



ROBERT SIMONS

## Strategy Execution Module 6: Evaluating Strategic Profit Performance

What You Will Learn in this Module: This module demonstrates how managers use profit plan variances to understand the performance of their business and identify future opportunities. First, you will learn how to analyze profitability to monitor the effectiveness of a business in its competitive market. Next, you will explore the volume-adjusted profit plan and the variances that managers use to monitor the efficiency of internal business activities. Finally, this module discusses how managers use these insights to implement business strategy.

In the previous module, we studied how strategies are translated into profit plans. In this module, we study the analytic techniques that managers use to monitor their business's success in achieving those profit goals and strategies.

In any business, managers must go through a series of steps to gain an understanding of the sources of strategic profitability. This is essentially a diagnostic function—tracking the progress of organizational achievements against preset performance goals and strategies. To perform this analysis, we revisit many of the themes introduced previously—strategy implementation, profit wheel analysis, span of accountability, and the use of information for decision making and control.

To analyze profit performance, we must consider two different types of measures: effectiveness measures and efficiency measures.

- *Effectiveness* refers to the extent to which an activity achieves desired outcomes. Effectiveness answers the question: Did we achieve what we set out to do? Thus, measures of effectiveness focus on the comparison of actual results with preset expectations or standards.
- *Efficiency*, by contrast, refers to the level of resources that were consumed to achieve a certain level of output. Measures of efficiency answer the question: How many resources were used to achieve the actual outputs? Thus, efficiency variances focus on ratios of inputs to outputs.

To analyze profit performance, the three conditions enumerated in *Module 3: Using Information for Performance Measurement and Control* must hold:

---

This module was prepared by Professor Robert Simons with the assistance of Research Associate Jennifer Packard. Parts of this module are adapted from Robert Simons, *Performance Measurement & Control Systems for Implementing Strategy*, Prentice Hall, 2000. Professor Antonio Dávila contributed to an earlier version of this module.

Copyright © 2016, 2017 President and Fellows of Harvard College. To order copies or request permission to reproduce materials, call 1-800-545-7685, write Harvard Business School Publishing, Boston, MA 02163, or go to [www.hbsp.harvard.edu](http://www.hbsp.harvard.edu). This publication may not be digitized, photocopied, or otherwise reproduced, posted, or transmitted, without the permission of Harvard Business School.

1. Ability to measure outputs—Managers cannot evaluate how well a business unit or manager has performed unless they are able to quantify outputs. Therefore, the ability to measure outputs is a prerequisite for evaluating whether a business has achieved its objectives and efficiently used scarce resources in achieving those objectives.
2. Existence of a predetermined standard of performance—Having a measure of output is useless unless a standard or target exists against which to compare actual performance. Telling someone that a business generated \$125,000 in weekly sales does not mean much without an appreciation of how much the business was expected to produce. Was the sales target \$100,000 (in which case the business did well)? Or was it \$200,000 (indicating a disastrous week)?
3. Ability to use variance information as feedback to adjust inputs and/or process—Measurement and comparison, by themselves, do little good unless managers can use this variance information to change inputs and processes to either bring operations in line with expectations (i.e., where performance is below expectations), or attempt to capture and replicate unexpected successes (i.e., where performance exceeds expectations). This implies, of course, that managers understand the causal linkages between inputs, processes, and outputs.

Managers can measure countless outputs and processes in any organization. The key to evaluating *strategic* profit performance is focusing on those accounting variables that inform managers about the success of their strategy. In the remainder of this module, we outline the procedures for calculating a series of variances that, in total, yield a complete analysis of strategic profitability. These variances include:

- profit plan variances, in absolute and relative terms
- market share variances
- revenue variances
- product efficiency and cost variances
- variances for non-variable costs

## Strategic Profitability

**Strategic profitability analysis** is a tool to evaluate the success of a business in generating profit from the implementation of its strategy. To illustrate the techniques of strategic profitability analysis, we will focus on the financial performance of Shade Tree Furniture—a manufacturer of teak and mahogany outdoor furniture.<sup>1</sup> Boston Retail considered acquiring Shade Tree when managers were debating a diversification move into furniture. Shade Tree follows a differentiation strategy supported by premium pricing. The company invests significant resources in advertising to illustrate the quality features that distinguish its products from competitors. The company sells expensive premium furniture through online and direct mail advertising in periodicals such as *Architectural Digest* and *The New York Times*. **Table 6-1** presents Shade Tree's profit plan and actual results for the year ended 20X1.

---

<sup>1</sup> We have chosen to illustrate strategic profitability analysis techniques using a manufacturing firm so that we can review variances that reflect manufacturing and operational efficiencies, in addition to those variances that would apply to a retail company such as Boston Retail.

By examining **Table 6-1**, we can see that the profit plan, prepared before the beginning of the fiscal year, estimated \$413,000 profit for 20X1. Actual profit was \$437,211. What are the implications of this difference for evaluating Shade Tree's strategy?

**Table 6-1** Shade Tree Furniture Profit Plan and Actual Performance for 20X1

	PROFIT PLAN 20X1	ACTUAL INCOME STATEMENT 20X1
Sales	\$ 4,300,000	\$ 4,450,050
Cost of goods sold		
Raw materials	1,595,000	1,686,672
Wages	505,000	514,696
Other manufacturing costs	480,000	490,650
Gross margin	\$ 1,720,000	\$ 1,758,032
Administrative and selling expenses	505,000	488,500
Advertising expenses	516,000	520,700
Interest expense	64,000	76,200
Profit before taxes	\$ 635,000	\$ 672,632
Income tax	222,000	235,421
Profit after tax	\$ 413,000	\$ 437,211

Source: Author.

To answer this question, we must know something about Shade Tree's strategic goals. Assume that the key strategic goals established by senior managers at Shade Tree were:

- Market share—Managers estimated the size of the outdoor wooden furniture market to be \$430 million (or, equivalently, 1,250,000 units of furniture). For 20X1, Shade Tree managers wanted to capture, in dollar terms, 1% of this market. Because Shade Tree Furniture products are premium priced, the 1% market share in dollar terms is equivalent to 0.80% market share in number of pieces of furniture.
- Gross margin—Shade Tree's premium pricing strategy should be reflected in high gross margin. Gross margin targets for 20X1 were set at 40% of sales.
- Advertising—Budgeted at 12% of sales.
- Cash flow—Managers wanted to be able to generate \$300,000 cash flow from operations.
- Return on equity—the goal for 20X1 was 18%.

To perform strategic profitability analysis, we revisit the profit wheel that we used in *Module 5: Building a Profit Plan*. In our analysis, we pay particular attention to three of the four variables on the profit wheel—sales, operating expenses, and profit. The fourth variable—investment in new assets—is covered in the next module.

### Boston Retail Company

Throughout the fifteen modules that comprise the Strategy Execution series, Boston Retail Company is used as an example to illustrate key concepts. Boston Retail, introduced in *Module 1: Managing Organizational Tensions*, is a clothing chain based in a suburb of Boston. The founders began with one store and a novel idea: to offer cheap but fashionable clothing to students who attend Boston's many colleges and universities. Their customers are young, enjoy wearing the latest fashions, but have limited income. With early success, Boston Retail began expanding, quickly increasing the number of stores and employees.

Boston Retail examples can be found in the following modules of the Strategy Execution series. These modules are available from HBS Publishing at [www.hbsp.harvard.edu](http://www.hbsp.harvard.edu).

#### Product #

117-101	<i>Module 1: Managing Organizational Tensions</i>
117-102	<i>Module 2: Building a Successful Strategy</i>
117-103	<i>Module 3: Using Information for Performance Measurement and Control</i>
117-104	<i>Module 4: Organizing for Performance</i>
117-105	<i>Module 5: Building a Profit Plan</i>
117-106	<i>Module 6: Evaluating Strategic Profit Performance</i>
117-107	<i>Module 7: Designing Asset Allocation Systems</i>
117-108	<i>Module 8: Linking Performance to Markets</i>
117-109	<i>Module 9: Building a Balanced Scorecard</i>
117-110	<i>Module 10: Using the Job Design Optimization Tool to Build Effective Organizations</i>
117-111	<i>Module 11: Using Diagnostic and Interactive Control Systems</i>
117-112	<i>Module 12: Aligning Performance Goals and Incentives</i>
117-113	<i>Module 13: Identifying Strategic Risk</i>
117-114	<i>Module 14: Managing Strategic Risk</i>
117-115	<i>Module 15: Using the Levers of Control to Implement Strategy</i>

### *Computing Profit Plan Variances in Absolute and Relative Terms*

The first step in profitability analysis is to isolate significant deviations from expectations using **variance analysis**. A variance is the difference between (1) an item estimated on a profit plan or budget prepared prior to the start of an accounting period and (2) the actual income or expense as reflected on accounting statements prepared after the accounting period has ended. Variances are **favorable** (F) if actual profit is higher than planned profit. Conversely, variances are **unfavorable** (U) if actual profit is below planned profit.

The first level of analysis then simply computes the difference between actual profit for year 20X1 and the standards set out in the accountability unit's profit plan or budget that was prepared in late

20X0 (**Table 6-2**). In Shade Tree Furniture's case, the profit difference is \$24,211 (favorable). Sales revenue is \$150,050 over plan. Some other expenses are below plan, such as administrative and selling expenses, which is \$16,500 under plan.

Managers often use this first level of analysis to describe variances in ratio or percentage terms. Thus, a manager might describe her revenue as "3.5% over plan" or administrative and selling expenses being "3% below budget."

**Table 6-2** Shade Tree Furniture Profit Plan Variances

	PROFIT PLAN 20X1 (IN DOLLARS)	PROFIT PLAN 20X1 (IN % OVER SALES)	ACTUAL INCOME STATEMENT 20X1 (IN DOLLARS)	ACTUAL INCOME STATEMENT 20X1 (IN % OVER SALES)	VARIANCE ANALYSIS (IN DOLLARS)
Sales	\$ 4,300,000	100.0%	\$ 4,450,050	100.0%	\$ 150,050 (F)
Cost of goods sold					
Raw materials	1,595,000	37.1	1,686,672	37.9	(91,672) (U)
Wages	505,000	11.7	514,696	11.6	(9,696) (U)
Other manufacturing costs	480,000	11.2	490,650	11.0	(10,650) (U)
Gross margin	\$ 1,720,000	40.0%	\$ 1,758,032	39.5%	\$ 38,032 (F)
Administrative and selling expenses	505,000	11.7	488,500	11.0	16,500 (F)
Advertising expenses	516,000	12.0	520,700	11.7	(4,700) (U)
Interest expense	64,000	1.5	76,200	1.7	(12,200) (U)
Profit before taxes	\$ 635,000	14.8%	\$ 672,632	15.2%	\$ 37,632 (F)
Income tax	222,000	5.2	235,421	5.3	(13,421) (U)
Profit after tax	\$ 413,000	9.6%	\$ 437,211	9.8%	\$ 24,211 (F)

Source: Author.

Once simple profit variances are calculated, the business strategy must be tested and validated. The reason for variances must be ascertained so that profit plan performance can be evaluated, corrective action taken, and key insights applied to other aspects of the business.

What should managers at Shade Tree make of the extra \$24,000 profit? Although the number is relatively small in both absolute and relative terms, it may conceal large offsetting variances. For example, it could be made up of a \$124,000 gain due to growth and a \$100,000 loss due to poor products. Further analysis may reveal unexpected changes in revenue, cost of raw materials, and a variety of other factors. Higher profits may be due to efficient use of resources, increased demand for goods and services, or changes in the competitive marketplace. Revenue might differ from expectations due to changes in selling prices or to a change in product mix. Cost savings may be due to a successful experiment in production technology. Even though the net profit change is small, each of these potential explanations must be tested and verified so that strategy can be affirmed or adjusted as necessary.

**Strategic profitability** comprises two components, as defined by the following formula:

$$\begin{aligned} \text{Strategic profitability} &= \text{profit (loss) from competitive effectiveness} \\ &+ \text{profit (loss) from operating efficiencies} \end{aligned}$$

These two terms—competitive effectiveness and operating efficiencies—drive sales and operating expenses, respectively, on the profit wheel.<sup>2</sup> Thus, for purposes of our strategic profitability analysis, we can re-label the profit wheel categories, substituting *competitiveness effectiveness* for sales, and *operating efficiencies* for operating expenses (**Figure 6-1**).

**Figure 6-1** Strategic Profitability Analysis Wheel



Source: Author.

Analysis of *competitive effectiveness*—did we achieve what we set out to do?—is applicable primarily to business units that set and implement product market strategy. This includes all stand-alone businesses, as well as any profit center or other unit whose managers are accountable for creating profit through market transactions. The analysis of *operating efficiencies*—how many resources were consumed to achieve the actual outputs?—is applicable to all accountability units that manage the flow of Inputs → Process → Outputs. This includes entire businesses and profit centers.

<sup>2</sup> For a discussion of the three wheels of profit planning, see *Module 5: Building a Profit Plan* (HBS No. 117-105).

## Competitive Effectiveness: Market Share Variances

How well did Shade Tree Furniture implement its strategy? To answer this question, we must probe the effectiveness of the business in attracting customers, marketing its products, and differentiating itself from other competitors in the marketplace.

Effectiveness, by definition, focuses on outputs. *Profit* from competitive effectiveness focuses on how well a business fared against competitors. It is gauged by two principal output indicators: market share growth and price premium. Market share growth reveals how customers reacted to a business's value proposition. Price premium, reflected in the revenue line of the income statement, reveals the success of a business in extracting value based on differentiation of its goods and services. In the next two sections, we compute market share and revenue variances to provide insight into how well the business performed on these dimensions of strategy.

### Computing Market Share Variances

As part of any profit planning process, revenue goals are established based on analysis of market potential, SWOT, and intended strategies (see *Module 2: Building a Successful Strategy*). These same market-based factors provide the foundation for analysis of market share growth.

Two key variables affect strategic profitability attributable to market share:

- increase (or decrease) in profit due to changes in market *size* (i.e., changes in total dollar volume sold in the entire market)
- increase (or decrease) in profit due to changes in market *share* (i.e., changes in percent of total market served by the business)

Each of these variables is evaluated against the original expectations set out in the profit plan (see **Table 6-3**).

**Table 6-3** Shade Tree Furniture Revenue Assumptions in 20X1 Profit Plan

	ASSUMPTIONS REFLECTED IN 20X1 PROFIT PLAN	ACTUAL DATA FOR 20X1
Market size (in \$)	\$ 430,000,000	\$436,280,000
Market size (in units)	1,250,000	1,268,293
Market share (in \$)	1.00%	1.02%
Market share (in units)	0.80%	0.82%
Contribution margin per unit in \$ <sup>a</sup>	\$ 220.00 <sup>b</sup>	
Contribution margin per unit in % <sup>a</sup>	51.16%	

<sup>a</sup> Only raw material and wages are variable costs

<sup>b</sup> Calculated from data in Table 6-4

Source: Author.

The formula for unexpected profit due to changes in *market size* is:

$$\begin{aligned} \text{Market size variance} &= \Delta \text{ market size} \times \text{planned market share} \times \text{planned average} \\ &\quad \text{contribution margin} \\ &= [\text{actual market size in units} - \text{predicted market size in units}] \\ &\quad \times \text{planned market share} \\ &\quad \times \text{planned average contribution margin} \end{aligned}$$

From Table 6-3, we find that the profit change due to increases in the size of the outdoor furniture market was:

$$\begin{aligned} &= [1,268,293 - 1,250,000] \\ &\quad \times 0.80\% \\ &\quad \times 220 = \underline{\$32,196} \text{ (F)} \end{aligned}$$

Thus, this calculation reveals that Shade Tree's profit increased by \$32,196 because of increases in overall market demand.

### A Common Way to Approximate Market Size Variance

Sometimes, managers do not have access to market size data expressed in unit volumes—that is, the number of pieces of furniture sold. In these cases, using market size expressed in *dollar terms* is usually a sufficient approximation to estimate a market size variance. For example, we can estimate the market size variance using the dollar value of the market as follows:

$$\begin{aligned} &= [\$436,280,000 - \$430,000,000] \\ &\quad \times 1.00\% \\ &\quad \times 51.16\% = \underline{\$32,128} \text{ (F)} \end{aligned}$$

For Shade Tree Furniture, estimating market size variance in dollars instead of number of units represents a difference in accuracy of less than 2%. Because this approximation fails to separate the effects of changes in market size (in units) and changes in unit prices, it is accurate only if the actual average unit market price (market size in dollars ÷ market size in units) is close to the expected average unit market price. A simple calculation reveals that the market for outdoor furniture meets this condition:

$$\begin{aligned} \text{Expected average market price} &= \$430,000,000 \div 1,250,000 = \$344.00 \\ \text{Actual average market price} &= \$436,280,000 \div 1,268,293 = \$343.99 \end{aligned}$$

Next we want to probe how successful the company was in capturing its share of this total demand. The formula for profit change due to increases or decreases in *market share* is:

$$\begin{aligned}
 \text{Market share variance} &= \Delta \text{ market share} \times \text{actual market size} \times \text{planned average contribution margin} \\
 &= [\text{actual market share in units} - \text{planned market share in units}] \\
 &\quad \times \text{actual market size} \\
 &\quad \times \text{planned average contribution margin}
 \end{aligned}$$

From Table 6-3 we can easily price the profit that was earned because of better-than-expected market share:

$$\begin{aligned}
 &= [0.82\% - 0.80\%] \\
 &\quad \times 1,268,293 \\
 &\quad \times \$220 = \underline{\$55,804} \text{ (F)}
 \end{aligned}$$

### A Common Way to Approximate Market Share Variance

Again, market share data expressed as dollar sales (instead of number of units) may be more readily available. Therefore, managers sometimes estimate market share variance using data expressed in dollars instead of units sold. However, you must remember that this approach mixes the effects of changes in market share with changes in unit prices. Therefore, it is only an approximation—adequate in most situations—but an approximation nonetheless.

$$\begin{aligned}
 &= [1.02\% - 1.00\%] \\
 &\quad \times \$436,280,000 \\
 &\quad \times 51.16\% = \underline{\$44,640} \text{ (F)}
 \end{aligned}$$

The difference that we get by using market share in dollars instead of units is \$11,164. This approximation is accurate if actual average unit price (for both the overall market and the company's products) is close to the expected average unit price used to build the profit plan. For Shade Tree Furniture in 20X1, market prices were as expected, but the company's price was \$2.11 below plan.<sup>3</sup> This lower than expected price makes the approximation of market share using dollars roughly accurate.<sup>4</sup>

By calculating these two market-based variances, we have ascertained that Shade Tree Furniture added \$88,000 to its profit due to changes in the market. Part of this increase was due to unexpected growth in the size of the total market (\$32,196), and part was due to an increased share of the larger pie (\$55,804). Through our analysis, we have learned that the market for outdoor furniture grew more than expected during 20X1, which indicates that Shade Tree Furniture is competing in a market with an attractive future. Moreover, the company captured a higher market share than expected. To understand

<sup>3</sup> Expected average price = \$4,300,000 ÷ 10,000 = \$430 (see Table 6-4 for volume data). Actual average price = \$4,450,050 ÷ 10,400 = \$427.89

<sup>4</sup> We can reconcile the difference of \$11,164 using the change in prices as follows:

$$\$11,164 = [(0.82\% \times \$2.11 \div \$430) - (0.80\% \times \$0.01 \div \$344)] \times 1,268,293 \times \$220$$

the implications of this performance indicator, managers need to answer several questions: Did the premium market for outdoor furniture grow more than the rest of the market? Did the company cut prices to achieve growth? Did the sales and marketing department of Shade Tree Furniture perform up to expectations? We consider these questions next.

## Competitive Effectiveness: Revenue Variances

With market share variances as a backdrop, we now evaluate managers' success in generating acceptable levels of revenue. Revenue is a simple accounting term: it equals sales volume in units multiplied by unit price. However, revenue is much more than that. Revenue is the unequivocal measure of the desirability of a value proposition. It is a key indicator of customer acceptance of products and services. In the long term, it is the ultimate measure of customer satisfaction.

### *Computing Revenue Variances*

Managers are especially interested in two sources of revenue-based profit:

- increase (or decrease) in profit due to changes in prices
- increase (or decrease) in profit due to changes in product mix

Shade Tree Furniture sells both chairs and benches. Assume for simplicity that each type of product costs the same to manufacture—\$210. But the chairs are priced at \$400 and the benches sell for \$500. In its profit plan, Shade Tree Furniture planned to sell 7,000 chairs and 3,000 benches (see **Table 6-4**). Thus, in the original profit plan total revenue was estimated at \$4,300,000 [7,000 chairs × \$400 + 3,000 benches × \$500]. However, the actual units sold differed from the number of units predicted in the profit plan. During the year, the company actually sold 7,050 chairs and 3,350 benches, and generated revenue of \$2,791,800 for chairs and \$1,658,250 for benches, for a total of \$4,450,050. We now have the information that we need to calculate basic revenue variances.

**Table 6-4** Shade Tree Furniture Information Needed for Calculation of Revenue Variances

	ASSUMPTIONS REFLECTED	
	IN 20X1 PROFIT PLAN	ACTUAL DATA FOR 20X1
Number of chairs (units)	7,000	7,050
Revenues from chairs	\$2,800,000	\$2,791,800
Number of benches (units)	3,000	3,350
Revenues from benches	\$1,500,000	\$1,658,250
Planned contribution margin per unit (chairs)	\$190.00	
Planned contribution margin per unit (benches)	\$290.00	
Average expected contribution per piece of furniture	\$220.00	\$222.21

Source: Author.

The first step in calculating revenue variances is to dig into the company records to find out how much of the profit variance was attributable to changes in selling prices. In our analysis of strategic effectiveness, it is critical to understand the ability of the business to receive price premiums for its products or services. Premium pricing results from effective differentiation and successful market positioning. Premium prices are possible for two reasons: (1) because customers believe that the value

they are receiving is worth the higher price, and/or (2) competitive offerings or substitute products are not available at lower prices. Understanding these factors is essential for effective competition.

A favorable sales price variance, or **price premium** (selling prices are higher than profit plan estimates), indicates that managers have been successful in extracting value from the marketplace—either because of product superiority or weakness in competitors’ product positions. An unfavorable sales price variance (selling prices are lower than profit plan estimates) suggests the opposite: the business had to lower price to meet competition or customers were unwilling to pay the planned price for the value they were receiving.

The formula for the *sales price variance* is:

$$\begin{aligned} \text{Sales price variance} &= \text{actual total revenue} \\ &- [\text{product \#1 standard selling price} \times \text{product \#1 actual volume}] \\ &- [\text{product \#2 standard selling price} \times \text{product \#2 actual volume}] \\ &- \dots \dots \\ &- [\text{product \#n standard selling price} \times \text{product \#n actual volume}] \end{aligned}$$

For Shade Tree Furniture, the sales price variance is:

$$\begin{aligned} &= \$4,450,050 - [\$400 \times 7,050 \text{ chairs}] - [\$500 \times 3,350 \text{ benches}] \\ &= 4,450,050 - 4,495,000 \\ &= \underline{\underline{\$44,950}} \text{ (U)} \end{aligned}$$

Through this calculation, we can see that lower prices reduced profits by just under \$45,000. Managers must now investigate why prices had to be lowered. Did Shade Tree Furniture lower its prices to meet competitive pressures? Or, were discounts needed to compensate for weak demand?

The second revenue variance focuses on **product mix**. Product mix describes the percentage of total sales that is generated by each product in a business’s product line. For example, a firm may generate 25% of its revenue from product A, 40% from product B, and 35% from product C. Product mix is important because selling prices and manufacturing costs often differ by product. If companies sell more or less of different products—each with different prices and contribution margins—then actual profit will differ from profit plan estimates.

To isolate the effect of product mix variances on profit, we must work with *standard contribution margins*. **Contribution margin** is defined as selling price minus variable costs. For our purposes, we are interested in isolating the profit effects of changes in product mix; therefore, we need to hold changes in variable costs and selling price constant. Thus, it is important to remember to compute product mix variances using standard (i.e., planned) variable costs per unit rather than actual variable cost per unit which may reflect unanticipated changes in production efficiency. Similarly, we use planned selling prices in the calculation of contribution margin because the effects of changes in selling price changes have already been identified above as part of the sales price variance.

In its profit plan, Shade Tree Furniture planned to generate 65% of its revenue from chairs and 35% from benches. We know that chairs have a planned contribution margin of \$190 per unit [\$400 – \$210] and benches have a planned contribution margin of \$290 per unit [\$500 – \$210]. We can calculate the total planned contribution margin as \$2,200,000 [7,000 chairs @ \$190 + 3,000 benches × \$290], and average contribution per unit as \$220 [\$2,200,000 ÷ 10,000 units]. Assuming that costs to produce did

not differ from the standards reflected in the profit plan (we will relax this assumption shortly), the restated “standard” contribution—using the actual sales mix—was \$2,311,000 [7,050 chairs × \$190 + 3,350 benches × \$290]. Average contribution per unit was \$222.21 [\$2,311,000 ÷ 10,400 units], reflecting a shift to higher-margin benches.

We can now use this information to compute the change in profit due to changes in product mix. The formula for **product mix variance** is:

$$\begin{aligned}
 \text{Product mix variance} &= \Delta \text{ average standard contribution} \times \text{actual unit volume} \\
 &= [\text{actual average standard contribution} - \text{planned average standard contribution}] \times \text{actual unit volume} \\
 &= [\$2,311,000 \div 10,400 - \$2,200,000 \div 10,000] \times 10,400 \\
 &= \underline{\underline{\$23,000}} \text{ (F)}
 \end{aligned}$$

The shift from chairs to benches generated \$23,000 additional profit. With this information in hand, managers need to explore the implications of the switch to higher margin products. Is this the start of a new trend? How can it be accelerated? What are the implications for production, sourcing, and advertising?

## Summary of Competitive Effectiveness Variances

To summarize, then, we have computed four variances related to competitive effectiveness:

Market size	\$ 32,196	(F)
Market share	55,804	(F)
Sales price	44,950	(U)
Product mix	<u>23,000</u>	(F)
Total profit variances due to competitive effectiveness	<u><u>\$ 66,050</u></u>	(F)

The picture that emerges from this analysis is generally favorable. Profit exceeded plan by \$66,050 due to superior competitive effectiveness. Managers must next take this data and probe its implications. The market is growing ahead of expectations. (Q. What factors are causing this increase in overall market demand?) Managers have been able to shift the product mix from chairs to more profitable benches. (Q. How can the business capitalize on this unexpected shift?) Market share is also growing faster than expectations. (Q. What combination of advertising and promotion programs have contributed to this shift?) The one unfavorable variance is due to lower than planned selling prices. (Q. Are managers “buying” market share by lowering prices?) This pricing issue will have to be watched carefully by managers if they want to implement a differentiation strategy focusing on the high-end premium products in the market.

## Volume-Adjusted Profit Plan

In the previous section, we examined the reasons for changes in operating profit due to the success or failure of the strategy in attracting customers, extracting value, and building market share. Having completed this analysis, we can now take the level of sales volume as given and move on to the next

steps in strategic profitability analysis—analyzing the extent to which managers were able to operate the business efficiently.

### *Calculating a Volume-Adjusted Profit Plan (or Flexible Budget)*

To gain a full understanding of internal operating efficiencies as they affect profit, it is necessary to recast the original profit plan to reflect the *actual volume* of sales. What we are trying to accomplish in this step is to set revised performance standards for internal efficiencies based on the realized level of production and sales. As discussed in *Module 5: Building a Profit Plan*, many of the profit plan estimates were based on forecasts of sales volume. To the extent that sales forecasts proved to be either too high or too low, managers must recalculate the profit plan standards so that variances can be computed accurately.

**Table 6-5** shows how this is done by inserting a new column for the *volume-adjusted profit plan* (or budget) between the original profit plan column and the actual profit column. The volume-adjusted profit plan is calculated by multiplying original estimates of sales-based cost variables (e.g., \$159.50 of raw material for each chair or bench manufactured) by the *actual* sales volume (now 7,050 chairs and 3,350 benches instead of 7,000 chairs and 3,000 benches as estimated in the original profit plan) to yield a volume-adjusted estimate (in this example, \$1,658,800 of raw material). This new volume-adjusted profit plan is often called a *flexible budget*.

In our analysis of competitive effectiveness, we have already calculated variances due to market size, market share, sales price, and product mix which total \$66,050 (F). This amount represents the difference between the original plan (column 1 of Table 6-5) and the volume-adjusted profit plan (column 3). Now, the remaining profit variances due to internal operating efficiencies can be calculated. These are the variances between the volume-adjusted profit plan (column 3) and actual performance (column 5).

A quick look at the columns shows us that if managers had known a year ago that sales would actually be 7,050 chairs and 3,350 benches with lower selling prices, they would have budgeted a pre-tax profit of \$701,050. Yet, actual profit was \$672,632—\$28,418 below revised expectations.

**Table 6-5** Shade Tree Furniture Calculation of Volume-Adjusted Profit Plan

	ORIGINAL PROFIT PLAN 20X1	EFFECTIVENESS VARIANCES EXPLAINED	VOLUME- ADJUSTED PROFIT PLAN 20X1	ADDITIONAL VARIANCE TO BE EXPLAINED	ACTUAL INCOME STATEMENT 20X1
Sales	\$ 4,300,000		\$ 4,450,050		\$ 4,450,050
– Cost of goods sold					
Raw materials	1,595,000		1,658,800	\$ (27,872)	1,686,672
Wages	505,000		525,200	10,504	514,696
Other manufacturing costs	480,000		480,000	(10,650)	490,650
Gross margin	\$ 1,720,000	\$ 66,050	\$ 1,786,050	\$ (28,018)	\$ 1,758,032
Administrative and selling expenses	505,000		505,000	\$ 16,500	488,500
Advertising expenses	516,000		516,000	(4,700)	520,700
Interest expense	64,000		64,000	(12,200)	76,200
Profit before taxes	\$ 635,000	\$ 66,050	\$ 701,050	\$ (28,418)	\$ 672,632

Source: Author.

## Operating Efficiencies: Variable Costs

Next, we analyze the business's ability to manage variable costs. This analysis is used primarily in manufacturing firms. In *Module 5: Building a Profit Plan*, we distinguished between *variable costs* and *non-variable costs*. You will recall that variable costs are resources (inputs) that vary proportionally with the level of sales (output). In simple terms:

$$\begin{aligned}\text{Variable costs} &= \text{Input volume} \times \text{Cost per unit of input} \\ &= \text{Output volume} \times \frac{\text{Input volume}}{\text{Output volume}} \times \text{Cost per unit of input}\end{aligned}$$

This last expression reveals that variable costs change with (1) output volume, (i.e., sales volume), (2) an efficiency ratio of inputs to outputs, and (3) the prices of input factors. We have already recalculated output volume to reflect actual sales in the previous step, so we need only calculate two additional variances at this point:

- changes in the use of inputs in relation to outputs (*efficiency variance*)
- changes in the unit cost of those inputs (*production spending variance*)

These two variances will reveal why actual variable costs differ from those reflected in the original profit plan: either the costs of inputs are higher or lower than expected, or the efficiency with which inputs were converted to outputs is different from the profit plan.

### *Calculating Production Efficiency and Cost Variances (If Applicable)*

**Table 6-6** gives us information on how changes in production efficiency and input prices affected the profit of Shade Tree Furniture.

**Table 6-6** Shade Tree Furniture Data to Analyze Manufacturing Performance

	ASSUMPTIONS REFLECTED IN 20X1 PROFIT PLAN		ACTUAL DATA FOR 20X1	
<i>Raw Material</i>				
Efficiency input/output (pounds per piece of furniture)		50.00		51.00
Cost of one pound of wood		\$ 3.19		\$ 3.18
Cost of raw material per chair/bench	50 x \$3.19 =	\$159.50	51 x \$3.18 =	\$162.18
<i>Labor</i>				
Efficiency input/output (hours per piece of furniture)		2.50		2.45
Wage per hour		\$ 20.20		\$ 20.20
Cost of labor per chair/bench	2.50 x \$20.20 =	\$ 50.50	2.45 x \$20.20 =	\$ 49.49
<i>Total Variable Cost</i>	\$159.50 + \$50.50 =	\$ 210.00	\$162.18 + \$49.49 =	\$ 211.67

Source: Author.

Let's first analyze how well the manufacturing operation at Shade Tree Furniture utilized raw materials. As always, the reference point to analyze performance is managers' expectations as reflected in the profit plan. How much raw material did Shade Tree Furniture's managers expect to use to manufacture one piece of furniture? (We assume for simplicity that chairs and benches use the same amount of wood).

Table 6-6 tells us the answer. Managers expected to use 50 pounds of wood per piece of furniture at a cost of \$3.19 per pound. The expected cost of raw material per chair or bench is \$159.50. This expected cost is called the *standard cost of raw material*. This amount can be broken down into the *standard cost of wood* and the expected input/output relationship, or *standard efficiency*.

According to the assumptions that managers used to build the profit plan, the cost of materials required for each piece of furniture is \$159.50. During 20X1, Shade Tree Furniture sold 10,400 pieces. Therefore, expected cost was  $10,400 \times \$159.50 = \$1,658,800$  (you can check this number in the volume-adjusted profit plan, Table 6-5). However, actual costs were \$1,686,672. A variance of \$27,872 must be explained.

We can analyze the difference between actual performance and expectations using an *efficiency variance* and a *spending variance*. The formula for the **efficiency variance** is:

$$\begin{aligned} \text{Efficiency variance} &= \text{actual units of output} \\ &\quad \times [\text{planned volume of inputs per unit of output} - \text{actual volume of inputs} \\ &\quad \quad \text{per unit of output}] \\ &\quad \times \text{Planned cost of one unit of input} \end{aligned}$$

Thus, the efficiency variance for raw materials at Shade Tree Furniture is:

$$\begin{aligned} \text{Efficiency variance} &= \text{actual number of pieces of furniture produced} \\ &\quad \times [\text{planned pounds of wood per piece} - \text{actual pounds of wood per piece}] \\ &\quad \times \text{planned cost of one pound of wood} \\ &= 10,400 \times [50 - 51] \times \$3.19 = \underline{\$33,176} \text{ (U)} \end{aligned}$$

The manufacturing operation at Shade Tree Furniture used more wood per piece of furniture than expected. In other words, the operation was *less efficient* than expected. This underperformance is reflected in an unfavorable efficiency variance of \$33,176. Were product designs more complex to manufacture than expected? Were workers less skilled and, therefore, used more wood for each piece of furniture? Did workers use more wood to meet increasing production demand? Did they have to use more wood because the purchasing department ordered cheaper wood which resulted in more rejected pieces? These questions need further exploration to understand the reasons for the efficiency variance. Analyzing additional variances may help in answering these questions.

The actual cost of one pound of wood was \$3.18 instead of the planned \$3.19. How did this change affect profits? Calculation of a **spending variance** answers this question. The formula is:

$$\begin{aligned} \text{Spending variance} &= \text{actual units of output} \\ &\quad \times \text{actual volume of inputs per unit of output} \\ &\quad \times [\text{planned cost of one unit of input} - \text{actual cost of one unit of input}] \end{aligned}$$

For raw materials at Shade Tree Furniture we have:

$$\begin{aligned} \text{Spending variance} &= \text{actual number of pieces of furniture produced} \\ &\quad \times \text{actual pounds of wood per piece} \\ &\quad \times [\text{planned cost of one pound of wood} - \text{actual cost of one pound of} \\ &\quad \quad \text{wood}] \\ &= 10,400 \times 51 \times [\$3.19 - 3.18] = \underline{\$5,304} \text{ (F)} \end{aligned}$$

It appears that the purchasing department was able to obtain wood at a somewhat lower cost than expected. However, was it because a lower quality wood was purchased? Or were market prices for wood lower than planned? Managers can explore the potential reasons for this variance if it appears to be significant to understanding the internal efficiencies of the business.

Efficiency variance and spending variance together explain the difference between the volume-adjusted profit plan and the actual raw material expense as shown on Table 6-5: \$33,176 (U) + \$5,304 (F) = \$27,872 (U).

We can apply the same tools to analyze the performance of Shade Tree's workers. The variance to be explained is \$10,504 (Table 6-5).

$$\begin{aligned} \text{Efficiency variance} &= \text{actual number of pieces of furniture produced} \\ &\quad \times [\text{planned labor hours per piece} - \text{actual labor hours per piece}] \\ &\quad \times \text{planned wages per hour} \\ &= 10,400 \times [2.50 - 2.45] \times \$20.20 = \underline{\$10,504} \text{ (F)} \end{aligned}$$

$$\begin{aligned} \text{Spending variance} &= \text{actual number of pieces of furniture produced} \\ &\quad \times \text{actual labor hours per piece} \\ &\quad \times [\text{planned wage per hour} - \text{actual wage per hour}] \\ &= 10,400 \times 2.45 \times [\$20.20 - 20.20] = \underline{\$0} \end{aligned}$$

The planned labor cost is called *standard labor cost*. This amount can be broken down into planned wages or *standard wages* and labor hours per piece of furniture, called *standard labor efficiency*.

The efficiency variance was favorable; whereas, actual wages were exactly as planned (i.e., standard wages equal to actual wages). We have now analyzed the "wages" variance of \$10,504 on Table 6-5, indicating that Shade Tree Furniture workers produced more pieces per hour than expected (efficiency variance) and their wages were as expected (spending variance).

Production efficiency and cost variances are useful indicators to understand how efficiently any strategy was implemented. Revenue variances tell us about performance in the market, and spending and efficiency variances inform us about how well managers used the internal capabilities of the business.

Comparing this information against competitors can further enhance management's understanding of how they are using internal efficiencies as sources of advantage. This is especially important for businesses following a low cost strategy. These businesses need lower input prices and/or higher efficiencies (achieved through process innovation, economies of scale, or economies of scope) than competitors. For such businesses, comparing efficiency costs against competitor benchmarks is critical. In some cases, companies have access to information on manufacturing efficiency through industry associations or independent **benchmarking** studies. When this information is not available, companies must rely on continuous improvement in profit plan indicators to ensure sustainable competitive efficiencies.

## Operating Efficiencies: Non-Variable Costs

For service industries like Boston Retail, the concept of efficiency variance is rarely used because there are no manufacturing costs that vary directly with outputs. This does not mean that service industries do not care about efficiency in their processes. On the contrary, the profitability of service companies often depends greatly on how efficiently they use their resources. However, the critical resources in service companies tend to be *non-variable* costs. For these resources—in both manufacturing and service firms—we calculate spending variances.

### The Importance of Benchmarks: A Rough Landing for American Airlines

Executives at American Airlines were pleased when they compared their 2009 financial results to the previous year. Operating income had increased by \$891 million, a whopping 44%. In addition, expenses had fallen by 18% compared to the previous year contributing to the net profit growth. They felt that these numbers showed that the management team had been effective in a very competitive industry during a tough economic downturn.

Upon comparison with the total industry, however, their joy faded away. The industry as a whole had a net income increase of 168%, eclipsing the 44% growth at American Airlines. Though American had a change in total revenue that was consistent with the rest of the industry, the executives found that their total passenger miles had declined by over 7%, while passenger miles for the industry as a whole dropped by only 5%. This meant that passengers were leaving American Airlines and choosing to fly with competitors instead. American's market share was in decline. The good news was that revenue per mile was higher at American versus the total industry indicating that American had managed to maintain higher pricing than competitors. However, holding higher prices while competitors advertised hot deals was also a likely reason for American's declining share.

The executives then turned optimistically to an analysis of their reduced expenses for the year. Fuel costs had declined by 34% at American. However, fuel costs for the total industry had fallen by 38%. It seemed that competitors were finding ways to manage these costs better than managers at American Airlines. American executives also found that flight-related and passenger costs (excluding fuel) were significantly higher than competitors. Diving into these numbers, the American Airlines executives found that while the number of passengers fell, labor costs were rising. In fact, American Airline's labor costs were the highest in industry.

After a more complete analysis that compared financial results to the industry – rather than only to the previous year's performance – the executives at American Airlines realized that they still had a lot of work to do.

---

Source: Paul A. Mudde and Parvez R. Sopariwala, "Relative Strategic Variance Analysis: The Case of American Airlines," *Cost Management*, May/June 2011: 25-40.

### Calculating Variances for Non-Variable Costs

The formula for *spending variance* is simply:

$$\text{Spending variance} = [\text{Planned cost} - \text{Actual cost}]$$

In *Module 5: Building a Profit Plan*, we identified three different types of non-variable costs:

- committed (or engineered) costs
- discretionary expenses
- activity-based costs

We can apply spending variance analysis to each category.

**Committed Costs** Companies commit to certain expenses for long periods of time. For example, depreciation of a fixed asset is determined for the life of the asset. Similarly, long term contracts fix lease expenses over several years. Because committed costs are fixed over long periods of time, there should not generally be any variance between expected and actual costs. However, unexpected events can cause a variation. For example, a long term lease contract indexed to inflation will show a *spending variance* if actual inflation is different from expected inflation.

For Shade Tree Furniture, the original profit plan reflected \$150,000 for the depreciation of machines. This amount was included in “other manufacturing costs” under cost of goods sold. The actual depreciation was \$155,000 because an old machine unexpectedly broke down and was replaced by a new one with higher depreciation. The spending variance was:

$$\begin{aligned} &= \$150,000 - \$155,000 \\ &= \underline{\$5,000} \text{ (U)} \end{aligned}$$

**Discretionary Expenses** Discretionary expenses are also analyzed using spending variances to compare expected and actual levels of costs. Advertising expense is a discretionary cost because managers can adjust the level of advertising expense almost at will. Shade Tree Furniture planned to spend \$516,000 on advertising, but the expense was \$520,700. Using the spending variance formula, we can calculate the variance as

$$\begin{aligned} &= \$516,000 - \$520,700 \\ &= \underline{\$4,700} \text{ (U)} \text{ (Table 6-5)} \end{aligned}$$

Can we conclude that the company overspent in advertising? No. An unfavorable variance is not necessarily bad, because the additional advertising expense may have helped increase market share. Managers of profit centers are responsible for making *trade-offs* to maximize profits. In certain circumstances, they may choose to increase spending if it will lead to higher profits.

**Activity-Based Costs** Finally, some types of indirect resources are used in ways that vary with cost-driver activities other than manufacturing outputs. For example, if the quality control department checks the first 10 items of each new batch, then quality control expense will vary with the number of batches. Similarly, warehousing costs may vary with the number of shipping orders, or selling costs may vary with the number of customers or customer segments.

Traditionally, management accounting systems have interpreted these expenses as “fixed” and calculated only *spending variances*. However, recent developments in activity-based costing allow a

more revealing analysis. In particular, we can now obtain *volume*, *efficiency*, and *spending variance* information about activity-based costs. The following example illustrates the analysis.

To maintain its premium prices, Shade Furniture Company has a Quality Control Department to ensure that the furniture is of premium quality. For each batch of furniture, the quality department checks a sample to see if the batch meets its high quality standards. If the sample passes the control check then the batch is shipped, but if it fails the quality control, then the whole batch is sent back for inspection and rework. For 20X1, the budget for the department (included in “other manufacturing costs”) was \$120,000. Half of this amount was salaries and other committed costs; the other half was supplies used to perform the quality control tests. **Table 6-7** compares expected and actual performance.

**Table 6-7** Shade Tree Furniture Data to Analyze the Performance of the Quality Control Department

	ASSUMPTIONS REFLECTED IN 20X1 PROFIT PLAN	ACTUAL DATA FOR 20X1
Number of batches	500	490
Amount of supplies per batch (liters)	1.50	1.40
Cost per one liter of supplies	\$ 80.00	\$ 80.50
Total cost of supplies	\$ 60,000	\$ 55,223

Source: Author.

For activity-based costs, we can estimate three variances that you should recognize as similar to previous ones:

- impact on profits due to changes in cost driver activity (i.e., number of batches)
- impact on profits due to changes in efficiency
- impact on profits due to changes in cost of resources

The quality department planned to use \$60,000 in supplies but it actually spent \$55,223. Again, we can use variances to get more detail on how the quality department was able to “save” \$4,777. The first variance that we compute is due to volume effects. The cost driver for the quality control process is the number of batches.

$$\begin{aligned}
 \text{Volume variance} &= [\text{planned number of batches} - \text{actual number of batches}] \\
 &\quad \times \text{planned liters of supplies per batch} \\
 &\quad \times \text{planned cost of one liter of supplies} \\
 &= [500 - 490] \times 1.50 \times \$80 = \underline{\$1,200} \text{ (F)}
 \end{aligned}$$

Part of the difference between planned and actual costs comes from a lower number of batches. If the quality department processed 10 batches less than expected, then we should expect cost savings of \$1,200.

The quality department also used fewer liters of supplies per batch than planned (1.40 liters vs. 1.50 liters). The impact of this difference upon profits is an efficiency variance:

$$\begin{aligned}
 \text{Efficiency variance} &= \text{actual number of batches} \\
 &\quad \times [\text{planned liters of supplies per batch} - \text{actual liters of supplies per batch}] \\
 &\quad \times \text{planned cost of one liter of supplies} \\
 &= 490 \times [1.50 - 1.40] \times \$80 = \underline{\$3,920} \text{ (F)}
 \end{aligned}$$

Finally, the quality department paid a higher price for supplies than expected. This difference created a spending variance:

$$\begin{aligned}
 \text{Spending variance} &= \text{actual number of batches} \\
 &\quad \times \text{actual liters of supplies per batch} \\
 &\quad \times [\text{planned cost of one unit of supplies} - \text{actual cost of one unit of supplies}] \\
 &= 490 \times 1.40 \times [\$80 - \$80.50] = \underline{\$343} \text{ (U)}
 \end{aligned}$$

The difference in activity-based costs between planned and actual performance in the quality department is explained by:

Volume variance	\$ 1,200	(F)	
Efficiency variance	3,920	(F)	
Spending variance	343	(U)	
Total	<u>\$ 4,777</u>	(F)	(\$60,000 - \$55,223 on Table 6-7)

These variances allow managers to further investigate the performance of the quality department. Managers may judge the efficiency variance to be somewhat high. Did the quality people find a way to save on supplies to perform quality control procedures? Or, did savings jeopardize the quality of Shade Tree Furniture products?

### Profit Planning at New Belgium Brewing Company

New Belgium Brewing Company, known for producing Fat Tire Beer since 1991, had over \$225 million in sales and 685 employees in 2015. The company was 100% employee-owned through an employee stock option plan. Each employee was responsible for participating in the profit planning process through a program called “open-book management.” Every new employee was taught how to read the financial statements, and the staff met monthly to discuss business results and variances. Based on this information, employees looked for ways to improve profitability. For example, employees noted that the cost of cardboard was increasing, so they worked together to eliminate the cardboard dividers in the 12-pack to reduce packaging costs.

Co-founder Kim Jordan explained, “The way it works here is that each employee knows precisely what it costs to make a barrel of beer, and how much their department contributes to that cost. Since they have a vested interest in the profits, they often meet to set performance targets to bring those costs down. They determine which costs trouble them—keep them up at night—and then they recommend how they can do better.”

Source: Kim Jordan, “A Different Way of Doing Business,” *U.S. Department of Labor*, September 9, 2015, <https://blog.dol.gov/2015/09/09/a-different-way-of-doing-business-new-belgium-brewing/>, accessed March 7, 2016; David Wann, “Brewing a Sustainable Industry,” *Terrain.org*, Summer, 2001, <http://www.terrain.org/articles/9/wann.htm>, accessed March 7, 2016.

## Summary of Operating Efficiency Variances

To summarize, then, we have computed the following variances related to operating efficiencies:

Raw materials	Efficiency variance	\$ 33,176 (U)
	Spending variance	<u>5,304 (F)</u>
Total variance for raw material		<u>\$ 27,872 (U)</u>
Labor	Efficiency variance	10,504 (F)
	Spending variance	0
Total variance for labor		<u>\$ 10,504 (F)</u>
Other manufacturing costs		
Quality department	Volume variance	1,200 (F)
	Efficiency variance	3,920 (F)
	Spending variance	343 (U)
Other manufacturing costs	Spending variance	<u>15,427 (U)</u>
Total variance other manufacturing costs		<u>\$ 10,650 (U)</u>
S&A expenses		16,500 (F)
Advertising expenses		4,700 (U)
Interest expense		<u>12,200 (U)</u>
Total variance for nonproduction costs		<u>\$ 400 (U)</u>
Total Operating Efficiency Variances		<u>\$ 28,418 (U)</u>

The objective of analyzing operating efficiency variances was to explain the difference between the volume-adjusted profit plan and the actual income statement (Table 6-5). At this point, we know that the difference of \$27,872 in raw materials is mainly due to the operation using more wood per piece of furniture than expected (\$33,176). We also know that the savings of \$10,504 in wages is related to higher productivity and not to changes in wages. The additional cost of \$10,650 identified in other manufacturing costs (Table 6-5) is driven by a spending variance of \$15,427. Finally, the changes in administrative, selling, advertising, and interest expenses are described as spending variances.

The picture that emerges from this analysis is mixed. The efficiency in using the raw materials was much lower than expected and this reduced profit by \$33,176. If this lower efficiency is due to using cheaper raw material (observe the favorable spending variance for raw material), the decision to use such material reduced efficiency more than it saved in raw material costs. Labor wages were lower than expected and people worked more efficiently than planned. Advertising expense was higher than expected; however sales were also higher and, if any relationship exists between these two numbers, then the extra advertising was worth it.

## Interpreting Strategic Profitability Variances

The analysis of profit performance due to competitive effectiveness and operating efficiencies is now complete. We can summarize the analysis in **Table 6-8**.

**Table 6-8** Shade Tree Furniture Strategic Profitability Analysis

Expected profit before taxes	\$	635,000	
Competitive Effectiveness Variances due to:			
Change in market size		32,196	(F)
Change in market share		55,804	(F)
Change in price		(44,950)	(U)
Change in product mix		23,000	(F)
Total competitive effectiveness		<u>66,050</u>	(F)
Expected profit before taxes (volume-adjusted)	\$	<u>701,050</u>	
Operating Efficiency Variances due to:			
Efficiency in raw materials		(33,176)	(U)
Spending in raw materials		5,304	(F)
Efficiency in wages		10,504	(F)
Spending in wages		-	(U)
Other manufacturing expenses		(10,650)	(U)
Administrative and selling expenses		16,500	(F)
Advertising expense		(4,700)	(U)
Interest expense		(12,200)	(U)
Total operating efficiencies		<u>(28,418)</u>	(U)
Actual profit before taxes	\$	<u><u>672,632</u></u>	

Source: Author.

We can see in Table 6-8 that the sum of the variances is exactly the difference between the original profit plan and the actual performance. This is not an accident. In our review of effectiveness and efficiency variances, we systematically examined each of the profit plan assumptions in sequence. This is illustrated in **Table 6-9**. The left column lists all the variables that were estimated for the original profit plan: market size, market share, selling price, average contribution, input quantities, input prices, and non-variable costs. Listed across the top of each column are the seven variances that can be computed by comparing the original profit plan with the actual profit as reported on the income statement. Four of these variances are the competitive effectiveness variances, which explain the difference between the original profit plan and the volume adjusted profit plan. The remaining three variances are the operating efficiency variances, which explain differences between the volume-adjusted profit plan and actual performance.

As we worked across Table 6-9 from left to right and calculated the seven variances identified at the top of each column, we “flipped” one profit plan variable at a time, turning an assumption in the original profit plan from “plan” to “actual.” By comparing the difference between plan and actual for that one variable—and holding all other variables constant—we were able to isolate the variance effects. Thus, for example, the market share variance (reading down the column) is based on the change in market share (*plan versus actual*) times *actual* market size and *planned* contribution (i.e., selling price, average contribution, input quantities, input prices, and non-variable costs all held at profit plan estimates). The next variance—sales price—holds market size and share at *actual* and computes the difference between actual and expected selling price (i.e., *plan vs actual*) again, contribution margin and other variables on the profit plan are maintained at the *plan* values to isolate the effect.

**Table 6-9 Strategic Profitability Analysis “Switches”**

ASSUMPTION IN ORIGINAL PROFIT PLAN	ORIGINAL PROFIT PLAN	COMPETITIVE EFFECTIVE VARIANCES				OPERATING EFFICIENCY VARIANCES				ACTUAL INCOME STATEMENT
		MARKET SIZE	MARKET SHARE	SALES PRICE	PRODUCT MIX	VOLUME ADJUSTED PROFIT PLAN	PRODUCTION EFFICIENCY	PRODUCTION SPENDING	NON-VARIABLE SPENDING	
Market Size	Plan	Plan vs Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual
Market Share	Plan	Plan	Plan vs Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual
Selling Price	Plan	Plan	Plan	Plan vs Actual	Actual	Actual	Actual	Actual	Actual	Actual
Average Contribution	Plan	Plan	Plan	Plan vs Actual	Actual	Actual	Actual	Actual	Actual	Actual
Input Quantities	Plan	Plan	Plan	Plan	Plan	Plan vs Actual	Actual	Actual	Actual	Actual
Input Prices	Plan	Plan	Plan	Plan	Plan	Plan	Plan vs Actual	Actual	Actual	Actual
Non-variable Costs	Plan	Plan	Plan	Plan	Plan	Plan	Plan	Actual	Plan vs Actual	Actual

**How to use this table:**

The top row indicates the different variances that can be estimated. For example, "market size" is a competitive effectiveness variance, whereas "production efficiency" variance is an operating efficiency variance. The left column lists assumptions in the original profit plan that can adopt two different values (like a "switch"): plan or actual. Changing the "switches" sequentially gives the different variances. To calculate a variance, choose the variance of interest from the top row and read down the column. The variance calculation focuses on the difference between "plan and actual" for one specific profit plan assumption and sets all other variables in the formula at either actual or plan according to the values shown in the table. For example, the product mix variance calculates the difference between planned contribution margin and actual contribution margin, while setting market size, market share, and selling price to "actual," and holding input quantities, input prices, and non-variable costs at their "planned" values.

Source: Author.

One by one, we systematically covered all the variances, moving from the original profit plan in the left column—where all variables were estimates and/or standards (identified as “plan” in Table 6-9)—to the actual income statement at the far right of the table, where all variables reflect actual performance outcomes.<sup>5</sup>

### *Searching for Explanations and Initiating Action Plans*

Variances themselves do little to explain the reasons why performance was above or below expectations. Knowing that input prices fell, or that market share increased, is only the first step. We still do not know why. Managers must investigate the reasons for these changes and initiate actions to either rectify problems or take advantage of unforeseen opportunities. We have identified some of the possible causes earlier, but we can recap as follows:

Shade Tree Furniture’s profits during 20X1 were \$37,632 better than planned. The company was favored by a larger market and a higher market share, but it suffered a “cost” of \$44,950 from reducing its prices. Did the company capture market share by reducing prices and putting its premium image at risk? The company sold a higher portion of benches, which have a bigger margin. Was this shift a one-time event in 20X1, or does it indicate a change in customers’ tastes? The most significant variance on our analysis of operational efficiencies is an unfavorable \$33,176 in raw material efficiency. Did the increase in sales volume affect production, or did the company hire low-skilled people to save on labor costs? Finally, administrative and selling expenses had a favorable variance. Was it caused by lower prices, or did the company manage its administrative systems differently?

## Using Strategic Profitability Analysis

Managers formally compare actual performance to profit plan performance at least once a year, and typically more often (e.g., quarterly or monthly). Effective managers *manage by exception*. In other words, they devote their scarce attention to understanding and acting upon variances that could imperil the strategy. Measures that are aligned with expectations receive little attention. By focusing on large or strategic variances, managers can quickly focus their attention on those issues that require follow-up action. Thus, strategic profitability analysis is an extremely important tool to increase return on management (ROM).

Managers use strategic profitability analyses for three purposes: strategic learning, early warning and corrective action, and performance evaluation.

### *Strategic Learning*

Variance analysis helps managers ask the right questions and calculate the costs or benefits of deviations from the norm. What was the effect on profits of higher input costs? What was the effect of a larger market share? Large deviations attract managers’ attention.

The comparison between expected and actual performance leads managers to review:

- assumptions and standards
- cause-and-effect relationships
- the validity of intended strategy
- the effectiveness and efficiency of strategy implementation

<sup>5</sup> John Shank and Neil Churchill introduced the genesis of this approach in their article “Variance Analysis: A Management-Oriented Approach,” *The Accounting Review* (Vol 5, 1977) 950-57.

Of course, the strategy of any particular business will influence which strategic profitability variances managers monitor. By way of example, **Table 6-10** summarizes possible choices for two competing strategies: differentiation and low cost.

**Table 6-10** Strategic Profitability Variances for Two Competing Strategies

	MARKET SIZE	MARKET SHARE	SALES PRICE	SALES MIX	PRODUCTION EFFICIENCY	PRODUCTION SPENDING	DISCRETIONARY SPENDING
Differentiation Strategy	✓	✓	✓	✓	●	●	●
Low-Cost, High-Volume Strategy	✓	✓	●	●	✓	✓	●

✓ = Primary strategic importance  
 ● = Important, but not strategic (i.e., unlikely to cause strategy to fail)

Source: Author.

Managers of businesses following a *differentiation* strategy, based on high value-added products or services, will ensure that sales price variances and sales mix variances are being computed routinely and monitored carefully; these are key measures of strategic effectiveness for their businesses. By contrast, managers of firms competing by *low price* and high volume must ensure that they have accurate data to routinely calculate market share, internal efficiencies, and input prices. Regardless of strategy, all firms in competitive markets must monitor their discretionary spending habits (spending variances) and ensure that they are accurately informed about changes in the size of the market in which they are competing.

Strategy evolves as managers learn from their actions and incorporate new information revealed by analysis and follow-up. Variance analysis facilitates this learning process.

### *Early Warning and Corrective Action*

Strategic profitability analysis also warns managers about possible events that may derail intended strategy. Remember how many interdependencies existed among the profit wheel, cash wheel, and ROE wheel in *Module 5: Building a Profit Plan*? If one of those variables fails, it could mean a major threat to the company.

Unforeseen events continually affect any company. Without an early warning system, unexpected events may only be noticed when major consequences are unavoidable. Comparing the profit plan with ongoing performance facilitates early diagnosis of the potential consequences of these unforeseen events. If a particular item deviates from the value in the profit plan, managers can take actions to bring the indicator back on track. Managers can react early to avoid unpleasant “surprises.” However, not all surprises are bad. Sometimes, early warning systems allow managers to take advantage of new opportunities in the market.

## Performance Evaluation

Profit plans can also be used for performance evaluation. The comparison between expected and actual performance serves to inform managers about the effort that subordinates have put into achieving the goals described in the profit plan. Setting objectives and evaluating performance against objectives motivates people to put substantial effort into achieving the strategy of the organization. We will cover this topic in depth in *Module 12: Aligning Performance Goals*.

For effective evaluation, managers must use strategic profitability analysis to get a true picture of the reasons for performance. Shade Tree's sales of \$4,450,050 exceeded the profit plan estimate of \$4,300,000 by a comfortable margin. Our initial reaction might be to praise the efforts of the sales manager and give him or her a positive performance evaluation. However, as we gather more information from our strategic profitability variances, we may temper or change our initial opinion. For example, as we saw earlier, sales have been favorably affected by growth in the overall market and possibly by favorable moves by competitors.

## Module Summary

The discussion in this chapter has focused solely on evaluation of performance using financial accounting data. This is appropriate for our analysis of profit plan performance. However, we need to be careful not to forget the importance of intangible resources and nonfinancial measures. These will be covered in depth in later modules.

The design of a profit plan is the first step in enabling managers to translate their strategy into action. During this process, managers are forced to make assumptions about the viability of the strategy and agree upon its details. Cause-and-effect relationships are hypothesized and strategies are communicated.

Successful strategy implementation requires managers to test their profit plan assumptions to validate strategy. The strategic profitability analysis tools described in this module provide that framework. Variance computations allow managers to understand the effectiveness and efficiency of strategy implementation.

Managers use strategic profitability analysis for three purposes:

- *Strategic learning*—Strategic profitability analysis allows managers to evaluate the adequacy of the intended strategy of the organization and the cause-effect assumptions that underlie the strategy.
- *Early warning and corrective action*—Analysis of strategic profitability gives managers either assurance that the strategy is on track or, alternatively, early warning that implementation is not proceeding according to plan.
- *Performance evaluation*—Strategic profitability analysis gives managers the tools to evaluate the success of individual managers in implementing strategy and the success of business units in creating value.

With strategic profitability data in hand, managers can redesign organizational processes or change the standards—even the strategy—to take advantage of changing developments in competitive markets and internal operations. Like all good performance measurement and control system tools, strategic profitability analysis should be used to enhance ROM, a topic that will be covered in depth in later modules.

## Terms Defined in Previous Modules

**Accountability** the outputs that a work unit is expected to produce and the performance standards that managers and employees of that unit are expected to meet. (*Module 4: Organizing for Performance*)

**Accounting systems** procedures and mechanisms to collect information about the transactions of a business. Account balances are ultimately summarized in financial statements such as balance sheets, income statements, and cash flow statements. (*Module 1: Managing Organizational Tensions*)

**Asset** a resource, owned or controlled by the entity, that will yield future economic benefits. Examples include plant, equipment, cash on hand, and inventory. (*Module 2: Building a Successful Strategy*)

**Assumptions** the starting point for any profit plan is a set of assumptions about the future. These assumptions describe the consensus among managers about how various markets—customer, supplier, and financial—will look in the future. (*Module 5: Building a Profit Plan*)

**Benchmark** a formal representation of performance expectations based on the demonstrated performance of an exemplary work unit or business. (*Module 3: Using Information for Performance Measurement and Control*)

**Budget** resource plans of any organizational unit that either generates or consumes resources. (*Module 5: Building a Profit Plan*)

**Business goals** the measurable aspirations that managers set for a business. Goals are determined by reference to business strategy. Goals may be financial—for example, to achieve 14% return on sales—or nonfinancial—such as to increase market share from 6% to 9%. (*Module 1: Managing Organizational Tensions*)

**Business strategy** how a company creates value for customers and differentiates itself from competitors in a defined product market. (*Module 1: Managing Organizational Tensions*)

**Cash wheel** a model of the operating cash flow through a business. Answers the question of whether the organization has enough cash to remain solvent throughout the year. (*Module 5: Building a Profit Plan*)

**Committed costs** expenses determined by previous management decisions and, therefore, not subject to discretion during the current profit planning period. (*Module 5: Building a Profit Plan*)

**Control** the process of using information to ensure that inputs, processes, and outputs are aligned to achieve organizational goals. (*Module 3: Using Information for Performance Measurement and Control*)

**Economies of scale** reduction in unit costs due to utilization of efficient, large-scale resources and high-volume processing. (*Module 4: Organizing for Performance*)

**Economies of scope** reduction in unit costs due to utilization of the same resources (e.g., distribution channels) across multiple products or activities to increase the throughput for a given fixed amount of that resource. (*Module 4: Organizing for Performance*)

**Feedback** return of variance information from the output of a process to the input or process stages so that adjustments can be made to maintain desired levels of performance or control the stability of a system. (*Module 3: Using Information for Performance Measurement and Control*)

**Goal** a formal aspiration that defines purpose or expected levels of achievement in implementing the business strategy. (*Module 2: Building a Successful Strategy*)

**Information** the communication or reception of intelligence or knowledge. It is the critical vehicle for profit planning, performance measurement, and management control. (*Module 3: Using Information for Performance Measurement and Control*)

**Intended strategy** planned strategy that managers attempt to implement in a specific product market based on analysis of competitive dynamics and current capabilities. (*Module 2: Building a Successful Strategy*)

**Non-variable costs** costs that do not vary directly with the level of sales. (*Module 5: Building a Profit Plan*)

**Performance measurement and control systems** the formal information-based routines and procedures managers use to maintain or alter patterns in organizational activities. (*Module 1: Managing Organizational Tensions*)

**Planning** the process of preparing an economic and strategic road map for a business. Planning provides a framework for setting aspirations through performance goals and ensuring an adequate level and mix of resources to achieve these goals. (*Module 3: Using Information for Performance Measurement and Control*)

**Product market** a defined competitive market for a specific product or category of products. (*Module 2: Building a Successful Strategy*)

**Profit** the residual economic value after interest expense and income taxes (both of which are nondiscretionary payments). Based on accounting assumptions, profit is the economic value that is available for distribution to the residual claimants—equity holders—or for reinvestment in the business. (*Module 3: Using Information for Performance Measurement and Control*)

**Profit plan** a summary of future financial inflows and outflows for a specified future accounting period. It is usually prepared in the familiar form of an income statement. (*Module 1: Managing Organizational Tensions*)

**Profit wheel** a model of the flow of operating profit through a business. Answers the question of whether the organization's strategy creates economic value. (*Module 5: Building a Profit Plan*)

**Profitability** the ratio of net income to sales. Profitability indicates how much profit was generated for each dollar of sales. (*Module 5: Building a Profit Plan*)

**Resource** a strength of the business embodied in the tangible or intangible assets that are tied semi-permanently to the firm. (*Module 2: Building a Successful Strategy*)

**Return on equity (ROE)** a ratio calculated as net income divided by shareholders' equity. (*Module 5: Building a Profit Plan*)

**ROE Wheel** a model of the flow of equity capital through a business. Answers the question of whether the organization creates enough value to attract the financial resources that it needs to invest in new assets. (*Module 5: Building a Profit Plan*)

**Span of accountability** the range of performance measures used to evaluate a manager's achievements. At a most basic level, span of accountability defines the financial statement items for which a manager is accountable. (*Module 4: Organizing for Performance*)

**SWOT** an acronym for strengths, weaknesses, opportunities, and threats. A SWOT analysis determines the potential for effective strategy based on an assessment of competitive dynamics and the resources and capabilities of a business. (*Module 2: Building a Successful Strategy*)

**Variable costs** costs that vary proportionally with the level of sales or production outputs. (*Module 5: Building a Profit Plan*)

**Variance information** the difference between actual outputs and preset standards of performance. Used as feedback for corrective action by managers. (*Module 3: Using Information for Performance Measurement and Control*)

### Suggested Study Cases

To enhance your understanding of the ideas covered in this module, we recommend that you study one or more of the following Harvard Business School Cases. These cases are available from Harvard Business School Publishing at [www.hbsp.harvard.edu](http://www.hbsp.harvard.edu).

- Compagnie du Froid, S.A. (HBS No. 197-085)
- Software Associates (HBS No. 101-038)
- Polysar Ltd. (HBS No. 187-098)
- Luotang Power: Variances Explained (HBS No. 913-533)
- Danshui Plant No. 2 (HBS No. 913-525)
- Waltham Motors Division (HBS No. 184-169)
- Mile High Cycles (HBS No. 191-056)