Chapter Four
Standard Cost System & Flexible Budgets

Master Budget Vs Flexible Budget

- **Master budget** discussed are **static or inflexible** because they assume fixed level of activity.
  - A master budget or static budget is prepared for only one activity level (for example one volume of sales activity).
- **Flexible budgets** is the budget that will fluctuate with the level of activity(output).
  - are budgets designed to direct management to areas of actual financial performance that desire attention.

Example (1): Evergreen Company prepares a budget based on detailed expectation for the forthcoming month. Evergreen Company's plan tailored to a single sales level, i.e., 9,000 units. Compute the master budget variance for each item g
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Particulars	Actual	Master Budget	Master Budget Variances
Units	7,000 units	9,000 units	2,000 units U
Sales	Br. 217,000	Br. 279,000	Br. 62,000 U
Variable Expenses			
* Manufacturing	Br. 151,270	Br. 189,000	Br. 37,730 F
* Selling	5,000	5,400	400 F
* Administrative	2,000	1,800	200 U
Total Variable Expense	Br. 158,270	Br. 196,200	Br. 37,930 F
Contribution Margin	Br. 58,730	Br. 82,800	Br. 24,070 U
Fixed Expenses			
* Manufacturing	Br. 37,300	Br. 37,000	300 U
*Selling & Administrative	33,000	33,000	---
Total Fixed Expenses	Br. 70,300	Br. 70,000	300 U
Operating Income (Loss)	**Br. (11,570)**	**Br. 12,800**	**Br. 24,370 U**

- **Master budget variance (static budget variance)** is the variance of actual result from the master budget.
- If the item for which the variance is computed is a revenue or profit item,
  - **Favorable variances** are those for which actual is greater than the target;
  - **unfavorable variances** are those for which actual is less than the target (or the budget).
- If the item for which the variance is computed is a cost or expense item,
  - **favorable variances** are those for which actual is less than the target.
  - **unfavorable variances** are those for

Flexible Budget/ variable budget/Dynamic Budget

Distinguishing Features of Flexible Budget

- **Cover a range of activity**
  - The flexible budget is prepared for any level of activity.
- **Are dynamic**
  - It is budget that can easily be adjusted for differences in the level of activity

- **Facilitate performance measurement**
  - It provides managers more useful information for planning and better basis for comparing performance than, a static or fixed budget because a flexible budget can be prepared at the actual

Flexible Budgeting Process

The following steps are needed to develop a flexible budget.

I. Determine the range of activity the budget should cover (because cost behavior patterns may be different in different ranges of activity)

II. Determine the cost behavior pattern for each cost included in the budget.

III. Select the activity levels for which budgets will be prepared.

IV. Prepared a flexible budget using the cost behavior data and the selected activity level.

Example (2): Evergreen Company is planning to use a flexible budgeting system to plan and control its operations. Evergreen made the following cost estimates for budgeting purposes:

Budget Formula Per Unit	
Sales	Br. 31.00
Variable Costs	
* Manufacturing	Br. 21.00
* Selling	0.60
* Administrative	0.20
Total Variable Costs	Br. 21.80
Contribution Margin	Br. 9.20
Budget Formula Per Month	
Fixed Costs	
* Manufacturing	Br. 37,000
* Selling and administrative	33,000
Total fixed costs	Br. 70,000

Instruction: Prepare a flexible budget for the next month using 7,000, 8,000, and 9,000 units as activity level. Evergreen Company's cost functions or flexible budget formulas are believed to be valid within the range of 7,000 to 9,000 units. At what level of activity does the company breakeven?

Exhibit 2.2 Evergreen Co. Flexible Budget

	Flexible Budgets For Various Activity Levels		
	7,000 units	**8,000 units**	**9,000 units**
Sales	Br. 217,000	Br. 248,000	Br. 279,000
Variable Costs			
* Manufacturing	Br. 147,000	Br. 168,000	Br. 189,000
* Selling	4,200	4,800	5,400
* Administrative	1,400	1,600	1,800
Total Variable Costs	Br. 152,600	Br. 174,400	Br. 196,200
Contribution margin	Br. 64,400	Br. 73,600	Br. 82,800
Fixed costs			
* Manufacturing	Br. 37,000	Br. 37,000	Br. 37,000
* Selling and administrative	33,000	33,000	33,000
Total fixed costs	Br. 70,000	Br. 70,000	Br. 70,000
Operating Income (loss)	**Br. (5,600)**	**Br. 3,600**	**B. 12,800**

- **Flexible Budget Variances:-** variances between the flexible budget and actual results
  - **can not be due** to activity levels.
  - due to departure of actual costs or revenues from flexible-budget amounts.

- **Activity level variances:-** variances between the master budget and the flexible budget
  - due to activity levels.

- **Total of the master budget variances:-** The sum of the activity level variances and the flexible budget variances

Example (3): Refer the data given in example (1) and (2). Prepare a condensed table showing the static (master) budget variance, the sales activity variance, and the flexible-budget variance.

Exhibit 2.3 Evergreen Co. Summary of Performance

	Actual Results	Flexible Budget	Master Budget	Flexible Budget Variance	Sales Activity Variances
Units	7,000	7,000	9,000	-	2,000 U
Sales	Br. 17,000	Br. 17,000	Br.279,000	-	Br62,000 U
Variable costs	158,270	152,600	196,200	Br 5,670 U	43,600 F
Contribution margin	Br. 58,730	Br. 64,400	Br. 82,800	Br.5,670 U	Br18,400 U
Fixed Costs	70,300	70,000	70,000	300 U	-
Operating Income (loss)	**Br. (11,570)**	**Br. (5,600)**	**Br. 12,800**	**Br. 5,970 U**	**Br. 18,400 U**

*U or F indicates whether the variances are unfavorable or favorable, respectively.

Total master budget variance (TMBV) = ALF + FBV

where TMBV = Total Master Budget Variance

ALF = Activity Level Variance

FBV = Flexible Budget Variance

- Managers use comparisons between **actual results, master budgets, and flexible budgets** to evaluate organizational performance.

- When evaluating performance, it is useful to distinguish between **effectiveness and efficiency**

- **Effectiveness**-the degrees to which a goal, objective, or target is met.

- **Efficiency**-the degree to which inputs are used in relation to a given level of outputs.
  - The less input used to produce a given output, the more efficient the operation

- **Standard Costing System**
  - Standard cost systems is accounting system that value products according to standard costs only.

- **Standard cost**
  - It is a carefully determined cost per unit that should be attained.
  - It is a predetermined measure of what a cost should be under stated conditions.
  - they are target costs that should be incurred under efficient operating conditions.
  - provides management with goals to attain (planning) & a basis for comparison with

Standard costs Vs budgeted costs

- Standard costs are not the same as budgeted costs.
  - A budget relates to an entire activity or operation. But a standard presents the same information on a per unit basis
  - a budget provides the cost expectation for the total activity but a standard therefore provides cost expectations per unit of activity

- Standard costs are also known as **planned costs, predicted costs and scheduled costs**.
- The purpose of standard costing is to assist

Types of Standards

- **Ideal standard/theoretical standard**
  - **represents perfect operating conditions and therefore can be hard to achieve.**
  - **It assumes** no material wastage, the worker always measures perfectly, and the machines never get out of adjustment.

- **A practical standard**
  - **It represents estimated cost under tight,** but achievable conditions.
  - make allowances for normal breakdowns in machinery and for rest periods for workers.
  - considered to be more realistic than ideal standards.
- **Expected Standard:**
  - are standards that reflect what is actually expected to occur in a future period

Standard Costing Steps

There are five major steps in standard costing.

Step 1: Develop standards

Step 2: Accumulate actual information

Step 3: Compute variances

Step 4: Investigate variances

Step5: Take corrective action

Step 1: Develop standards

- Standards are established for each component (materials, labor, and overhead) of product cost.
- The development of a standard cost involves judgment and practicality in identifying the types of material and labor to be used and their related quantities and prices.
- The development of standards for overhead requires that costs are appropriately classified by cost behavior, valid allocation bases have been chosen, and a reasonable level of activity has been specified.

STEP 3: COMPUTE VARIANCES

A. VARIANCE ANALYSIS

- A variance is a deviation from a predetermined standard cost.
- a variance is the result of a deviation in the price paid, the quantity purchased, or both.
- variances are used to assign responsibility to appropriate people who have control over that element of the cost and to draw their attention to the need for corrective action.
- standard cost systems compute and report three major variances. They are
  - material variance
  - labor variance
  - overhead variances.

1.Material Variances

- The standard material cost = standard price of materials X standard quantity materials
- Total actual costs may differ from standard because of either a difference in the price paid for those materials and/or the amount of materials used.
- Hence, we can isolate two variances for materials: materials price variance and materials usage variance

A. The materials price variance:

- **It measures how much is paid for material consumed and how much** should have been paid.
- unfavorable variance results when actual price is higher than standard
- favorable variance results when the reverse is true.

MPV = (AP-SP) X AQ

where AP= Actual Price per Unit

SP= Standard Price per Unit

B) The materials quantity (or usage) variance:

- **measures how much material is consumed and how** much should have been consumed.
- unfavorable variance results when the actual quantity used exceeds the standard quantity allowed
- favorable variance results when the reverse is true.

MQV = (AQ - SQ) X SP,

where AQ= Actual Total Material Used

SQ= Standard Total Material Used

SP= Standard Price per Unit

Total Material Variance= MPV+ MQV

2. Labor Variance

- **standard labor cost = standard hours allowed X Standard rate.**
- Total labor costs may differ from standard for two reasons: a deviation from standard pay rates and/or from standard hours.
- Two variances for labor:
  - the labor rate variance and
  - the labor efficiency variance.

A)The labor rate variance (LRV):

- **It measures how much is paid and how much should have been paid.**
- Unfavorable variance:- the actual rate is higher than the standard rate.
- **Favorable variance:-** The actual rate is less than the standard rate.
- **LRV** is computed as follows:

LRV = (AR - SR) X AH,

where AR= Actual Labor Rate per Hour

SR= Standard Labor Rate per Hour

AH= Actual Total Labor Hour Worked

B) The labor efficiency variance(LEV):

- **measures how much time is used and how much should have been** used.
- unfavorable variance exists:- more hours are used than allowed.
- Favorable variance:- actual hours are less than standard.
- LEV is computed as follows:

LEV = (AH - SH) x SR

where SR= Standard Labor Rate per Hour

SH= Standard Total Labor Hour Allowed

AH= Actual Total Labor Hour Worked

Exercise

	Budget	Standards per unit	Actual
Production	50 units		30 units
DM usage		4 lbs. @ Br 0.50 per lb.	140 lbs @ Br 1 per lb.
DL usage		2 hrs. @ Br1 per hour	72 hours @ Br 0.75 per hr.

Compute:

a) Material Price Variance

b) Material Quantity Variance

c) Total Material Variance

d) Labor Rate Variance

e) Labor Efficiency Variance

h) Total Labor Variance

C. Factory Overhead variances

- Overhead is applied to production based on predetermined overhead rate.
- The amount of over- and under-applied overhead resulting from using this rate can be investigated using the two-variance approach.
- Computation of the overhead budget variance and the overhead volume variance.
- The overhead budget variance shows the efficiency of operations and may be considered a combination of the price and usage variance for total overhead.
- The overhead volume variance results from two factors: (1) the fixed nature of some overhead costs, and (2) operating at a level

Overhead variance

- **difference between total actual overhead costs and budgeted** total overhead for the actual output attained.
- Favorable Variance:- the actual overhead less than the budgeted overhead costs
- Unfavorable Variance:- actual overhead costs greater than budgeted overhead costs.

1. Variable Factory Overhead Variance (VFOH)

- The variances may be divided into spending and efficiency variance.

2.The VFOH spending variance

- It is the result of comparing the amount that was spent on variable overhead items at the actual level of activity with the amount that should have been spent

VFOH spending variance	=	Actual quantity of VFOH allocation base for actual output	X	Actual VFOH rate	-	Budgeted VFOH rate	

2. The VFOH efficiency variance

- It is not a direct measure of how efficiently the quantity of overhead was used
- It is a measure of efficiency with the application base (e.g., machine hours, process hours, and so on).
- The variance may be expressed algebraically

VFOH		Budgeted		Actual	quantity	of	Budgeted	quantity	of
Efficiency	=	VFOH	X	VFOH	allocation	base	- VFOH	allocation	base
variance		rate		for actual output			Allowed for actual output		

Fixed Factory Overhead Variances (FFOH)

Fixed overhead variances are divided into spending and volume variances.

1. FFOH spending variance, also called budget variance

- comparing total actual fixed-overhead expenditures with budgeted fixed overhead costs.
  - **FFOH Spending variance = Actual fixed overhead - Budgeted fixed overhead**
- **A favorable variance:-** The actual FFOH costs less than budgeted FFOH costs.
- **Unfavorable variance:-** Actual

2. Production-Volume variance

- output-level overhead variance and denominator-level variance.
- Volume variance occurs whenever the actual production differs from the budgeted level used to calculate the budgeted FFOH rate.
- It is calculated as follows:

Production-volume variance = Budgeted FFOH - Applied FFOH

Applied FFOH= Standard quantity of FFOH allocation base for Actual Output X Budgeted FFOH Rate

- favorable variance:- applied overhead exceeds the budgeted overhead.
- unfavorable variance:- budgeted overhead exceeds applied overhead.
- A common interpretation of a positive volume variance is that a company has underutilized its facility.
- However, this interpretation is faulty when a reduction in activity levels is in response to an unexpected decrease in demand. In such a situation, the volume variance is a

Note: Total FOH Spending Variance = VFOH Spending Variance + FFOH Spending Variance

Total FOH Flexible-Budget Variance = Total FOH Spending Variance + Production-volume Variance

Example

Addis Manufacturing uses a standard costing system and its fiscal year ends on Hamle 30. Variable overhead for Hamle 1997 was budgeted at Br 4 per machine hour. Budgeted fixed overhead in Hamle 1997 was Br 240,000. Addis has budgeted 200,000 units of output for Hamle 1997. Machine hour is the allocation base for variable and fixed overhead costs. Machine hour is budgeted to be 0.50 hours per unit of output. The actual number of units produced for the month is 192,000 with a total machine hours of 57,600. The actual variable and fixed overhead costs for the month are Br 120,000 and Br 256,800, respectively.

Required: Compute

1. VFOH Efficiency Variance
2. VFOH Spending Variance
3. FFOH Spending Variance
4. Production-Volume Variance

STEP 4: INVESTIGATE VARIANCES

- **Primary purpose of investigating** reported variances is to manage costs.
- identifying the **root causes of variances** and **assigning responsibility for variances**.
- Given cost of investigation, the benefits of **investigating a variance** should be greater than **the cost of doing the analysis.**

a. Deciding Which Variances to Investigate

- **Given cost of investigation**, most firms use a management by exception system that focuses on variances that are large in size or show a negative trend.

Management by exception

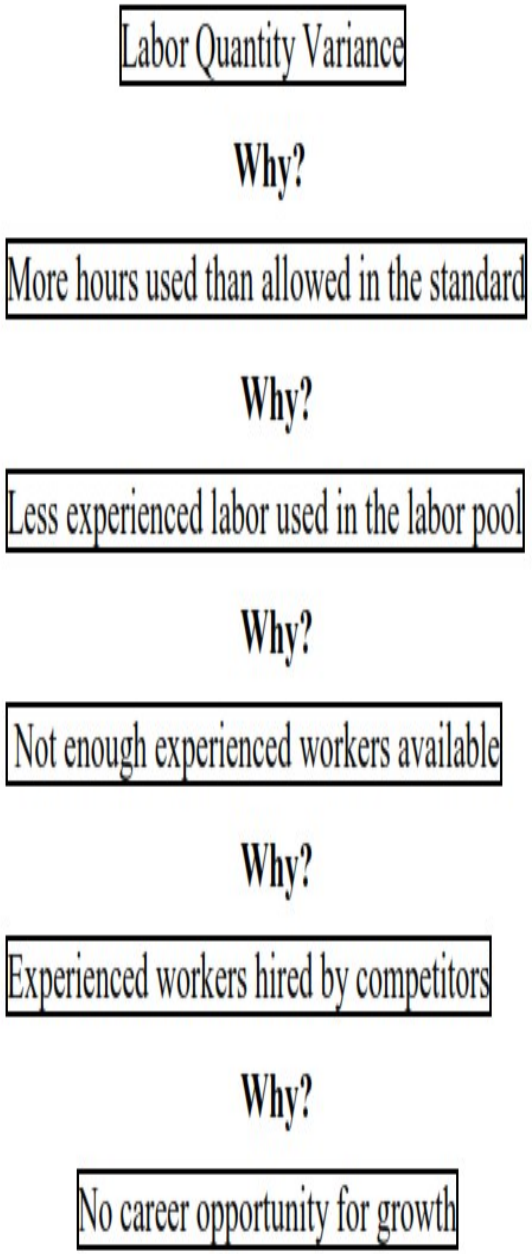
- **is a technique in** which managers set upper and lower limits of tolerance for deviations and investigate only deviations that fall outside those tolerance ranges
- It is important to investigate both favorable and unfavorable variances.
- A favorable variance for a particular item may be unfavorable to the firm overall.
- For example, using less material than

b. Identifying Root Causes of Variances

- Once accountants identify that a variance needs investigation, operating personnel must apply a systematic process to find out what causes these variances.
- Many firms use a tool called root cause analysis.
- Root cause analysis is a method of linking a variance to the underlying cause of the variance.

Root Cause Analysis Using the 5-Why Method

- Assume that Girum Company has a persistent problem with an unfavorable labor quantity variance.
- The following five levels of analysis provide a possible root cause analysis for why the company



Question 1: why unfavorable labor quantity variance.

Answer 1 : More labor hours than budget were used

Question 2: why we used more hours?

Answer 2: there were lots of inexperienced labor in the pool

Question 3: why inexperienced labor was used?

Answer 3: experienced labor was unavailable.

Question 4: why experienced labor was unavailable

Answer 4: competitors are hiring this labor away.

Question 5: why experienced workers leave

Answer 5: Because they do not have

- Note that root cause analysis shows a problem actually the result of the human resource policies of the firm.
- By understanding the root cause, we can attack the real source of the problem rather than simply putting pressure on the production supervisor- the normal outcome without root cause analysis.
- **Root cause analysis, which requires asking why several times, allows managers to understand** and address the source

STEP 5: TAKE CORRECTIVE ACTION

- The final step in the standard costing process is to use the information derived from the root cause investigation to take corrective action.