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Making Decisions with Throughput Accounting

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Authored or coauthored 6 books, 7 chapters, 1 guide, numerous articles, workshops, and presentations.

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Major Types of Accounting

1. Financial – External financial statements; must follow specific rules (GAAP); cost allocations required.
2. Tax – Rules established by national and regional governments; cost allocations required.
3. Managerial – Internal decision use only; not public; cost allocations NOT required.

May be combined

Companies **must** follow

There are no "rules"

Presentation Agenda

1. Brief summary of over a century of management accounting in the U. S.
2. Types of management accounting currently most popular.
3. Throughput Accounting for organizations **without** an internal constraint.

Managerial Accounting

- Internal use only (not public)
  - Budgets
  - Standards
  - Performance evaluation
  - Projections
- Cause-effect importance recognized

Management Accounting in the United States

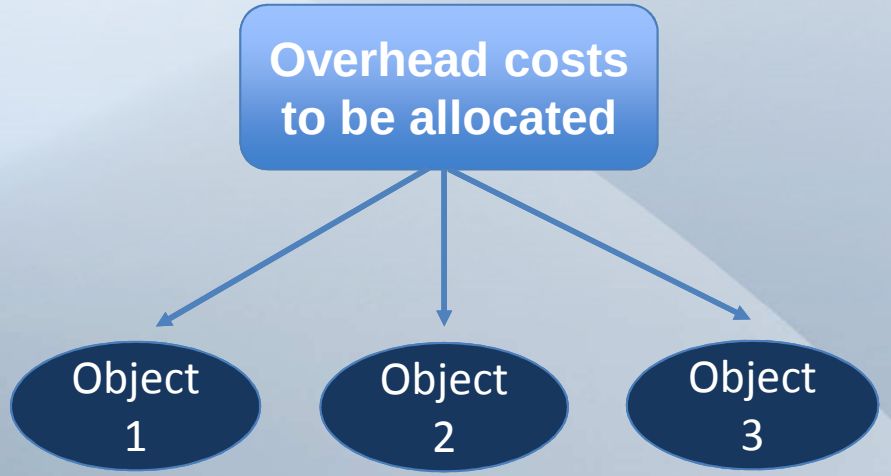
- Powerful "*Cost per Unit*" concept
  - Variable costs per unit (RM and other variable costs), plus allocated portion of fixed costs (fixed costs allocated based on chosen *driver*)
  - Allocation example: Estimated fixed overhead costs of $5,000,000; Driver is estimated labor hours of 65,000;

Production overhead rate for **fixed** overhead costs:

$$\frac{\$5{,}000{,}000\ estimated\ costs}{65{,}000\ estimated\ labor\ hours} = \underline{\$76.9231}\ \text{per labor hour}$$

Cost per Unit *(continued)*

- From where did the $5,000,000 come?
- From where did the 65,000 labor hours come?



Assumptions: Company will sell 100,000 units of Product 1 and 25,000 units of Product 2 (50,000 and 15,000 labor hours, respectively); Product 1 requires 0.5 labor hours; Product 2 requires 0.6 hours.

Standard Cost Accounting

- Used in preparing budgets prior to start of a new year
- Permits faster closing of books (during year and at end of year)
- Sets targets for production to achieve
- Designed for a mass-production environment
- Changes in unit standards are infrequent (for consistency)

Standard Cost Accounting *(continued)*

- Standard Cost per Unit *Example:*

	Product 1	***Product 2***
Raw Materials	$10.0000	$20.0000
Labor hours (at $10/hr.)		
(0.5 hr., Un.1; 0.6 hr., Un.2)	5.0000	6.0000
Manufacturing Overhead ($76.9231/hr.*)	38.4615	46.1538
Total Cost per Unit	$53.4615	$72.1538

* From slide 6 calculation

Standard Cost Accounting (continued)

IF the allocation rate had been based on estimated total materials costs of $1,500,000, the overhead rate would be: $5,000,000 ÷ $1,500,000 = $3.3333 per dollar of material cost and standard costs per unit would be:

	Product 1	***Product 2***
Raw Materials	$10.0000	$20.0000
Labor hours (0.5 hr.; 0.6 hr.)	5.0000	6.0000
Manufacturing Overhead ($3.3333)	33.3333	66.6667
Total Cost per Unit	$48.3333	$92.6667
Change from previous cost	13% ↓	44% ↑

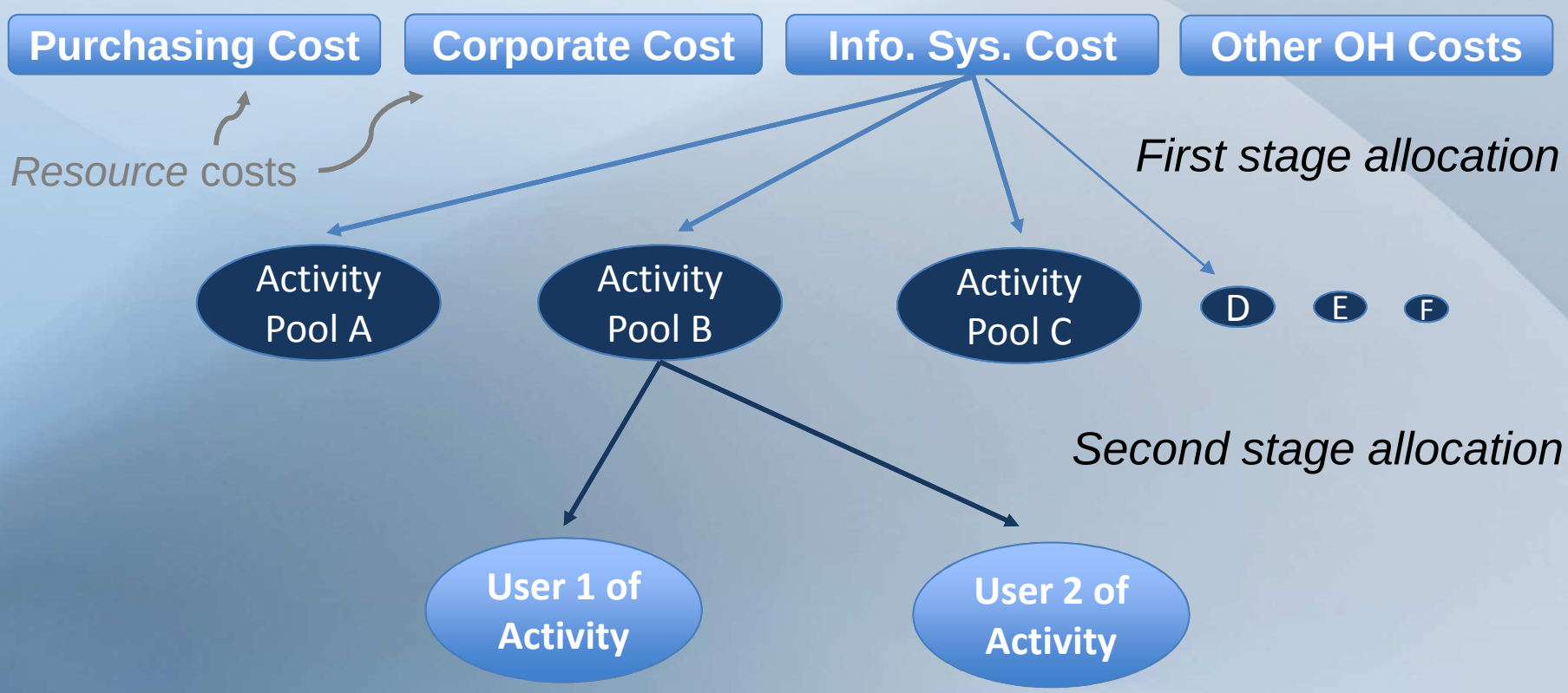
Standard Cost Accounting Systems

Problems that may result:

1. Engineering standards may not be achieved prior to end of product's life
2. Promotes excessive production to lower unit costs
3. Usually results in high work-in-process inventory
4. Production forced to focus on efficiencies (and, typically, utilizations)
5. Due date performance suffers
6. Causes major conflicts between sales and production

Activity-Based Cost Accounting

What is Activity-Based Cost (ABC) Accounting ?



ABC Accounting (continued)

Activity-Based Costing (ABC) assumptions:

1. Activities consume resources and products consume activities.
2. All costs are variable (very long-term concept).
3. Selection of pool driver (allocation base) is logical and straightforward.
4. Mixing variable and fixed costs in one pool is acceptable.
5. Data collection costs are negligible.

Assumptions 2, 3, and 4 are not supported by experience.

Lean Accounting

***Lean Accounting** is* now heavily promoted

- Establishes “value streams” of mostly dedicated resources to avoid many allocations
- Developed to support Lean Manufacturing (loosely based on the *Toyota Production System*)
- Objectives:
  - Improve flow and due date performance
  - Reduce headcount and eliminate costs everywhere

Lean Accounting (continued)

Problems:

1. Sometimes cost cuts are too deep;
   - Average cost per unit regularly reported; reduction expected;
   - Excess resource capacity reported (value streams encouraged to increase “excess” capacity, then remove it).
2. Does not encourage organization “team” concepts (each value stream evaluated on its own).
3. Some allocations still occur!
4. No ***system*** focus.

Damage Caused by Allocations

Traditional cost accounting (including standard costs), ABC, and to some extent, Lean are based on allocating costs to products.

The moment you begin arbitrarily allocating costs to products, you begin to focus on the wrong thing(s) for decision-making purposes.

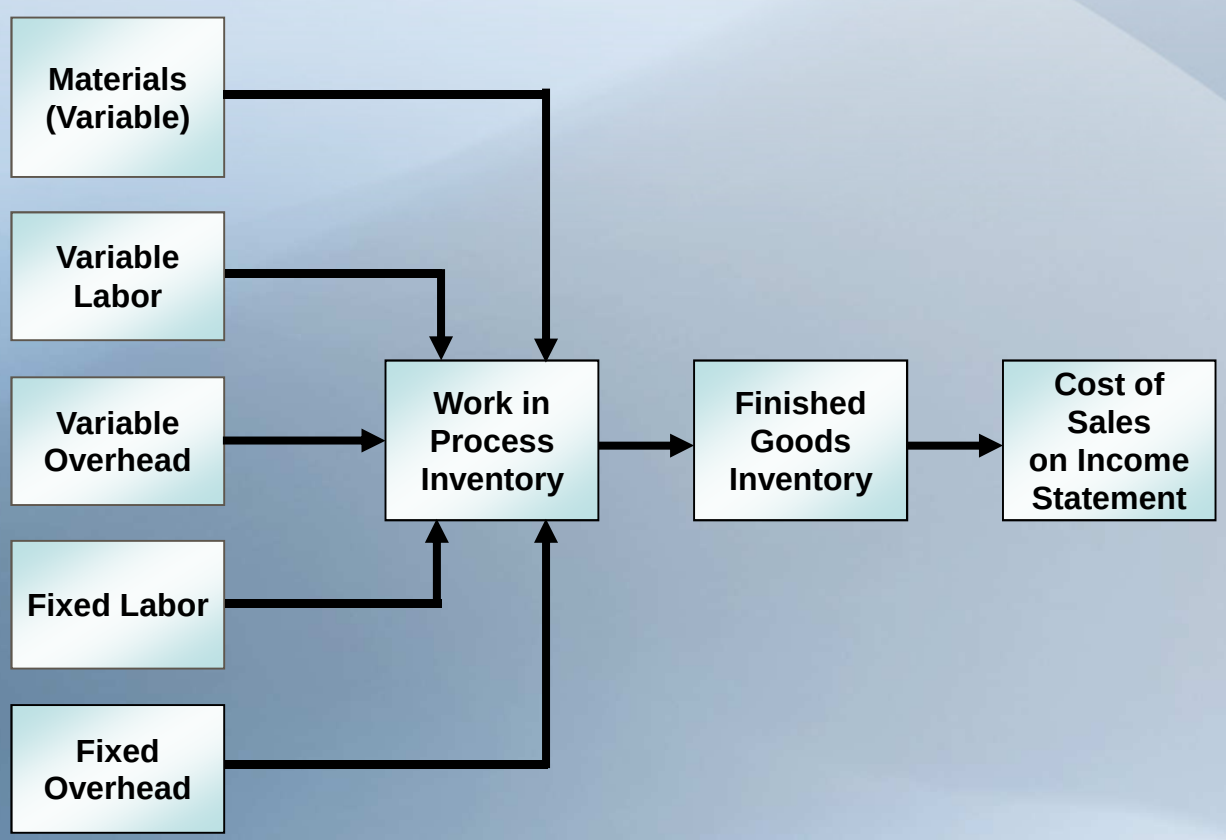
All allocations are **arbitrary**!

Adjustments Required for **All** U. S. Costing Systems

- Internal reporting methodologies (standard costs, ABC, etc.) must be converted to **actual** costs for external reporting (Public Company reports, tax returns, etc.).
- Under- or over-applied manufacturing overhead amounts must be closed at year end and cost of sales adjusted.
- Costs must be shown by functional area:
  - cost of sales; general, selling, and administrative, including finance costs; other income/expense; income taxes

“Fully Absorbed” Cost Flows

Absorption (Traditional and Activity-Based Costing) Product Cost Flow Assumptions for internal and external reporting:



Throughput Accounting

- Originally developed from the 5 focusing steps
- Considers the entire system
- Primary focus is on revenue generation, then inventory reduction, then cost reductions
- Does NOT allocate fixed production or other fixed costs
- Resource capacity availability is important
  - *Protective* Capacity
  - *Surge* Capacity
- Considers only ***relevant*** items in making decisions

What are *relevant* items?

1. **Future** items
   - revenues, costs, investments, etc.
2. Items that are **different** for each alternative.

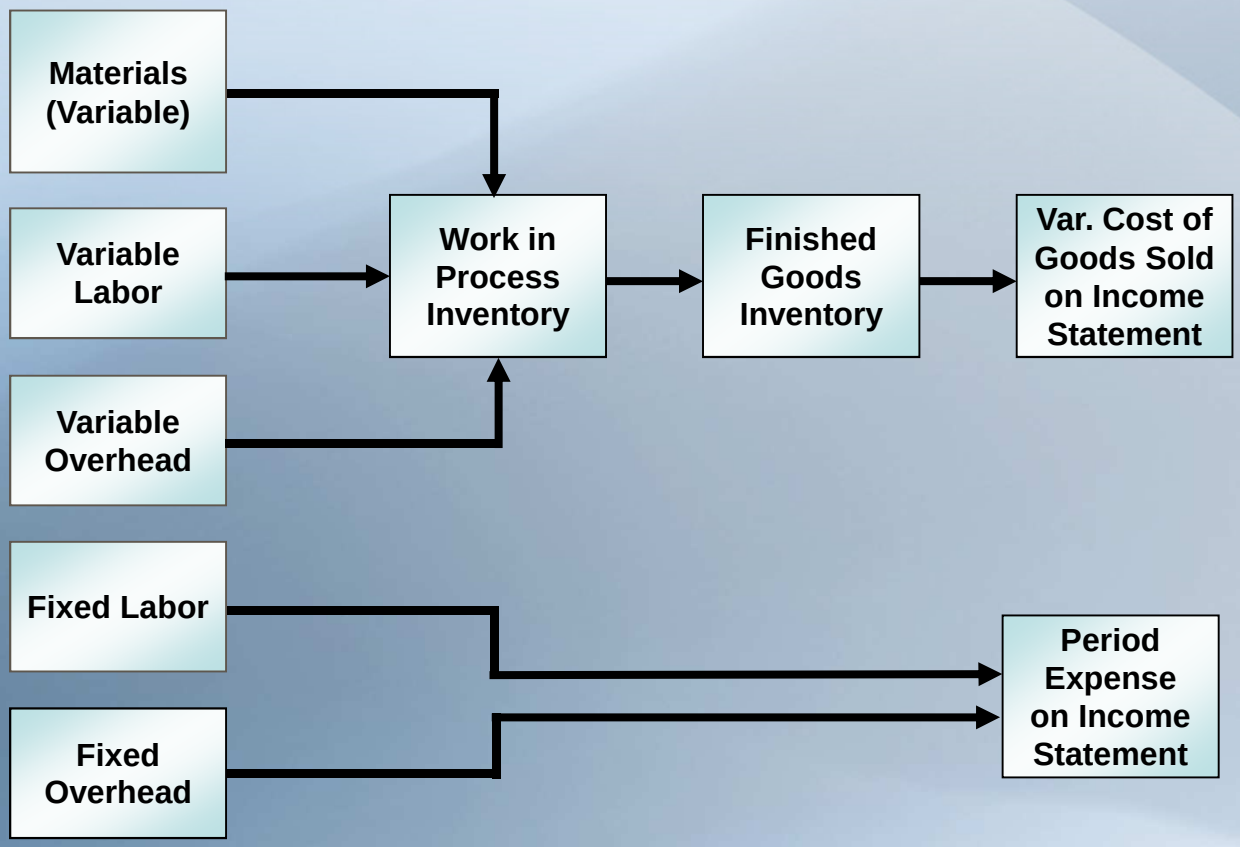
Therefore, previous investments
("sunk" costs) **ALWAYS** are irrelevant!

Familiar Throughput Metrics

- Throughput (T)
  - Revenue minus total variable costs
- Inventory/Investment (I)
  - Costs incurred to be in a position to produce
- Operating Expense (OE)
  - Costs that must be incurred each period
- Throughput per unit of the constraint
  - Useful only when there is an internal constraint
- Return on Investment (ROI)
  - Income divided by investment

“Variable” Cost Flows

Variable Costing (Throughput Accounting) Product Cost Flow Assumptions for internal (not external) reporting:



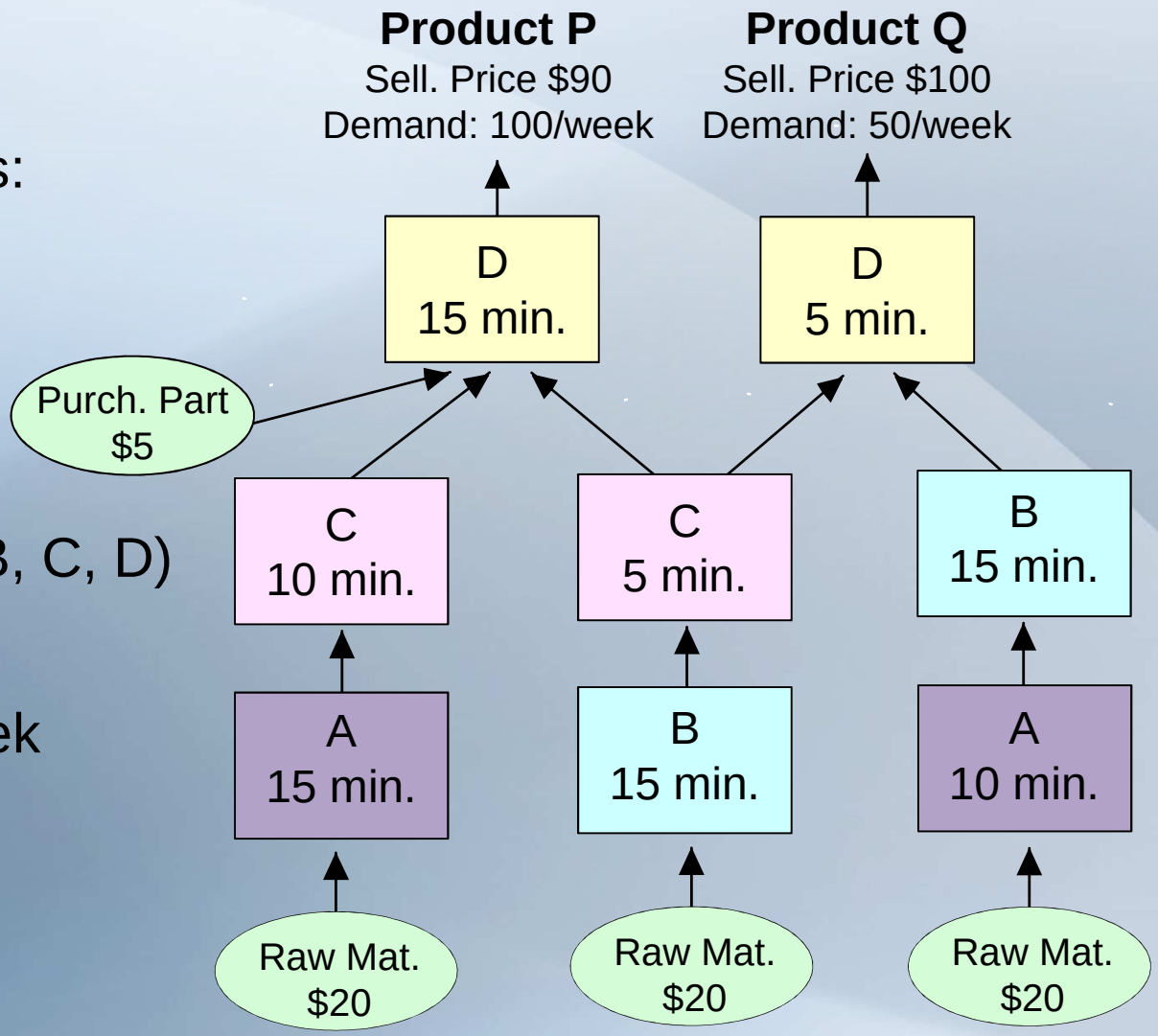
Basic P-Q Example

Operating Expenses:

$6,000 per Week

Each Resource (A, B, C, D)

is available **2,400** minutes each week



Decisions with NO Internal Constraint

Typical system information required:

1. Period of time during which decision assumptions will remain valid.
2. Capacity freely available during the time frame of the decision.
3. Change in Throughput (revenue minus variable costs).
4. “Knock on” change in Throughput of other products currently being produced and sold.
5. Change in operating costs resulting from the decision.
6. Change in investment resulting from the decision.
7. Change in customer service or long-term prospects resulting from the decision.

Make versus *Buy* Decision

A company has the following production costs per unit for one of its products that it expects to sell 40,000 units of during the upcoming year:

Materials	$1.00
Labor (piecework)	.25
Fixed production costs	.75
Total production costs	$2.00

The Purchasing Department has found a source that sells this part for $1.75 per unit.

Should the company outsource production of this unit if there is no alternative use for the production facilities?

Decision Analysis

Throughput Accounting: Assuming no ill effects from not paying the piece worker . . . DO **NOT** outsource!

Purchase price = $1.75
Cost to make = 1.25
Advantage to **make** = $0.50 per unit

Good Decision!

40,000 units x $0.50 = $20,000 advantage to make

Traditional costing: Yes, **outsource** and save $0.25 a unit x 40,000 units = $10,000 better off.

Bad Decision!

WHY?

Discontinue Department?

A department store operates a lunch counter that has consistently shown an annual operating loss of $5,000.

Projected financial and tax income for the current year:

Sales		$80,000
Cost of sales		60,000
Gross profit		$20,000
Operating costs		
Direct (wages, food, etc.)	$16,000	
Allocated (heat, light, space)	9,000	25,000
Net **Loss**		$(5,000)

A local vending company wants to lease the space for $1,500 per year and operate the lunch counter.

Should the company accept the lease proposal?

Decision Analysis (discontinue department?)

Throughput Accounting: NO! (Do **not** sign lease)

Sales		$80,000
Cost of sales	$60,000	
Operating costs	16,000	76,000
Throughput		$ 4,000
Less lease opportunity cost		1,500
Advantage to continue operating counter		$2,500

Good Decision!

Decision Analysis (discontinue department?)

Traditional accounting: YES! Sign the lease!

Current loss	$(5,000)
Lease income	1,500
Increase in profit	$ 6,500

Bad Decision!

Why?

Obsolete Inventory Decision

A company has 10,000 obsolete cameras that are carried in inventory at a cost of $10 each. In its effort to reduce inventory, the company finds that the cameras can be sold as they are for $2 each. However, they also can be reworked at a cost of $40,000, after which, the company is confident, they can be sold for $7 each. Capacity is available to perform the rework.

What should the company do?

Decision Analysis (obsolete inventory)

Throughput Accounting: Rework the cameras!

Sale of reworked cameras	$70,000
Cost of rework	40,000
Throughput	$30,000
Opportunity cost	20,000
Advantage of reworking	$10,000

Good Decision!

Decision Analysis (obsolete inventory, continued)

Traditional accounting: NO!

Sell *as is* for $2 per unit.

"Our company already is losing $8 per unit;
Rework will cost an additional $4 per unit,
we will lose even more!"

Bad Decision!

Why?

The **BEST** (Safe) Approach

When a major decision must be made:

1. If changes in product mix or quantities are involved, make sure resource capacities are available to accommodate the change;
2. Compute the income after the change and compare it to the status quo before the change.

Note: Learn to be comfortable with uncertainty; do not punish good decisions that turn out badly.

Cost Accounting Problems

1. Most accounting/finance people do not recognize the importance of individual resource capacities.
2. Use of financial accounting methods (particularly fixed cost allocations) for management decisions.
3. People are not ***mindful*** of appropriate (relevant) decision inputs.

Decision Caveats

- ALWAYS:
  - Know what is being assumed.
  - Make a record of the assumptions.
  - Be alert to inaccurate assumptions.
  - Check to see how decisions should be revised when assumptions are invalidated.

Next Topic

Why more companies do not use Throughput Accounting?

Questions?