

VROMAN TIRE COMPANY

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EDITOR'S NOTE: Similar to the previous case, this case also come in three parts, each introduced after completing the previous part. We are showing you the back story and part 1 in the journal. The follow-up cases are available upon request. All three parts have a detailed series of questions to be discussed

Vroman Tire Company (VTC) recently automated its plant in Memphis, Tennessee, producing over 400 different tires in various sizes. Before automation, the company used a simple plantwide rate to allocate conversion costs to its products, while material costs were assigned directly to tires.

We provide two separate data sets. The first data set (Table 1) provides the information needed to answer Alfred Olson's concerns within the case. The second data set (Table 2) will help students address parts 2 and 3. Part 2 and 3 come with their own brief case along with a set of questions to be discussed.

Keywords: Cost allocation, ABC, activity-based costing, product costing

INTRODUCTION

Vroman Tire Company (VTC) was a tire manufacturer that produced over 400 different tires in various sizes in its Memphis plant. In 2020, VTC automated the Memphis plant to take advantage of reasonably priced cutting-edge technology. Before automation, VTC used a single plantwide rate to allocate conversion costs using direct labor hours. At that time, the correlation between conversion costs and direct labor hours was 0.762. The technological improvements cut the number of direct labor hours in half.

James Jetter was the Chief Executive Officer (CEO) of VTC. Before becoming the CEO in 2016, he served as the Chief Operating Officer (COO) for eight years. VTC has its international headquarters in Memphis, Tennessee. At this time, VTC had three manufacturing plants in the United States and a plant in Cortez, Mexico. The

other two locations in the United States were in Casper, Wyoming and Cleveland, Ohio.

VTC manufactured tires in seven different tire types: all-season, light/medium truck, passenger, performance, summer, touring, and winter. Additionally, VTC produced seven brands of tires with over 70 models and makes 20 different tire widths, with aspect ratios from 20 to 85 and tire diameters between 15 and 20 inches. As mentioned previously, VTC produced more than 400 types of tires in the Memphis plant and employed between 2,000 to 3,000 employees during its slow and busy seasons, respectively.

Because of the variety of tires produced and the Memphis plant's automation, Alfred Olson, the Controller at VTC, had become concerned with the accuracy of product costs assigned to the tires. He had gathered data after the automation of the Memphis manufacturing plant. More specifically, he collected 12 observations on total conversion costs and direct labor hours. He provided this data in Table 1. (Table 1 can be found at the end of the case.)

Currently, VTC allocated conversion costs using direct labor hours based on an average of the 12 observations. In other words, VTC found the sum of the total conversion costs and direct labor hours over the 12 observations. Then VTC found the predetermined conversion costs rate by dividing the total conversion costs for the 12 observations by the total direct labor hours for the same 12 observations. VTC directly assigned material costs to the tires.

Last month, VTC manufactured 30,000 VTC/A105 and 7,500 VTC/B107 tires. VTC/A105 was a more popular tire produced in larger batches than VTC/B107. Additionally, the average direct materials costs for VTC/A105 and VTC/B107 were \$52 and \$79, respectively. While the VTC/A105 fitted a common family car or van, the VTC/B107 was not suitable for family vehicles because of its larger size. The direct labor hours used to produce VTC/A105 and VTC/B107 last month were 12,000 and 4,000 direct labor hours, respectively.

TABLE 1: DATA SET 1

Observations (OBS)	Direct Labor Hours (DLHs)	Conversion Costs
1	100,500	\$20,615,000
2	95,500	\$20,648,000
3	97,000	\$20,675,750
4	101,150	\$20,703,750
5	99,500	\$22,663,250
6	96,650	\$20,845,000
7	83,000	\$21,006,750
8	91,850	\$21,022,250
9	91,250	\$21,135,250
10	98,500	\$21,627,000
11	110,500	\$21,671,250
12	99,000	\$21,771,750