Standard Costing and Variance Analysis

Budgeting is essential to the planning process. Control, however, is arguably more important. The objective of "control" is to interpret the variances between actual & standard costs/revenues so that more accurate & descriptive budgets can be prepared. This chapter explains these variances. Three variances can be identified first and the other variances simply break these categories into their finer subparts.

Flexible Budget: highlights the costs & revenues that <u>should have</u> been incurred for a given actual level of activity using the standard prices & quantities.

- Prepared once the actual results are known
- Facilitates fair comparison of budgeted to actual results.

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Example

Verona Pizza is a small neighborhood pizzeria that has a small area for in-store dining as well offering takeout and free home delivery services. The pizzeria's owner has determined that the shop has two major cost drivers—the number of pizzas sold and the number of deliveries made. Data concerning the pizzeria's costs appear below:

	Fixed Cost per Month	Cost per Pizza	Cost per Delivery
Pizza ingredients		$4.20	
Kitchen staff	$5,870		
Utilities	$590	$0.10	
Delivery person			$2.90
Delivery vehicle	$610		$1.30
Equipment depreciation	$384		
Rent	$1,790		
Miscellaneous	$710	$0.05	

In October, the pizzeria budgeted for 1,500 pizzas at an average selling price of $13.00 per pizza and for 200 deliveries.

Data concerning the pizzeria's operations in October appear below:

	Actual Results
Pizzas	1,600
Deliveries	180
Revenue	$21,340
Pizza ingredients	$6,850
Kitchen staff	$5,810
Utilities	$875
Delivery person	$522
Delivery vehicle	$982
Equipment depreciation	$384
Rent	$1,790
Miscellaneous	$778

Required:

1. Prepare a flexible budget performance report that shows both activity variances and revenue and spending variances for the pizzeria for October.
2. Explain the activity variances.

Solution

Verona's Pizzeria
Flexible Budget Report
For October

①

	Revenue Cost Formulas	Planning Budget	
# pizzas sold (Q)		Q = 1,550	
# deliveries made (D)		D = 200	
Revenues	$13Q	19,500	(13 x 1500)
Expenses:			
Pizza Ingredients	$4.2Q	6,300	(4.2 x 1500)
Kitchen Staff	5,870	5,870	
Utilities	590 + 0.1Q	740	(590 + 0.1 x 1500)
Delivery Person	$2.9D	580	(2.9 x 200)
Delivery Vehicle	610 + 1.3D	870	
Depreciation	384	384	
Rent	1,790	1,790	
Miscellaneous	710 + 0.05Q	785	
Total Expenses		17,319	
Net Income		$2,181	

	Activity Variances		Flexible Budget Q = 1,600, D = 180	
Revenues	(F) 1,300	(20,800 - 19,500)	20,800	(13 x 1600)
Expenses:				
Pizza Ingredients	420 (U)		6,720	(4.2 x 1600)
Kitchen Staff	–		5,870	
Utilities	10 (U)		750	(590 + 0.1 x 1600)
Delivery Person	58 (F)		522	(2.9 x 180)
Delivery Vehicle	26 (F)		844	(610 + 1.3 x 180)
Depreciation	–		384	
Rent	–		1,790	
Miscellaneous	5 (U)		790	
Total Expenses	351 (U)		17,670	
Net Income	949 (F)		$3,130	

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	Revenue / Spending Variances	Actual Results
Revenues	540 (F)	21,340
Expenses:		
Pizza Ingredients	130 (U)	6,850
Kitchen Staff	60 (F)	5,810
Utilities	125 (U)	875
Delivery Person	–	522
Delivery Vehicle	138 (U)	982
Depreciation	–	384
Rent	–	1,790
Miscellaneous	12 (F)	778
Total Expenses	321 (U)	17,991
Net Income	219 (F)	3,349

② Activity variances are the difference btw. what should have been and what you planned for. They represent errors in budgeting due to mis-estimating the level of the cost driver(s).

Total variances are the difference btw. what (actual) was and what you planned for. They represent errors in budgeting due to both misestimating the level of the cost driver(s) and mis-estimating the formulas (mismanaging the costs & revenues)

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Activity Variance = Flexible Budget - Static Planning Budget

$$= (AQ \times SC) - (SQ \times SC)$$

Revenue Variance = Actual Revenue - Flexible Budget Revenue

$$= (AQ \times AP) - (AQ \times BP)$$

Spending Variance = Actual Costs - Flexible Budget Costs

$$= (AQ \times AC) - (AQ \times SC)$$

AQ = actual quantity produced or sold (in units of product)

SQ = quantity that was expected to be sold or produced (in units of product)

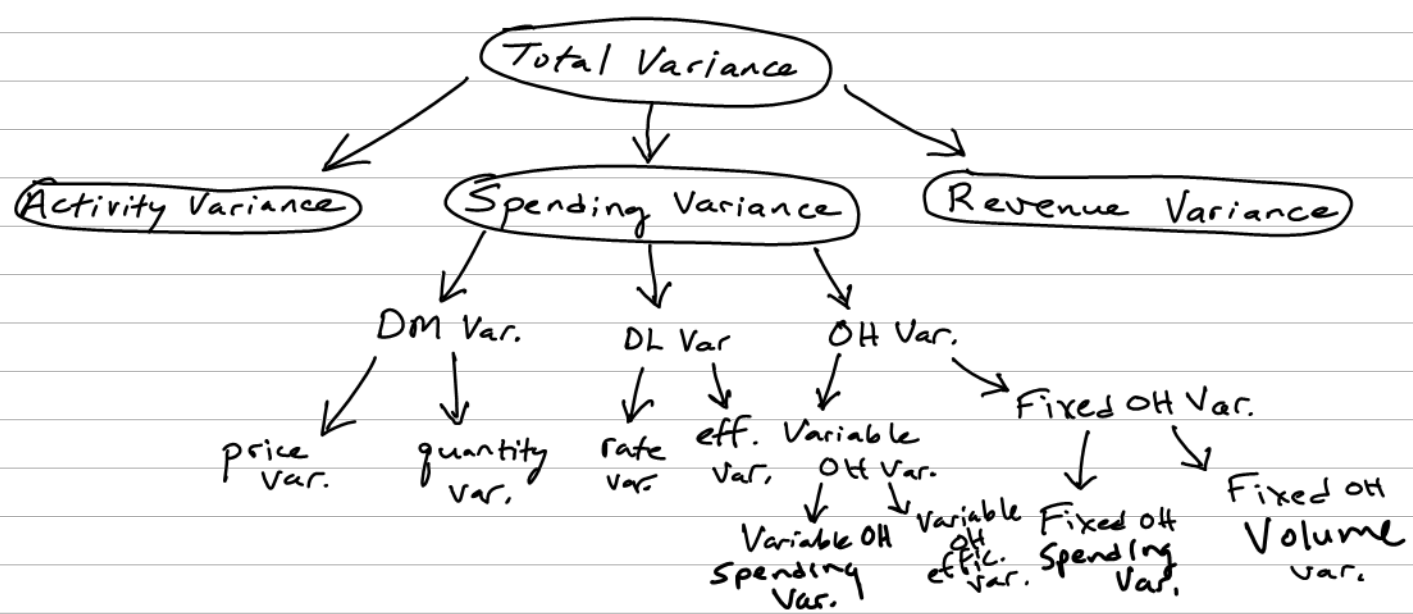
AP = actual sales price per unit

BP = budgeted sales price per unit

AC = actual cost per unit of product

SC = expected (standard) cost per unit of product

Now we want to take the spending variance and break it up into its' component parts.



Note: SQ, AQ & AP here represent different things compared to before.

Direct Materials Quantity Variance (MQV)

$SP(AQ_u - SQ)$

SP = standard price paid for 1 unit of direct materials (i.e. $ per pound)

AQ_u = actual quantity of direct materials used.

SQ = quantity of direct materials that should have been used to produce the actual # of units produced for the period
↓
of product

Direct Materials Price Variance (MPV)

$AQ_p(AP - SP)$

AQ_p = actual quantity of direct materials purchased

AP = actual price paid per unit of direct materials.

Direct Materials Spending Variance

$(AP \times AQ_p) - (SQ \times SP) = MQV + MPV$ when $AQ_u = AQ_p$

$\neq MQV + MPV$ when $AQ_u < AQ_p$

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Labor efficiency variance (LEV)

$SR(AH - SH)$

SR = standard hourly employee pay rate

AH = actual amt. of hours worked to produce given # of units

SH = # of hours that should have been used to produce actual # of units

Labor rate Variance (LRV)

$AH(AR - SR)$

AR = actual hourly employee pay rate

Labor Spending Variance

$(AH \times AR) - (SH \times SR) = LEV + LRV$

Variable Mfg. OH efficiency variance (VOHEV)

$SVOHR(AQ - SQ)$

$SVOHR = \frac{\text{budgeted total variable Mfg. OH}}{\text{budgeted total level of cost driver}}$

AQ = actual level of the cost driver (e.g. actual direct labor hours)

SQ = level of the cost driver that should have been used to produce actual units (e.g. SQ in the labor efficiency variance)

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Variable Mfg. Spending Var. (VOHSV)

AQ(AVOHR - SVOHR) AVOHR = actual variable OH rate

= $ total variable OH / actual level of cost driver

e.g. = $ total variable OH / actual # of DL hours

Variable Mfg. OH Total Variance

(AQ * AVOHR) - (SQ * SVOHR) = VOHSV + VOHEV

Fixed Mfg. OH Spending Var. (FOHSV)

Actual fixed overhead - budgeted fixed overhead

Fixed Mfg. OH Volume Variance (FOHVV)

Budgeted fixed OH - Applied Fixed OH

(SFOHR x SH)

$ Budgeted Fixed OH / Expected level of cost driver

level that the cost driver should have been (according to the standard) to produce the # of units produced.

(e.g. # of labor hrs. they should have worked)

Accounting for Direct Materials Price and Quantity Variances

As a general rule, in a standard costing system, all inventories are carried at standard. Actual costs are never entered into an inventory account. Following this general rule means that the direct materials price variance is computed at the point of purchase. In recording variances, unfavorable variances are always debits, and favorable variances are always credits. The general form of the journal entry associated with the purchase of direct materials for a standard costing system follows. This entry assumes an unfavorable MPV and that AQ is defined as direct materials purchased.

Materials $SP \times AQ_p$

Direct Materials Price Variance $(AP - SP)AQ$

Accounts Payable $AP \times AQ$

Quantity Variance

WIP $SP \times SQ$

DM quantity Variance $SP(AQ_u - SQ)$

Materials $SP \times AQ_u$

unfavorable

Accounting for the Direct Labor Rate and Efficiency Variances

The journal entry to record the direct labor rate and efficiency variance is made simultaneously. The general form of this journal entry follows. (It assumes a favorable direct labor rate variance and an unfavorable direct labor efficiency variance.)

Work in Process $SH \times SR$

Direct Labor Efficiency Variance $(AH - SH)SR$

Direct Labor Rate Variance $(AR - SR)AH$

Wages Payable $AH \times AR$

Closing out variance accounts at end of period

2 methods: ① Close all out to COGS if immaterial

② Close out to COGS, WIP & FG in proportion to the costs left in each at end of period.

- If variance has unfavorable (debit) balance you credit it and debit COGS. This increases COGS. This is necessary since COGS must be based on actual quantities and prices. An unfavorable variance represents actual was greater than expected so we must add this difference to COGS
- If variance has favorable balance (credit) you debit it and credit COGS. This decreases COGS to it's true value.