Managerial Accounting

COURSE OVERVIEW

Session	Topic	Hilton / Platt
1	The Changing Role of Managerial Accounting	Chapter 1
	Basic Cost Management Concepts	Chapter 2
2	Product / Job Costing	Chapter 3
	Transfer Pricing	Chapter 13
3	Cost-Volume-Profit Analysis	Chapter 7
	Inventory Costing (Absorption vs. Variable Costing)	Chapter 8
4	Decision-Making: Relevant Costs and Benefits	Chapter 14
	Responsibility Center, Performance Measures & Controls	(Chapter 12/13)
5	Activity-Based Costing	Chapter 5
6	Activity Analysis, Cost Behavior, and Cost Estimation	Chapter 6
	Budgets – Financial Planning and Analysis	Chapter 9
7	Standard Costing and Direct Cost Variances	Chapter 10
8	Signaling Effects of Incentives	
	Sustainability and Controlling	

CHAPTER 10
STANDARD COSTING AND DIRECT COST VARIANCES

STD. COSTING & VARIANCES

OUTLINE

BUDGETS GIVE A "BENCHMARK" TO COMPARE TO ACTUAL RESULTS

DEVIATIONS FROM BUDGET – VARIANCE ANALYSIS

- Static vs. flexible budgets
- Standard costing – what is it and why use it
- Variance analysis – what and why
  - Material variances – rate and usage
  - Labor variances – rate and efficiency
  - Interaction of variances

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PREPARING A BUDGET

- When preparing a budget, we first budget a specific output (production) quantity
- We then rely on standard costs to budget total costs
- Budgeted Output Quantity * Standard Costs
- Standard costs reflect how many input units should be consumed per unit of output and at what unit cost

Static Budget (standard budget):
Budgeted Output Quantity * Standard Costs

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PREPARING A BUDGET

- What do differences between Actual and Static Budget tell us?

- Companies will typically sell a different quantity and at different costs
- Actual = Actual Output Quantity * Actual Costs

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STATIC AND FLEXIBLE BUDGETS

- Comparing actual costs to static budget:
  - Expect higher (lower) variable cost with higher (lower) quantity sold
  - Effect of volume on costs may overwhelm any production efficiency effect

Need for a flexible budget to isolate effect of production efficiency

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STATIC AND FLEXIBLE BUDGETS

- Flexible Budget: Show revenues and expenses that should have occurred at the actual level of activity.
- Actual Output Quantity * Standard Costs
  - Multiply standard cost by actual volume to create flexible budget (or standard budget/cost)
- Flexible budget is the benchmark against which the firm compares actual costs
  - Controls for effect of volume on costs

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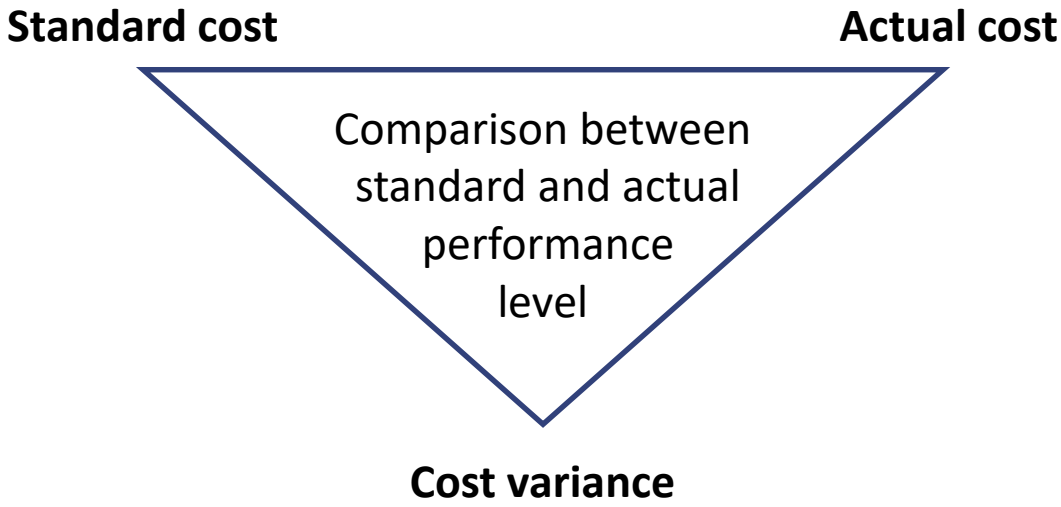
COST VARIANCE



Allows firms to understand how/why they missed/outperformed the budget

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STANDARD COSTING

- Costs = quantity * unit costs
- Standard costs reflect how many units should be consumed (standard input quantity) per unit of output and at what unit cost (standard input price)
- Standards are established for:
  - Material prices and quantities
  - Labor rates and time required
- Standards reflect what management expects costs and efforts to be

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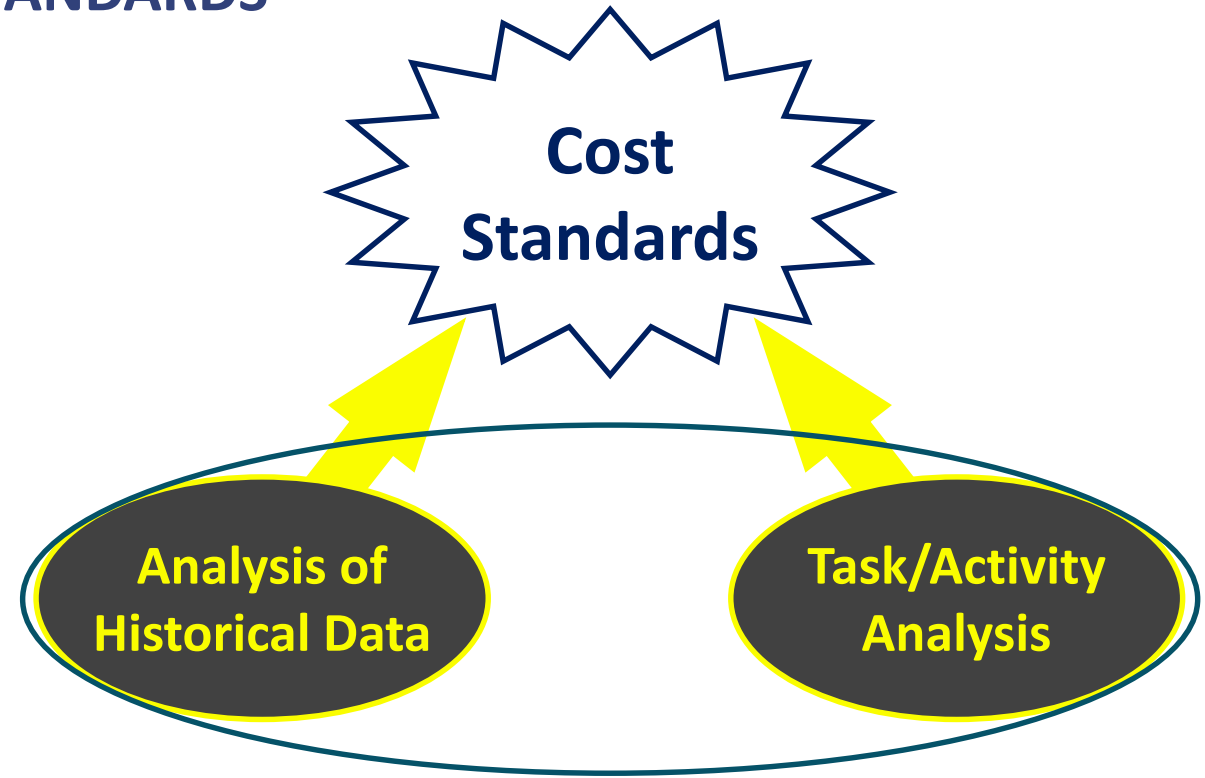
SETTING STANDARDS



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COST VARIANCE ANALYSIS

- Cost variance: Difference between actual cost and standard cost

  Standard cost = Standard quantity(SQ)*Standard price(SP)

  Actual cost = Actual quantity(AQ)*Actual price(AP)

- Cost variance = AP*AQ – SP*SQ
- Is variance due to differences in the price of materials or because materials were used more/less efficiently?

Not knowing whether purchasing or production caused the variance makes it difficult to take action

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COST VARIANCE ANALYSIS

- Decompose cost variance into price and quantity variance
- Price variance: (AP-SP) * AQ

  Compares actual price with standard price, holding quantity constant
- Quantity variance: SP * (AQ-SQ)

  Compares actual quantity with standard quantity, holding price constant

Allows the firm to understand how/why they missed the standard

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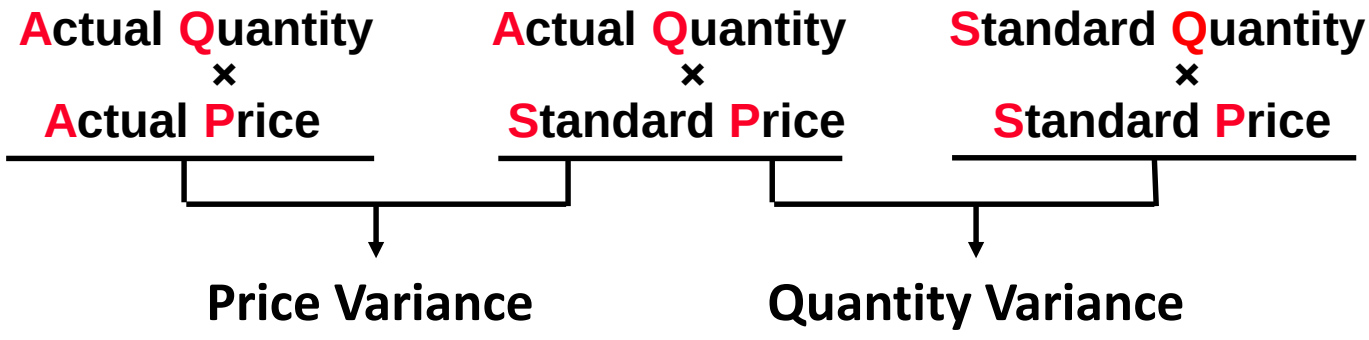
COST VARIANCE ANALYSIS

- A general model for variance analysis:→ Memorize this formula!



Price Variance	Quantity Variance
AQ * (AP – SP)	SP * (AQ – SQ)
AP = Actual Price	SP = Standard Price
AQ = Actual Quantity	SQ = Standard Quantity

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COST VARIANCE ANALYSIS

- Analyze variances for both material and labor

MATERIAL

- Material Price Variance
- Material Quantity Variance

LABOR

- Labor Rate Variance
- Labor Efficiency Variance

This model enables to track price and quantity variances for multiple categories of direct material/labor

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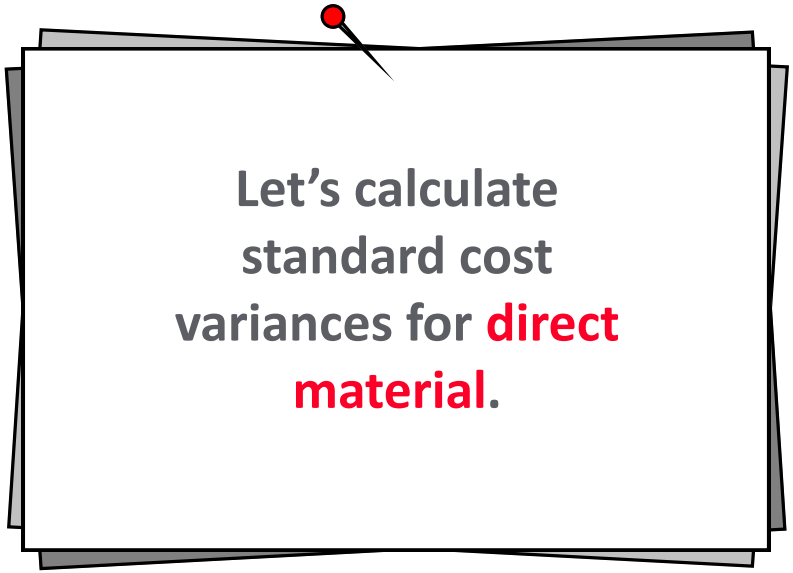
COST VARIANCE ANALYSIS



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HANSON‘S MATERIAL VARIANCES

- Hanson Inc. has the following direct material standard to manufacture one Zippy:
  - 1.5 pounds per Zippy at $4.00 per pound
- Last week 1,700 pounds of material were purchased and used to make 1,000 Zippies. Material cost amounts to a total of $6,630.

- Calculate price and quantity variances for direct material!

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HANSON'S MATERIAL VARIANCES

Standard quantity	= 1,000 zippies*1.5 lbs. per zippy = 1,500
Standard price	= $4
Actual quantity	= 1,700
Actual price	= (6,630/1,700) = $3.90

- What is the direct material price variance? F or UF?
- What is the direct material quantity variance? F or UF?
- Favorable (unfavorable) variances positively (negatively) impact income

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HANSON'S MATERIAL VARIANCES : SUMMARY

Actual Quantity × Actual Price	Actual Quantity × Standard Price	Standard Quantity × Standard Price
1,700 lbs. × $3.90 per lb.	1,700 lbs. × $4.00 per lb.	1,500 lbs. × $4.00 per lb.
$6,630	$ 6,800	$6,000

Price variance	Quantity variance
$170 favorable	$800 unfavorable
MPV = AQ(AP - SP) MPV = 1,700 lbs × ($3.90 - 4.00)	MQV = SP(AQ - SQ) MQV = $4.00x(1,700 lbs - 1,500 lbs)

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HANSON'S MATERIAL VARIANCES

- Hanson Inc. has the following material standard to manufacture one Zippy:
- 1.5 pounds per Zippy at $4.00 per pound
- Last week 2,800 pounds of material were purchased at a total cost of $10,920, and 1,700 pounds were used to make 1,000 Zippies

How do we compute variances when units purchased differs from units produced?

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HANSON'S MATERIAL VARIANCES

WHEN PURCHASED QUANTITY DIFFERS FROM QUANTITY USED:

- Some firms calculate an additional purchase price variance, considering the entire quantity purchased
  - purchase price variance (quantity purchased)
  - price variance (quantity used)

- The quantity variance is computed only on the quantity used

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HANSON'S MATERIAL VARIANCES

- Hanson Inc. has the following material standard to manufacture one Zippy:
- 1.5 pounds per Zippy at $4.00 per pound
- Last week 2,800 pounds of material were purchased at a total cost of $10,920, and 1,700 pounds were used to make 1,000 Zippies.
- Same as previous question except purchased 2,800 pounds

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HANSON'S MATERIAL VARIANCES

Actual Quantity Purchased × Actual Price	Actual Quantity Purchased × Standard Price
2,800 lbs. × $3.90 per lb.	2,800 lbs. × $4.00 per lb.
$10,920	$11,200

MPV = AQ(AP - SP)
MPV = 2,800 lbs.
× ($3.90 - 4.00)
MPV = $280 Favorable

Purchase price variance
$280 favorable

Purchase price variance higher than price variance as *quantity purchased > quantity used*.

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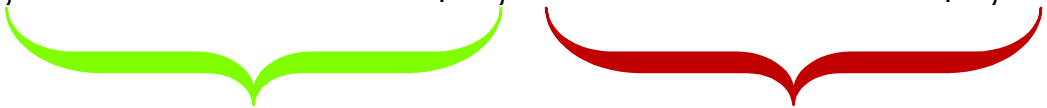
HANSON'S MATERIAL VARIANCES: SUMMARY

Actual Quantity × Actual Price	Actual Quantity × Standard Price	Standard Quantity × Standard Price
1,700 lbs. × $3.90 per lb.	1,700 lbs. × $4.00 per lb.	1,500 lbs. × $4.00 per lb.
$6,630	$ 6,800	$6,000



Price variance: $170 fav.

Quantity variance: $800 unfav.

Price variance is **unchanged** because actual quantity used is unchanged

Quantity variance is **unchanged** because actual and standard quantities used are unchanged.

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MATERIAL VARIANCES

WHAT CAUSES MATERIAL VARIANCES?

- Price variances
  - Changing raw material prices
  - Substitution of raw materials
- Quantity variances
  - Inefficient employees causing excess waste
  - Poor quality materials purchased
  - Changes in manufacturing processes
- Responsibility
  - Procurement for pricing and quality
  - Production for use of materials

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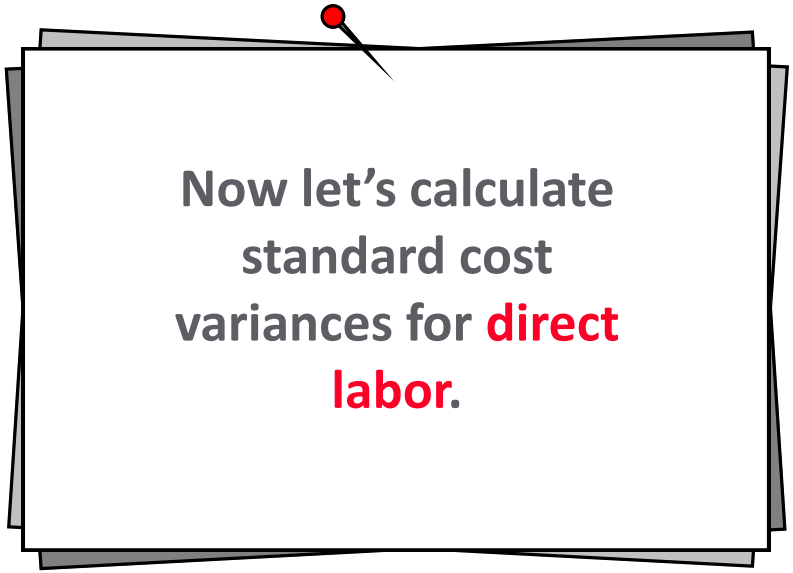

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HANSON'S LABOR VARIANCES

- Hanson Inc. has the following direct labor standard to manufacture one Zippy:
- 1.5 standard hours per Zippy at $10.00 per direct labor hour
- Last week 1,550 direct labor hours were worked at a total labor cost of $15,810 to make 1,000 Zippies.

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HANSON'S LABOR VARIANCES

Standard hours	= 1,5 hrs * 1,000 = 1,500 hrs
Standard rate	= $10
Actual hours	= 1,550 hrs
Actual rate	= $15,810/ 1,550 hrs = $ 10.20

- What is the direct labor rate variance? F or UF?
- What is the direct labor efficiency variance? F or UF?
- Favorable (unfavorable) variances positively (negatively) impact income.

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HANSON'S LABOR VARIANCES

Actual Hours × Actual Rate	**Actual Hours × Standard Rate**	**Standard Hours × Standard Rate**
1,550 hours × $10.20 per hour	1,550 hours × $10.00 per hour	1,500 hours × $10.00 per hour
$15,810	$15,500	$15,000

Rate variance
$310 unfavorable

Efficiency variance
$500 unfavorable

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LABOR VARIANCES

WHAT CAUSES LABOR VARIANCES?

- Labor rate variances
  - Skill mismatches: Assigning highly skilled workers to low skill jobs or vice versa
  - Competition increases market wages
- Labor efficiency variances
  - Skill mismatches
  - Lower than expected material quality
- Responsibility
  - Production managers who make job assignments
  - Procurement who purchases materials

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INTERACTION AMONG VARIANCES

- One choice can impact several variances → hard to disentangle responsibilities
  - Use cheaper material → F material price variance
  - Cheaper material breaks easily → UF material quantity variance
  - Assembly takes longer due to broken parts→ UF labor hours variance

- Analyze the net impact on income!

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MANAGEMENT BY EXCEPTION

- Focus on quantities and costs that differ from standard costs by substantial margin
  - Depends on type and size of firm and the production process
- Examine whether uncontrollable factors caused the variance
  - Uncontrollable shocks can also have indirect effects

Example: high oil prices can lead companies to use more labor and less automation

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WHAT VARIANCES SHOULD BE INVESTIGATED?

SIZE OF VARIANCE

- Dollar amount
- Percentage of standard

RECURRING VARIANCES

TRENDS

CONTROLLABILITY

FAVORABLE VARIANCES

COSTS AND BENEFITS OF INVESTIGATION

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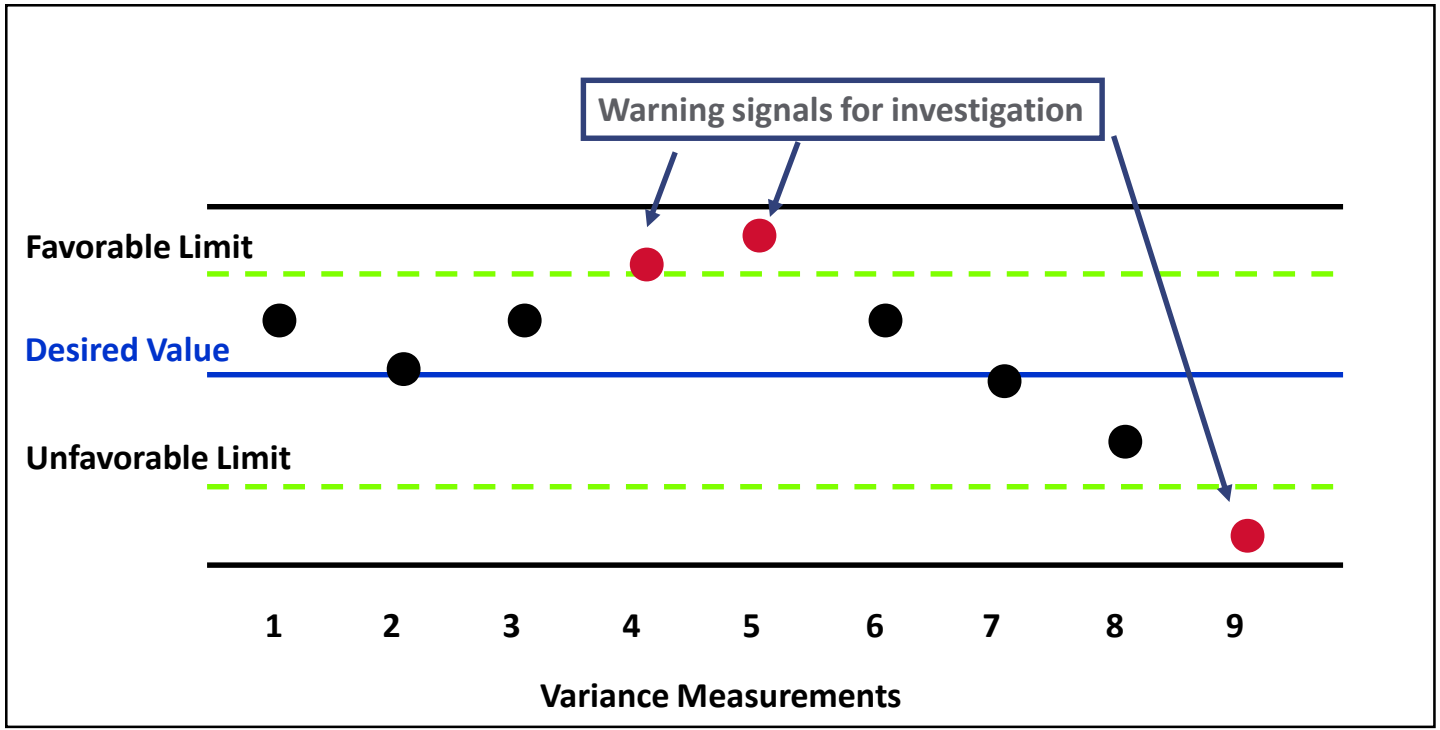
STATISTICAL CONTROL CHART



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P10-36

- Wolfe operates a landscaping business and has recently expanded into providing fertilizer services to clients; unfortunately many clients complained.
- In the first year, he had 55 fertilizer clients. Each client got 6 applications and was billed $40 per application. Details:
  - Two applications were Type 1 and four were Type 2 fertilizer.
  - They purchased 5,000 lbs of Type 1 at $.53/lb. and 10,000 lbs of Type 2 at $.40/lb.
  - Actual usage of Type 1 was 3,700 lbs and Type 2 was 7,800 lbs.
  - Labor cost for new employee was $11.50 /hr (paid premium), logged 165 hrs.
- Standards were established as:
  - DL – 40 min / app at $9.00 per hour
  - DM – 40 pounds per app at $.50 / lb Type 1 and $.42/ lb Type 2.

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P10-36

1. Compute DM variances (for both types of fertilizer).
2. Compute DL variances.
3. Compute actual costs per application (unused fertilizer goes into inventory). Was the new service financially successful?
4. Analyze the variances from (1) and (2). Was it a success from an overall cost-control perspective? Why did customers complain?
5. Should he continue next year in light of complaints?

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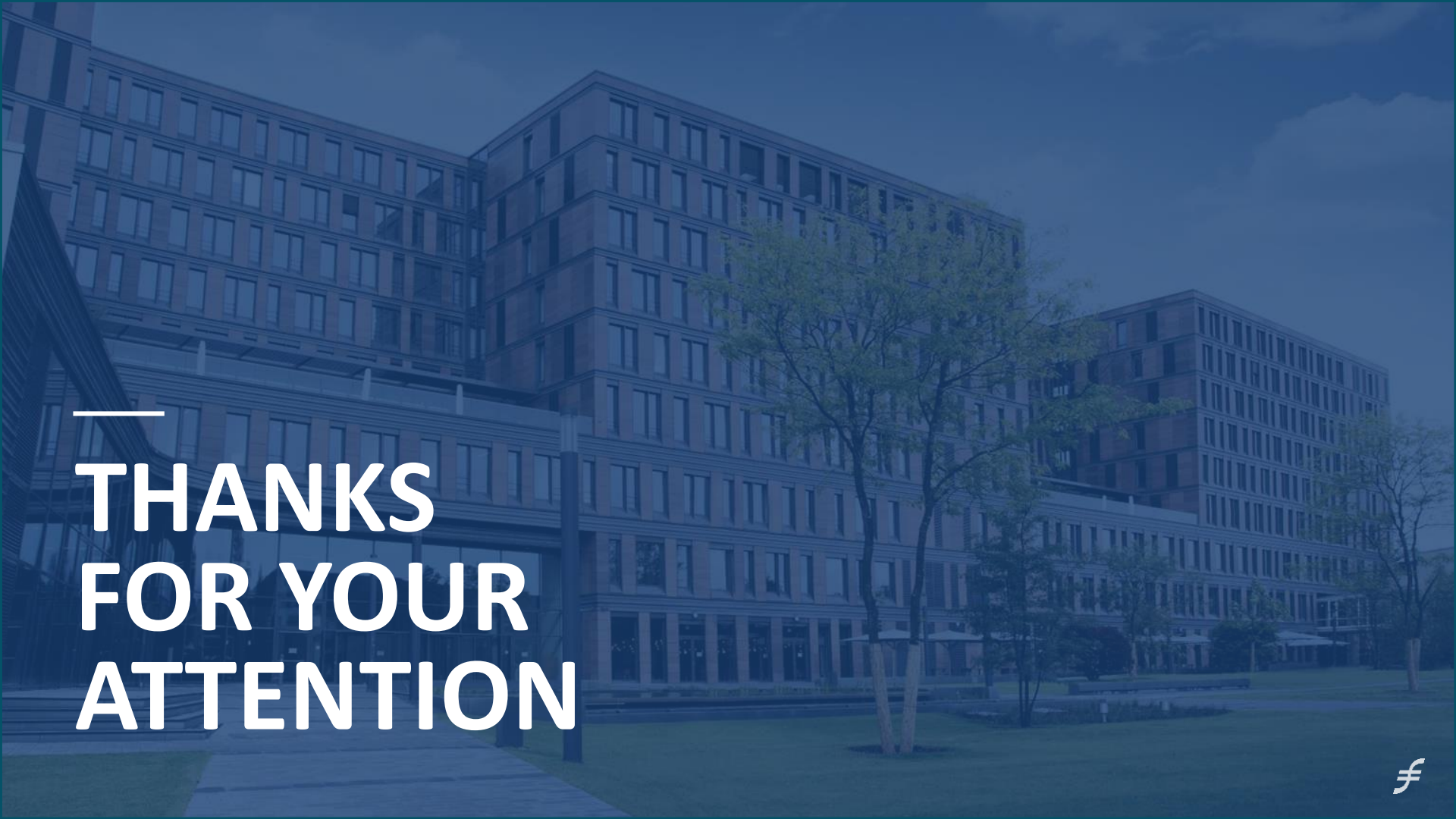
P10-45

Ozarks Camping Equipment, Inc., has established the following direct-material standards for its two products.

	Standard Quantity	Standard Price
• Standard camping tent	12 yards	$6 per yard
• Deluxe backpacking tent	6 yards	$8 per yard

During May, the company purchased 4,200 yards of tent fabric for its standard model at a cost of $26,880. The actual May production of the standard tent was 200 tents, and 2,500 yards of fabric were used. Also during May, the company purchased 1,600 yards of tent fabric for its deluxe backpacking tent at a cost of $12,640. The firm used 1,440 yards of the fabric during May in the production of 240 deluxe tents.

1. Compute the direct-material purchase price variance and quantity variance for May.


THANKS
FOR YOUR
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