation largely depends on top management's commitment, well-trained team, software support and crucially identifying accurate cost drivers.

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Appendix

Appendix-A

Survey Instrument

1. Company characteristics

1.1. Type of business

1.2. Basic scope of activity

1.3. Competition in the basic scope of activity

1.4. Origin of equity capital

1.5. Sales direction

1.6. Number of employees

2. Characteristics of company's cost accounting

2.1. Who determines cost accounting?

2.2. What is the structure of costs?

2.3. How has, over the last ten years, changed the indirect costs share in the total costs?

3. Company's attitude towards ABC

3.1. ABC implementation was mainly influenced by:

	no influence	little influence	moderate influence	large influence	crucial influence
need for cost reduction and performance improvement					
changed management information needs					
need for improvement of control					
dissatisfaction with existing cost system					
increased competition					
headquarters' demands					
desire to gain new markets					
change of strategy					
availability of financial resources					
change in organizational structure					
availability of human resources					

implementation of new technologies					
change of management					
favorable attitude among employees					
Others					

4. General information on ABC system

4.1. How many employees currently (after implementation) maintain ABC system?

4.2. Has the company, after ABC implementation, quit the existing cost accounting?

4.3. How do you generally evaluate ABC implementation?

4.4. What were the basic problems the company experienced during implementation:

	no problem	little problem	moderate problem	large problem	very large problem
high labor input during ABC implementation and operation					
insufficient knowledge of ABC among employees					
problems with model (selection of activities, drivers, etc.)					
lack of adequate IT resources					
high cost of ABC implementation and operation					
lack of support from management/head office etc					

5. Structure of ABC system

5.1. How does IT model of ABC operate?

5.2. How is data from financial accounting system and other IT systems transferred to IT model of ABC?

5.3. ABC system has the following number of elements:

	1-5	6-20	21-100	101-500
resources				
resource drivers				
activities				
Activity drivers				
cost objects (products, customers, etc.)				

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APPENDIX – B

List of Supporting Responsibility Center with ABC Guidelines

* Supporting responsibility centers are mainly facilitator; it is very difficult to relate them with batches. So, apportionment is necessary. ABC system will use step method to apportioned the cost according to ranking mentioned below, I.e. once the costs are apportioned of a responsibility center, it will not receive any costs of other responsibility center:

Code	Name of the Cost/Responsibility Center	Cost Driver	Ranking of apportionment	Remarks
69	Administration & Hr (Plant)	Number of Employee	1st	
X2	Electricity Generation, Distribution & Supply	Consumption of electricity	2nd	
O6	Water Generation (Deep tube well)	Consumption of Normal water (Ltr)	3rd	
X1	Steam Generation & Distribution	Consumption of steam	4th	
N3	Factory Canteen	Number of Meal	5th	
W7	Water Processing & Supply	Consumption of water (Ltr)	6th	
W2	Laundry	Number of pcs	7th	
W8	Engineering & Machine Maintenance(Workshop) + Eng. Store	Number of preventive and troubleshooting	8th	
W9	Air Conditioning (Ac,Chiller)	Consumption	9th	
W5	Nitrogen / Oxygen Gas Supply	Consumption of gas	10th	
W6	Compressed Air Producing & Supply	CFM	11th	
70	Store & Accounts-Human	% of demanded services by various dosages form	12th	To be apportioned among the dosages form only.
71	Store & Accounts-Veterinary			
72	Store & Accounts-Herbal			
76	Product Development Deptt.	Number of Products	13th	To be apportioned among the dosages form only.
X4	Effluent Treatment Plant	Water purification (Ltr)	14th	To be apportioned among the dosages form and project only.
44	Production Overhead-Human	Number of Employees at Human Div. Dosages forms	15th	To be apportioned among the dosages form only.
54	Production Overhead-Veterinary	Number of Employees at Vtn Div. Dosages forms		To be apportioned among the dosages form only.
68	Production Overhead-Herbal	Number of Employees at Herbal Div. Dosages forms		To be apportioned among the own division's dosages form only.

List of Core Responsibility Center with ABC Guidelines

* Core responsibility centers are directly related with batches. All of their costs to be consumed by the batches, according to corresponding cost drivers mentioned below:

Code	Name of the Cost/Responsibility Center	Cost Driver	Remarks
31	Capsule Department-Human	Machine hour	
U1	Ointment Department-Human	Machine hour	
U2	Cream Department-Human	Machine hour	
33	Dry Syrup Department-Human	Machine hour	
34	Eye, Ear & Nasal Drop Dept.-Human	Machine hour	
35	Injection Department-Human	Machine hour	
36	Liquid Department-Human	Machine hour	
37	Tablet Department-Human	Machine hour	
U3	Inhaler Department(Dpi)	Machine hour	
U4	Inhaler Department(Mdi)	Machine hour	
39	Suppository Department-Human	Machine hour	
U5	Batch Over Printing -Human	Machine hour	
U6	Blister Packing-Human	Machine hour	
U7	Strip Packing-Human	Machine hour	
U9	Liquid Packing-Human	Labor hour	
U8	Secondary Packing-Human	Labor hour	
45	Bolus Department-Veterinary	Machine hour	
46	Liquid Department-Veterinary	Machine hour	
47	Premix Department-Veterinary	Machine hour	
48	Water Soluble Powder Department-Vet	Machine hour	

List of Projects

* Following projects consume services from ACME Lab's facilities. They will be assigned relevant costs as per ABC guidelines:

Code	Name of the Cost/Responsibility Center	Remarks
B4	ACME Agrovet& Beverages	
A2	SinhaPriters Ltd	
O1	ACME Specialized Pharmaceuticles Ltd.	
B7	Herbal R& D	

Journal Entries

Code	Head of Accounts	Debit		Credit		Remarks
		Control	Subsidiary	Control	Subsidiary	
1) Raw Materials Issued to Production						
121-06-00	Work in Progress Accounts	XXX				At actual
121-06-01	Work in Progress - Human		XXX			
121-04-00	Raw Materials Inventory Accounts			XXX		
121-04-01	Raw Materials - Human				XXX	
2) Packing Materials Issued to Production						
121-06-00	Work in Progress Accounts	XXX				At actual
121-06-01	Work in Progress - Human		XXX			
121-05-00	Raw Materials Inventory Accounts			XXX		
121-05-01	Raw Materials - Human				XXX	
3) Factory Overhead assigned to Production (Batches)						
121-06-00	Work in Progress Accounts	XXX				At actual
121-06-01	Work in Progress - Human		XXX			
417-01-00	Factory Overhead Applied Accounts			XXX		
417-01-01	Factory Overhead Applied - Human				XXX	
4) To Neutralized Factory Overhead applied and Factory Overhead Accounts						
417-01-00	Factory Overhead Applied Accounts	XXX				
417-01-01	Factory Overhead Applied - Human		XXX			
421-00-00	Factory Overhead Accounts			XXX	Total factory overhead - Inter project consumption	
421-03-00	Utility				XXX	

421-04-00 Telephone

XXX

5) Finished Goods Received by Factory Warehouse

121-01-00 Finished Goods Inventory Accounts XXX

At standard, system will capture data separately for raw, packing & overhead. System also capture data regarding local, free sample & export category.

121-01-01 Finished Goods Inventory - Human XXX

121-06-00 Work in Progress Accounts XXX

121-06-01 Work in Progress - Human XXX

6) Disposition of Variances for Raw and Packing Materials (after Completion of Batches)

121-06-00 Work in Progress Accounts XXX

121-06-01 Work in Progress - Human XXX

412-13-00 Material Cost Variance Accounts XXX

412-13-01 Material Cost Variance - Raw XXX

412-13-02 Material Cost Variance - Packing XXX

121-06-00 Work in Progress Accounts XXX

121-06-01 Work in Progress - Human XXX

412-13-00 Material Cost Variance Accounts XXX

412-13-01 Material Cost Variance - Raw XXX

412-13-02 Material Cost Variance - Packing XXX

7) Disposition of Variances for Factory Overhead (after Completion of Batches)

121-06-00 Work in Progress Accounts XXX

121-06-01 Work in Progress - Human XXX

Factory Overhead Cost Variance

412-14-00 Accounts XXX

412-14-01 Factory Overhead Cost Variance - Human XXX

121-06-00 Work in Progress Accounts XXX

121-06-01 Work in Progress - Human XXX

412-14-00 Factory Overhead Cost Variance Accounts XXX

412-14-01 Factory Overhead Cost Variance - Human XXX

8) For Charging Cost of Finished Goods to Cost of Goods Sold Accounts (after sales)

411-01-00 Standard Cost of Sales - Human XXX

i) Head of accounts to be renamed

411-01-01 Standard Cost of Sales - Human XXX

ii) System will capture data separately for raw mat, packing mat and factory overhead.

121-01-00 Finished Goods Inventory Accounts XXX

121-01-01 Finished Goods Inventory - Human XXX

ELECTRICITY CONSUMPTION FORM

Month: dd/mm/yyyy

* Responsibility Center & Code : Electricity Generation & Distribution (Generator) X2

Code No	Name of the Responsibility Center/Project	Unit	Consumption	Remarks
31	CAPSULE DEPARTMENT-HUMAN	KW		
U1	OINTMENT DEPARTMENT-HUMAN	KW		
U2	CREAM DEPARTMENT-HUMAN	KW		
33	DRY SYRUP DEPARTMENT-HUMAN	KW		
34	EYE,EAR & NASAL DROP DEPT.-HUMAN	KW		
35	INJECTION DEPARTMENT-HUMAN	KW		
36	LIQUID DEPARTMENT-HUMAN	KW		
37	TABLET DEPARTMENT-HUMAN	KW		
U3	INHALER DEPARTMENT(DPI)	KW		
U4	INHALER DEPARTMENT(MDI)	KW		
39	SUPPOSITORY DEPARTMENT-HUMAN	KW		
44	PRODUCTION OVERHEAD-HUMAN	KW		
U5	BATCH OVER PRINTING -HUMAN	KW		
U6	BLISTER PACKING-HUMAN	KW		
U7	STRIP PACKING-HUMAN	KW		
U8	SECONDARY PACKING-HUMAN	KW		
U9	LIQUID PACKING-HUMAN	KW		
45	BOLUS DEPARTMENT-VETERINARY	KW		
46	LIQUID DEPARTMENT-VETERINARY	KW		
47	PREMIX DEPARTMENT-VETERINARY	KW		
48	WATER SOLUBLE POWDER DEPARTMENT-VET	KW		
50	INJECTION DEPARTMENT-VETERINARY	KW		
54	PRODUCTION OVERHEAD-VETERINARY	KW		
V1	BATCH OVER PRINTING -VETERINARY	KW		
V2	BLISTER PACKING-VETERINARY	KW		
68	PRODUCTION OVERHEAD-HERBAL	KW		
V7	BATCH OVER PRINTING -HERBAL	KW		
V8	SECONDARY PACKING-HERBAL	KW		
V9	LIQUID PACKING-HERBAL	KW		
W1	BOTTLE WASHING & DRYING	KW		
69	ESTABLISHMENT & PERSONNEL DEPT.	KW		
Total		***		

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APPENDIX – G

ETP DATA COLLECTION FORM

Month: dd/mm/yyyy

Responsibility Center: ETP X4

Code No	Name of the Responsibility Center/Project	Unit	Consumption	Remarks
31	CAPSULE DEPARTMENT-HUMAN	LTR		
U1	OINTMENT DEPARTMENT-HUMAN	LTR		
U2	CREAM DEPARTMENT-HUMAN	LTR		
33	DRY SYRUP DEPARTMENT-HUMAN	LTR		
34	EYE,EAR & NASAL DROP DEPT.-HUMAN	LTR		
35	INJECTION DEPARTMENT-HUMAN	LTR		
36	LIQUID DEPARTMENT-HUMAN	LTR		
37	TABLET DEPARTMENT-HUMAN	LTR		
U3	INHALER DEPARTMENT(DPI)	LTR		
U4	INHALER DEPARTMENT(MDI)	LTR		
39	SUPPOSITORY DEPARTMENT-HUMAN	LTR		
44	PRODUCTION OVERHEAD-HUMAN	LTR		
45	BOLUS DEPARTMENT-VETERINARY	LTR		
46	LIQUID DEPARTMENT-VETERINARY	LTR		
47	PREMIX DEPARTMENT-VETERINARY	LTR		
48	WATER SOLUBLE POWDER DEPARTMENT-VET	LTR		
50	INJECTION DEPARTMENT-VETERINARY	LTR		
54	PRODUCTION OVERHEAD-VETERINARY	LTR		
55	CAPSULE DEPARTMENT-HERBAL	LTR		
60	LIQUID DEPARTMENT-HERBAL	LTR		
62	TABLET DEPARTMENT-HERBAL	LTR		
B4	ACME Agrovvet& Beverages Ltd.	LTR		
A2	Sinha Printers Ltd.	LTR		
O1	ACME Specialized Pharmaceuticles Ltd.	LTR		
B7	HERBAL R AND D	LTR		
Total				

MANPOWER DATA COLLECTION FORM

Month: dd/mm/yyyy

Code No	Name of the Responsibility Center/Project	Daily	Permanent	Total
31	CAPSULE DEPARTMENT-HUMAN			
U1	OINTMENT DEPARTMENT-HUMAN			
U2	CREAM DEPARTMENT-HUMAN			
33	DRY SYRUP DEPARTMENT-HUMAN			
34	EYE,EAR & NASAL DROP DEPT.-HUMAN			
35	INJECTION DEPARTMENT-HUMAN			
36	LIQUID DEPARTMENT-HUMAN			
37	TABLET DEPARTMENT-HUMAN			
U3	INHALER DEPARTMENT(DPI)			
U4	INHALER DEPARTMENT(MDI)			
39	SUPPOSITORY DEPARTMENT-HUMAN			
44	PRODUCTION OVERHEAD-HUMAN			
U5	BATCH OVER PRINTING -HUMAN			
U6	BLISTER PACKING-HUMAN			
U7	STRIP PACKING-HUMAN			
U8	SECONDARY PACKING-HUMAN			
U9	LIQUID PACKING-HUMAN			
45	BOLUS DEPARTMENT-VETERINARY			
46	LIQUID DEPARTMENT-VETERINARY			
47	PREMIX DEPARTMENT-VETERINARY			
48	WATER SOLUBLE POWDER DEPARTMENT-VET			
50	INJECTION DEPARTMENT-VETERINARY			
54	PRODUCTION OVERHEAD-VETERINARY			
V1	BATCH OVER PRINTING -VETERINARY			
V2	BLISTER PACKING-VETERINARY			
Total				

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APPENDIX –I

MACHINE HOUR DATA COLLECTION FORM

Name of the Activity:

Product Code:

Product Name:

Batch No.

Batch Size:

SL#	Sub Activity	Name of the Machine	Start		Finished		Total Duration	Remarks
			Date	Time	Date	Time		
	Total							

APPENDIX – J

Batch Size:

[illegible]

