

Required:

- Prepare a table that reports how the 9,225 CHF purchase cost of VBN032 is distributed across S&Y's manufacturing accounts after VBN032 has been used in the three jobs.
- Based on your analysis in part (a), what observations would you offer to management?

P 12-9: Healing Touch

Healing Touch manufactures massage chairs with the following standard cost structure:

Standard Cost Sheet: Massage Chair

Metal tubing	6 meters @ \$3	\$ 18.00
Leather	2 square meters @ \$7	14.00
Padding	3 kilograms @ \$4	12.00
Direct labor	4 hours @ \$15	60.00
Total standard cost		<u>\$104.00</u>

During the month 500 chairs are manufactured and the following costs incurred:

Actual Costs Incurred for the Month: Massage Chair

Metal tubing	3,100 meters	\$ 9,455
Leather	1,100 square meters	7,722
Padding	1,600 kilograms	6,560
Direct labor	1,800 hours	27,270
Total cost		<u>\$51,007</u>

Required:

- Calculate all materials and labor variances (including price, quantity, wage rate, and labor efficiency variances).
- Write a short report summarizing and analyzing the manufacturing operations for the month.

P 12-10: Marian Health Care System

Marian Health Care is a large hospital system outside Chicago that offers both hospital (inpatient) and clinic (outpatient) services. It has a centralized admissions office that admits and registers clients, some of whom are seeking inpatient hospital services and others outpatient services. Marian uses a standard cost system to control its labor costs. The standard labor time to admit an inpatient is 15 minutes. Outpatient admissions have a standard labor time of 9 minutes. The standard wage rate for admissions agents is \$14.50 per hour. During the last week, the admissions office admitted 820 inpatients and 2,210 outpatients. Actual hours worked by the admissions agents last week were 540 hours, and their total wages paid were \$8,235.

Required:

- Prepare a financial report that summarizes the operating performance (including the efficiency) of the admissions office for last week.
- Based on the financial report you prepared in (a), write a short memo summarizing your findings and conclusions from this report.

P 12-11: Zinc Faucets

The standard cost sheet calls for 80 pounds of zinc per batch of 70 faucets. Zinc has a standard price of \$5.10 per pound. One thousand pounds of zinc are purchased for \$5,530. Ten batches of the faucets

are produced, and 840 pounds of zinc are used. There was no beginning zinc inventory. All variances are calculated as soon as possible.

Required:

Prepare a table that decomposes the total purchase price of the zinc (\$5,530) into its various components as calculated by the standard cost system.

P 12-12: Johnson Quote

More research is needed to explain the tenacity with which businesses cling to accounting performance information. More empirical research into the consequences of managing with accounting information is also in order. But there already is much evidence that businesses impair their competitiveness and profitability by managing with the information found in standard cost variances, flexible budgets, product cost, return on investment, and other financial measures. Less well understood is why "world-class" manufacturing companies persist in using accounting-based financial performance measures.

Required:

Critically evaluate this quotation.

SOURCE: H T Johnson, "Performance Measurement for Competitive Excellence," *Measures for Manufacturing Excellence*, ed R Kaplan (Boston: Harvard Business School Press, 1990), p. 84.

P 12-13: Labor Efficiency Ratio

A number of companies use the following ratio to measure operating efficiency:

$$\frac{\text{Earned direct labor dollars}}{\text{Actual direct labor dollars}}$$

Earned direct labor dollars is the number of units produced times the standard direct labor dollars per hour. For example, the machine department produced four jobs today:

<i>Job Number</i>	<i>Number of Units Produced</i>	<i>Standard Labor Dollars per Unit</i>	<i>Earned Direct Labor Dollars</i>
101	100	\$3	\$ 300
102	200	2	400
103	150	1	150
104	100	2	200
Total earned direct labor dollars			<u>\$1,050</u>

Actual direct labor dollars for today total \$1,350.

$$\frac{\text{Earned direct labor dollars}}{\text{Actual direct labor dollars}} = \frac{\$1,050}{\$1,350} = 0.777$$

The higher the ratio, the more output per actual direct labor dollar. Operating managers are rewarded for high ratios.

Required:

Discuss the advantages and disadvantages of using this ratio to measure and reward the performance of factory managers.

12-14: Howard Binding

Howard Binding manufactures two types of notebooks: large and small. The large and small notebooks are made of the same cloth cover (direct materials) but in different quantities. The standard cost sheet for each follows.

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continued

	<i>Large</i>	<i>Small</i>
Cloth covering	3 feet @ \$0.30/foot	2 feet @ \$0.30/foot
Ring holder	1 @ \$0.12 each	1 @ \$0.12 each
Direct labor	0.15 hour @ \$6.00/hour	0.10 hour @ \$6.00/hour

At the beginning of the month, the purchasing department bought 35,000 feet of cloth for \$10,850. There were no beginning inventories. During the month, 5,000 large and 8,000 small notebooks were produced. The production records for the month indicate the following actual production quantities:

	<i>Large</i>	<i>Small</i>
Cloth covering	16,000 feet	15,500 feet
Ring holders	5,000 @ \$0.12 each	8,000 @ \$0.12 each
Direct labor	800 hours @ \$5.80/hour	780 hours @ \$6.10/hour

Required:

- Calculate the cloth covering price variance (i) at purchase and (ii) when the materials are actually used.
- Discuss why the two price variances calculated in (a) differ. Which is superior (and why)?

P 12-15: Fast Fax

Sue Young sells fax machines for Fast Fax. There are two fax machines: model 700 and model 800. At the beginning of the month, Sue's sales budget is as follows:

	<i>Model 700</i>	<i>Model 800</i>
Budgeted contribution margin per unit	\$ 200	\$ 300
Forecasted sales in units	100	100
Budgeted margins	<u>\$20,000</u>	<u>\$30,000</u>

At the end of the month, the number of units sold and the actual contribution margins are as follows:

	<i>Model 700</i>	<i>Model 800</i>
Actual contribution margin	\$ 150	\$ 350
Number of units sold	150	80
Actual contribution	<u>\$22,500</u>	<u>\$28,000</u>

Contribution margins have changed during the month because the fax machines are imported and foreign exchange rates have changed.

Required:

Design a performance evaluation report that analyzes Sue Young's performance for the month.

Leather Quality	Leather Price per Square Foot	Square Feet of Leather Required for 1 Strap*	Minutes of Labor Required to Cut Leather for 1 Strap*
Very high	\$1.4375	8	5
High	1.0000	9	8
Medium	0.7700	10	11
Low	0.5909	11	12
Very low	0.4583	12	15

* This strap requires 6 square feet of unblemished leather.

Skilled leather craftsmen who cut the leather into strips prior to braiding and stitching are expected to cost \$30 per hour (salary, benefits, and payroll taxes) in the current fiscal year. Cibo's goal is to choose the leather quality that maximizes profits. The firm uses a standard cost system.

Required:

- Calculate the current fiscal year's standard quantity and standard price for the leather used in the shoulder strap.
- Calculate the current fiscal year's standard labor minutes and standard wage rate per minute.
- Seven months into the current fiscal year, a large glut of cattle comes onto the market, drastically lowering the cost of all grades of leather. The following table details the new prices for the various leather qualities:

Leather Quality	Leather Price per Square Foot
Very high	\$1.1500
High	0.8000
Medium	0.6930
Low	0.5318
Very low	0.4125

P 12-20:

Suppose these prices are expected to persist not only for the remaining five months of the current fiscal year, but also for the next fiscal year. Calculate next fiscal year's standard quantity and standard price for leather used in shoulder straps, and the standard minutes to cut the leather.

- Do you expect Cibo to revise the standard quantity and standard price of the shoulder strap leather in the current fiscal year? Explain why or why not.
- Suppose that Cibo decides that the most efficient (profit-maximizing) leather choice is to use shoulder strap leather of very low quality, whereby 12 square feet of leather are required for each strap which has 6 square feet of leather in it. (The expected cost of this quality of leather is \$0.4583 per square foot.) How does the standard cost system account for the 6 square feet of leather scrapped for every shoulder strap?

P 12-19: Software Associates

Software Associates (SA) is a computer software consulting firm that specializes in designing and implementing integrated marketing database warehousing programs. Humphrey Catalog is advertising. In preparing its bid for Humphrey, SA estimates its total labor cost for this project to be \$225,000, broken down as follows:

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continued

	Budgeted Hours	Budgeted Wage	Budgeted Cost
Partner	100	\$175	\$ 17,500
Associate	300	120	36,000
Senior analyst	600	90	54,000
Analyst	1,000	40	40,000
Programmer	3,000	25	75,000
Total			<u>\$222,500</u>

After the completion of the Humphrey contract, the following data are reported:

	Actual Hours	Actual Cost
Partner	90	\$ 15,750
Associate	280	35,000
Senior analyst	750	63,750
Analyst	1,400	49,000
Programmer	3,600	82,800
Total		<u>\$246,300</u>

Required:

- Prepare a performance report for the Humphrey Catalog project.
- Offer a plausible explanation for SA's performance on the Humphrey project.

Starling Coatings

Starling Coatings produces weatherproofing coatings that protect metal from oxidation. One of Starling's patented coatings, zurtan, is composed of two inputs, magna45 and zelon. While both inputs are required, they can be substituted for each other. The following table describes how many gallons of magna45 and zelon are required to produce a single batch of zurtan.

**Gallons of Magna45 and
Zelon Needed to Make
One Batch of Zurtan**

Magna45	Zelon
1	30.00
2	15.00
3	10.00
4	7.50
5	6.00
6	5.00
7	4.30
8	3.75
9	3.33
10	3.00

In other words, one batch of zurtan can be produced using one gallon of magna45 and 30 gallons of zelon, or 2 gallons of magna45 and 15 gallons of zelon, or 3 gallons of magna45 and 10 gallons of zelon, and so forth. Starling has a long-term contract with a defense contractor to supply a fixed quantity of zurtan at a fixed price, neither of which can be altered. The price of zurtan is far above its manufacturing cost. Starling uses a standard cost system and at the beginning of the year establishes the standard quantities of the various raw materials used to manufacture its coatings. Before Starling's fiscal year begins, management estimates that magna45 will have a standard price of \$4 per gallon and zelon will have a standard price of \$5 per gallon.

The manager in charge of producing zurtan has decision-making authority to alter the quantities of magna45 and zelon used to produce zurtan and is evaluated and rewarded based on two criteria: meeting delivery schedules of zurtan (including quantities and quality specifications) and materials quantity variances of magna45 and zelon.

Required:

- Before Starling's fiscal year begins, determine the cost-minimizing (standard) quantities of magna45 and zelon per batch of zurtan.
- Soon after the fiscal year begins, the price of magna45 falls to \$3 per gallon and the price of zelon rises to \$7 per gallon. What are the efficient (cost-minimizing) quantities of magna45 and zelon that Starling should use to produce a batch of zurtan?
- Starling has a policy of never changing standards during the year. Standard prices and standard quantities are changed only before the next fiscal year begins. What quantities of magna45 and zelon will the zurtan production manager choose after the price of magna45 falls to \$3 per gallon and zelon rises to \$7 per gallon?
- Why doesn't Starling its policy of never changing standards after the fiscal year begins?

P 12-21: Seville Techtronics

Seville Techtronics, a manufacturer of subcomponents for a large power supplier, uses a standard cost system. One particular product, M-303, called for a silver-iridium compound that Seville did not have in inventory. Seville purchased the compound and used a portion of it in producing M-303. Upon purchase, the compound was recorded in the raw materials inventory at standard price. The following data summarize the disposition of the silver-iridium compound:

Silver-iridium price variance	\$110,000 U
Silver-iridium quantity variance	\$60,000 F
Silver-iridium charged to work-in-process	\$2,850,000
Actual pounds of silver-iridium used in producing M-303	9,300 pounds
Actual cost of silver-iridium purchased	\$3,410,000

Required:

- Calculate the standard quantity (in pounds) of the silver-iridium compound that Seville should have used in producing M-303.
- Calculate the number of pounds of the silver-iridium compound initially purchased.
- Calculate the standard price per pound of the silver-iridium compound.
- Calculate the actual price paid per pound of the silver-iridium compound.

P 12-22: Trevino Golf Balls

Golf ball manufacturer Trevino is generally regarded as the industry leader. It commands a 40 percent market share in its targeted channels of distribution and reported net profits of \$31.5 million on sales of \$171 million in the last fiscal year.

Cases

Case 12-1

12-22
Continued

A recent trend in the golf ball industry is the movement toward a 15-ball dozen (a so-called value pack). This value-oriented offering provides the consumer with 15 golf balls for the price of a standard (12-ball) dozen. Using one of its less popular, lower-quality golf ball brands, Trevino entered this market in a temporary, special promotion context. The entry was primarily in response to competitive pressures from smaller, lower-quality ball manufacturers who were flooding the market with value packs.

Initially, Trevino encountered several start-up problems relating to the unorthodox 15-ball packaging. Since the packaging machinery had been tooled to accommodate 12-ball dozens, it could not be converted to run packaging for 15-ball dozens. These 15-ball value packs had to be packed by hand. Nonetheless, as the market developed, the value pack became a permanent product offering. Trevino continued to offer its higher-quality, more popular brands exclusively in a 12-ball dozen configuration.

Trevino uses a standard cost system based on cost per 12-ball unit. When the value pack was introduced, it was costed at the 12-ball standard. As a result, the standard cost for the value pack includes only the costs associated with the manufacturing of 12 balls. The cost of the remaining three balls is written off to a value-pack sales promotion account when the balls are manufactured and is treated as a marketing expense for that period. Trevino calculates this written-off amount by taking the standard cost per golf ball (12-ball standard divided by 12) and multiplying it by three.

The table below, drawn from Trevino's most recent business plan, displays how the standard cost of the value pack did not increase to account for the additional three balls.

Product	Units*	Trade List Price	Standard Manufacturing Cost	Gross Margin \$	Gross Margin %
Standard dozen (12 balls)	2 million	\$17.00	\$6.75	\$10.25	60.3%
Value pack (15 balls)	1 million	17.00	6.75	10.25	60.3

*A unit is considered a "dozen" package regardless of the actual number of balls in the package.

The senior product manager, defending the use of sales incentives to increase market share in the value-pack market, commented that increasing value-pack sales was appropriate for a number of reasons, including the fact that "we're still making a 60 percent margin on that line, as reflected in the business plan." When asked about the value-pack standard cost, a senior financial officer commented, "Look, we're still accounting for the cost, but just doing it somewhere else, so the bottom line isn't affected. Since we've given marketing a bigger budget to account for the balls, everyone is happy."

Trevino uses standard units as a means for allocating certain categories of overhead in a FIFO inventory system and uses standard gross margin as a component of the manufacturing group's compensation package. Marketing is treated as a cost center and marketing costs are not traced to the product.

Required:

- What effect is the accounting treatment of the value pack having on Trevino?
- Why do you think the company implemented such an accounting treatment?
- Should the accounting treatment of the value pack be changed?

SOURCE: D Arvan, A Thomas, D Titus, and C Webber.

Cases

Case 12-1: Domingo Cigars

To generate needed foreign exchange, the Cuban government entered into a joint venture with Domingo Cigars of Spain. The joint venture manufactures Domingo Cigars in Cuba using Cuban