Performance Measurement in Decentralized Organizations

Chapter 13

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Decentralization in Organizations

Benefits of Decentralization

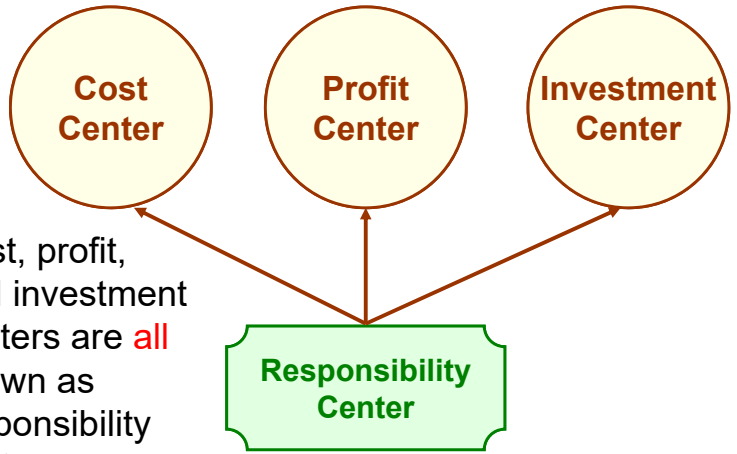
- Top management freed to concentrate on strategy.
- Lower-level managers gain experience in decision-making.
- Decision-making authority leads to job satisfaction.
- Lower-level decisions often based on better information.
- Lower level managers can respond quickly to customers.

Decentralization in Organizations

Disadvantages of Decentralization

- May be a lack of coordination among autonomous managers.
- Lower-level managers may make decisions without seeing the "big picture."
- Lower-level manager's objectives may not be those of the organization.
- May be difficult to spread innovative ideas in the organization.

Cost, Profit, and Investments Centers



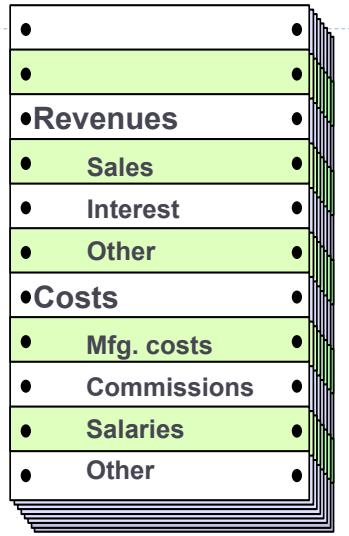
Cost, profit, and investment centers are all known as responsibility centers.

Cost Center

A segment whose manager has control over costs, but not over revenues or investment funds.

Profit Center

A segment whose manager has control over both costs and revenues, but no control over investment funds.

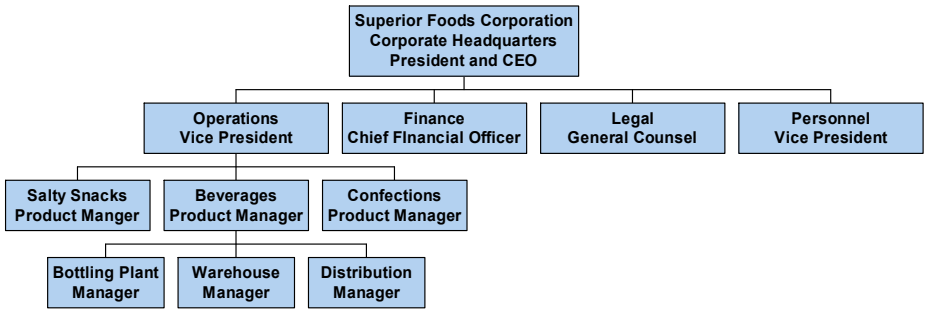


Investment Center

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.

Decentralization and Segment Reporting

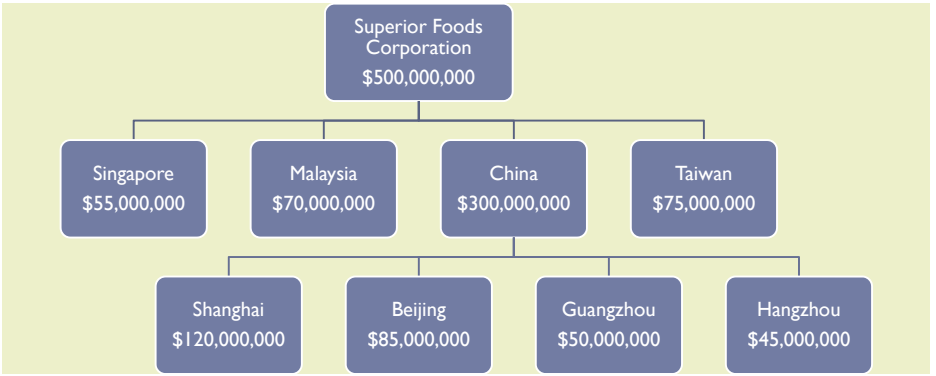
A segment is any part or activity of an organization about which a manager seeks cost, revenue, or profit data.

An Individual Store

A Sales Territory

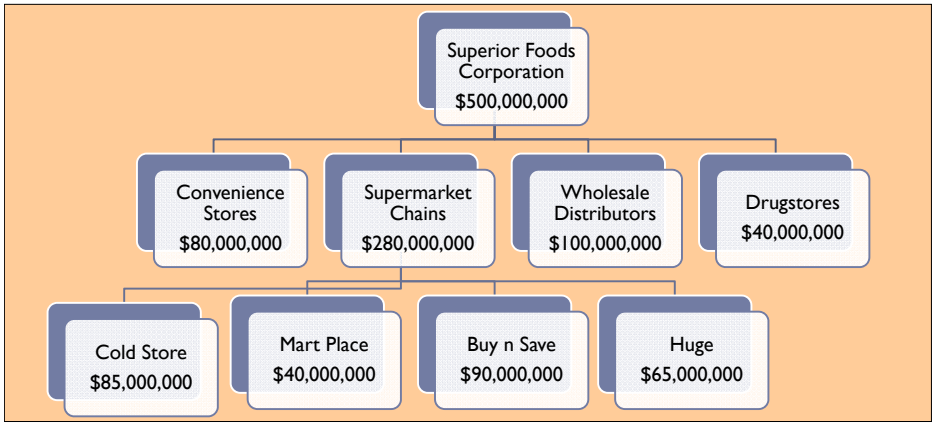
A Service Center

Superior Foods: Geographic Regions



Superior Foods Corporation could segment its business by geographic region.

Superior Foods: Customer Channel

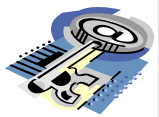


Superior Foods Corporation could segment its business by customer channel.

Keys to Segmented Income Statements

There are two keys to building 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.

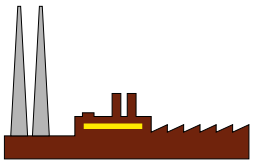


Traceable fixed costs should be separated from common fixed costs to enable the calculation of a segment margin.

Identifying Traceable Fixed Costs

Traceable costs arise because of the existence of a particular segment and would disappear over time if the segment itself disappeared.

No computer division means . . .

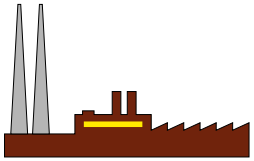


No computer division manager.

Identifying Common Fixed Costs

Common costs arise because of the overall operation of the company and would not disappear if any particular segment were eliminated.

No computer division but . . .



We still have a company president.

Notes:

Traceable Costs Can Become Common Costs

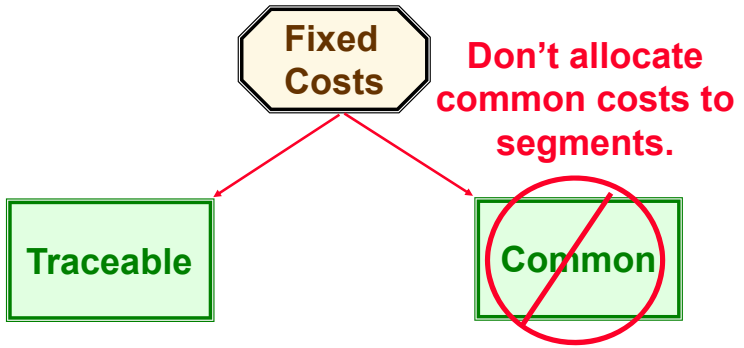
It is important to realize that the traceable fixed costs of one segment may be a common fixed cost of another segment.

For example, the landing fee paid to land an airplane at an airport is traceable to the particular flight, but it is not traceable to first-class, business-class, and economy-class passengers.

Segment Margin

The segment margin, which is computed by subtracting the traceable fixed costs of a segment from its contribution margin, is the best gauge of the long-run profitability of a segment.

Traceable and Common Costs

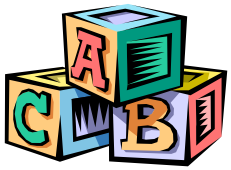


Activity-Based Costing

Activity-based costing can help identify how costs shared by more than one segment are traceable to individual segments.

Assume that three products, 9-inch, 12-inch, and 18-inch pipe, share 10,000 square feet of warehousing space, which is leased at a price of $4 per square foot.

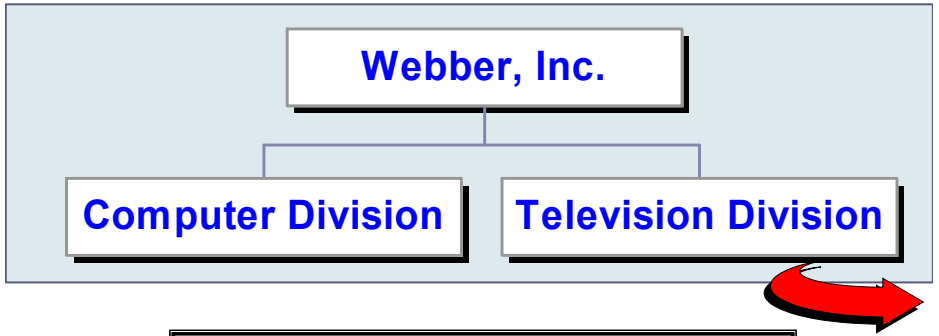
If the 9-inch, 12-inch, and 18-inch pipes occupy 1,000, 4,000, and 5,000 square feet, respectively, then ABC can be used to trace the warehousing costs to the three products as shown.



	Pipe Products			
	9-inch	12-inch	18-inch	Total
Warehouse sq. ft.	1,000	4,000	5,000	10,000
Lease price per sq. ft.	$ 4	$ 4	$ 4	$ 4
Total lease cost	$ 4,000	$ 16,000	$ 20,000	$ 40,000

Levels of Segmented Statements

Webber, Inc. has two divisions.



Let's look more closely at the Television Division's income statement.

Levels of Segmented Statements

Our approach to segment reporting uses the contribution format.

Income Statement Contribution Margin Format Television Division	
Sales	$300,000
Variable COGS	120,000
Other variable costs	30,000
Total variable costs	150,000
Contribution margin	150,000
Traceable fixed costs	90,000
Division margin	$ 60,000

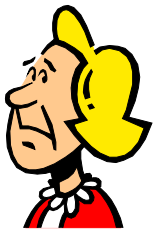
Levels of Segmented Statements

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			
Net operating income			

Traceable Costs Can Become Common Costs

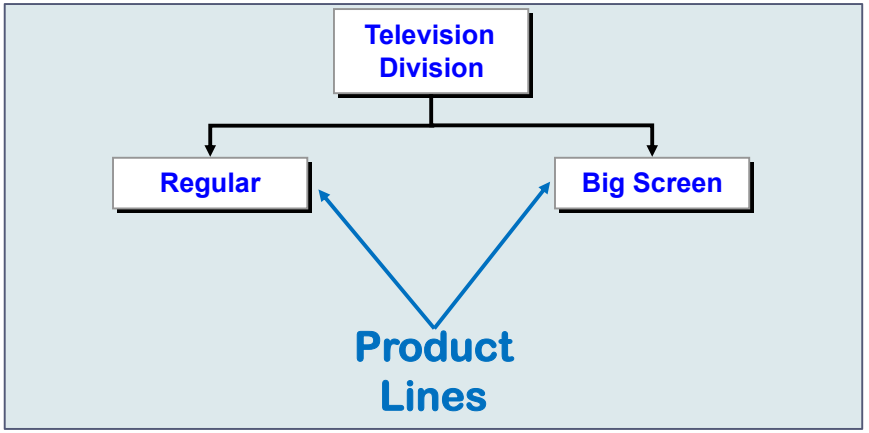
As previously mentioned, fixed costs that are traceable to one segment can become common if the company is divided into smaller segments.

Let's see how this works using the Webber, Inc. example!



Traceable Costs Can Become Common Costs

Webber's Television Division



Traceable Costs Can Become Common Costs

Income Statement	Television Division	Regular	Big Screen
Sales	$ 300,000	$ 200,000	$ 100,000
Variable costs	150,000	95,000	55,000
CM	150,000	105,000	45,000
Traceable FC	80,000	45,000	35,000
Product line margin	70,000	$ 60,000	$ 10,000
Common costs			
Divisional margin			

External Reports

The International Financial Reporting Standards (IFRS) and US GAAP require companies to include segmented financial data in their annual reports.

1. In addition to some compulsory disclosure, companies must report segmented results to shareholders using the same measures to be used by the Chief Operating Decision Maker (CODM) to make decisions
2. Since the contribution approach to segment reporting does not comply with financial reporting standards, it is likely that some managers will choose to construct their segmented financial statements using the absorption approach to comply with GAAP.

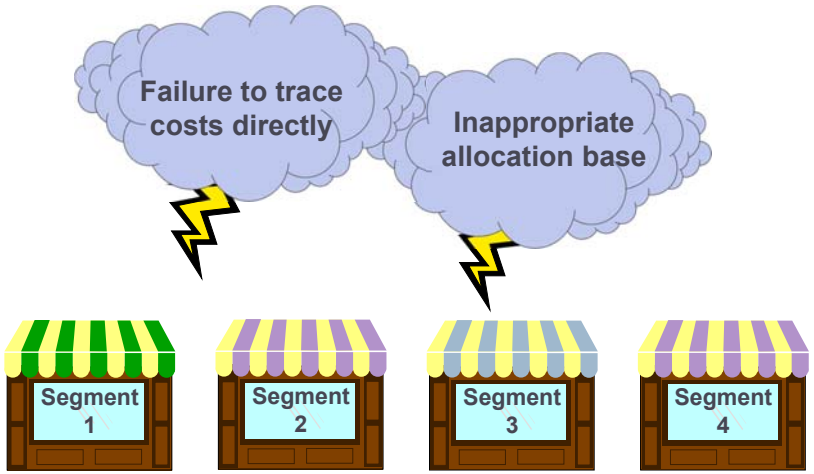
Omission of Costs

Costs assigned to a segment should include all costs attributable to that segment from the company's entire value chain.

Business Functions Making Up The Value Chain

R&D	Product Design	Manufacturing	Marketing	Distribution	Customer Service

Inappropriate Methods of Allocating Costs Among Segments

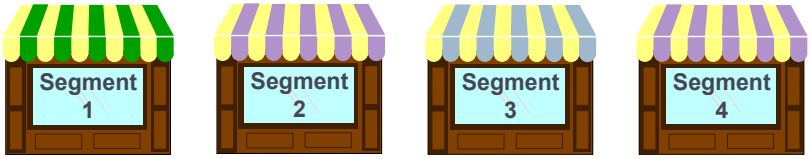


Common Costs and Segments

Common costs should not be arbitrarily allocated to segments based on the rationale that "someone has to cover the common costs" for two reasons:

1. **This practice may make a profitable business segment appear to be unprofitable.**

2. **Allocating common fixed costs forces managers to be held accountable for costs they cannot control.**



Notes:

Quick Check ✓

Income Statement

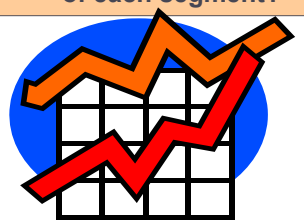
	Hoagland's Lakeshore	Bar	Restaurant
Sales	$ 800,000	$ 100,000	$ 700,000
Variable costs	310,000	60,000	250,000
CM	490,000	40,000	450,000
Traceable FC	246,000	26,000	220,000
Segment margin	244,000	$ 14,000	$ 230,000
Common costs	200,000		
Profit	$ 44,000		

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

Quick Check ✓

Suppose square feet is used as the basis for allocating the common fixed cost of $200,000. How much would be allocated to the bar if the bar occupies 1,000 square feet and the restaurant 9,000 square feet?

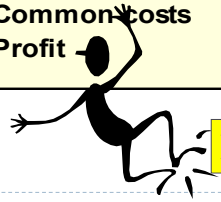
If Hoagland's allocates its common costs to the bar and the restaurant, what would be the reported profit of each segment?



Allocations of Common Costs

Income Statement

	Hoagland's Lakeshore	Bar	Restaurant
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!!!

Return on Investment (ROI) Formula

Income before interest and taxes (EBIT)

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

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

Net Book Value vs. Gross Cost

Most companies use the net book value of depreciable assets to calculate average operating assets.

Acquisition cost
Less: Accumulated depreciation
Net book value

Understanding ROI

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

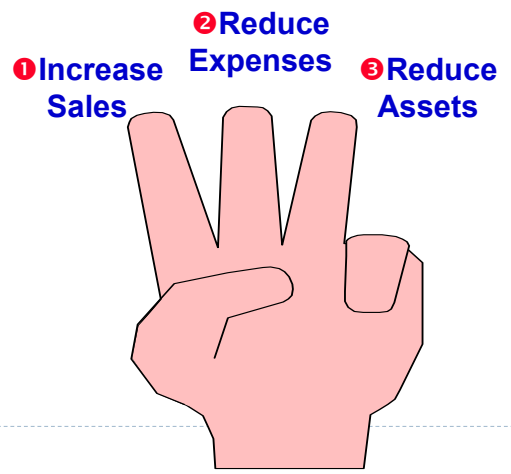
$$Margin = \frac{\text{Net operating income}}{\text{Sales}}$$

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

$$ROI = Margin \times Turnover$$

Increasing ROI

There are three ways to increase ROI . . .



Increasing ROI – An Example

Regal Company reports the following:

Net operating income	$ 30,000
Average operating assets	$ 200,000
Sales	$ 500,000
Operating expenses	$ 470,000

What is Regal Company's ROI?

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

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

Increasing ROI – An Example

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

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

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

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

Investing in Operating Assets to Increase Sales

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

Regal Company 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.

Investing in Operating Assets to Increase Sales

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

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

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

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

ROI increased from 15% to 21.8%.

Criticisms of ROI

- In the absence of the balanced scorecard, management may not know how to increase ROI.
- Managers often inherit many committed costs over which they have no control.
- Managers evaluated on ROI may reject profitable investment opportunities.

Residual Income - Another Measure of Performance

Calculating Residual Income

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

This computation differs from ROI.

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.

Notes:

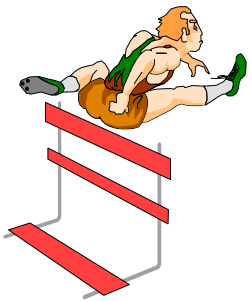
Residual Income – An Example

- The Retail Division of Zephyr, Inc. 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	$ 20,000



Actual income	$ 30,000
Minimum required return	(20,000)
Residual income	$ 10,000

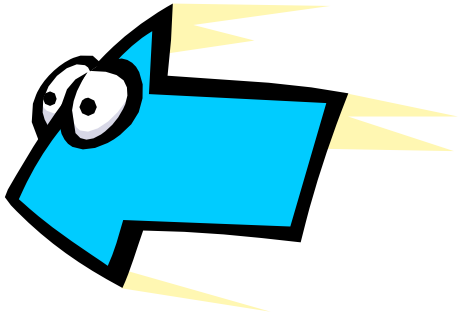
Motivation and Residual Income

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

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.



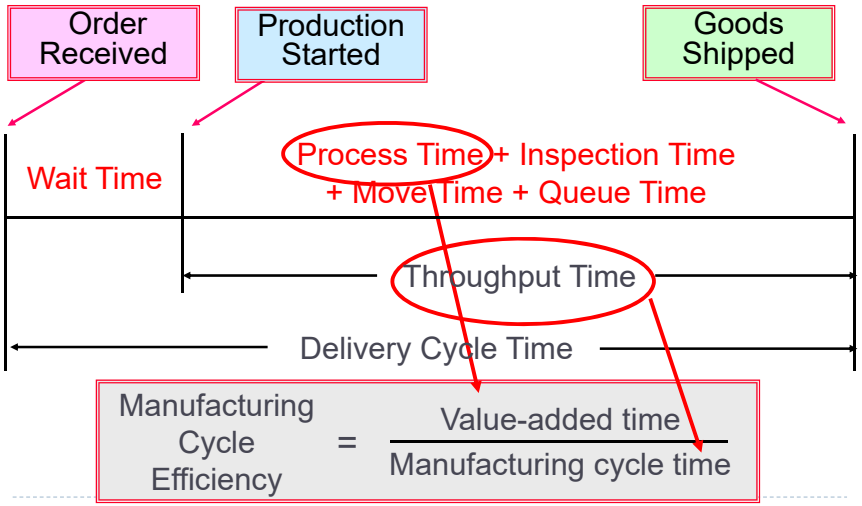
Zephyr, Inc. - Continued

The residual income numbers suggest that the Wholesale Division outperformed the Retail Division because its residual income is $10,000 higher. However, the Retail Division earned an ROI of 30% compared to an ROI of 22% for the Wholesale Division. The Wholesale Division's residual income is larger than the Retail Division simply because it is a bigger division.

	Retail	Wholesale
Operating assets	$ 100,000	$ 1,000,000
Required rate of return ×	20%	20%
Minimum required return	$ 20,000	$ 200,000

	Retail	Wholesale
Actual income	$ 30,000	$ 220,000
Minimum required return	(20,000)	(200,000)
Residual income	$ 10,000	$ 20,000

Delivery Performance Measures



$$\text{Manufacturing Cycle Efficiency} = \frac{\text{Value-added time}}{\text{Manufacturing cycle time}}$$

Quick Check ✓

A TQM team at Narton Corp has recorded the following average times for production:

Wait	3.0 days	Move	0.5 days
Inspection	0.4 days	Queue	9.3 days
Process	0.2 days		

What is the throughput time?

a. 10.4 days.
b. 0.2 days.
c. 4.1 days.
d. 13.4 days.

Quick Check ✓

A TQM team at Narton Corp has recorded the following average times for production:

Wait	3.0 days	Move	0.5 days
Inspection	0.4 days	Queue	9.3 days
Process	0.2 days		

What is the Manufacturing Cycle Efficiency (MCE)?

a. 50.0%.
b. 1.9%.
c. 52.0%.
d. 5.1%.

Quick Check ✓

A TQM team at Narton Corp has recorded the following average times for production:

Wait	3.0 days	Move	0.5 days
Inspection	0.4 days	Queue	9.3 days
Process	0.2 days		

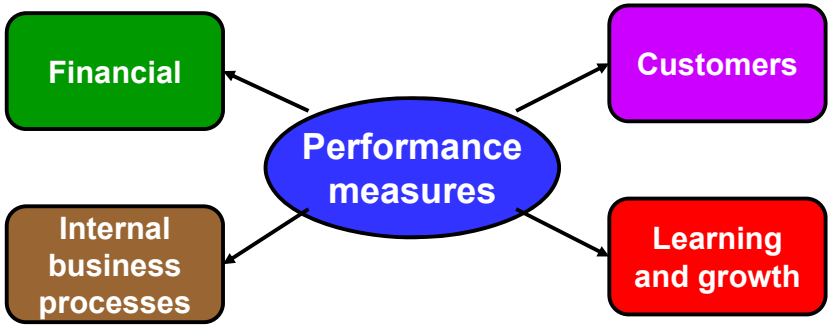
What is the delivery cycle time (DCT)?

a. 0.5 days.
b. 0.7 days.
c. 13.4 days.
d. 10.4 days.

Notes:

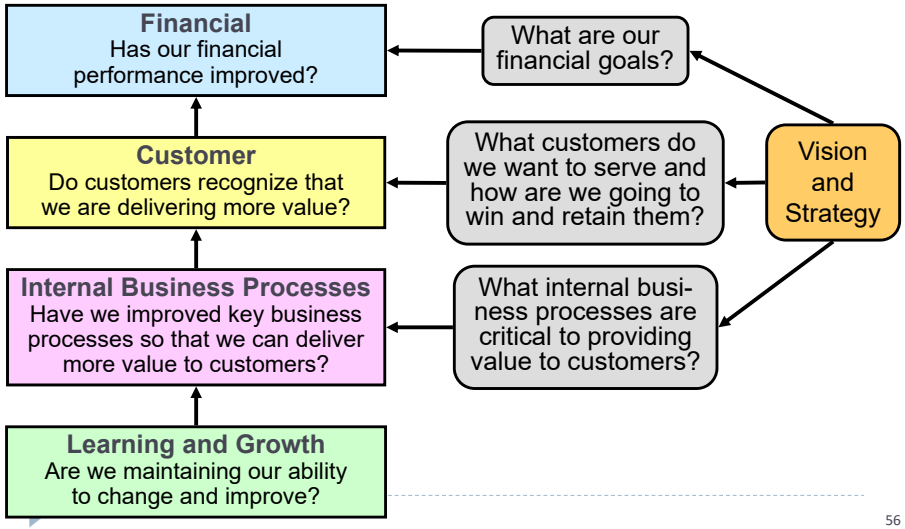
The Balanced Scorecard

Management translates its strategy into performance measures that employees understand and influence.



The Balanced Scorecard: From Strategy to Performance Measures

Performance Measures



The Balanced Scorecard: Non-financial Measures

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

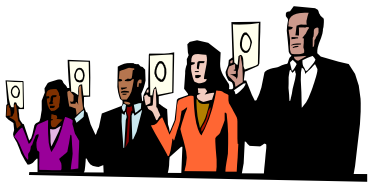
❶ Financial measures are lag indicators that summarize the results of past actions. Non-financial measures are leading indicators of future financial performance.

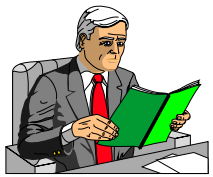
❷ Top managers are ordinarily responsible for financial performance measures – not lower level managers. Non-financial measures are more likely to be understood and controlled by lower level managers.

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.

Notes:

The Balanced Scorecard

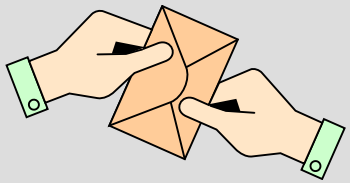
A balanced scorecard should have measures that are linked together on a cause-and-effect basis.

If we improve one performance measure . . . **Then** Another desired performance measure will improve.

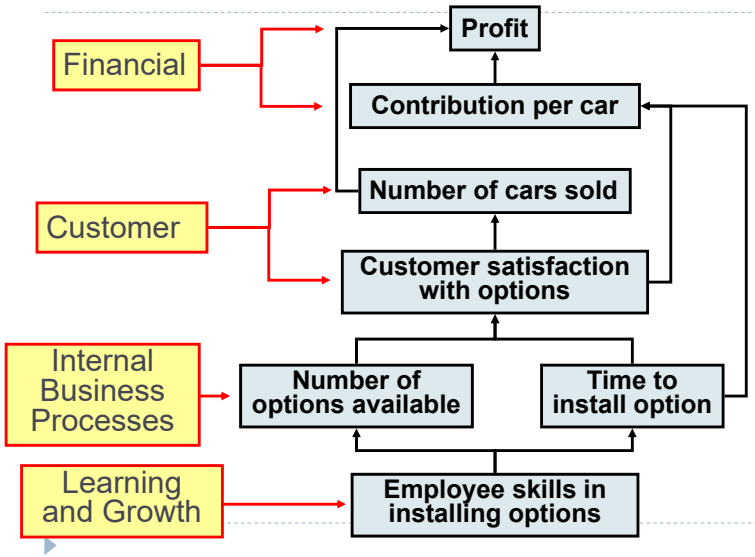
The balanced scorecard lays out concrete actions to attain desired outcomes.

The Balanced Scorecard and Compensation

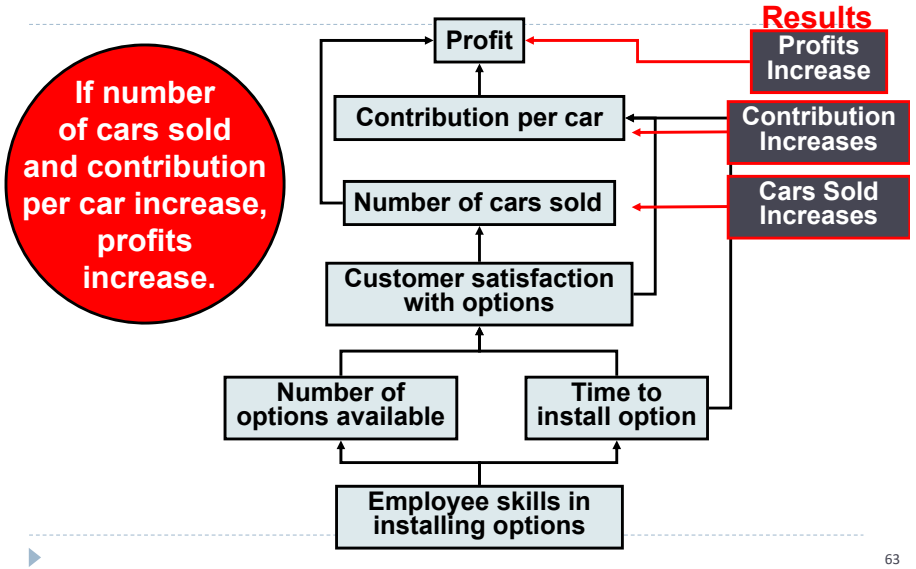
Incentive compensation should be linked to balanced scorecard performance measures.



The Balanced Scorecard – Jaguar Example



The Balanced Scorecard – Jaguar Example



Obj.# 5 Understand how to construct and use a balanced scorecard

Key Performance Indicators for a Balanced Scorecard

Key performance indicators (KPIs) should address

- Missions and Vision of the organization
- Management principles and objectives (i.e. Execution of strategy)
- Critical success factors of the organization and operations
- Key objectives of the subsidiary/division/department/employee
- Balance of lead and lag measures (i.e. measures that lead to future success and measures that reflect historical performance)

Number of KPI s should be kept at a controllable number.

Transfer Pricing

Appendix 13A

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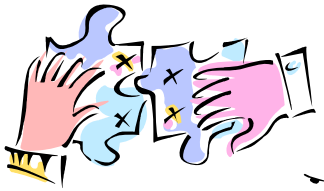
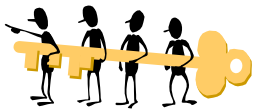
Key Concepts/Definitions

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:

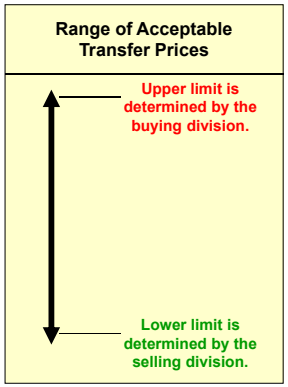
1. **Negotiated transfer prices;**
2. **Transfers at the cost to the selling division; and**
3. **Transfers at market price.**

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.



Notes:

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 capactiy 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

Grocery Storehouse – An Example

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

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

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.

Evaluation of Negotiated Transfer Prices

If a transfer within a company would result in higher overall profits for the company, there is always a range of transfer prices within which both the selling and buying divisions would have higher profits if they agree to the transfer.

If managers are pitted against each other rather than against their past performance or reasonable benchmarks, a non-cooperative atmosphere is almost guaranteed.

Given the disputes that often accompany the negotiation process, most companies rely on some other means of setting transfer prices.

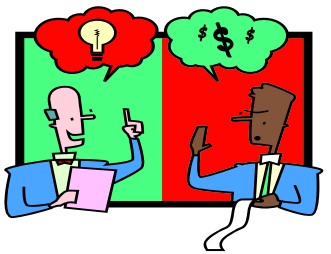
Notes:

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 sub-optimization.**
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.

End of Chapter 13