

Homework #4_Set #4: Sales Variances

1. Why is customer-profitability analysis an important topic for managers?

Customer-profitability analysis (CPA) is vital for managers as it informs decisions on resource allocation, pricing, and marketing strategies. By identifying which customers are most profitable, managers can optimize resource use, make informed pricing choices, tailor marketing campaigns, and prioritize retention efforts for high-value clients. Furthermore, CPA provides insights into cost control and can influence broader strategic decisions, ensuring that efforts are directed towards maximizing returns and efficiency.

2. How can managers gain insight into the causes of a sales-volume variance by subdividing the components of this variance?

Sales-volume variance can be dissected into two main components to provide managers with clearer insights: sales mix variance and sales quantity variance. Sales mix variance assesses the difference between the actual and expected sales of different products, revealing shifts in customer preferences. Sales quantity variance, on the other hand, compares the actual total units sold to expected sales, highlighting overall market demand fluctuations. By analyzing these components, managers can pinpoint specific reasons for sales deviations, aiding in better decision-making.

3. Explain why a favorable sales-quantity variance occurs.

A favorable sales-quantity variance occurs when the actual number of units sold exceeds the expected or budgeted number of units. This favorable deviation signifies that the company was able to sell more products than anticipated, which can result from factors such as increased market demand, effective marketing strategies, or superior product quality. Such a variance indicates a positive performance in sales volume, contributing to higher revenues and potentially better profitability.

4. How can the sales-quantity variance be decomposed further?

The sales-quantity variance can be further decomposed into two main components: the market-share variance and the market-size variance. The market-share variance measures the impact of the company's ability to capture a larger or smaller share of the market than anticipated, while the market-size variance assesses the effect of the overall market size growing or shrinking compared to expectations. By subdividing the sales-quantity variance, managers can discern whether variations arose from internal factors (like marketing effectiveness) or external shifts in the market as a whole.

5. Miami Infonautics, Inc., produces handheld electronic devices. Miami Infonautics markets three different models: PalmPro is a souped-up version for the executive on the go, Palm CE is a consumer-oriented version, and PalmKid is a stripped-down version for the young adult market. You are Miami Infonautics' senior vice president of marketing. The CEO has discovered that the total contribution margin came in lower than budgeted, and it is your responsibility to explain to him why actual results are different from the budget. Budgeted and actual operating data for the company's third quarter are as follows:

Budgeted Operating Data, Third Quarter

Volume		Variable	Contribution	Sales
<u>units</u>	<u>Selling Price</u>	<u>Cost per unit</u>	<u>Margin per unit</u>	<u>in</u>
PalmPro	\$373	\$181	\$192	10,215
PalmCE	\$270	\$100	\$170	38,817
PalmKid	\$140	\$80	\$60	<u>53,118</u>

102,150

Actual Operating Data, Third Quarter

Volume		Variable	Contribution	Sales
<u>units</u>	<u>Selling Price</u>	<u>Cost per unit</u>	<u>Margin per unit</u>	<u>in</u>
PalmPro	\$370	\$175	\$195	12,360
PalmCE	\$280	\$96	\$184	42,230
PalmKid	\$110	\$76	\$34	<u>48,410</u>

103,000

Compute the actual and budgeted contribution margins in dollars for each product and in total for the third quarter.

Actual Contribution

Margin

Product	Actual Selling Price	Actual Variable cost/unit	Actual Contribution margin/cost	Sales volume	Actual Contribution	Actual Contribution %
Palm Pro	370	175	195	12,360	2410200	20%
Palm CE	280	96	184	42,230	7770320	66%
Palm Kid	110	76	34	48,410	1645940	14%
Total	760	347	413	103000	11826460	100%

Budgeted Contribution

Margin

Product	Budgeted Selling Price	Budgeted Variable cost/unit	Budgeted Contribution margin/cost	Sales volume	Budgeted Contribution	Budgeted Contribution %
Palm Pro	373	181	192	10,215	1961280	17%
Palm CE	270	100	170	38,817	6598890	56%
Palm Kid	140	80	60	53,118	3187080	27%
Total	783	361	422	102150	11747250	100%

Actual average contribution margin per unit is **\$114.82**.

Budgeted average contribution margin per unit is **\$115**.

Calculate the actual and budgeted sales mixes for the three products for the third quarter.

Actual Sales Mix

Product	Actual Sales volume	Actual Sales Mix
Palm Pro	12,360	12%
Palm CE	42,230	41%
Palm Kid	48,410	47%
Total	103000	100%

**Budgeted Sales
Mix**

Product	Budgeted Sales volume	Budgeted Sales Mix
Palm Pro	10,215	10%
Palm CE	38,817	38%
Palm Kid	53,118	52%
Total	102150	100%

Calculate total sales-volume, sales-mix, and sales-quantity variances for the third quarter.
Calculate all variances in terms of contribution margins.

Sales-Volume Variance						
Product	Actual Sales volume	Budgeted Sales volume	Budgeted Contribution margin/cost	Sales Volume Variance		
Palm Pro	12,360	10,215	192	411840	F	
Palm CE	42,230	38,817	170	580210	F	
Palm Kid	48,410	53,118	60	-282480	U	
Total	103000	102150	422	709570	F	
Sales-Mix Variance						
Product	Actual Units of all products sold	Actual Sales Mix	Budgeted Sales Mix	Budgeted Contribution margin/cost	Sales Mix Variance	
Palm Pro	103000	0.12	0.1	192	395520	F
Palm CE	103000	0.41	0.38	170	525300	F
Palm Kid	103000	0.47	0.52	60	-309000	U
Total					611820	F

Sales-Quantity

Variance

Product	Actual Units of all products sold	Budgeted Units of all products sold	Budgeted Sales Mix	Budgeted Contribution margin/cost	Sales Quantity Variance	
Palm Pro	103000	102150	0.1	192	16320	F
Palm CE	103000	102150	0.38	170	54910	F
Palm Kid	103000	102150	0.52	60	26520	F
Total					97750	F

Given that your CEO gets very angry if actual results differ from budget, you want to be well prepared for this meeting. In order to prepare, write a paragraph or two comparing actual results to budgeted amounts.

1. The difference between actual and budgeted quantities, when multiplied by the budgeted contribution margins, resulted in a favorable difference of \$709,570 (\$12,456,820 - \$11,747,250). The contribution margins from PalmPro and PalmCE exceeded budgeted amounts, whereas PalmKid's was below its budgeted margin.
2. In percentage terms, PalmPro's contribution margin was 19% ($\$2,373,120 \div \$12,456,820$) of the actual sales, compared to a budgeted 17% ($\$1,961,280 \div \$11,747,250$). PalmCE's contribution was 58% ($\$7,179,100 \div \$12,456,820$) against a budgeted 56% ($\$6,598,890 \div \$11,747,250$), while PalmKid's was 23% ($\$2,904,600 \div \$12,456,820$) versus its budgeted 27% ($\$3,187,080 \div \$11,747,250$).
3. In units, PalmKid made up 47% of the actual sales mix, less than the budgeted 52%. PalmPro accounted for 12% of the actual mix versus its budgeted 10%, and PalmCE was at 41%, surpassing its budgeted 38%.
4. Analysis for PalmPro and PalmCE reveals a favorable sales-mix variance and a favorable sales-quantity variance, leading to a positive sales-volume variance.

5. PalmKid's share in the actual sales mix (47%) was below its budgeted share (52%), resulting in an unfavorable sales-mix variance. While PalmKid had a favorable sales quantity variance, its overall sales volume variance was negative.
6. Overall, there was a positive total sales-volume variance. However, due to PalmKid's sizable decline in actual contribution margin per unit compared to its budgeted amount and a decrease in the actual number of units sold, the total contribution margin was below the budgeted figure, despite the higher actual contribution margins and unit sales from PalmPro and PalmCE.
7. Other elements to consider include PalmKid's price drop from a budgeted \$140 to an actual \$110. Although variable costs decreased, they didn't drop substantially, suggesting a marketing strategy that may not have been as effective as planned.

6. (continuation of #5)

Miami Infonautics' senior vice president of marketing prepared her budget at the beginning of the third quarter assuming a 25% market share based on total sales. Foolinstead Research estimated that the total handheld electronic device market in which Miami Infonautics competes would reach sales of 408,600 units worldwide in the third quarter. However, actual sales in the third quarter were 515,000 units.

Calculate the market-share and market-size variances for Miami Infonautics in the third quarter. Calculate all variances in terms of contribution margins.

Market Share

	Actual	Budgeted
Worldwide	515,000	408,600
Miami Infonautics	103,000	102,150
Market Share	20%	25%

Market Share

Variance

Product	Actual Market Size	Actual Market Share	Budgeted Sales Mix	Budgeted Contribution margin/cost	No Name #1	Budgeted Market Share	No Name #2
Palm Pro	515,000	0.2	0.1	192	1977600	0.25	2472000
Palm CE	515,000	0.2	0.38	170	6653800	0.25	8317250
Palm Kid	515,000	0.2	0.52	60	3213600	0.25	4017000
Total					11845000		14806250
Market Share Variance						2961250	U

Market Size**Variance**

Product	No Name #2	Budgeted Market Size	Budgeted Market Share	Budgeted Sales Mix	Budgeted Contribution margin/cost	Static Budget
Palm Pro	2472000	408,600	0.25	0.1	192	1961280
Palm CE	8317250	408,600	0.25	0.38	170	6598890
Palm Kid	4017000	408,600	0.25	0.52	60	3187080
Total	14806250					11747250
Market Size Variance		-3059000	F			
Sales Quantity Variance		97750	F			

Explain what happened based on the market-share and market-size variances.

The actual market size, at 515,000 units, surpassed the budgeted 408,600 units, resulting in a positive market-size variance. Though Miami Infonautics' market share dropped from 25% to 20%, the significant positive market-size variance more than offset the negative market-share variance. Consequently, the overall sales-quantity variance was favorable.

7. The Robin's Basket operates a chain of Italian gelato stores. Although the Robin's Basket charges customers the same price for all flavors, production costs vary, depending on the type of ingredients. Budgeted and actual operating data of its Washington, D.C. store for August are as follows (the Robin's Basket focuses on contribution margin in its variance analysis):

Budgeted for August

	Selling Price	Variable	Contribution	Sales
Volume				
	<u>per pint</u>	<u>Cost per pint</u>	<u>Margin per pints</u>	<u>in</u>
<u>pints</u>				
Mint Chocolate Chip	\$9.00	\$4.80	\$4.20	
35,000				
Vanilla	\$9.00	\$3.20	\$5.80	
45,000				
Rum Raisin	\$9.00	\$5.00	\$4.00	<u>20,000</u>
100,000				

Actual for August

	Selling Price	Variable	Contribution	Sales
Volume				
	<u>per pint</u>	<u>Cost per pint</u>	<u>Margin per pints</u>	<u>in</u>
<u>pints</u>				
Mint Chocolate Chip	\$9.00	\$4.60	\$4.40	
33,750				
Vanilla	\$9.00	\$3.25	\$5.75	
56,250				
Rum Raisin	\$9.00	\$5.15	\$3.85	<u>22,500</u>
112,500				

Actual Contribution Margin

Product	Actual Selling Price	Actual Variable cost/pint	Actual Contribution margin/pint	Actual Sales volume	Actual Contribution	Actual Contribution %
Mint Choc Chip	9	4.6	4.4	33,750	148500	27%
Vanilla	9	3.25	5.75	56,250	323437.5	58%
Rum Raisin	9	5.15	3.85	22,500	86625	16%
Total	27	13	14	112500	558563	100%

Budgeted Contribution Margin

Product	Budgeted Selling Price	Budgeted Variable cost/pint	Budgeted Contribution margin/pint	Budgeted Sales volume	Budgeted Contribution	Budgeted Contribution %
Mint Choc Chip	9	4.8	4.2	35,000	147000	30%
Vanilla	9	3.2	5.8	45,000	261000	53%
Rum Raisin	9	5	4	20,000	80000	16%
Total	27	13	14	100000	488000	100%

Actual Sales Mix

Product	Actual Sales volume	Actual Sales Mix
Mint Choc Chip	33,750	30%
Vanilla	56,250	50%
Rum Raisin	22,500	20%
Total	112500	100%

Budgeted Sales Mix

Product	Budgeted Sales volume	Budgeted Sales Mix
Mint Choc Chip	35,000	35%
Vanilla	45,000	45%
Rum Raisin	20,000	20%
Total	100000	100%

Compute the total sales-volume variance for August.

Sales-Volume

Variance

Product	Actual Sales volume	Budgeted Sales volume	Budgeted Contribution margin/cost	Sales Volume Variance	
Mint Choc Chip	33,750	35,000	4.2	-5250	U
Vanilla	56,250	45,000	5.8	65250	F
Rum Raisin	22,500	20,000	4	10000	F
Total	112500	100000	14	70,000	F

Compute the total sales-mix variance for August.

Sales-Mix Variance

Product	Actual Units of all products sold	Actual Sales Mix	Budgeted Sales Mix	Budgeted Contribution margin/cost	Sales Mix Variance	
Mint Choc Chip	112,500	0.3	0.35	4.2	-23625	U
Vanilla	112,500	0.5	0.45	5.8	32625	F
Rum Raisin	112,500	0.2	0.2	4	0	
Total					9000	F

Compute the total sales-quantity variance for August.

**Sales-Quantity
Variance**

Product	Actual Units of all products sold	Budgeted Units of all products sold	Budgeted Sales Mix	Budgeted Contribution margin/cost	Sales Quantity Variance	
Mint Choc Chip	112,500	100000	0.35	4.2	18375	F
Vanilla	112,500	100000	0.45	5.8	32625	F
Rum Raisin	112,500	100000	0.2	4	10000	F
Total					61000	F

Comment on your results in requirements 1, 2, and 3.

The Robin's Basket registered fewer sales of the mint chocolate chip gelato than budgeted, leading to a negative sales-mix variance for this flavor. However, the sales of the vanilla gelato, with its higher budgeted contribution margin, exceeded the budgeted mix, yielding a positive sales-mix variance that compensated for the chocolate chip gelato's shortfall. The sales mix for the rum raisin gelato remained consistent at 20%, producing no sales-mix variance.

Consequently, The Robin's Basket achieved an overall positive sales mix variance. This, combined with a positive total sales-quantity variance, culminated in a favorable total sales-volume variance.