

REFRESHMENT!

Responsibility Accounting

By Teerachai Arunruangsirilert, PhD, CPA

Outline

- การกระจายอำนาจในการบริหาร (**Decentralization**)
- รูปแบบของศูนย์ความรับผิดชอบ
- การจัดทำงบกำไรขาดทุนแยกตามส่วนงาน
- การวัดผลการดำเนินงานในแต่ละศูนย์ความรับผิดชอบ
- **Overview of Balance Scorecard**
- การกำหนดราคาโอน
- **Case Study Discussion**

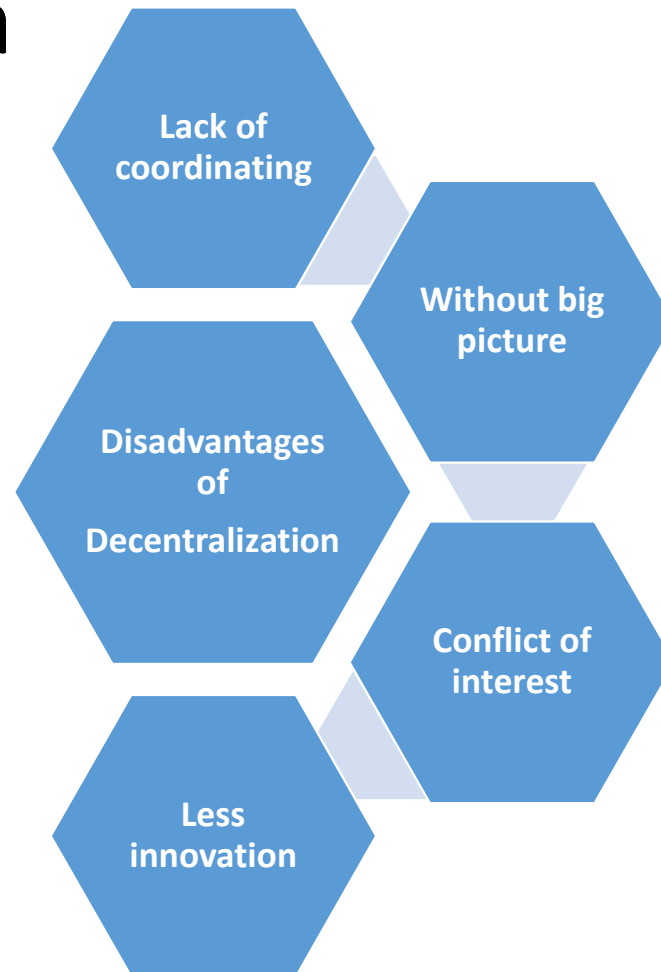
Why Decentralization?

By Teerachai Arunruangsirilert, PhD, CPA

Decentralization



Decentralization



If decentralization is applied, how
do we can cope with its
limitations?



CONTROL

How do we have to control those decentralized segments?

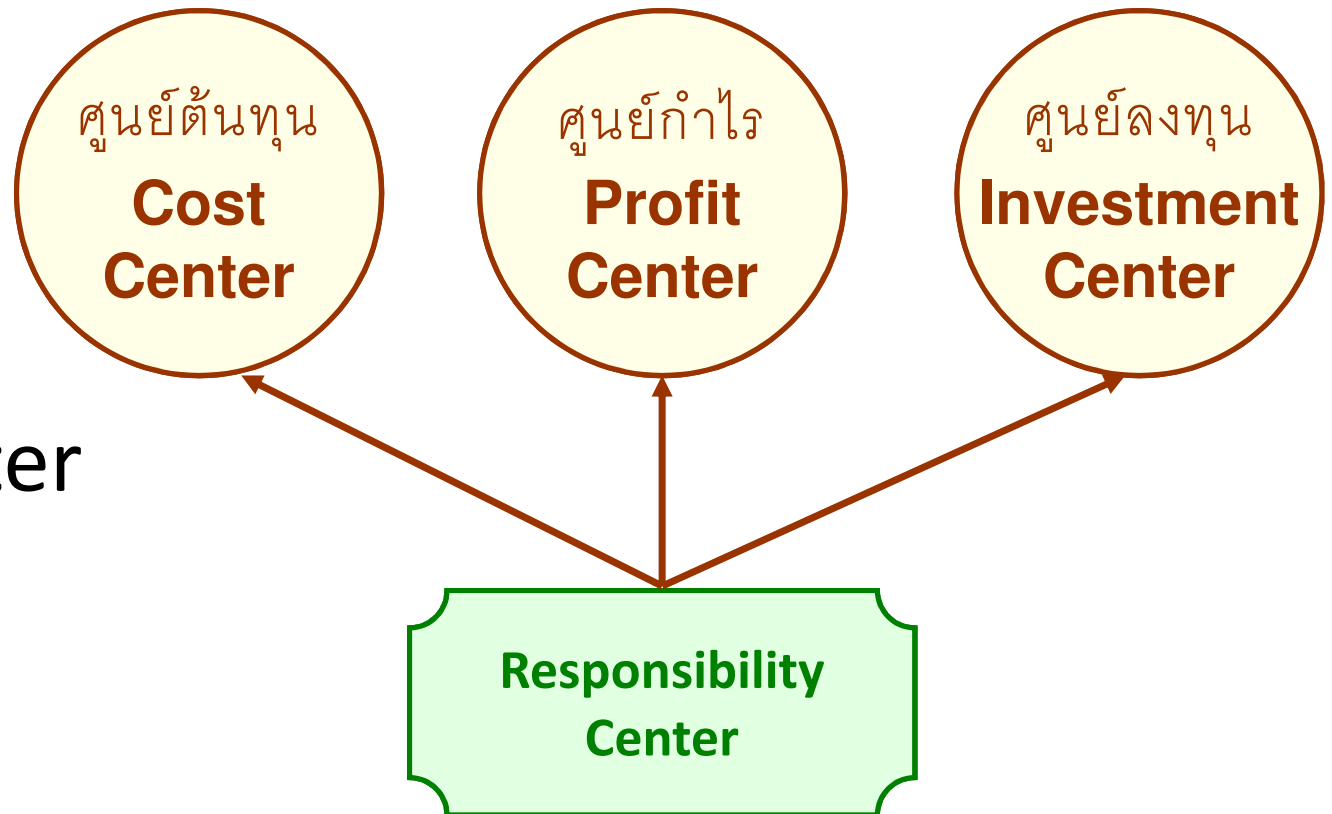
EVALUATION

What is the key concept of evaluation?

“We can evaluate something/someone in which they can control.”

General Types of Responsibility Center

- Cost Center
- Profit Center
- Investment Center



COST CENTER?
PROFIT CENTER?
INVESTMENT CENTER?

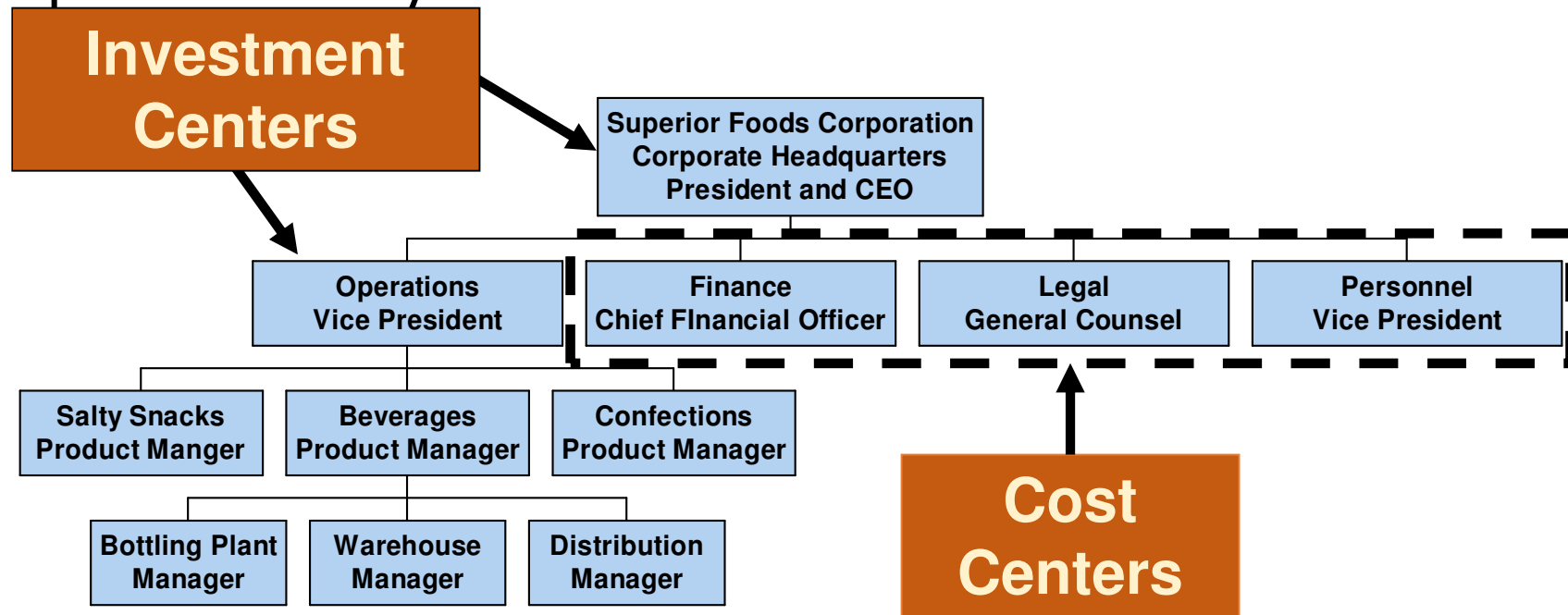
Investment Center

A segment whose manager has control over costs, revenues, and investments in operating assets.

Corporate Headquarters

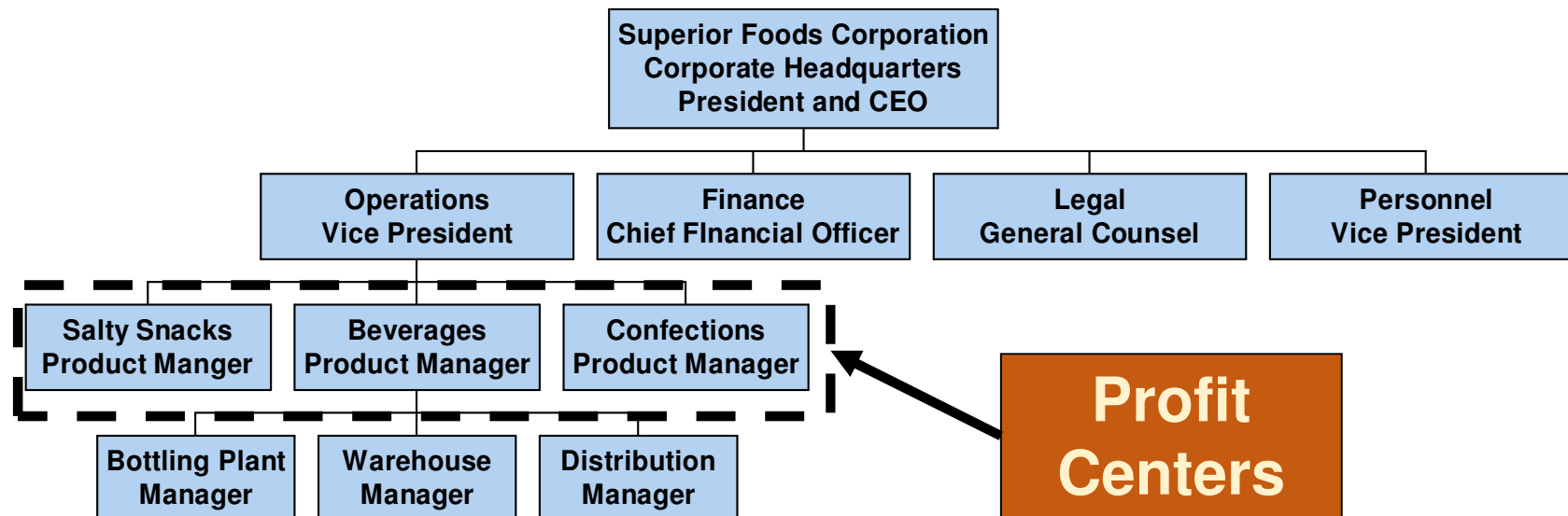


Responsibility Centers



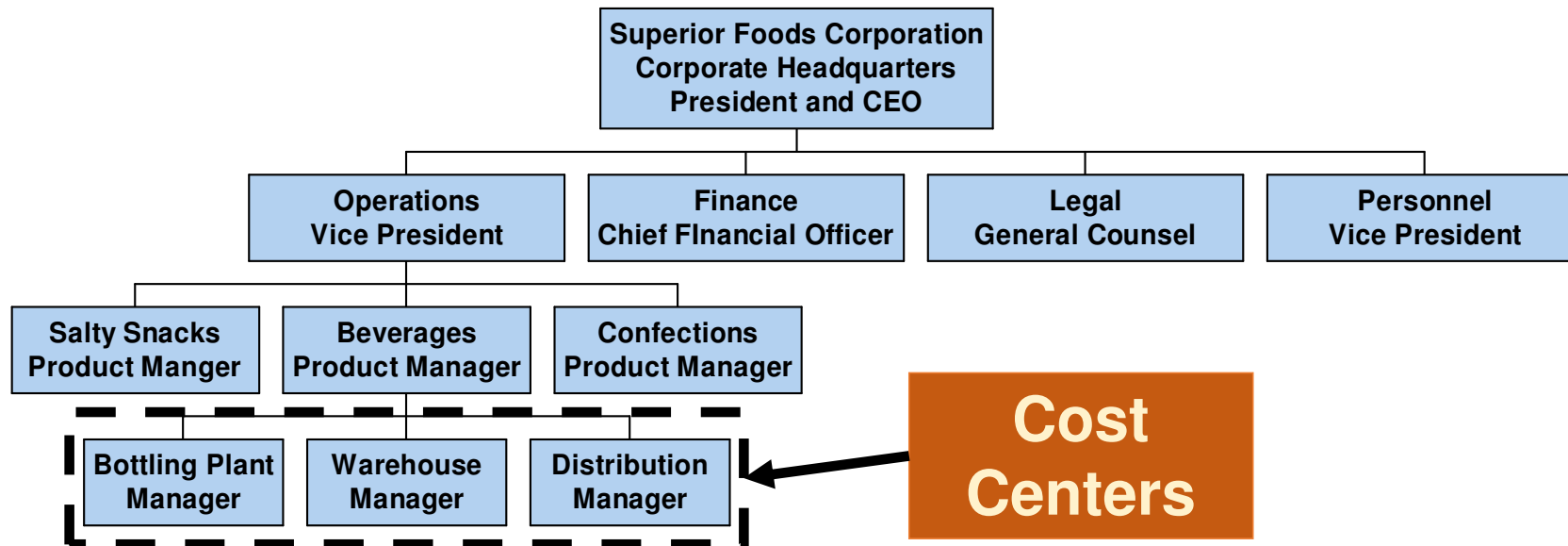
Superior Foods Corporation provides an example of the various kinds of responsibility centers that exist in an organization.

Responsibility Centers



Superior Foods Corporation provides an example of the various kinds of responsibility centers that exist in an organization.

Responsibility Centers



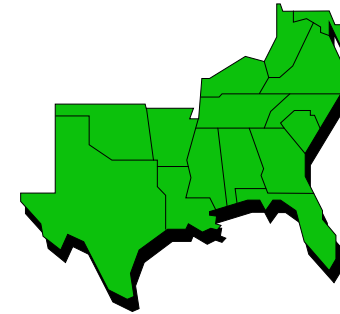
Superior Foods Corporation provides an example of the various kinds of responsibility centers that exist in an organization.

Before evaluating, we have to
know about
a segmented income statement.

Segment Reporting

A **segment** is any part or activity of an organization about which a manager seeks cost, revenue, or profit data.

A Sales Territory



A Service Center

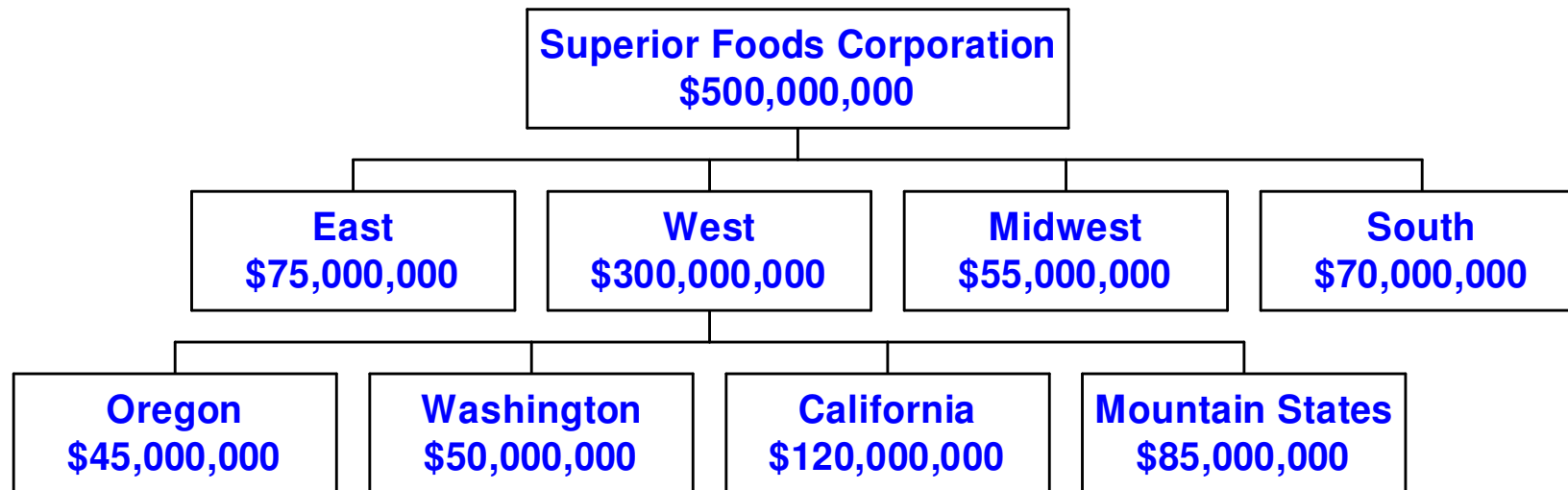


An Individual Store



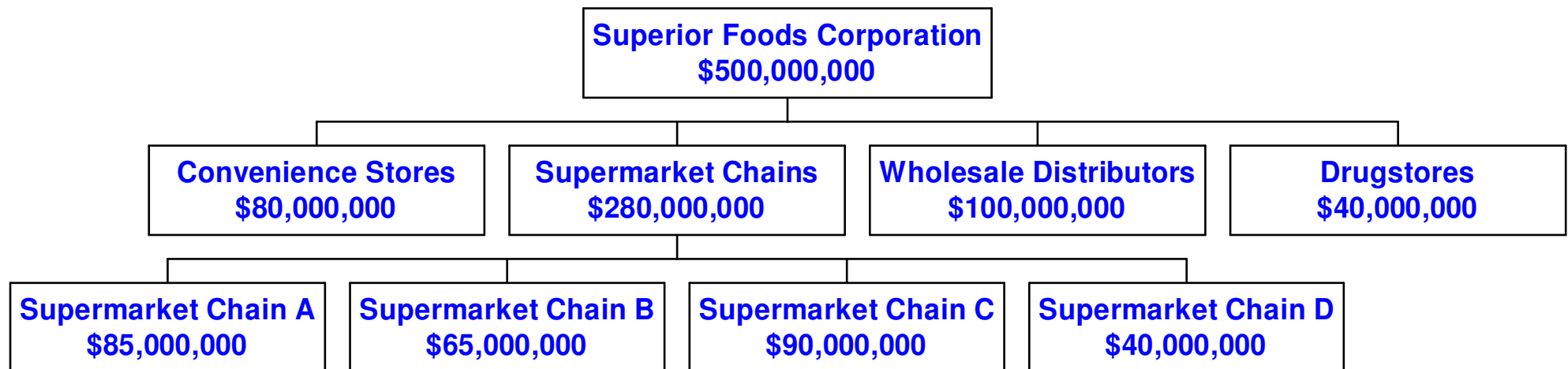
Example of Segments

Superior Foods: Geographic Regions



Superior Foods Corporation could segment its business by geographic region.

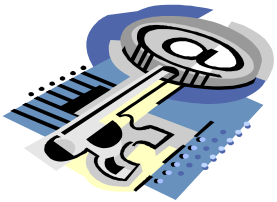
Superior Foods: Customer Channel



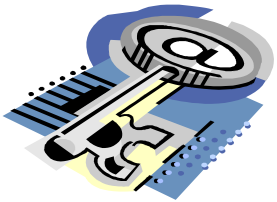
Superior Foods Corporation could segment its business by customer channel.

How to create segmented income reports!

TWO KEYS TO CREATE SEGMENTED INCOME STATEMENTS

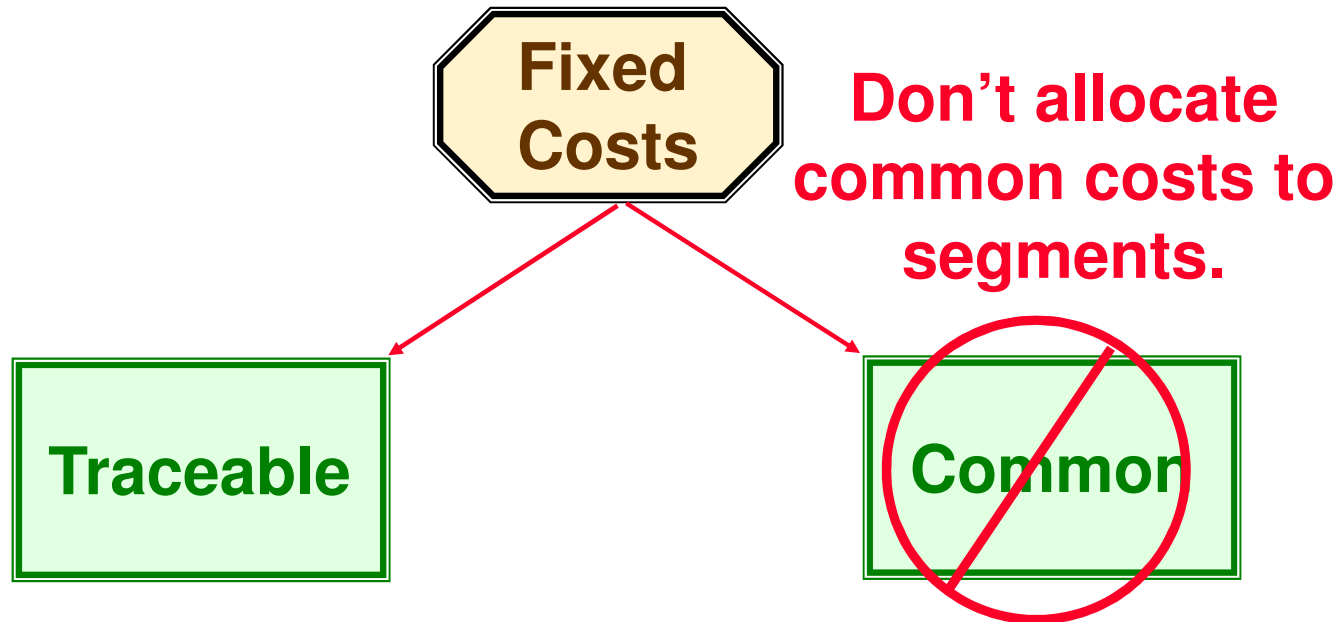


A contribution format should be used because it separates fixed from variable costs and it enables the calculation of a contribution margin.



Traceable fixed costs should be separated from common fixed costs to enable the calculation of a segment margin.

Traceable and Common Costs



Levels of Segmented Statements

Income Statement			
	Company	Television	Computer
Sales	\$ 500,000	\$ 300,000	\$ 200,000
Variable costs	230,000	150,000	80,000
CM	270,000	150,000	120,000
Traceable FC	170,000	90,000	80,000
Division margin	100,000	\$ 60,000	\$ 40,000
Common costs	25,000		
Net operating income	\$ 75,000		

Common Costs and Segments

Common costs should not be allocated to segments because:

1. Making a profitable segment to be unprofitable.
2. Forcing managers to be held accountable for costs they cannot control.

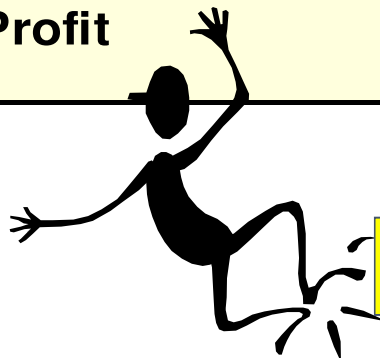
Example

Income Statement			
	WholeCom	A	B
Sales	<u>\$ 800,000</u>	<u>\$ 100,000</u>	<u>\$ 700,000</u>
Variable costs	<u>310,000</u>	<u>60,000</u>	<u>250,000</u>
CM	<u>490,000</u>	<u>40,000</u>	<u>450,000</u>
Traceable FC	<u>246,000</u>	<u>26,000</u>	<u>220,000</u>
Segment margin	<u>244,000</u>	<u>\$ 14,000</u>	<u>\$ 230,000</u>
Common costs	<u>200,000</u>		
Profit	<u>\$ 44,000</u>		

Assume that Hoagland's Lakeshore prepared its segmented income statement as shown.

Allocations of Common Costs

Income Statement			
	WholeCom	A	B
Sales	\$ 800,000	\$ 100,000	\$ 700,000
Variable costs	310,000	60,000	250,000
CM	490,000	40,000	450,000
Traceable FC	246,000	26,000	220,000
Segment margin	244,000	14,000	230,000
Common costs	200,000	20,000	180,000
Profit	\$ 44,000	\$ (6,000)	\$ 50,000



Hurray, now everything adds up!!!

?

ควรยกเลิก Bar ทิ้งหรือไม่?

a. Yes

b. No

?

a. Yes

b. No

The profit was \$44,000 before eliminating the bar. If we eliminate the bar, profit drops to \$30,000!

	<u>WholeCom</u>	<u>A</u>	<u>B</u>
Sales	\$ 700,000		\$ 700,000
Variable costs	250,000		250,000
CM	450,000		450,000
Traceable FC	220,000		220,000
Segment margin	230,000		230,000
Common costs	200,000		200,000
Profit	<u>\$ 30,000</u>		<u>\$ 30,000</u>

How to evaluate performance of each type of responsibility centers!

Evaluating in each type of responsibility center

- **Cost Center => Cost**
- **Profit Center => Profit**
- **Investment Center => Profit and Asset Performance**

The Investment Center is
Evaluated by
Return on Investment


Return on Investment (ROI) Formula

Income before interest
and taxes (EBIT)



$$\text{ROI} = \frac{\text{Net operating income}}{\text{Average operating assets}}$$

Cash, accounts receivable, inventory,
plant and equipment, and other
productive assets.



Why do we use EBIT to calculate ROI?



Understanding ROI

$$\text{ROI} = \frac{\text{Net operating income}}{\text{Average operating assets}}$$

$$\text{Margin} = \frac{\text{Net operating income}}{\text{Sales}}$$

$$\text{Turnover} = \frac{\text{Sales}}{\text{Average operating assets}}$$

$$\text{ROI} = \text{Margin} \times \text{Turnover}$$

ROI – An Example

ABC reports the following:

Net operating income \$ 30,000

Average operating assets \$ 200,000

Sales \$ 500,000

Operating expenses \$ 470,000

What is ABC's ROI?

ROI = Margin × Turnover

$$\text{ROI} = \frac{\text{Net operating income}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Average operating assets}}$$

ROI – An Example

$$\text{ROI} = \text{Margin} \times \text{Turnover}$$

$$\text{ROI} = \frac{\text{Net operating income}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Average operating assets}}$$

$$\text{ROI} = \frac{\$30,000}{\$500,000} \times \frac{\$500,000}{\$200,000}$$

$$\text{ROI} = 6\% \times 2.5 = 15\%$$

Assume that ABC's manager invests in a \$30,000 piece of equipment that increases sales by \$35,000, while increasing operating expenses by \$15,000.

ABC reports the following:

Net operating income	\$ 50,000
Average operating assets	\$ 230,000
Sales	\$ 535,000
Operating expenses	\$ 485,000

Let's calculate the new ROI.

ROI = Margin × Turnover

$$\text{ROI} = \frac{\text{Net operating income}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Average operating assets}}$$

$$\text{ROI} = \frac{\$50,000}{\$535,000} \times \frac{\$535,000}{\$230,000}$$

$$\text{ROI} = 9.35\% \times 2.33 = 21.8\%$$

ROI increased from 15% to 21.8%.

Increasing ROI

① Increase Sales

② Reduce Expenses

③ Reduce Assets



Criticisms of ROI

Management may not know how to increase ROI.

Managers evaluated on ROI may reject profitable investment opportunities.



RESIDUAL INCOME (IR)

By Teerachai Arunruangsirilert, PhD, CPA

Residual Income - Another Measure of Performance



By Teerachai Arunruangsirilert, PhD, CPA

Calculating Residual Income

$$\text{Residual income} = \text{Net operating income} - \left(\text{Average operating assets} \times \text{Minimum required rate of return} \right)$$

Cost of Capital

Calculating Residual Income

$$\text{Residual income} = \text{Net operating income} - \left(\text{Average operating assets} \times \text{Minimum required rate of return} \right)$$

ROI measures net operating income earned relative to the investment in average operating assets.

Residual income measures net operating income earned less the minimum required return on average operating assets.

Residual Income – An Example

- ABC has average operating assets of \$100,000 and is required to earn a return of 20% on these assets.
- In the current period, the division earns \$30,000.

Let's calculate residual income.

Residual Income – An Example

Operating assets	\$ 100,000
Required rate of return ×	20%
Minimum required return	<u>\$ 20,000</u>



Actual income	\$ 30,000
Minimum required return	(20,000)
Residual income	<u>\$ 10,000</u>

Motivation and Residual Income

Residual income encourages managers to make profitable investments that would be rejected by managers using ROI.



Practice!

ABC is a division of FAC and it has a net operating income of \$60,000 and average operating assets of \$300,000. The required rate of return for the company is 15%. What is the division's ROI?

- a. 25%
- b. 5%
- c. 15%
- d. 20%

Practice!

ABC is a division of FAC and it has a net operating income of \$60,000 and average operating assets of \$300,000. The required rate of return for the company is 15%. What is the division's ROI?

- a. 25%
- b. 5%
- c. 15%
- d. 20%**

$$\begin{aligned} \text{ROI} &= \text{NOI} / \text{Average operating assets} \\ &= \$60,000 / \$300,000 = 20\% \end{aligned}$$

Practice!

ABC, a division of FAC, has a net operating income of \$60,000 and average operating assets of \$300,000. If the manager of the division is evaluated based on ROI, will she want to make an investment of \$100,000 that would generate additional net operating income of \$18,000 per year?

- a. Yes
- b. No

Practice!

ABC, a division of FAC, has a net operating income of \$60,000 and average operating assets of \$300,000. If the manager of the division is evaluated based on ROI, will she want to make an investment of \$100,000 that would generate additional net operating income of \$18,000 per year?

a. Yes

b. No

$$\text{ROI} = \$78,000 / \$400,000 = 19.5\%$$

This lowers the division's ROI from 20.0% down to 19.5%.

Practice!

**The company's required rate of return is 15%.
Would the company want the manager of the ABC
division to make an investment of \$100,000 that
would generate additional net operating income of
\$18,000 per year?**

- a. Yes**
- b. No**

Practice!

The company's required rate of return is 15%.
Would the company want the manager of the ABC division to make an investment of \$100,000 that would generate additional net operating income of \$18,000 per year?

a. Yes

b. No

$$\text{ROI} = \$18,000 / \$100,000 = 18\%$$

The return on the investment exceeds the minimum required rate of return.

Quick Check ✓

ABC, a division of FAC, has a net operating income of \$60,000 and average operating assets of \$300,000. The required rate of return for the company is 15%. What is the division's residual income?

- a. \$240,000
- b. \$ 45,000
- c. \$ 15,000
- d. \$ 51,000

Quick Check ✓

ABC, a division of FAC, has a net operating income of \$60,000 and average operating assets of \$300,000. The required rate of return for the company is 15%. What is the division's residual income?

- a. \$240,000
- b. \$ 45,000
- c. \$ 15,000**
- d. \$ 51,000

Net operating income	\$60,000
Required return (15% of \$300,000)	<u>(45,000)</u>
Residual income	\$15,000

Practice!

If the manager of the ABC division is evaluated based on residual income, will she want to make an investment of \$100,000 that would generate additional net operating income of \$18,000 per year?

- a. Yes**
- b. No**

Practice!

If the manager of the ABC division is evaluated based on residual income, will she want to make an investment of \$100,000 that would generate additional net operating income of \$18,000 per year?

a. Yes

b. No

Net operating income	\$78,000
Required return (15% of \$400,000)	<u>(60,000)</u>
Residual income	\$18,000

Yields an increase of \$3,000 in the residual income.

Divisional Comparisons and Residual Income

The residual income approach has one major disadvantage.

It cannot be used to compare the performance of divisions of different sizes.



Which one is better performance?

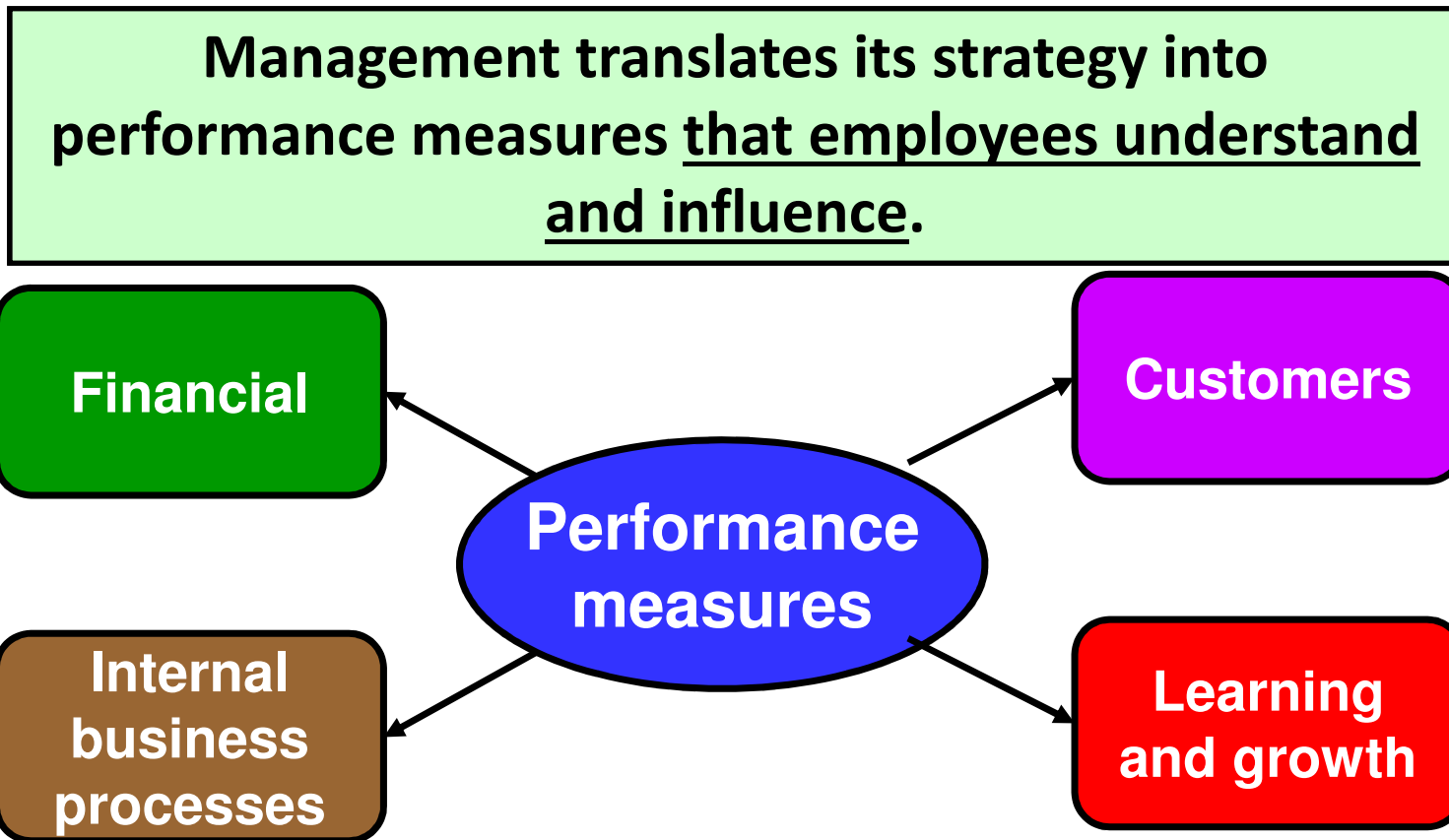
	Retail	Wholesale
Operating assets	\$ 100,000	\$ 1,000,000
Required rate of return ×	20%	20%
Minimum required return	\$ 20,000	\$ 200,000
<hr/>		
	Retail	Wholesale
Actual income	\$ 30,000	\$ 220,000
Minimum required return	(20,000)	(200,000)
Residual income	\$ 10,000	\$ 20,000

What are the drawbacks of those financial indicators?

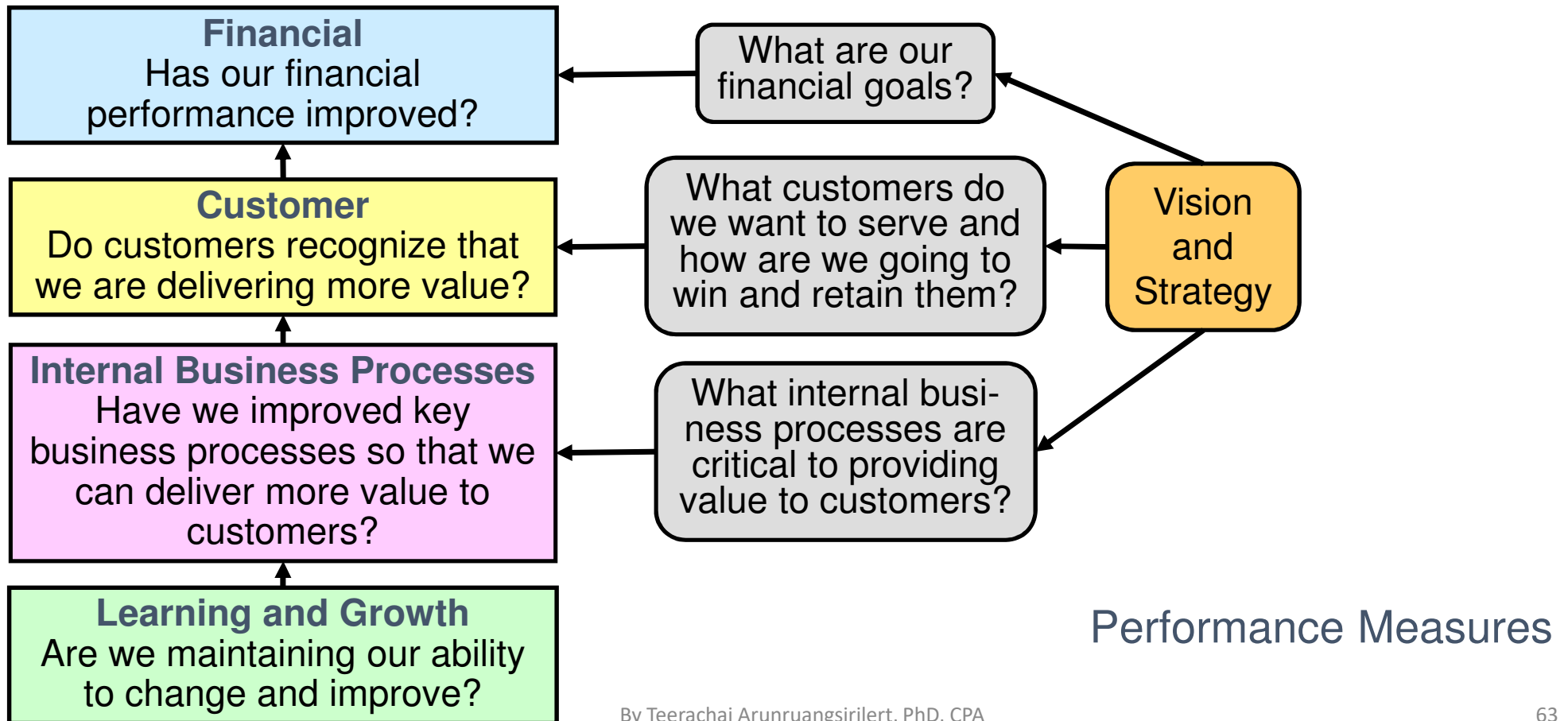
Overview of Balanced ScoreCard (BSC)



The Balanced Scorecard



The Balanced Scorecard: From Strategy to Performance Measures



The Balanced Scorecard: Non-financial Measures

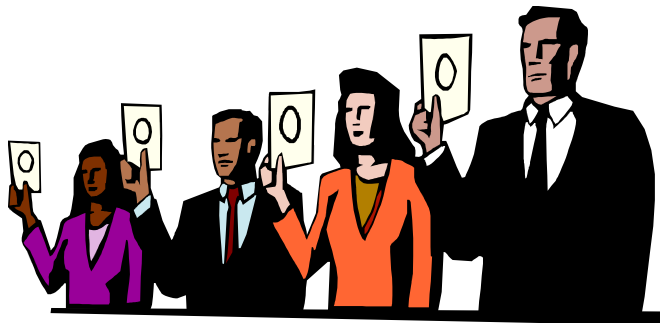
The balanced scorecard relies on non-financial measures in addition to financial measures for two reasons:

❶ Financial measures are lag indicators that summarize the results of past actions. Non-financial measures are leading indicators of future financial performance.

❷ Top managers are ordinarily responsible for financial performance measures – not lower level managers. Non-financial measures are more likely to be understood and controlled by lower level managers.

The Balanced Scorecard for Individuals

The entire organization should have an overall balanced scorecard.



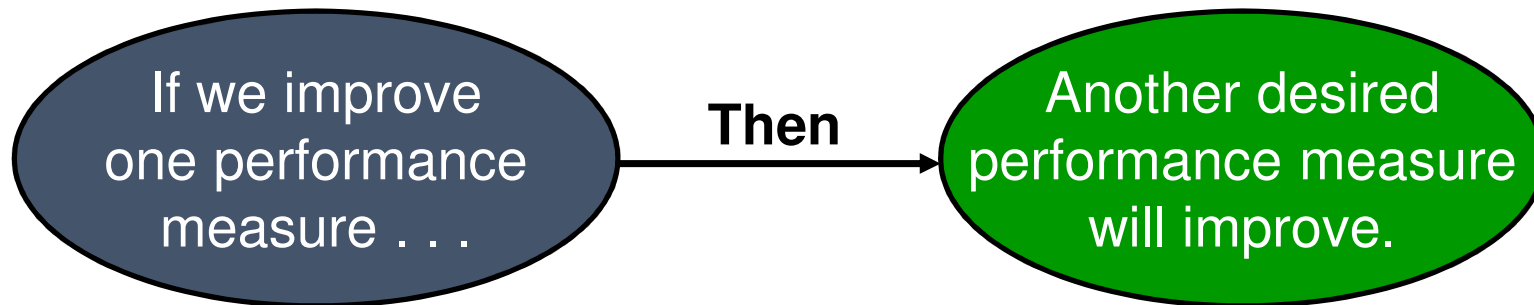
Each individual should have a personal balanced scorecard.



A personal scorecard should contain measures that can be influenced by the individual being evaluated and that support the measures in the overall balanced scorecard.

The Balanced Scorecard

A balanced scorecard should have measures that are linked together on a cause-and-effect basis.



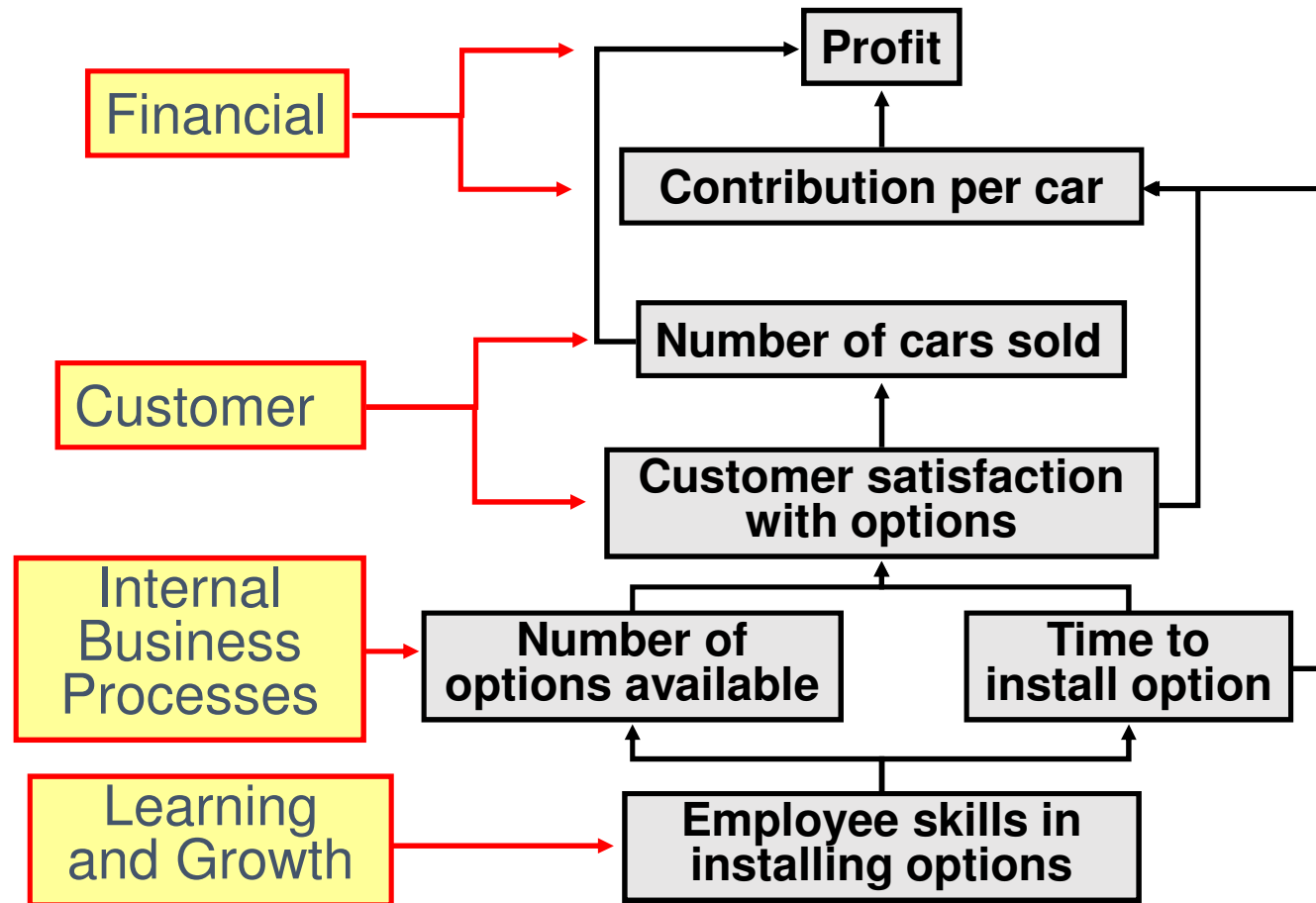
The balanced scorecard lays out concrete actions to attain desired outcomes.

The Balanced Scorecard and Compensation

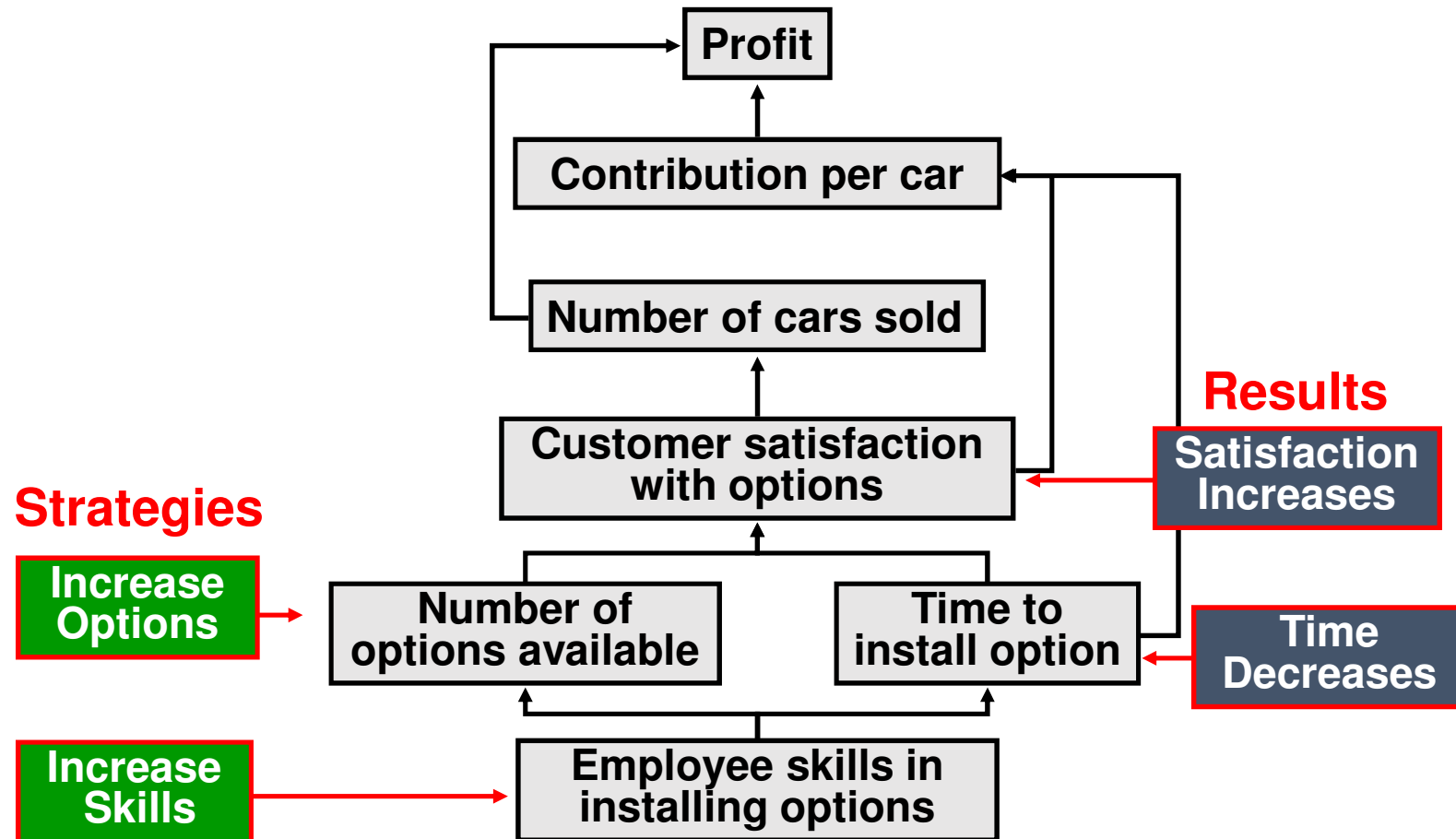
Incentive compensation should be linked to balanced scorecard performance measures.



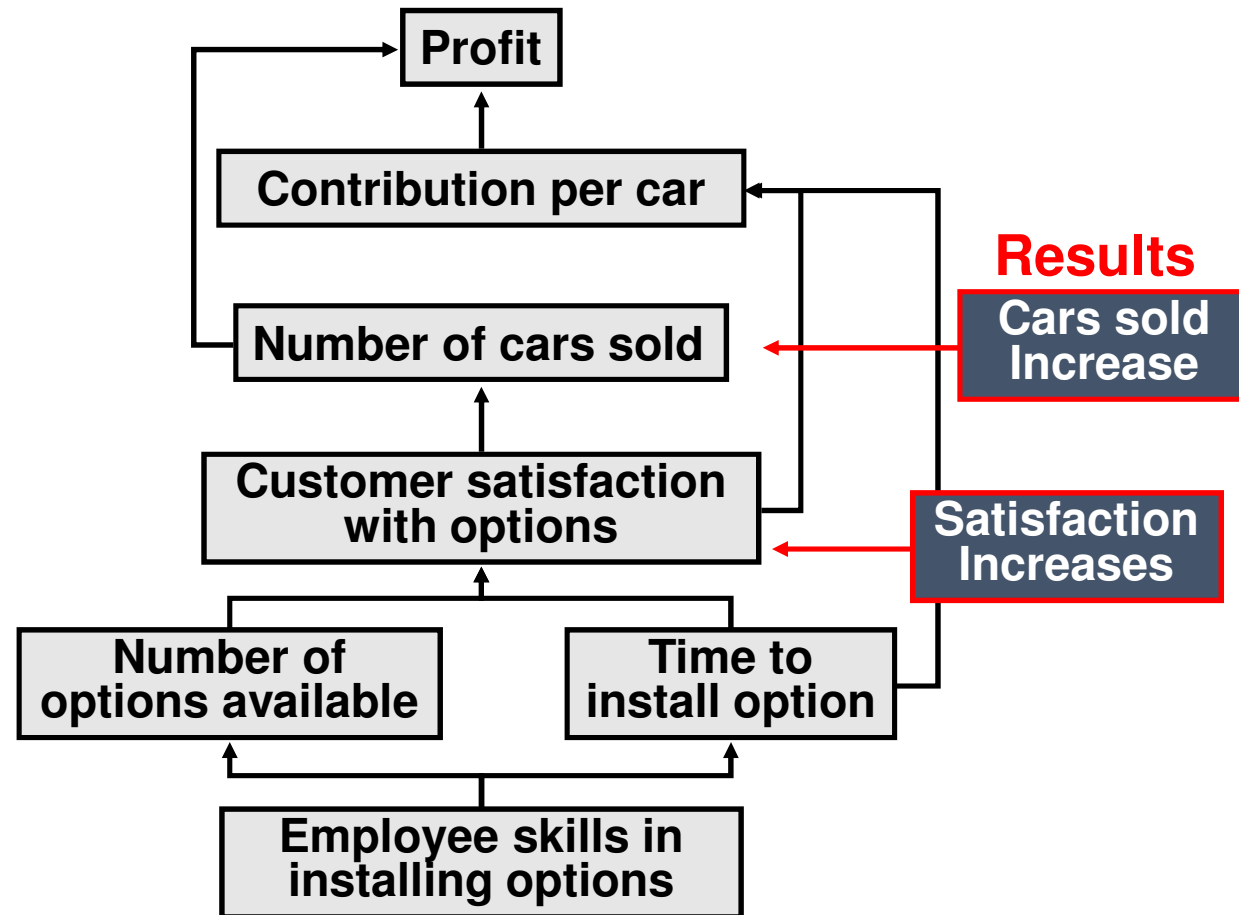
The Balanced Scorecard – Jaguar Example



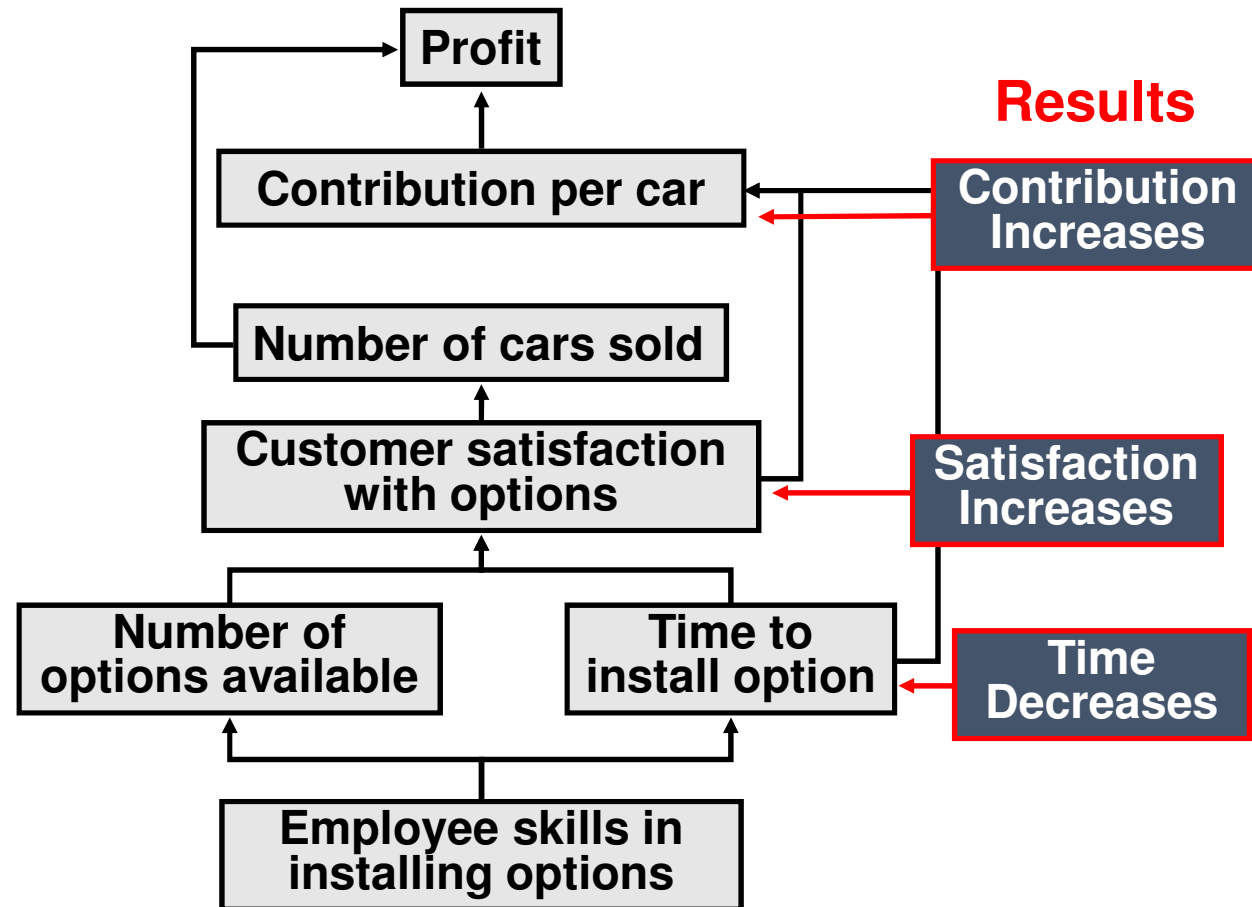
The Balanced Scorecard – Jaguar Example



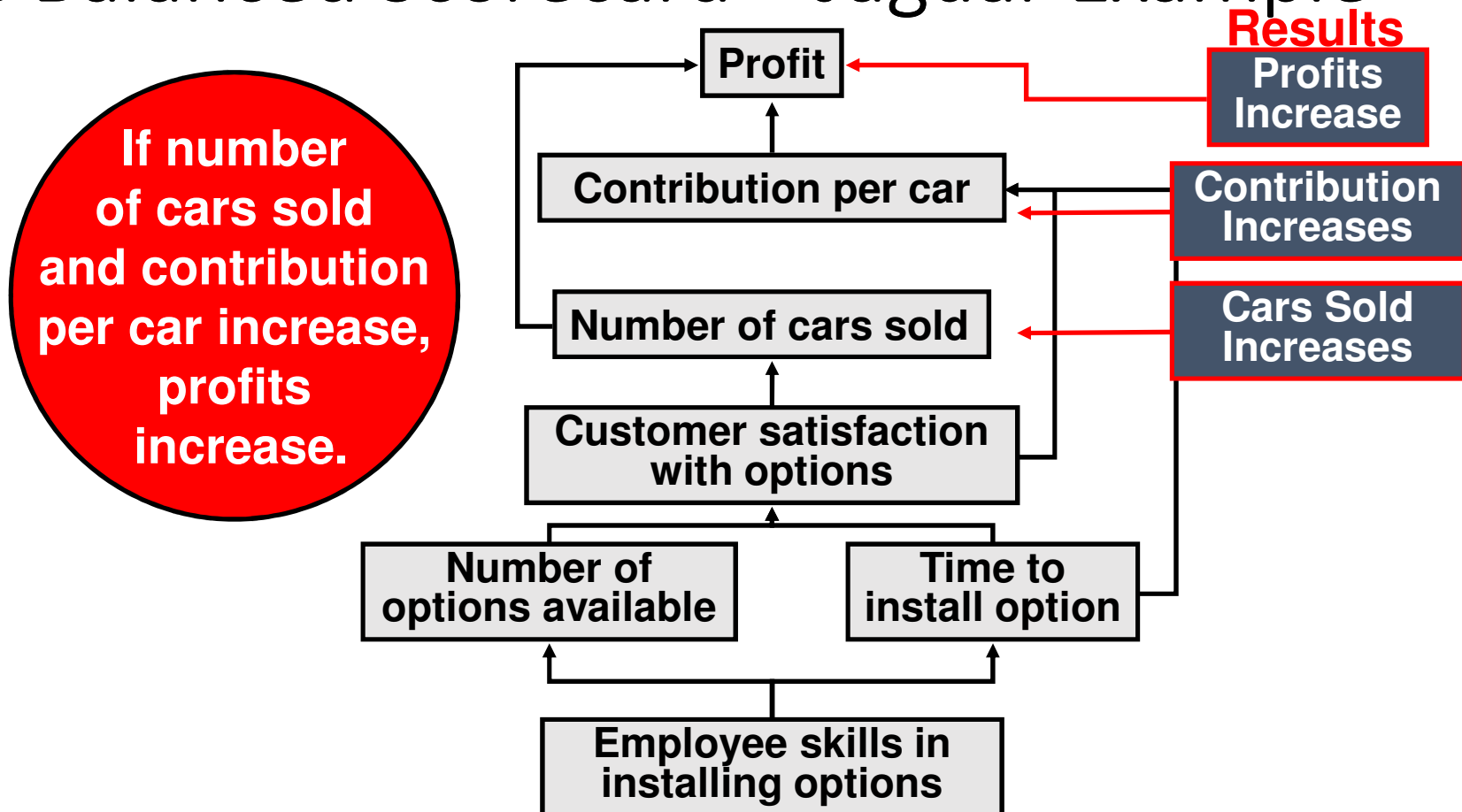
The Balanced Scorecard – Jaguar Example



The Balanced Scorecard – Jaguar Example



The Balanced Scorecard – Jaguar Example



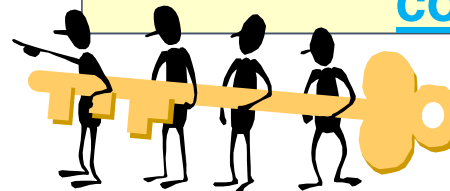
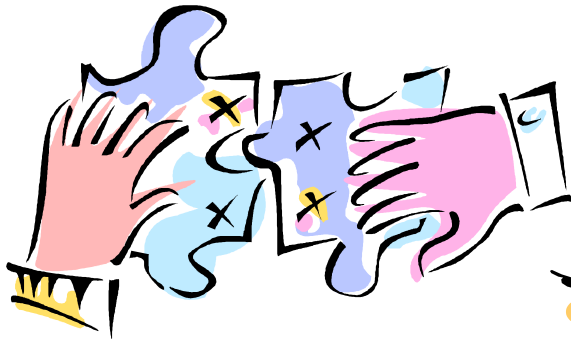
Transfer Pricing

Key Concepts/Definitions

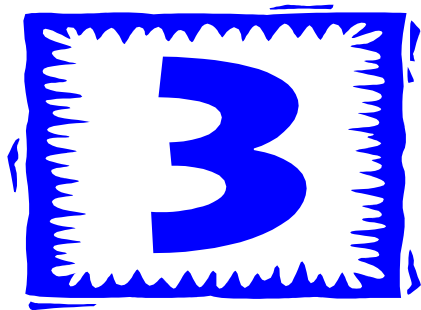
A **transfer price** is the price charged when one segment of a company provides goods or services to another segment of the company.



The fundamental objective in setting transfer prices is to motivate managers to act in the **best interests of the overall company.**



Three Primary Approaches



There are three primary approaches to setting transfer prices:

1. Negotiated transfer prices;
2. Transfers at the cost to the selling division; and
3. Transfers at market price.

The negotiated transfer price

Negotiated Transfer Prices

A negotiated transfer price results from discussions between the selling and buying divisions.

Advantages of negotiated transfer prices:

1. They preserve the autonomy of the divisions, which is consistent with the spirit of decentralization.
2. The managers negotiating the transfer price are likely to have much better information about the potential costs and benefits of the transfer than others in the company.

Range of Acceptable Transfer Prices

Upper limit is determined by the buying division.

Lower limit is determined by the selling division.

Grocery Storehouse – An Example

Assume the information as shown with respect to West Coast Plantations and Grocery Mart (both companies are owned by Grocery Storehouse).



West Coast Plantations:

Naval orange harvest capacity per month	10,000	crates
Variable cost per crate of naval oranges	\$ 10	per crate
Fixed costs per month	\$ 100,000	
Selling price of navel oranges on the outside market	\$ 25	per crate

Grocery Mart:

Purchase price of current naval oranges	\$ 20	per crate
Monthly sales of naval oranges	1,000	crates

The selling division's (West Coast Plantations) lowest acceptable transfer price is calculated as:

$$\text{Transfer Price} \geq \frac{\text{Variable cost}}{\text{per unit}} + \frac{\text{Total contribution margin on lost sales}}{\text{Number of units transferred}}$$

Let's calculate the lowest and highest acceptable transfer prices under three scenarios.

The buying division's (Grocery Mart) highest acceptable transfer price is calculated as:

$$\text{Transfer Price} \leq \text{Cost of buying from outside supplier}$$

If an outside supplier does not exist, the highest acceptable transfer price is calculated as:

$$\text{Transfer Price} \leq \text{Profit to be earned per unit sold (not including the transfer price)}$$

Grocery Storehouse – An Example

If West Coast Plantations has **sufficient idle capacity** (3,000 crates) to satisfy Grocery Mart's demands (1,000 crates), without sacrificing sales to other customers, then the lowest and highest possible transfer prices are computed as follows:

Selling division's lowest possible transfer price:

$$\text{Transfer Price} \geq \$10 + \frac{\$ -}{1,000} = \$10$$



Buying division's highest possible transfer price:

$$\text{Transfer Price} \leq \text{Cost of buying from outside supplier} = \$ 20$$

Therefore, the range of acceptable transfer prices is \$10 – \$20.

Grocery Storehouse – An Example

If West Coast Plantations has **no idle capacity** (0 crates) and must sacrifice other customer orders (1,000 crates) to meet Grocery Mart's demands (1,000 crates), then the lowest and highest possible transfer prices are computed as follows:

Selling division's lowest possible transfer price:

$$\text{Transfer Price} \geq \$ 10 + \frac{(\$25 - \$10) \times 1,000}{1,000} = \$ 25$$



Buying division's highest possible transfer price:

$$\text{Transfer Price} \leq \text{Cost of buying from outside supplier} = \$ 20$$

Therefore, there is no range of acceptable transfer prices.

Grocery Storehouse – An Example

If West Coast Plantations has **some idle capacity** (500 crates) and must sacrifice other customer orders (500 crates) to meet Grocery Mart's demands (1,000 crates), then the lowest and highest possible transfer prices are computed as follows:

Selling division's lowest possible transfer price:

$$\text{Transfer Price} \geq \$ 10 + \frac{(\$ 25 - \$ 10) \times 500}{1,000} = \$ 17.50$$



Buying division's highest possible transfer price:

$$\text{Transfer Price} \leq \text{Cost of buying from outside supplier} = \$ 20$$

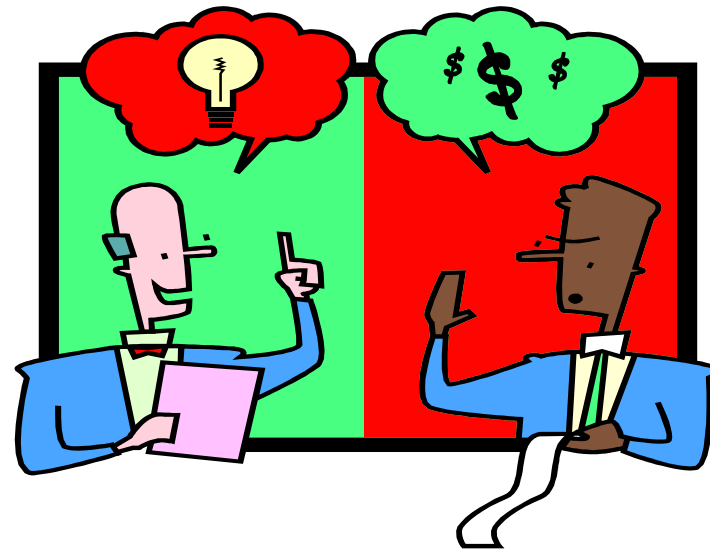
Therefore, the range of acceptable transfer prices is \$17.50 – \$20.00.

Transfers at the Cost to the Selling Division

Many companies set transfer prices at either the **variable cost or full (absorption) cost** incurred by the selling division.

Drawbacks of this approach include:

1. Using full cost as a transfer price can lead to suboptimization.
2. The selling division will never show a profit on any internal transfer.
3. Cost-based transfer prices do not provide incentives to control costs.



Transfers at Market Price

A **market price (i.e., the price charged for an item on the open market) is often regarded as the best approach to the transfer pricing problem.**

- 1. A market price approach works best when the product or service is sold in its present form to outside customers and the selling division has no idle capacity.**
- 2. A market price approach does not work well when the selling division has idle capacity.**



Divisional Autonomy and Suboptimization

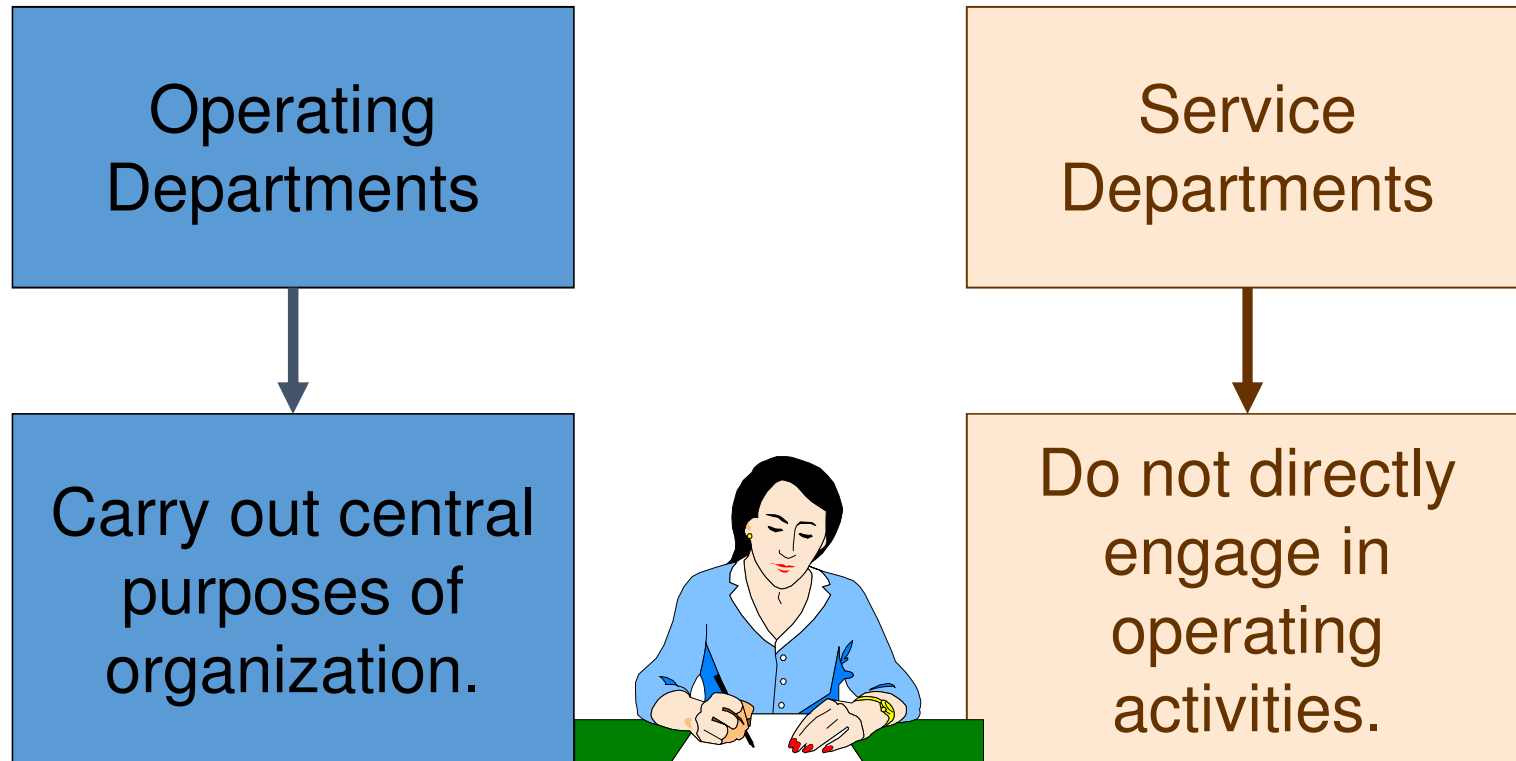


The principles of decentralization suggest that companies should grant managers autonomy to set transfer prices and to decide whether to sell internally or externally, even if this may occasionally result in suboptimal decisions.

This way top management allows subordinates to control their own destiny.

Service Department Charges

Service Department Charges



Reasons for Charging Service Department Costs

Service department costs are charged to operating departments for a variety of reasons including:

To encourage operating departments to wisely use service department resources.

To provide operating departments with more complete cost data for making decisions.

To help measure the profitability of operating departments.

To create an incentive for service departments to operate efficiently.

Transfer Prices

The service department charges can be viewed as a transfer price that is charged for services provided by service departments to operating departments.



Charging Costs by Behavior

Whenever possible,
variable and fixed
service department costs
should be charged
separately.



Charging Costs by Behavior

Variable service department costs should be charged to consuming departments according to whatever activity causes the incurrence of the cost.



Charging Costs by Behavior

Charge **fixed** service department costs to consuming departments in predetermined lump-sum amounts that are based on the consuming department's peak-period or long-run average servicing needs.

Are based on amounts of capacity each consuming department requires.

Should not vary from period to period.

Actual Costs VS Budgeted Costs

Budgeted variable
and fixed service department
costs should be charged to
operating departments.



Pitfalls in Allocating Fixed Costs

Allocating fixed costs using a variable allocation base.



Result

Fixed costs allocated to one department are heavily influenced by what happens in other departments.

Pitfalls in Allocating Fixed Costs

Using sales dollars as an allocation base.



Result

Sales of one department influence the service department costs allocated to other departments.

Case Study Discussion!

Thank you