Case Study

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Terabyte Mode India Ltd: ABC Model Development

Pankaj Kumar Baag [1]

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Please contact the corresponding author for queries.

[1]Associate Professor, Finance, Accounting and Control area, Indian Institute of Management Kozhikode, IIMK Campus PO, Kunnamangalam, Kozhikode, Kerala 673 570, India; Email: baagpankaj@iimk.ac.in, Phone Number - 0495 2809121

CASE

Terabyte Mode India Ltd: ABC Model Development

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Terabyte Mode India Ltd. (TMIL), a small PCB manufacturing company in Bilaspur, HP, India, produces three types of PCB Models used in a variety of Front-Loading Automatic Washing Machines. For many years in the recent past, the company was producing only one PCB model. However, around two years back it introduced a new model after considering the opportunities in the market based on queries received from a few homes appliance manufacturers who were its customers. And, recently just around one year back another model was introduced in the market based on new queries received from a few homes appliance manufacturers who were its customers.

After a quick trail, these new products were introduced with the support of the R&D team and the operation team. Further, each time, the opportunities were well supported by the marketing team of the company which included the willingness of the appliance companies to pay premiums on the new models giving a rosy future for TMIL.

Nevertheless, on the contrary, a pretty lamentable scenario was now being put up as financial trends for the operating results by the Chief Accounts Officer, Ms Sneha P of the company to the president of TMIL. Ms Shaily B, the president of the company was really concerned after she went through the results. Profit margins were above 40% till a few years back when they were producing only a single product. TMIL had been using the traditional volume-based product costing system with manufacturing overhead applied on the basis of direct-labour cost as all its labours were paid at the same rate.

Ms. Shaily was disappointed to see the drop in percentage of the margins for the products against the usual expectations as given in **Exhibit 1, Exhibit 2, and Exhibit 3.** Only model 3 was showing a ROS above the earlier 40%. The president noticed the jump in PDOHR compared to the earlier just above 200% when TMIL had one product only. She also noticed

that there has been no loss of sales of model 1 whereas model 2 had actually increased its sales compared to last year. While model 3 in its 1st year had done good sales. This showed that the marketing research report was correct. She immediately decided to have a talk with the operation manager to understand the increase in PDOHR.

Production Process

The Operation Manager, Mr Daniel P shared his observations with the president. He had observed the following during the last two years:

After the introduction of Model 2 – Machine set up time had increased by around 150% compared to an earlier set up time for Model 1. Similarly, machine hours had doubled for the Model 2. In addition, while inspection time had jumped up by over 300%, the engineering time had more or less remained the same. Material handing cost overall had also increased significantly for model 2.

And, after the introduction of Model 3 - Machine set up time had increased by around 250% compared to an earlier set up time for Model 1. Similarly, machine hours had also doubled for the Model 3. In addition, the inspection time was just a little less time spent on Model 2, while the engineering time had more or less remained the same. Material handling cost was almost similar to Model 1.

Overall, the Operation Manager thought that the responsibility, time and cost had a huge jump because of which he had in consultation with the CAO had decided to increase the PDOHR to 8.75 times based on TMIL's past practice of *pea-nut costing system*.

Activity Based Costing

The president called on the CAO to understand the concept of *pea-nut costing* and during the discussion, she came across the concept of Activity Based Costing to understand the reason for the cost distortion and to do a better cost analysis of the product. She immediately requested the CAO, to design an ABC model for the company and present it before her.

The Analysis

The CAO had recently attended a conference on ABC. She had been convinced that implementing the ABC system would help TMIL to understand the cost distortion and accordingly had mentioned it to the President. Now that she had the approval of the President

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to design the ABC model for the company. She in stage one, first double checked the indirect cost of the company and found them to be in order.

Next in the second stage she identified the various activities which were again based on the indirect costs mentioned in exhibit 3 and were laced into respective own cost pools but were divided into three activity levels. In the third stage, she interviewed the various workers, supervisors and managers at each of the three-activity level. This helped her to identify a cost driver for each of these activity cost pools as well as distribute it across the three products. She made a table of these as given in the **Exhibit 4**.

In the process, she also noticed the following: set up were based on runs which were based on customer orders, shipping costs were clubbed with handling costs, all customer costs were merged together with the engineering costs. She decided to continue with the same but engineering also included number of change orders which she found to be almost equal across the three products. She decided to use the amount of time spent on each activity for each product as most of the activities were of similar in nature for each product.

She now started with constructing the ABC model and tried to give a clear picture to the reason behind the cost distortion.

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Exhibit 1

The annual sales of the three products for the just concluded financial year 2023 PCB Model 1 -- 9000 units PCB Model 2 – 16000 units PCB Model 3 – 5000 units

Exhibit 2

Indirect Manufacturing Cost (Rs):

Machine set up	10000
Machinery	1250000
Inspection	600000
Handling	1000000
Engineering	430000
Total	3290000

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Exhibit 2

The cost of the products:

Heads	Model 1	Model 2	Model 3
Direct material (Rs.)	36	51.75	18.50
Direct Labour @ Rs 20/- per hour	Time 4/5 hour 16.00	Time 3/5 hour 12.00	Time 2/5 hour 8.00
Manufacturing indirect (Rs)	140.00	105.00	70.00
Total	192.00	168.75	96.5
Selling Price	215	225	237
ROS%	10.69	25.00	59.28

Exhibit 4

Activity	Cost Driver	Model 1	Model 2	Model 3
Machine setup	No of set up	20%	30%	50%
Machine Run	Machine hours	20%	40%	40%
Inspection	Number of inspections	15%	45%	40%
Materials handling	Prime cost	15%	60%	25%
Engineering, Records and service	No of products	33.33%	33.33%	33.33%

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Indian Institute Management Kozhikode
Globalizing Indian Thought

Research Office
Indian Institute of Management Kozhikode
IIMK Campus P. O.,
Kozhikode, Kerala, India,
PIN - 673 570
Phone: +91-495-2809237/ 238
Email: research@iimk.ac.in
Web: https://iimk.ac.in/publications