HAAGA-HELIA
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Development of Job Costing Procedure in Packaging Industry

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Bachelor's Thesis

Degree Programme in International Business

2015

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Abstract

29.04.2015

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Degree programme
International Business

Development of Job Costing Procedure in Packaging Industry	**Number of pages and appendix pages 44 + 2**

In this age of severe competition, companies are alwasys in search of new approaches to find the exact production costs. For this purpose, companies often revise the cost of products in order to find the cost of poroducts with an accuracy. Different costing systems are available for product costing such as job costing or process costing but the applicability of the costing system depends on the nature of the manufacturing process.

The aim of study is to provide the latest job costing system for the case company and also calcuate the cost of two different products by using the same method. In order to proceed in products costing, joint work was done with the case company.

Practically, getting information on variable and fixed costs from the case company and then using this cost information for the new costing system is the main task. Beside this, assigning manufacturing overheads (fixed cost) to job records requires a clear understanding of the manufacturing process.

A presentation of two different case orders gives the main idea as to how the case company can continue its costing with this new system in the future. In addition to this, the new system also helps to facilitate the process especially in price decisions. Apart from product cost accuracy, this system also gives information on inventory at each level of activity. it gives a deep view of the utilization of labor, materials and the usage of labor in the right way. Furthermore, it also enables companies to take outsourcing decision by comparing costs.

Keywords
Job Costing, activity level (Job Cost Records), Manufacturing Overheads, case company, Invenotory, Allocation method, outsourcing, Cut sheet, Cost of Goods Sold

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1 Introduction

In this age of competition, it is highly important for companies to know about the actual cost of their products. For this purpose, job costing or process costing (depending on the manufacturing process) acts as a tool which allows the companies to resolve this issue. In addition to this, these accounting tools not only give the product cost accuracy but also keep the proper record on inventory and helps in outsourcing decision. Here is a similar case whom costing system is based on estimations. Joint work was done with the case company to find the cost of different product. The main purpose of this project is to develop the product costing system by giving the latest accounting system. To calculate the cost of two customized orders with a new accounting system will facilitate the process of a case company

1.1 Thesis Objectives

- To find the cost of a product with an accuracy.
- To make the decision method faster especially in bidding process.
- To deal when raw material prices are fluctuates.

1.2 Project Scope

To provide the latest accounting system (job costing) and find the cost of two customized orders with this new system. Once the company adopt this new accounting system, inventory and other issues will automatically be settled. Our main focus will remain in product costing.

1.3 International Aspects

Due to product uniqueness and manual manufacturing process, people have not enough idea how to calculate the cost of corrugated boxes. I hope this thesis will give the clue about the costing of corrugated boxes.

1.4 Project Tasks

Table 1-A

No.	Project Tasks	Frame of Reference (concepts)	Time Frame	Method	Output
1	Analyzing the whole manufacturing process. (Understanding of manual process).	Analyzing the product formation system. Find out different steps and related costs such as DM and DL.	January 2015	Via Skype By seeing Videos.	Get all steps of product formation. Understanding of allocation method.
2	Analyzing their current costing system (tools and methods). Taking cost information from the case company.	Check previous costing system. Make sure that in all steps all costs are taken into account in these procedures.	February 2015	Practically work on formulas. Measuring and taking weight of paper.	To find errors in techniques especially to find the area of sheets.
3	Panning to start in our own way, more systematically as described below. Subtasks (3.1-3.10)	After completing task 2, we will calculate a product cost with our new system.	March, April 2015	Use Course book for product costing.	Calculate in our own way and find the final cost of the product.

1.5 Demarcation

- Understanding of current costing system and manufacturing process.
- Taking cost information from the case company, find the price of two customized orders with a new accounting system.

1.6 Case Company Introduction

The case company (M.S PACK RITE) is related to the packaging material industry (corrugated boxes). Case company is situated in Pakistan. It has almost 8 years' experience in this field. At the moment, labor (direct and indirect labor) strength is over fifty. The monthly turnover of a company is 8 to 10 million Rupees (Pakistan currency unit). Target cus-

tomers are edible oil companies, textiles mills, soap industry and sports industry. The major turnover comes from the fruit industry.

1.7 A Glance at Current System

Current costing system of a case company is based on rough calculations. There is no proper record of labor usage and manufacturing overheads. The followings things come out after analyzing the current costing system,

- No Specific record of direct labor in production process
- Minor costs are ignored
- Improper allocation method

1.8 Key Concepts

Job costing – Companies using job costing system to produce unique or customized products, or produce in small batches is called a process of job costing. (Braun, Tietz 2010, 99.)

Bill of materials - A list of all the raw materials needed in the manufacturing process is called bill of materials. (Braun, Tietz 2010, 102).

Production schedule- A written document that mentions the schedule of each job, represents the material type and its quantity is called production schedule. (Braun, Tietz 2010, 101.)

Raw Material Record- Electronic document listing the numbers of units, cost of all the units and keep the records of raw material in production process. (Braun, Tietz 2010, 102.)

Work in Process (WIP) Inventory- Inventory units and their costs which are still in the process of production is called WIP inventory. (Braun, Tietz 2010, 100.)

Finish Goods Inventory- The value of goods available for the sale at the ending of accounting period is called finish goods inventory. Cost is taken into account to its lower value. (Braun, Tietz 2010, 100.)

Material Requisition- A document that requests the specific materials be transferred from raw material inventory to the production floor. (Braun, Tietz 2010, 104.)

Cost of Goods Sold- The direct costs such as labor and materials attributed to the production of the goods sold by a company. It excludes the indirect expenses such as distribution cost and sales forecast. (Investopedia)

Manufacturing Overheads - Indirect costs such as labor, materials and factory overheads which are not directly involved in the production process are called manufacturing (Mnf.) overheads.

Allocation of Mnf. Overhead to jobs- It means that splitting of Mnf. Overhead to different jobs during the year. Different allocation methods are available, for example you can split more to the job who has a greater contribution. Allocation of manufacturing overheads to jobs based on following steps

1. Estimates total Mnf. overhead costs for the coming year
2. Select an allocation base and estimates total amount that will be used
3. Calculate Pre-determined Mnf. Overheads with the help of one and two

Predetermined Manufacturing overhead rate= total estimated costs/total estimated amount of allocation base

4. The company allocates some of Mnf. Overheads to different jobs. (Braun, Tietz 2010, 109.)

Cost-Plus Pricing- The percentage of profit which the company adds after finding the unit cost of a product. (Braun, Tietz 2010, 112.)

2 Frame of Reference

2.1 Production Schedule

Manufacturing process starts with the decision of management. Companies produce batch of units in order to meet customer's demand. Job costing system has different jobs records and different types of cost which are incurred in each job record. These jobs may be on customer's demand or for company stock in order to sell on the regular basis. Production Schedule represents time frame and quantity of raw material in units. This is very important and helps the management to determine the direct labor and direct material quantity in production process.

Table 2-A

Job No.	Type	Stock or Customer	Quantity	Starting date	Ending date
102	Cutting	For Stock	4000	15/2	15/2
103	Pasting	For Customer	2000	16/2	16/2
104	dry	For Customer	4000	17/2	17/2

2.2 Purchasing of Raw Materials

Production engineers prepare a bill of materials which will be used in the manufacturing process. It is in the form of receipt card with a detail of all raw materials needed in the manufacturing process. After the preparation of bill of materials, purchasing department checks its inventory. If something is missing in the inventory then purchasing department orders for it and try to get materials according to the production schedule. Purchasing department keeps the record of quantity in units and their total cost.

Raw Material Record

Table 2-B

	Received			Used/Shipped/stock				Ending Balance		
Date	Units	Cost	Total	Requisition Number	units	costs	Total	units	Cost	Total
5/6	100	70	7000	#5063	30	70	2100	70	70	4900

2.3 Job cost Records

After receiving the raw material for production, manufacturing starts according to the production schedule. Each job starts and ends according to the production schedule. Three types of costs are included such as direct labor, direct materials and manufacturing over-

heads. For total job cost, add the cost of all job records then this total cost is divided by the total no. of units produced in the manufacturing process.
The amount of raw material which is left in the manufacturing process is marked as ending balance.

Job 130
Customer: For stock
Job Description
Date Started:6/2 Date Completed: 7/2

Table 2-C

Manufacturing Cost Information			**Cost summary**
Direct material			10000
Direct labor			5000
Manufacturing overheads			5000
Total job cost			20000
Number of units			1000
Cost per unit			20
Shipping Information:			
Date	**Quantity Shipped**	**Units remaining**	**Cost Balance**

2.4 Direct material cost to Job

Once the job is ready to begin, it needs many parts as shown in the bill of materials. For example, if job takes three days then it means that production floor does not need to take all raw material at once. Each time they need some raw material, for this purpose they fill requisition form but here at this stage they will show the hard copy for this.

Date 6/2 Material Requisition
Job 130 Number: #5063

Table 2-D

Part no.	**Description**	**Quantity**	**Unit cost**	**Amount**
	corrugation	1 roll	5.13 (8072 sheets)	41400
	pasting	5 kg	16 rupee per kg	80
Total				**41480**

As soon as the requisition material is received from storeroom, workers pick the appropriate materials to the production floor. All records of direct material kept in term of units with their cost both in raw material inventory and also work in process inventory.

Updated of Raw Material Record

Item: Description:

Table 2-E

	Received			Used				Ending Balance		
Date	**Units**	**Cost**	**Total**	**Requisition Number**	**units**	**costs**	**Total**	**units**	**Cost**	**Total**
4/6	100	70	7000							7000
5/6				#5063	30	70	2100	70	70	4900
7/6	20	70	1400					90	70	6300

Finally, the raw material requisition for each job is posted to job cost records.

2.5 Direct Labor cost to job

Company keeps labor record individually. For this, they note the time, date and cost related to it.

Labor time Record

Employee: x Week: 12/2 - 12/9

Hourly wages: 60 rupees Record#: 536

Table 2-F

Date	Job Number	Start time	End time	Hours	Cost
12/2	536	8:00	11:00	3	50

Some companies add the percentage of benefit in hourly salary, for example these benefits are 30 percent of gross salary then salary would be recorded 13.

2.6 Allocating Manufacturing Overheads to Jobs

Normally, companies follow four steps to implement the basic allocation system. First three steps are taken before the beginning of year.

In the very first step, company estimates total cost of manufacturing overheads for the coming year. For example, company estimates that cost would be 2 million for the next

year. In the second step, company selects an allocation base. It may be machine hours or direct labor hours. Let's say that there are 100,000 direct labor hours. In the third step, company calculates predetermined overhead rate by using the formula.

Predetermined MOH rate= Total estimated manufacturing overhead costs/Total estimated amount of allocation base

= 2000, 0000/100,000
=$200 per direct labor hour
The rate will be use throughout the next year.
If 4 hours of direct labor is used for job then manufacturing overheads will be
=200 x 4
=800
Add 800 to total job cost record and then divided by total number of units produce in manufacturing process to find the unit cost of job cost record (each level of activity).

2.7 Completion of Job Cost Records and then Business Decision

After completing the job cost records, add all the costs which incurred in each job record then total amount divided by the total no. of units produced to find the unit cost of a product. This cost will be in-house cost of a product.
Furthermore, management will use the job cost information and analyze how they will reduce the cost of this job for the coming years.

2.8 Bidding for Customer Order

After finding the in-house cost of a product, companies add some mark-up cost to in-house cost and this is called cost plus price. This will be the selling price of a product.
Cost plus price= Cost + Markup on Cost
= 10,000 + (25% x 10,000)
=10,000+2500=12,500

3 First Case Order

Size=	L=16 inch W=10 inch H=6 inch
Type=	3 ply (1 corrugated paper + 2 Kraft paper)
Corrugated quality=	150 GSM Amount = 7,500
Other features=	Printing, using Starch for pasting

3.1 Company Order Processing and Flow of Inventory

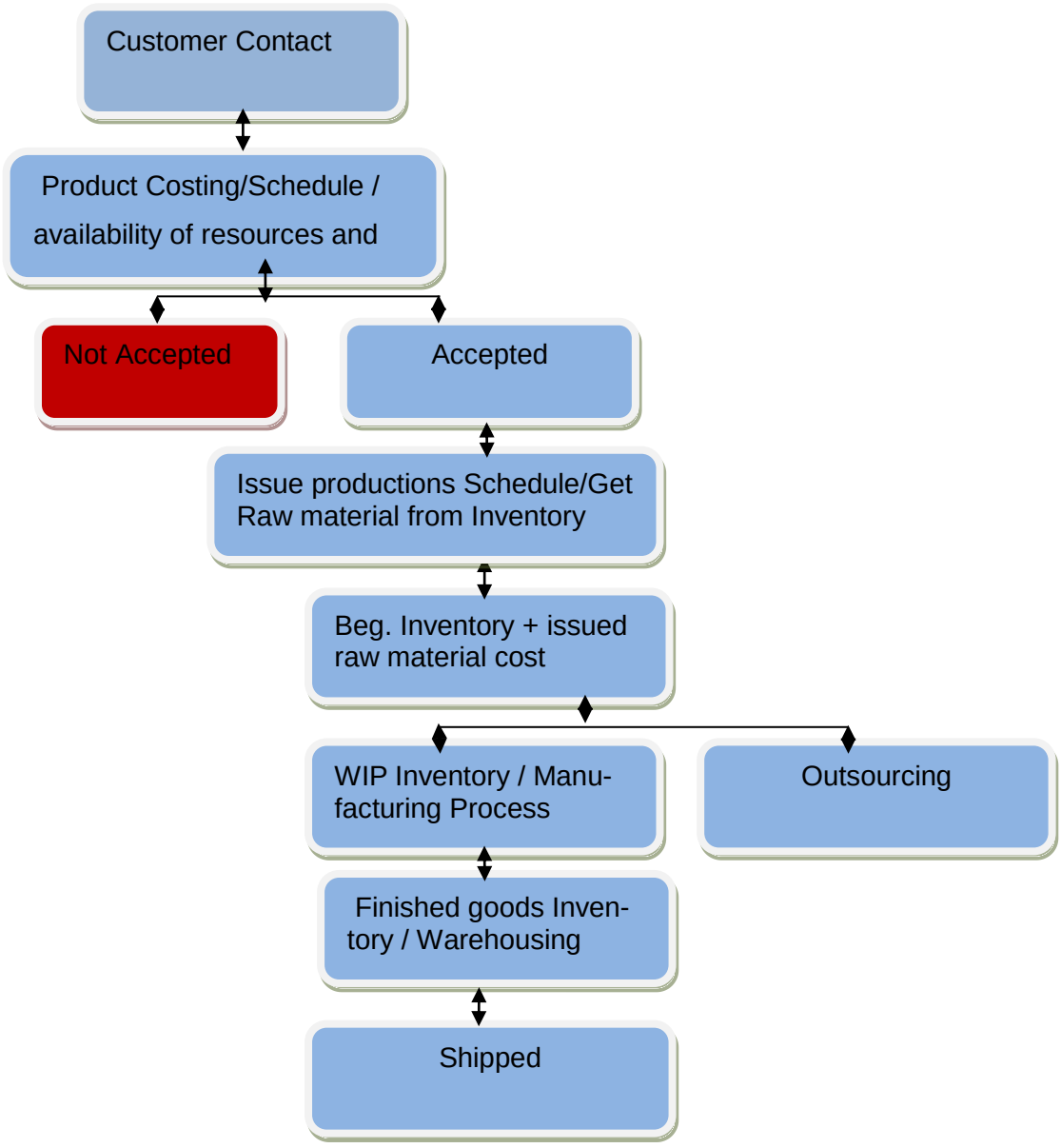

Figure 1. Order processing and flow of inventory

3.2 Production Process Flow Diagram

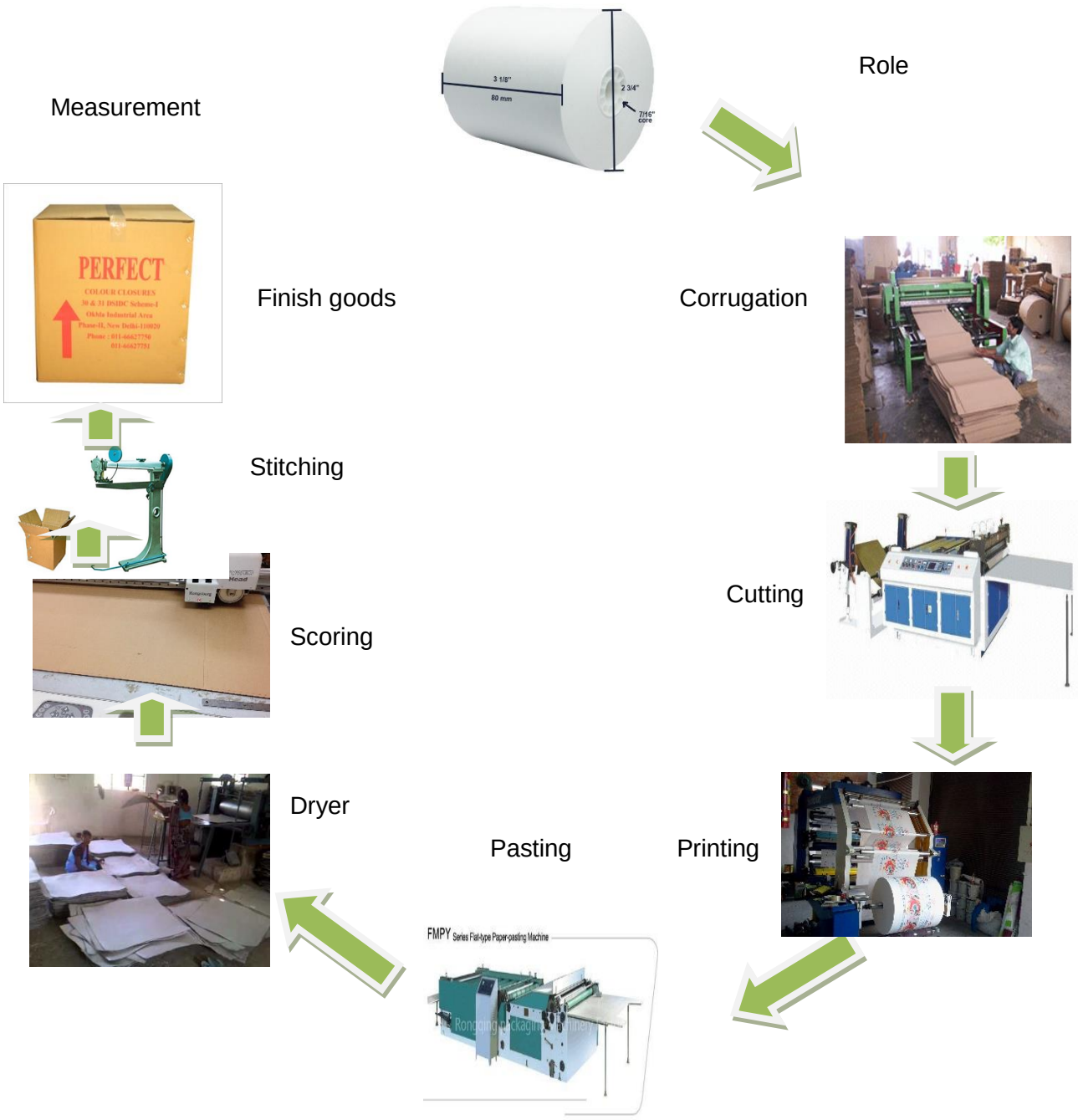

Figure 2. Production process

3.3 Currency Unit

In these cases, cost is measured in Rupees (Pakistan Currency unit and it is denoted in Rs).

3.4 Area of a box

First of all, we have to find the area of a box i.e. the length and the width of a box. Here, we find the area of a box and also kept in mind that we put 2 inches extra to the length side, extra 2 inch will be used in stitching of a box. Mostly companies try to make bigger cut sheets so that they can obtain 3 or 4 boxes sheets. The purpose of making such kind of cut sheets is to reduce manufacturing time.

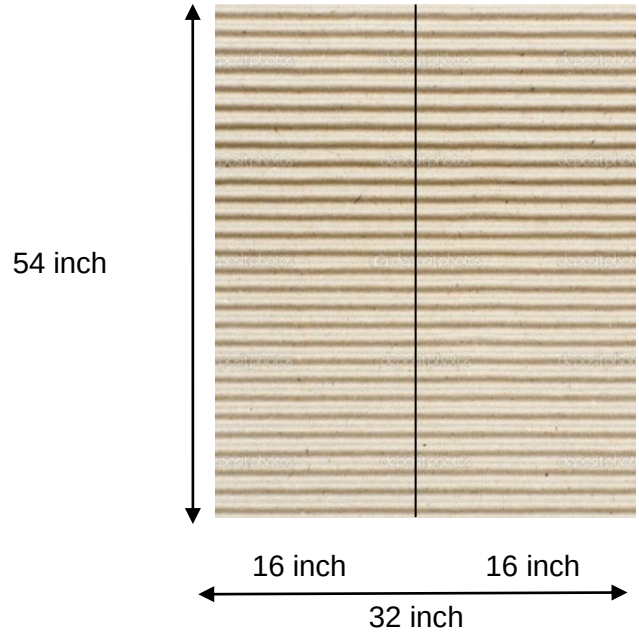

Figure 3. Cut Sheet

The Length

To find the length of a cut sheet

=2 (L+W) + 2

+2 means that 0.7 inches goes into wastage when edges are fined in scoring process and rest 1.30 inch will be used in stitching process.

By putting the values

=2 (16+10) + 2

=54 inches

The Width

W= (W+H)

W= (10+6)

W=16 inches (for one box, sheet size 54 x 16)

For two boxes
W=2 x 16
W = 32 (for two boxes)

Width of a box gives the exact idea in the selection of role. In this case, company will try to get a paper roll whose width is 32, 48 or 64 inches in order to get a cut sheet for two, three or four boxes respectively.

Width side (box sheet) will not be use in stitching, so no need to put 2 inches extra to the width side.

Area of a cut sheet
A= length x width
A= 54 x 32
A= 1,728 sq. inches
Area of one box
A=1,728/2
A=864 sq. inches (54 x 16 sheet)

3.5 Length of Corrugated Roll and Price of Cut Sheet

3.5.1 Price of Corrugated sheet

Paper price is 46 rupees per kilo gram (kg) with a basis weight of 150 GSM (Gram Square meter). Now we have to calculate the price of a cut sheet (54 x 32).
Rate of paper
= 54 x 32 x 150 x 46/ 1550 x 1000 (A. Hussain-M.S Pack Rite 15 January 2015.)

=7.69 rupees

As we are considering 1.33 inch normal paper is equal to 1 inch of corrugated paper, after corrugation the price of a cut sheet would be equal to
=7.69 x 1.33
=10.26 rupees (54 x 32 inch cut sheet)
=10.26/2
=5.13 (for 1 box, 54 x 16 inch)

3.5.2 Length of Corrugated Paper Roll

The length is not mentioned on a paper roll, only the basis weight in GSM (gram square meter) and total weight (Kg) of paper roll is given. In this situation, we have no idea how many cut sheets can be acquired from a paper roll? For this, different formulas can be used to find the length of a paper roll.

First Method

In this case, we have a paper roll of 900 kilo grams (kg) with a basis weight of 150 GSM. We will make corrugated paper rolls each having length of 2400 inches (200 feet). On solving the formula, we will get the quantity of rolls. Multiply the no. of rolls with 2400 inches (90.82 x 2400), we will get paper roll length in inches. Divide the total length of roll (217,968 inches) on the length of cut sheet (54 inch) to get the numbers of cut sheets.

=900 x 1000 x 1550/32 x 3200 x 150 (A. Hussain-M.S Pack Rite 15 January 2015.)

Here,
1,000 when kilo gram is converted to grams
1,550 square inches is equal to 1 square meter. As we are calculating in inches so we convert the sq. meter into square inches.
32 is width of a roll
3,200 is used as a ratio, when we multiply our desired corrugated roll length (2400 inches) to ratio (1.33 inches), we will get 3200.
As we are making corrugated roll from normal paper then,
1.33 inches normal paper= 1 inch corrugated paper

Figure 4. Corrugated Rolls

By solving above formula we get
=90.82 rolls (each 2400 inches long)

Length of roll in inches = 90.82 x 2400
=217,968 inches
=217,968/54

=4,036 cut sheets (each having a length of 54 inches and 32 inches width)
=4,036 x 2
=8,072 (boxes)

Second Method

This method is very simple but its applicability is limited.
Total weight (900 kg) and price (46 rupees per kilo gram) is given on the roll. We already calculate the price of a cut sheet (54 x 32) = 10.26 rupees
By using formula
Amount of sheets= Weight x Price per kg/ price of (54 x 32) sheet
=900 x 46/ 10.26
=41,400/ 10.26
=4,036 cut sheets
=4,036 x 2
=8,072 boxes sheet
Note: This formula can only be applicable if there is no extra width (roll should be 32, 48 inches not 34 or 50) in a paper roll. Extra width will give more no. of cut sheets due to increase in the weight of a roll.

3.6 Length of Kraft Paper Roll and Price of Cut sheet

3.6.1 Price of Kraft Paper

Here we use Kraft paper with 150 GSM and its price is 55 rupee per kg.
=54 x 32 x 150 x 55/1550 x 1000 (A. Hussain-M.S Pack Rite 25 January 2015.)
=9. 20 rupees (price of sheet)
=9. 20/2
=4. 60 rupees (for one box)

3.6.2 Length of Kraft paper Roll

In Kraft paper we have a roll of 1000 kg with a basis weight of 150 GSM and its price is 55 rupees per kg.

=1,000 x 55/ 9. 20

=55,000/9. 20

=5,978 cut sheets (54 x 32)

=5,978 x 2

=11,956 (paper box 54 x 32)

3.7 Production Schedule

The company estimates that the following order will be accomplished from 4/2 – 8/2, company issues the schedule that on such dates we need that amount of raw material and labor.

Table 3-A

Job	Model Number	Stock or Customer	Quantity	Starting date	Ending date
110	Corrugation	For Customer	7,500	4/2	4/2
111	Cutting	For Customer	7,500	4/2	4/2
112	Pasting	For Customer	7,500	5/2	5/2
114	Dryer	For Customer	7,500	6/2	6/2
113	Scoring	For Customer	7,500	7/2	7/2
	Printing	For Customer	7,500 (out-sourced)	7/2	7/2
115	Stitching	For Customer	7,500	8/2	8/2
116	Transportation	For Customer	7,500	8/2	8/2

3.8 Purchasing of Raw Material

After analyzing the bill of materials, purchasing departments checks its inventory and then decide what to purchase. In this case, purchasing department decides to buy the following materials.

Table 3-B

Item	Quantity	Cost	Total cost
Starch bags	4	4,500	18,000
Corrugated roll	1	41,400	41,400

LPG cylinder	2	5,520	11,040
Kraft Paper roll	2 roll	55,000	110,000
Chemicals		300	300
Stitching pins	8 x 100	800	800
Dye	1	2,000	2,000
Total costs			**183,540**

Keeping Raw Material Record

Table 3-C

	Received			**Used/shipped**				**Ending balance**		
Date	**Units**	**Cost**	**Total**	**Requisition No.**	**unit**	**cost**	**Total**	**unit**	**Cos**	**Total**
4/2	1 roll (8072 sheets)	5.13	41,400	#538	7,500	5.13	38475	572	5.13	2,934
4/2	1 roll 11956 sheets	1000 kg x 55	55,000	#584	7,500	4.60	34500	4456	4.60	20,500
4/2	Starch bags 2	4500	9,000	#601	1.5	4,500	6760	0.75	4500	2,240
4/2	Chemi-cals	300	300	# 457	1	300	300	--	---	---
4/2	LPG/80 L	69 rup/L	5,520	#604	80	69	5520	---	---	---
5/2	Starch bags	2 bags	9,000	#601	1.5 bags	4,500	6750	0.25	4500	2,250
5/2	1 roll Kraft paper	55000 x 1	55,000	#584	7,500	4,60	34500	4456	4,60	20,500
6/2	LPG 80 Liters	69	5,520	#604	80	69	5520	---	---	---
7/2	Dye (1)	2000	2,000	#751	1	2,000	2000	---	---	---
8/2	Stitching pins 8 boxes	100 pins in a box	800	#753	7.5	100	750	0.5	100	50

Total			**183,540**				**135,065**			**48,475**

3.9 Job Cost Records

3.9.1 Corrugation

In the very first step, converting the normal paper into corrugated sheets and also pasting of Kraft paper to its one side. Both rolls (corrugation and kraft) should be of same size. Different types of cost are incurred in the corrugation process. This technique of corrugation provides the safety to the products.

For pasting we will use the formula that how much pasting material (cost) is used on the 54 x 32 sheet. Case company provided this formula for the calculation of pasting material.

=54 x 32 x .0009 (A. Hussain-M.S Pack Rite 26 January 2015.)

= 1.56 rupees

=1.56/2

=0.78 rupees

But for 3 ply we use pasting of 2 papers (Kraft papers). In this case price would be

=0.78 x 2

=1.56 rupees

Job no: 110

Customer: Fruit packaging

Job description: Paper corrugation and pasting of Kraft paper

Job Started: 4 /2 Ending Date: 4/2

Table 3-D

Manufacturing cost system	**unit/hour**	**Total cost**
Direct material		
Corrugated paper (8072 sheets total in a roll)	7,500 x 5,13	38,475
Kraft paper (11956 sheets total in a roll)	7,500 x 4.60	34,500
Pasting material/starch bags (1.5 x 4500)+150 (chemicals plus fuel cost)	1.5 bags + 150	6,900
LPG gas (69 rupees/liter)	80 liter	5,520

Direct Labor Operator (1) 57 rupees/h worker (3) 50 rupees/h Handling sheets (2) 43 rupees/h Helper (2) 38 rupees/h	 1 hour 1 hour 1 hour 1,5 hours	 57 150 86 114
Manufacturing overheads	1 x 217.13	217.13
Total Job Cost		**86,019.13**
Total units		7,500
Unit cost		11.47

Inventory Record

	Received			**Used/shipped/stock**				**Ending Balance**		
Date	**Units**	**Cost**	**Total**	**Requisition no.**	**unit**	**costs**	**Total**	**units**	**Cost**	**Total**
4/2	1 roll (8072 sheets)	5.13	41,400	#538	7,500	5.13	38,475	572	5.13	2,934
4/2	1 roll 11956 sheets	1,000 kg x 55	55,000	#584	7,500	4.60	34500	4,456	4.60	20,500
4/2	Starch bags 2	4,500	9,000	#601	1.5	6,750	6,750	0. 5	4,500	2,250
4/2	LPG/80 rupee/L	69	5,520	#604	80	69	5,520	---	---	---
4/2	chemi-cals		150				150			--
To-tal			**111,070**				**85,395**			**25,684**

3.9.2 Cutting of sheets

After completing the procedure of pasting of kraft paper, we will cut this cut sheet to our desired size of (54 x 32). In this process direct labor is used.

Job no: 111
Customer: Fruit packaging
Job description: Cutting of sheets

Job Started: 4 /2 ending date: 4/2

Table 3-E

Manufacturing cost system	**units/hour**	**Total cost**
Direct Labor		
Workers (2) 43 rupees/h	1.5 h	129
handling (2) 38 rupees/h	1.5 h	114
Manufacturing overheads	1.5 x 217.13	325.69
Total Job cost for 1 machine		568.69
As 3 machine hours are used so cost would be (3 x 568.69)		1706.08
Total job cost		**1706.08**
Total units		**7,500**
Unit cost		**0.2274**

3.9.3 Pasting of Kraft paper on other side

After cutting the cut sheets (54 x 32), paste kraft paper on the other side of a cut sheet.

Job no: 112
Customer: Fruit packaging
Job description: Pasting of Kraft paper
Job Started: 5 /2 ending date: 5/2

Table 3-F

Manufacturing cost system	**unit/hour**	**Total cost**
Direct Labor		
Operator (1) 57 rupees/h	3 hours	171
worker (2) 48 rupees/h	3 hours	288
Helper (1) 43 rupees/h	3 hours	129
Handling (2) 38 rupees/h	3 hours	228
Direct Material		
Kraft paper (11956 sheets. 2500 on one machine)	2500 x 4.60	11,500
Pasting material/starch bags (1.5 x 4500)+150 chemicals plus fuel cost) for 2500 sheets	6900/3	2,300

Manufacturing Overheads						3 x 217.13	651.39			
Total cost for 1 machine							**15,268**			
As they are using 3 machine at the same time so cost would be (15268 x 3)							**45,803**			
Total Units							**7,500**			
Unit cost							**6.107**			
Inventory Record										
	Received			**Used/Shipped**				**Ending Balance**		
Date	**Unit**	**Cost**	**Total**	**Requisi-tion NO.**	**units**	**costs**	**Total**	**units**	**Cost**	**Total**
5/2	Starch bags	2 bags	9000	#601	1.5 bags	4500	6,750	0.75	4500	2,250
5/2	fuel cost		150				150			0
5/2	one roll Kraft pa-per	55,000 x 1	55,000	#584	7,500	4.60	34,500	4456	4.60	20,500
Total			**64,150**				**41,400**			**22,750**

3.9.4 Dryer process

After pasting of Kraft paper, sheets will wet due to starch material. For this purpose LPG gas is used to dry the sheets.

Job no: 114

Customer: Fruit packaging

Job description: Dryer process

Job Started: 6/2 Ending date: 6/2

Table 3-G

Manufacturing cost system	**unit**	**Total cost**

Direct Labor feeding (2) 58 rupees/h worker (2) 48 rupees/h Handling (2) 38 rupees/h	 4 hours 4 hours 4 hours	 464 384 304
Direct material LPG gas 69 rupees per liter	 80 liters	 5,520
Manufacturing overheads	4 x 217.13	869.52
Total Job cost		**7,541**
Total units		**7,500**
Unit cost		**1.005**

Inventory Record

	Received			**Used/shipped/stock**				**Ending Balance**		
Date	**Units**	**Cost**	**Total**	**Requisition NO.**	**units**	**costs**	**Total**	**units**	**Cost**	**Total**
6/2	LPG 80 Liters	69	5,520	#604	80 liters	69/L	5,520	0	0	0
Total			**5,520**				**5,520**	**0**	**0**	**0**

3.9.5 Scoring

This process involves bents (helps in box folding) on cut sheets, fine the edges and cutting of cut sheet into two sheets in order to obtained two boxes sheet. Dye and labor costs are involved in this case.

Job no: 113
Customer: Fruit packaging
Job description: Scoring of sheets
Job Started: 7/2 Ending date: 7/2

Table 3-H

Manufacturing cost system				**unit**			**Total cost**			
Direct Labor										
feeding (1) 58 rupees/h				8 hours			464			
worker (2) 48 rupees/h				8 hours			768			
Handling (3) 38 rupees/h				8 hours			912			
Direct Material										
Dye cost				1			2,000			
Manufacturing Overheads				8 x 217.13			1,737.04			
Total Job cost							**5,881.04**			
Total Units							**7,500**			
Unit cost							**0.7841**			
Inventory Record										
	Received			**Used/shipped/stock**				**Ending Balance**		
Date	**Units**	**Cost**	**Total**	**Requisition Number**	**units**	**costs**	**Total**	**units**	**Cost**	**Total**
7/2	Dye (1)	2,000	2,000	#751	1	2,000	2,000	---	---	---
Total			**2,000**				**2,000**			**0**

3.9.6 Box Stitching

This process involves glue pasting or use stapless pins for stitching. It depends on the customer's choice what he wants? Direct labor is used in this case. 4 machines will be used to complete the work.

Job no: 115

Customer: Fruit packaging

Job description: Stitching

Job Started: 8/2 Ending date: 8/2

Table 3-I

Manufacturing cost system	**units/Hours**	**Total cost**
Direct labor		
Feeding (1) 58 rupees/h	3 hours	174
handling (2) 38 rupees/h	3 hours	228
Direct material		

Pins for staples (8 boxes x 100)	7.5 x 100/4	187.5
Manufacturing overhead	217.13 x 3	651.39
Total cost for 1 machine		**1,240.89**
As there are 4 machines and the cost for 4 machines (1240.89 x 4)		**4,963.56**
Total Job cost		**4,964**
Total Units		**7,500**
Unit cost		**0.6619**

Inventory Record

	Received			**Used/ stock/shipped**				**Ending Balance**		
Date	**Units**	**Cost**	**Total**	**Requisition No.**	**units**	**costs**	**Total**	**units**	**Cost**	**Total**
8/2	Stitching pins 8 boxes	100	800	#753	7.5	100	750	0.5	100	50
Total			**800**				**750**			**50**

3.9.7 Transportation and loading Cost

Job no: 116

Customer: Fruit packaging

Job description: Transportation and loading

Job Started: 8/2 Ending date: 8/2

Table 3-J

Manufacturing cost system	**unit**	**Total cost**
Direct labor workers (2) 38 rupees/h	3 hours	228
Shipping cost (750 shipping cost**)**		750
Total cost		**978**
Total units		**7,500**
Unit cost		**0.1304**

3.10 Direct Labor cost

Calculation of direct labor cost which is used in the manufacturing process.

Table 3-K

Labor Type	**Hours**	**Per hour cost**	**Total Cost**
Feeding	6	58	1624
Workers	42	--	2781
Helpers	12	--	501
Operator	3	57	570
Handling	85	--	3240
Total Cost			**8716**

3.11 Calculation of Manufacturing Overheads

Manufacturing overheads contain indirect material, indirect labor and factory overheads. The most important thing is the selection of allocation method. Three methods such as Pre-determined overhead rate (traditional method), Departmental overhead allocation and Activity Based (ABC) costing can be used.

Here we will use traditional system (Predetermined) due to the nature of the manufacturing process. Manufacturing process is similar except some customization. Sheet size does not effect on extra setups.

On the other hand ABC system is used where product A and B are different. If product A takes more setup hours and inspection cost than B, and A product has low volume and B is on higher volume then all the cost would be allocated to B instead of A. This allocation gives more accuracy when company makes two different products.

Here in this case, expenses are taken into an account on monthly basis but as an average of the year.

Indirect Materials

Table 3-L

Objects	**Cost per month**
Cleaning supplies	5250

Disposable safety equipment	2475
Disposable tools	2160
Fitting and fasteners	2900
Glue	600
Tape	900
Oil used for machines	5000
Total cost	**19,285**

Indirect Labor

Table 3-M

Objects	**Cost per month**
Managers (Accounting work)	32,000
Foreman	22,000
Assistant foreman	14,000
Insurance	35,000
Bonuses	9,000
Allowance (holidays)	14,500
3 Security Guard (8000 x 3)	24,000
Total cost	**150,500**

Factory overheads

Table 3-N

Objects	**Cost per month**
Factory rent	200,000
Property tax	1,500
Depreciation is already done (more than 5 years)	------
Business tax	1,300
Electricity	5,0000
Methane Gas	8,000
Phone bill+ cell phone+ internet	4,0000
Water	6,000
Safety insurance	4,500
Maintenance cost	12,000
Miscellaneous expenses	15,000
Total cost	**338,300**

Total overheads=19,285+150,500+338,300

Total overheads=508,085

Calculation of Machine hours

Total machines hours per day= 10 x 9= 90 hours per day

As there are average 26 days' work in a month so

90 x 26 = 2,340 hours

Calculation of Pre-determined Overhead Rate

Pre-determined overhead rate= Total overheads/ Total machine hours

Pre-determined overhead rate per hour=19,285+150,500+338,300/2,340

Machine cost per hour=508,085/2340

Machine cost per hour= 217.13 rupees per hour

3.12 Unit Cost of a Product

Table 3-O

Activity level (Job Records)	**Costs**
Corrugation and pasting	86019.13
Cutting of sheets	1,706
Pasting of kraft paper	45,803
Dry process	7,541
Scoring	5,881.04
Stitching	4,964
Transportation and loading cost	978
printing (outsourcing)	15,300
Total cost	**168,192**
Total units	7500
Unit cost	**22.4256**
Mark up profit	16 percent
	1.16 x 22.4256
Total cost for one box (16 x 10 x 6)	**26.013**

3.13 Cost-Plus Pricing

Mark up profit or cost plus pricing decision depends on the followings

- Customer relationships
- Order volume
- Order feasibility

3.14 Price of a box in Euros (€)

As one euro is equal to 110 rupees so the cost of a box would be

=26.013/110

= € 0.2365

3.15 Cost Distribution in Manufacturing Process

Table 3-P

Cost Category	**Cost**	**Percentage**
Direct Material	135,065	80.30
Direct Labor	8,716	5.18
Manufacturing Overheads	8,360	4.97
Shipping cost	750	0.45
Outsourcing cost	15,300	9.10
Total	**168,192**	**100%**

3.16 Cost of Goods Sold

Beginning inventory= 10,000

Purchases= 183,540

Available for sale= Beg. Inventory + purchases

Available for sale =193,540

Ending inventory = 48,475

COGS= COGS available for sale- Ending inventory

COGS= 193,540-48,475

COGS =145,065

4 Second Case Order

Size=	L= 15 inch W= 7 inch H= 8 inch
Type=	5 ply (2 corrugated + 3 Kraft papers)
Corrugated quality=	110 Gram Square meter (GSM)
Kraft paper quality=	150 Gram Square meter (GSM)
Other features=	Lamination, using silicon for pasting
Amount=	13,000

4.1 Area of a box

The Length

L= 2 (L+W) + 2

L= 2(15+7) + 2

=46 inch

The Width

W= (W+H)

W= (7 + 8)

=15 inch (for one box)

Width for cut sheet

=2 x 15

=30 inch

Area of a box

Area= Length x width

Area= 46 x 30

Area= 1380 square inch (cut sheet where from get two boxes)

Area for one box

Area= 1380/2

Area= 690 sq. inch (for 1 box)

4.2 Length of Corrugated Roll and price of Cut Sheet

4.2.1 Price of corrugated cut sheet

= 46 x 30 x 110 x 41/ 1550 x 1000 (A. Hussain-M.S Pack Rite 28 January 2015.)

=4.01 x 1.45 (1.45 inch normal paper equal to 1 inch after corrugation)

=5.82 rupees

Price for one box

=5.82/2

Price =2.91 rupees

4.2.2 Length of Corrugated paper roll

First method

Here we take a roll of 1000 kg with a basis weight of 110 GSM.

=1000 x 1000 x 1550/30 x 2900 x 110. (A. Hussain-M.S Pack Rite 28 January 2015.)

Here,

In the formula we use 2900, as we consider 1.45 inches so ratio become 2900/2000= 1.45

=162 rolls (each roll is 2000 inch long)

=162 x 2000

=323,929 inches

=323,929/46

=7,041.93 (cut sheets)

=7,041.93 x 2

=14,084 (boxes paper)

For corrugation here we consider 1.45 inches normal paper equal to 1 inch

Second method

=1000 x 41/5.82

=7,045 (cut sheets)

=7,044.67 x 2

=14,089

4.3 Length of Kraft Paper Roll and price of Cut Sheet

4.3.1 Price of Kraft paper

=46 x 30 x 150 x 55/1550 x 1000 (A. Hussain-M.S Pack Rite 28 January 2015.)

=7.34 rupees

For one box

=7.34/2

=3.67 rupees

4.3.2 Kraft paper roll length

Here we have a roll of 1000 kg with a basis weight of 150 GSM and its price is 55 rupees per kg.

=1000 x 55/ 7.34

=55,000/7.34

=7,493 sheets (46 x 30)

=7,493 x 2

=14,986 (paper box 46 x 15)

4.4 Production Schedule

The company estimates that the following order will be completed from 15/2 – 19/2, then issues the schedule that on such dates we need that amount of raw material and labor type.

Table 4-A

Job number	Job descrip-tion	Stock or Customer	Quantity	Starting date	Ending date
110	Corrugation	Customer	13,000	15/2	15/2
111	Cutting	Customer	13,000	16/2	16/2
112	Pasting	Customer	13,000	16/2	16/2
114	Dryer	Customer	13,000	16/2	16/2
113	Scoring	Customer	13,000	17/2	17/2
109	Lamination	Customer	13,000	18/2	18/2
115	Stitching	Customer	13,000	19/2	19/2
116	Transportation	Customer	13,000	19/2	19/2

4.5 Purchasing of Raw Material

After analyzing the bill of material and production schedule, company checks its stock and then decide what to purchase. In this case, we need the following raw material.

Table 4-B

Item	Quantity	Cost	Total cost
Silicon	40	50 x 16=8,00	32,000
Kraft Paper roll	3	55,000	165,000
Lamination roll	2	15,000	30,000

Stitching pins	14 box	100	1,400
Dye	2	2,000	4,000
Total costs			**232,400**

Raw Material Record and keep Record what is Received and used

Table 4-C

Received			**used**				**Ending balance**		
Unit	**cost**	**total**	**Req. no**	**unit**	**cost**	**total**	**unit**	**cost**	**total**
1 roll	2.91	41,000	#538	13,000	2.91	37830	1089	2.91	3,170
1 roll	2.91	41,000	#538	13,000	2.91	37830	1089	2.91	3,170
3 Kraft roll sheets	1000 kg x 55 (3.67)	165,000	#584	39,000	3.67	143,130	5958	3.67	21,866
silicon (40)	800	32000	#601	40	800	32,000	--	--	--
7LPG/80 L	69 /L	38,640	#604	7	5520	38,640	--	--	--
Lamination	2 roll	30,000	#601	1.75 roll	15000	26,250	0.25	15000	3,750
Dye (2)	4000	4000	#751	2	4000	4000	---	---	0
Stitching 14 boxes	1000 pins in a box	1400	#753	13.5	100	1350	0.5	100	50
Total		**353,040**				**321,030**			**32,010**

4.6 Job Cost Records

4.6.1 Corrugation

For pasting we will use the formula that how much pasting material (cost) is used on the (46 x 30) sheet.

=46 x 30 x .0009 (A. Hussain-M.S Pack Rite 26 January 2015.)

= 1.24 rupees

=1.24/2

=0.621 rupees

But for 5 ply we use pasting of 4 paper (Kraft paper). In this case price would be

=0.621 x 4

=2.484 rupees

Job no: 110

Customer: Textile

Job description: Paper corrugation and pasting of Kraft paper

Job Started: 15 /2 Ending Date: 15/2

Table 4-D

Manufacturing cost system	**unit/hour**	**Total cost**
Direct material		
Corrugated paper (14089 sheets total in a roll)	13000 x 2.91	37,830
Kraft paper (14986 sheets total in a roll)	13000 x 3.67	47,710
Pasting material/Silicon (10 container x 800	10 x 800	8,000
(1.75) LPG gas cylinder (69/L)	5520 x 1,75	9,660
Direct Labor		
Operator (1) 57 rupees/h	2 hours	114
worker (3) 50 rupees/h	2 hour	300
Handling sheets (2) 43 rupees/h	2 hour	172
Helper (2) 38 rupees/h	2.5 hour	190
Manufacturing overheads	2 x 217.13	434.26
Total Job Cost		**104,410.26**
AS in 5 ply box 2 machines are used with same DM and DL so cost would be (2 x 104,410.26)		
Total cost		**208,820.52**
Total Units		**13,000**
Unit cost		**16.0631**

Inventory Record										
	Received			Used/shipped				Ending Balance		
date	unit	cost	total	Requisi-tion no.	units	cost	total	unit	cost	total
15/2	1 roll	2.91	41,000	#538	13,000	2.91	37830	1089	2.91	3,170
15/2	1 roll	2.91	41,000	#538	13,000	2.91	37830	1089	2.91	3,170
15/2	2 Kraft	1000 kg x 55	110,000	#584	26,000	3.67	95,420	3972	3.67	14,577
15/2	silicon 50 kg (20)	800	16000	#601	20	800	16,000	--	--	0
15/2	LPG/80 L (3.5)	5520	19320	#604	3	5,520	19,320			0
Total			**225,720**				**206,400**			**19,320**

4.6.2 Cutting of sheets

After pasting of Kraft paper, we will cut the sheets into our desired size (46 x 30). In this process direct labor will use.

Job no: 111

Customer: Textile

Job description: Cutting of sheets

Job Started: 16 /2 ending date: 16/2

Table 4-E

Manufacturing cost system	units/h	Total cost
Direct Labor Workers (2) 43 rupees/h handling (2) 38 rupees/h	 5 h 5 h	 430 380
Manufacturing overheads	5 x 217.13	1,085.65
Total Job cost for 1 machine		1,895.65

As 3 machine hours are used so cost would be (3 x 1895.65)		5,686.95
Total job cost		**5,686.95**
Total units		**13,000**
Unit cost		**0.4374**

4.6.3 Kraft Paper Pasting and Pasting of Corrugation sheets

After making corrugated rolls (each having length of 167 ft.), kraft paper will be pasted to its one side. But in case of 5 ply, we paste one kraft paper on one side of corrugation sheet and then combine all corrugation sheets with the help of pasting material. So in this case, pasting material is used more as compared to the previous case but kraft paper is 13000 sheets. Here, Kraft paper (13000 sheets) and pasting material (20 containers) will be used. DM and DL is also involved and some other costs are also involved in this process.

Job no: 112
Customer: Textile
Job description: Pasting of Kraft paper and corrugation sheets are combine
Job Started: 16 /2 Ending date: 16/2

Table 4-F

Manufacturing cost system	**unit/hour**	**Total cost**
Direct Labor		
Operator (1) 57 rupees/h	10.5 h	598.5
worker (2) 48 rupees/h	10.5 h	1008
Helper (1) 43 rupees/h	10.5	451.5
Handling (2) 38 rupees/h	10.5 h	798
Direct Material		
Kraft paper (13000 sheets. 4333 on one machine)	4333 x 3.67	15,903
Pasting material (2 times)/Silicon (20 x 800	16000/3	5,333,33
1.75 LPG gas cylinder (1.75 x 5520=9660)	9660/3	3,220

Manufacturing Overheads				10.5 x 217.13			2,280			
Total cost for 1 machine							**29,592.33**			
As they are using 3 machine at the same time so cost would be (29,592,33 x 3)							**88,776.99**			
Total Units							**13,000**			
Unit cost							**6.8290**			
Inventory Record										
	Received			**Used/shipped**				**Ending Balance**		
date	**unit**	**cost**	**total**	**Requisition**	**unit**	**cost**	**total**	**unit**	**cost**	**total**
16/2	silicon 20	800	16,000	#601	20	800	16,000	--	--	0
16/2	1.75 Lpg	5520	9660	#604	1.75	5520	9660	--		0
16/2	1 Kraft	1000 kg x 55	55,000	#584	13,000	3.67	47,710			7290
Total			**80,660**				**73,370**			**7,290**

4.6.4 Dryer process

In this process the whole sheet (2 corrugated papers plus 3 Kraft paper) is passed through dryer. LPG gas is used as DM and DL is also involved.

Job no: 114
Customer: Textile
Job description: Dry process
Job Started: 16/2 Ending date: 16/2

Table 4-G

Manufacturing cost system	**unit**	**Total cost**

Direct Labor		
feeding (2) 58 rupees/h	7 hours	812
worker (2) 48 rupees/h	7 hours	672
Handling (2) 38 rupees/h	7 hours	532
Direct material		
1.75 LPG gas cylinder (1.75 x 5520=9660)	1.75 cylinder	9,660
Manufacturing overheads	7 x 217.13	1520
Total Job cost		**13,196**
Total units		**13,000**
Unit cost		**1.015**

Inventory Record

	Received			**Used/shipped**				**Ending Balance**		
date	**unit**	**cost**	**total**	**Requisition**	**unit**	**cost**	**total**	**unit**	**cost**	**total**
16/2	1.75 LPG	5520	9660	#604	1.75	5520	9660	--		0
Total			**9,660**				**9,660**			**0**

4.6.5 Scoring

This process involves bent on sheets, fine the edges and also cutting of cut sheet into two pieces in order to get sheet for two boxes. Dye and direct labor costs are involved in this case. It takes more time as compared to previous due to weight of sheets.

Job no: 113

Customer: Textile

Job description: Scoring

Job Started: 17/2 Ending date: 17/2

Table 4-H

Manufacturing cost system	**unit**	**Total cost**
Direct Labor		
feeding (1) 58 rupees/h	9 hours	522
worker (2) 48 rupees/h	9 hours	864
Handling (3) 38 rupees/h	9 hours	1026

Direct Material Dye cost	4000/2	2000
Manufacturing Overheads	9 x 217.13	1955.7
Total Job cost for one machine		**6367.7**
For 2 machines (2 x 6367.7)		**12,735.4**
Total Units		**13,000**
Unit cost		**0.9796**

Inventory Record

	Received			**Used/shipped/stock**				**Ending Balance**		
date	**unit**	**cost**	**total**	**Requisition**	**unit**	**cost**	**total**	**unit**	**cost**	**total**
17/2	Dye (2)	4,000	4,000	#751	2	4,000	4,000	---	---	0
Total			**4,000**			**4,000**				**0**

4.6.6 Lamination

After scoring, lamination paper will be used to laminate the box sheet. In this case height and length is considered, width is ignored because when box is fold width of a box will become upper and bottom side of a box. The purpose of using lamination is to prevent trade mark and increase durability of products.

Job no: 109
Customer: Textile
Job description: Stitching
Job Started: 18/2 Ending date: 18/2

Table 4-I

Manufacturing cost system	**units/Hours**	**Total cost**
Direct labor worker (2) 58 rupees/	8 hours	928
Direct material 2 lamination rolls (30,000)	1.75/2 x 15000	13,125
Manufacturing overhead	217.13 x 8	1,086
Total cost for 1 machine		**15,139**

As there are 2 machines and the cost for 2 machines (15,139 x 2)		**30,278**
Total Job cost		**30,278**
Total Units		**13,000**
Unit cost		**2.3290**

Inventory Record										
	Received			**Used/shipped/stock**				**Ending Balance**		
date	**unit**	**cost**	**total**	**Requisi-tion**	**unit**	**cost**	**total**	**unit**	**cost**	**total**
18/2	lamina-tion	2 roll	30,000	#601	1.75 roll	15,000	26,250	0.25	15,000	3,750
Total			**30,000**				**26,250**			**3,750**

4.6.7 Box Stitching

This process involves glue pasting or stapless pins in order stitching the faces of a box. Direct costs will be used in this case.

Job no: 115
Customer: Textile
Job description: Stitching
Job Started: 19/2 Ending date: 19/2

Table 4-J

Manufacturing cost system	**units/H**	**Total cost**
Direct labor		
Feeding (1) 58 rupees/h	5 hours	290
handling (2) 38 rupees/h	5 hours	380
Direct material		
Pins for staples (14 boxes x 1000 pins)	13.5 x 100/4	337.5
Manufacturing overhead	217.13 x 5	1,086
Total cost for 1 machine		**2,093.15**
As there are 4 machines and the cost for 4 machines (2093.15 x 4)		**8,373**
Total Job cost		**8,373**

Total Units							**13,000**			
Unit cost							**0.6440**			
Inventory Record										
	Received			**Used/shipped**				**Ending Balance**		
date	**unit**	**cost**	**total**	**Requisition**	**unit**	**cost**	**total**	**unit**	**cost**	**total**
19/2	14 boxes	100	1,400	#753	13.5	100	1,350	0.5	100	50
Total			**1,400**				**1,350**			**50**

4.6.8 Transportation and loading Cost

Job no: 116

Customer: Fruit packaging

Job description: Transportation and loading

Job Started: 20/2 Ending date: 20/2

Table 4-K

Manufacturing cost system	**units**	**Total cost**
Direct labor workers (2) 38 rupees/h	5 hours	380
Shipping cost (1400**)**		1,400
Total cost		**1,780**
Total units		**13,000**
Unit cost		**0.1369**

4.7 Direct labor cost

Table 4-L

Labor type	**Hours**	**Total Cost**
Operator	12.5	2,023.5
Workers	46.5	9,550
Helper	13	1,734.5
Feeding	21	3,016
Handling	38.5	7,982
Total labor cost		**24,306**

4.8 Unit Cost of a Product

Table 4-M

Activity Level (Job Records)	**Costs**
Corrugation and pasting	208,820.52
Cutting of sheets	5,686.96
Pasting of Kraft paper	88,777
Dry process	13,196
Scoring	12,735.4
Lamination	30,278
Stitching	8,373
Transportation and loading cost	1,780
Total cost	**369,648**
Total Units	13,000
Unit cost	**28.4345**
Mark up profit	16 percent
(15 x 7 x 8) inch box	1.16 x 28.4345
Total cost for one box (15 x 7 x 8)	**32.9839**

4.9 Price in Euros (€)

=32.9838/110

Price = € 0.2999

4.10 Cost Distribution in Manufacturing Process

Table 4-N

	costs	**Percentage**
Direct material	321,030	86.84
Direct labor	24,306	6.58
Manufacturing overheads	22,912.87	6.20

Shipping	1,400	0.378
Total cost	**369,648**	**100%**

4.11 Cost of Goods Sold

Beginning Inventory= 175,000

Purchasing=232,400

Available for sale: Beg. Inventory + purchases

Available for Sale= 407,400

Ending inventory= 32,010

COGS= Available for sale-Ending inventory

COGS= 407,400-32,010

COGS= 375,390

5 Discussions

New methods are evolved with the rise in competition, competition can be in any field like marketing or accounting. Accounting tools help the company by giving cost information in product costing, expenses and outsourcing decision etc. These accounting tools are often advanced by accounting professionals in order to get more accurate results.
We can also develop our accounting system by taking many things into considerations such as interruption in electricity, how much loss in efficiency (labor and machines) during this shortfall?

5.1 Key findings

- Fast method of bidding, by putting cost of sheets and pasting material you will able to find the cost of product.
- Charging right price from the customers, exactly know about the firm profitability.
- Quick response against price change, just change the price of raw material in job records and then easily find the unit cost of that product.

5.2 Recommendations

- Some companies have their own buildings but estimated rent should be included in product costing.
- Consider all the expenses such as maintenance cost and oil usage for machines.
- Never ignored minor costs, make a list of all the manufacturing overheads.

5.3 Evaluation

This project will give a broad view to the case company and to normal reader. To find the area of sheets by using different formulas requires knowledge of Geometry. The project (Corrugated box costing) is not much common for the normal reader but I hope it will give a clear understanding of the process itself and its costing. I try my best to keep it easy by explaining challenging terms so that the reader could get the basic idea.
This project developed my intellectual abilities especially in accounting and mathematics.

5.4 Case Company Feedback

I have a very positive feedback from the case company. Company highlighted that following things will be very helpful in the future for the case company such as unit cost of each

job record and inventory record with each job record. Also a positive comment on the distribution of cost in manufacturing process which I used at the end of each case order. This percentage gave more clear view about the cost distribution in manufacturing process.

6 References

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Appendices

Appendix 1. Overlay Matrix about Project Tasks

No.	Project Tasks	Frame of Reference (concepts)	Time Frame	Method	Output
1	Analyzing the manufacturing process. (Understanding of manual process).	Analyzing the product formation system. Find out different steps and related costs such as DM and DL.	January 2015	Via Skype By seeing Videos.	Get all steps of product formation. Understanding of allocation method which can be used in that process.
2	Analyzing their current costing system (tools and methods). Taking cost information from them.	Check previous costing system. Make sure that in all steps all costs are taken into account in these procedures. Taking cost information.	February 2015	Practically work on formulas. Measuring and taking weight of paper.	To find errors in techniques especially to find the area of sheets.
3	Panning to start in our own way, more systematically as described below. Subtasks (3.1-3.10)	After completing tasks 2, we will calculate cost with new system.	March, April 2015	Use Course book for product costing.	Calculate in our own way and find the final cost of the product.

Appendix 2. Zipper Report Structure

Cover page, Abstract, Table of Contents
Introduction - Objectives - Tasks - Demarcation - Case company introduction - Analyzing Current System - Key Concepts
Frame of Reference - Production schedule - Purchasing - Raw material Record - Manufacturing Overheads - Job Cost Records - Unit cost of a product
First Case Order - Production schedule - Purchasing of Materials - Raw material Record - Labor time Record - Manufacturing Overheads - Job Cost Records - Unit cost of a product - Cost of Goods Sold
Second Case order - Production schedule - Purchasing of Materials - Raw material Record - Labor time Record - Job Cost Records - Unit cost of a product - Cost of Goods Sold
Discussions - Key Findings - Recommendations - Evaluation
References
Appendices