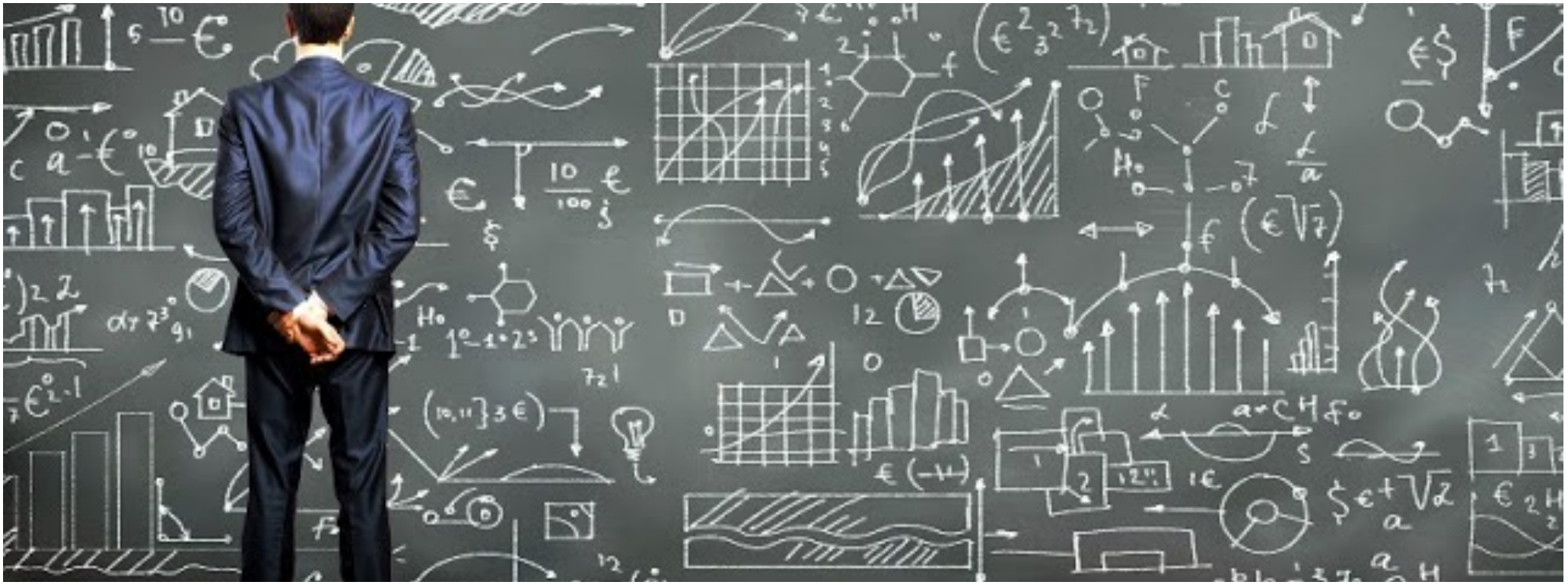
MANAGERIAL COSTING

What is “managerial costing” and why it is needed



WHAT IS ACCOUNTING AND WHY IT IS IMPORTANT?

Accounting is the process of:

- COLLECTING
- RECORDING
- ESTIMATING
- ORGANIZING
- SUMMARIZING

FINANCIAL AND **OPERATIONAL DATA**

in order to provide **VALUABLE INFORMATION** to **DECISION MAKERS**

USER OF ACCOUNTING INFORMATION

All accounting systems are designed to provide information to

“DECISION MAKERS”

SOURCE: Lanen–Anderson-Maher, “Fundamentals of Cost Accounting”, Third Edition

USER OF ACCOUNTING INFORMATION

All accounting systems are designed to provide information to

“DECISION MAKERS”

Some of them are not directly involved in the daily management of the firm.
These users of the information are often “**external**” to the firm.

We defined “**internal**” to the firm, those users that are responsible for its performance.

SOURCE: Lanen–Anderson-Maher, “Fundamentals of Cost Accounting”, Third Edition

USER OF ACCOUNTING INFORMATION

All accounting systems are designed to provide information to

"DECISION MAKERS"

Some of them are not directly involved in the daily management of the firm.
These users of the information are often "**external**" to the firm.

- **ACTUAL OR POTENTIAL INVESTORS**
- **CREDITORS**
- **GOVERNMENT AGENCIES**
- **TAX AUTHORITIES**

We defined "**internal**" to the firm, those users that are responsible for its performance.

MANAGERS
- Executive Level
- Middle Management Level
- Production Level

SOURCE: Lanen–Anderson-Maher, "Fundamentals of Cost Accounting", Third Edition

FINANCIAL ACCOUNTING AND MANAGERIAL ACCOUNTING

“EXTERNAL” DECISION MAKERS

FINANCIAL ACCOUNTING

Field of accounting that reports financial position and income according to accounting rules.

“INTERNAL” DECISION MAKERS

MANAGERIAL ACCOUNTING

Field of accounting concerned with providing information to managers for use within the organization. It has, therefore, the aim of identifying, measuring, analyzing, interpreting and communicating information for the pursuit of an organization's goals.

FINANCIAL ACCOUNTING AND MANAGERIAL ACCOUNTING

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	FINANCIAL ACCOUNTING	MANAGERIAL ACCOUNTING
▪ Users of the system	▪ External	▪ Internal
▪ Most important criteria	▪ Comparability, Objectivity, Verifiability	▪ Decision relevance, Timeliness
▪ Who establishes or defines the system?	▪ Standard-setters	▪ Managers
▪ How to determine accounting treatment ?	▪ Standards	▪ Relevance for decision making

SOURCE: Adapted from Lanen–Anderson-Maher, “Fundamentals of Cost Accounting”, Third Edition

FINANCIAL ACCOUNTING VS. MANAGERIAL ACCOUNTING

FINANCIAL ACCOUNTING

- Reports to those **outside** the organization:
  - Owners
  - Creditors
  - Tax Authorities
  - Regulators
- Emphasizes financial consequence of **past** activities
- Emphasizes **precision**
- Emphasizes **companywide** reports (focus on the **whole**)
- **Must** follow GAAP/IFRS
- **Mandatory** for external reports.

MANAGERIAL ACCOUNTING

- Reports to manager **inside** the organization for
  - Planning
  - Controlling
- Emphasizes decisions affecting the **future**
- Emphasizes **timeliness**
- Emphasizes **segment** reports (focus on **parts**)
- Need **not** follow GAAP/IFRS
- **Not mandatory**

SOURCE: Adapted from Garrison, Noreen, Brewer, "Managerial Accounting", 16th Edition

COST ACCOUNTING AND MANAGERIAL COSTING

"EXTERNAL" DECISION MAKERS

FINANCIAL ACCOUNTING

Field of accounting that reports financial position and income according to accounting rules.

COST ACCOUNTING

"Cost accounting is measuring and reporting costs intended for external financial reporting or regulatory purposes where guidelines and principles must be followed and complied with to meet regulatory, legal, or other defined standards and requirements."

Source: IFAC (International Federation of Accountants), "Evaluating and Improving Costing in Organizations," International Good Practice Guidance, July 2009.

"INTERNAL" DECISION MAKERS

MANAGERIAL ACCOUNTING

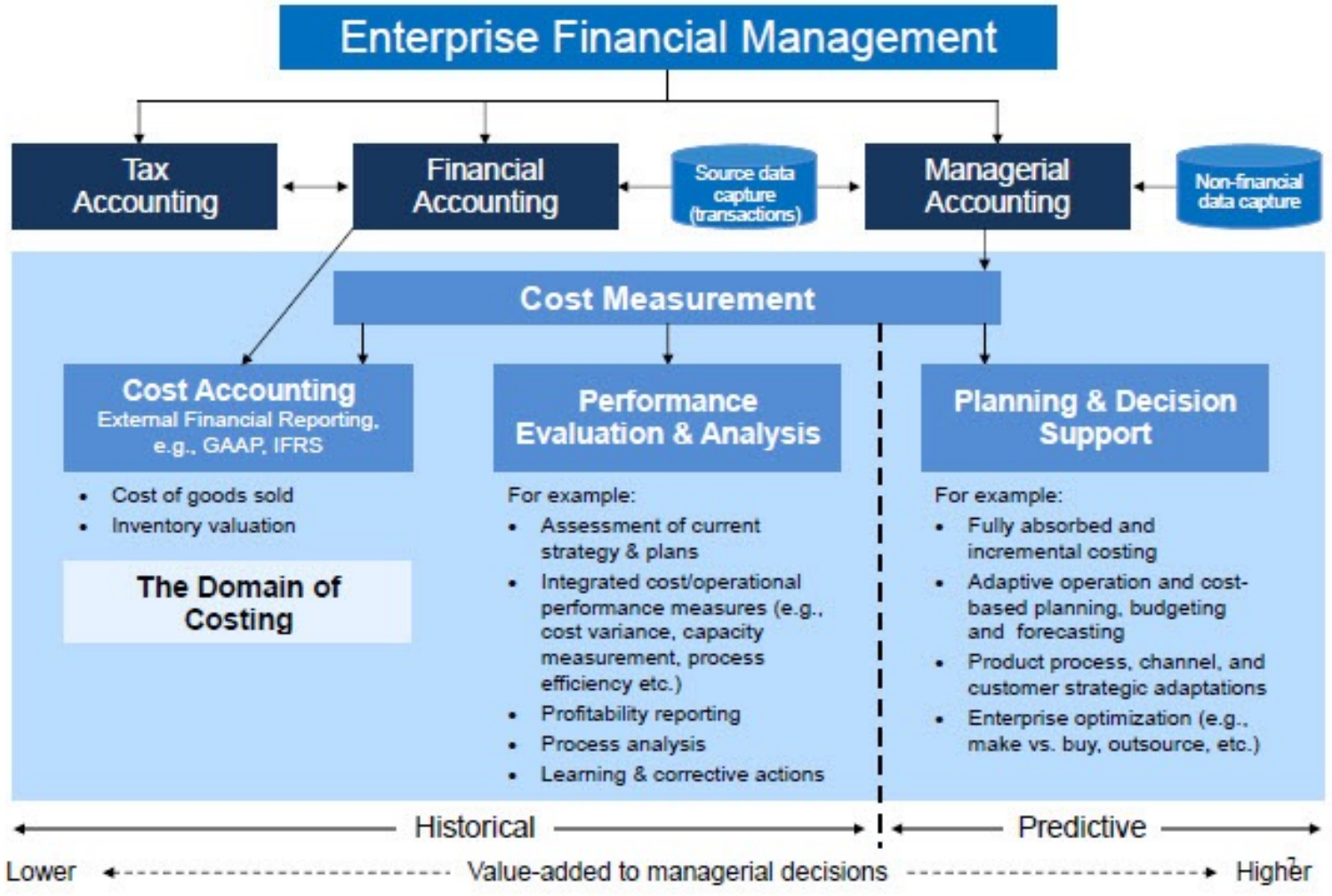
Field of accounting concerned with providing information to managers for use within the organization.

MANAGERIAL COSTING

"Managerial costing is costing done purely for the organization to use internally to ensure that information for decisions reflects the characteristics of the organization's resources and operations."

Source: IMA (Institute of Management Accountants), "The Conceptual Framework for Managerial Costing," Statement on Management Accounting, September 2014.

COST MEASUREMENT, COST ACCOUNTING & MANAGERIAL COSTING



COST MANAGEMENT

We frequently hear business people use the term *cost management*. Unfortunately, that term has no uniform definition.

We use **cost management** to describe the approaches and activities of managers to use resources to increase value to customers and to achieve organizational goals.

Cost management decisions include decisions such as whether to enter new markets, implement new organizational processes, and change product designs. Information from accounting systems helps managers to manage costs, but the information and the accounting systems themselves are not cost management.

Cost management has a broad focus and is not only about reduction in costs. Cost management includes decisions to incur additional costs, for example to improve customer satisfaction and quality and to develop new products, with the goal of enhancing revenues and profits.

SOURCE: Horngren, Datar, Foster, "Cost Accounting. A managerial Emphasis", 11th Edition

STRATEGIC COST MANAGEMENT

Strategy specifies how an organization matches its own capabilities with the opportunities in the marketplace to accomplish its objectives. In other words, strategy describes how an organization will compete and the opportunities its managers should seek and pursue.

Deciding between [different] strategies is a critical part of what managers do.

Management accountants work closely with managers in formulating strategy by providing information about the sources of competitive advantage—for example, the cost, productivity, or efficiency advantage of their company relative to competitors or the premium prices a company can charge relative to the costs of adding features that make its products or services distinctive.

Strategic cost management describes cost management that specifically focuses on strategic issues.

SOURCE: Horngren, Datar, Foster, "Cost Accounting. A managerial Emphasis", 11th Edition

STRATEGIC COST MANAGEMENT

Management accounting information helps managers formulate strategy by answering questions such as the following:

- **Who are our most important customers, and how can we be competitive and deliver value to them?** After Amazon's success in selling books online, management accountants at Barnes and Noble presented senior executives with the costs and benefits of several alternative approaches for building its information technology infrastructure and developing the capabilities to also sell books online. A similar cost-benefit analysis led Toyota to build flexible computer-integrated manufacturing (CIM) plants that enable it to use the same equipment efficiently to produce a variety of cars in response to changing customer tastes.
- **What substitute products exist in the marketplace, and how do they differ from our product in terms of price and quality?** Hewlett-Packard, for example, designs and prices new printers after comparing the functionality and quality of its printers to other printers available in the marketplace.
- **What is our most critical capability?** Is it technology, production, or marketing? How can we leverage it for new strategic initiatives? Kellogg Company, for example, uses the reputation of its brand to introduce new types of cereal.
- **Will adequate cash be available to fund the strategy, or will additional funds need to be raised?** Proctor & Gamble, for example, issued new debt and equity to fund its strategic acquisition of Gillette, a maker of shaving product

SOURCE: Horngren, Datar, Foster, "Cost Accounting. A managerial Emphasis", 11th Edition

OPERATIONAL COST MANAGEMENT

Operational cost management involves the whole set of planning and monitoring activities that are necessary to increase the level of efficiency and effectiveness with which business processes are carried out.

Planning comprises:

a. selecting organizations goals, projecting the results under alternative ways of achieving these goals, deciding on the plan of action that is deemed most effective in achieving the desired results and

b. communicating the goals and how to attain them to the entire organization.

Monitoring comprises:

a. taking actions that implement the planning decisions (execution of the strategy) and

b. deciding how to evaluate the performance and to provide what feedback that will increase the level of efficiency and effectiveness with which business processes are carried out and help future decision making.

SOURCE: Horngren, Datar, Foster, "Cost Accounting. A managerial Emphasis", 11th Edition

WHAT DOES A MANAGER DO?

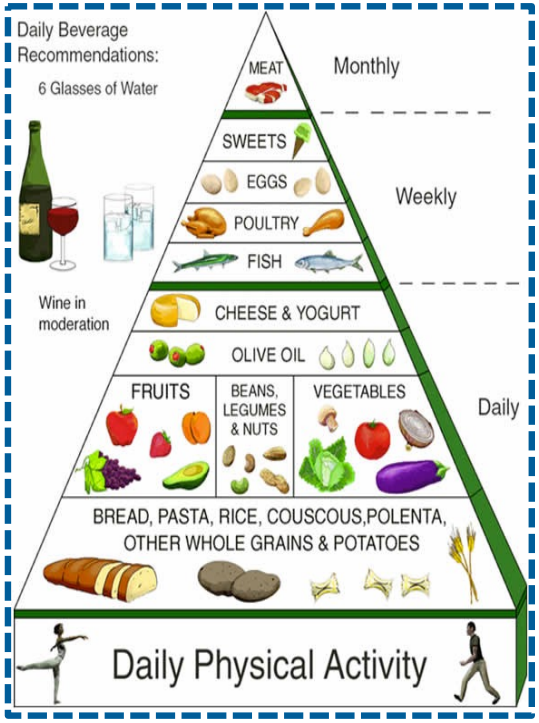
1. He/She acquires information

WHAT DOES A MANAGER DO?

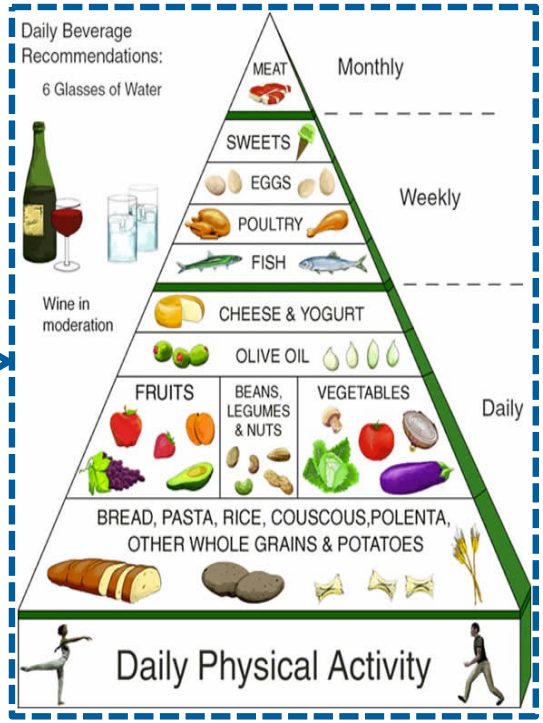
2. He/She makes decisions

WHAT DOES A MANAGER DO?

3. He/She tries to put the decision taken in practice



COHERENCE BETWEEN INFORMATION AND DECISIONS



DECISION MODELS

The information must be **RELEVANT** for the decisions that managers, operating in a particular business environment with a particular strategy, make.

MENTAL MODELS

In 1971 Jay Wright Forrester defined mental models as follows:

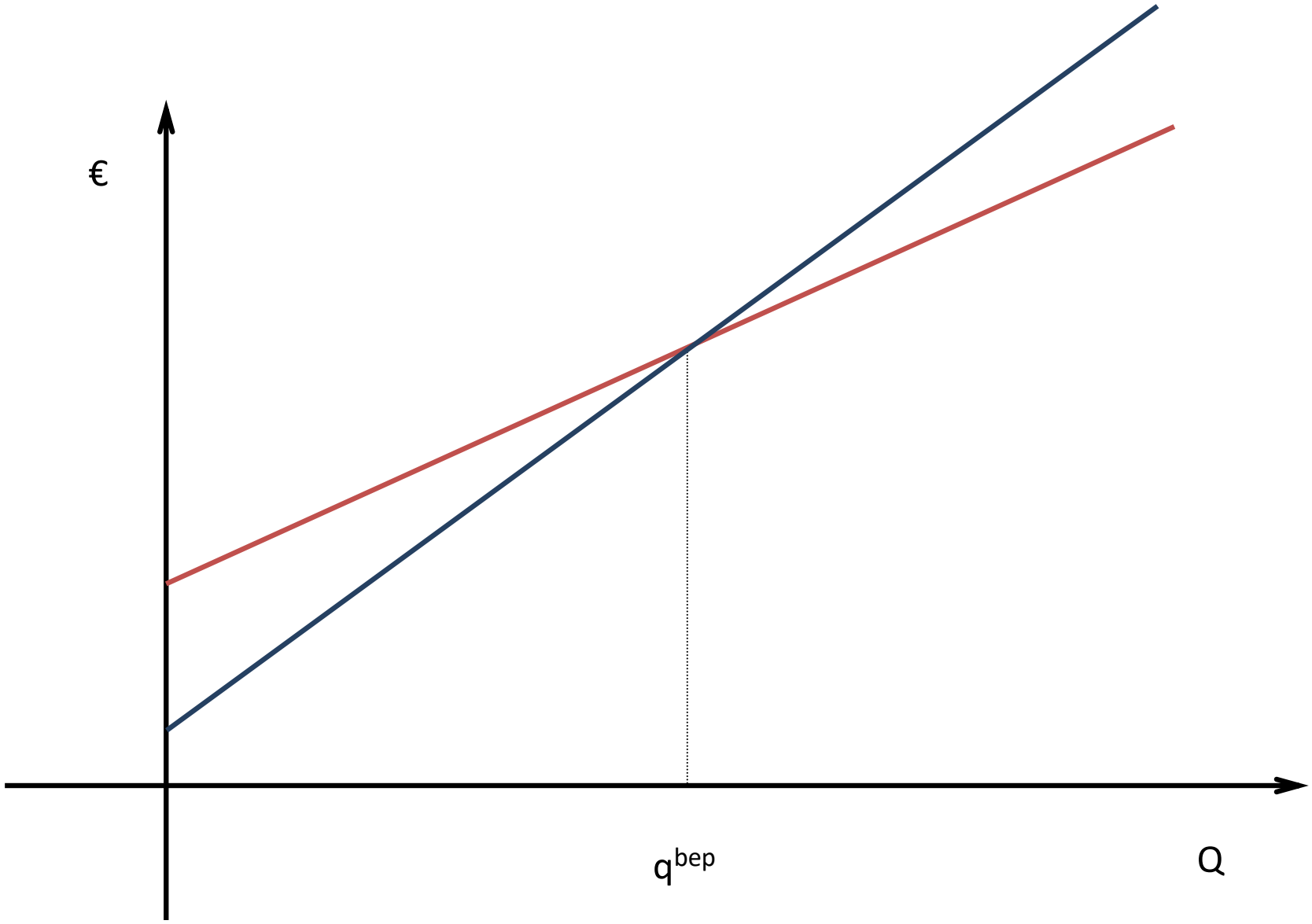
"The image of the world around us, which we carry in our head, is just a model. Nobody in his head imagines all the world, government or country. He has only selected concepts, and relationships between them, and uses those to represent the real system"

Mental model is an explanation of someone's thought process about how something works in the real world. It is a representation of the surrounding world, the relationships between its various parts and a person's intuitive perception about his or her own acts and their consequences. Mental models can help shape behavior and set an approach to solving problems (similar to a personal algorithm) and doing tasks.

A mental model is a kind of internal symbol or representation of external reality, hypothesized to play a major role in cognition, reasoning and decision-making. Kenneth Craik suggested in 1943 that the mind constructs "small-scale models" of reality that it uses to anticipate events.

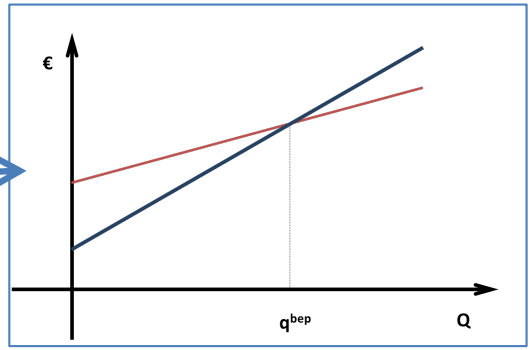
SOURCE: https://en.wikipedia.org/wiki/Mental_model

COST-VOLUME-PROFIT ANALYSIS

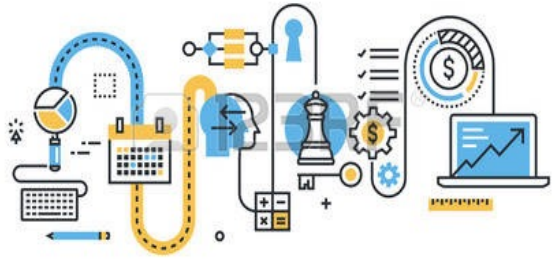


DECISION MODELS

SELECTED CONCEPTS AND SELECTED RELATIONSHIPS BETWEEN THEM

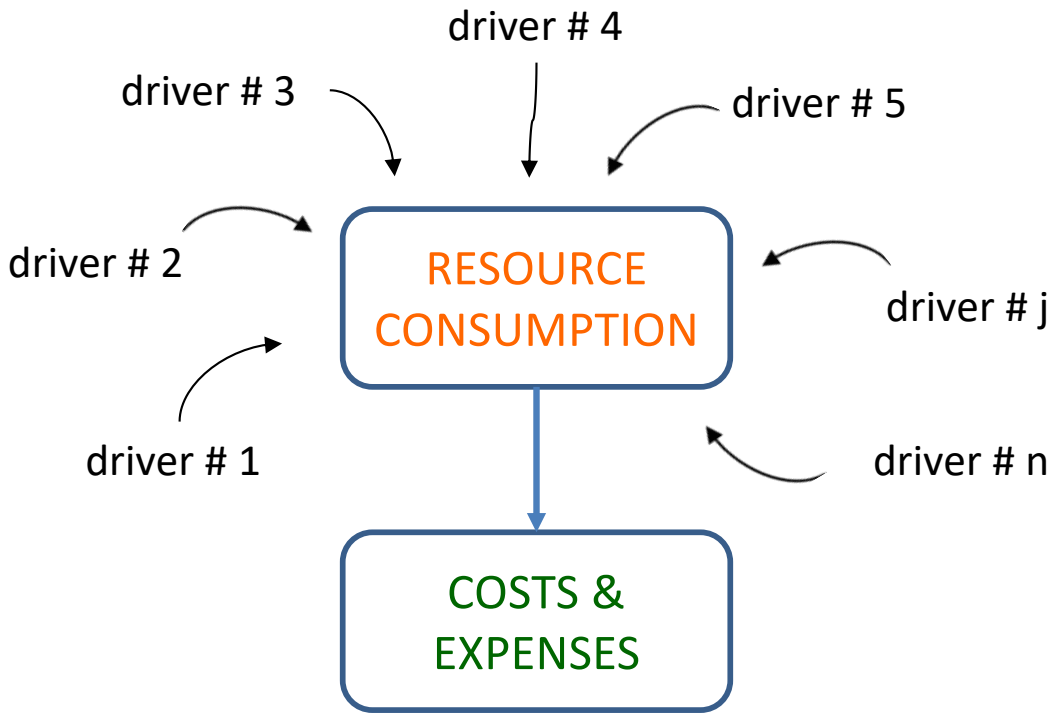


DECISION MODEL (ABSTRACTION)



BUSINESS PROCESSES (REALITY)

COSTS, RESOURCES AND DRIVERS

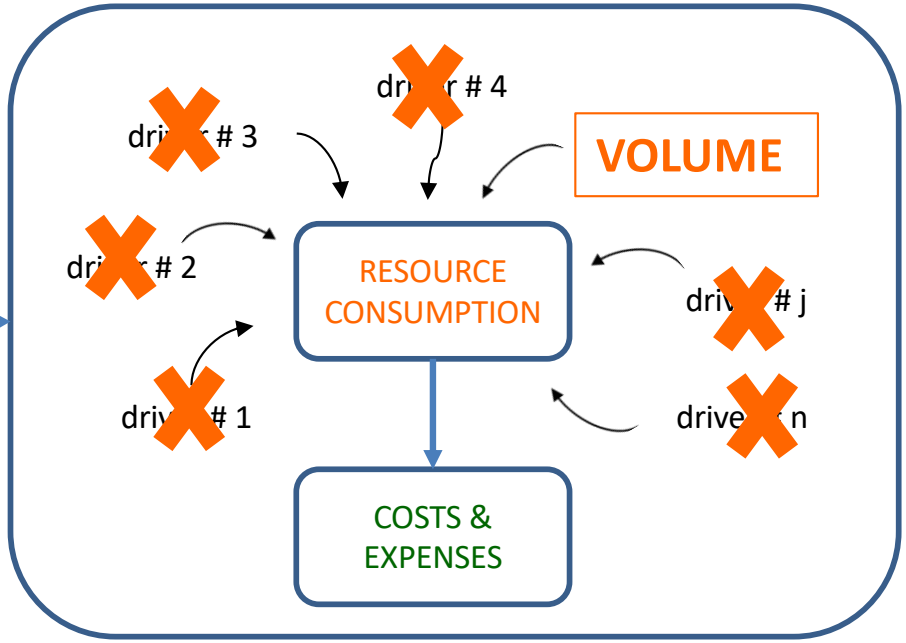


A **cost** is a sacrifice of resources. More precisely the cost (and therefore an expense) is **the monetary reflection** of the sacrifice of one or more resources that are used in order to perform business processes. The **usage** of a resource is determined by different kinds of causes (generally indicated in accounting as drivers)

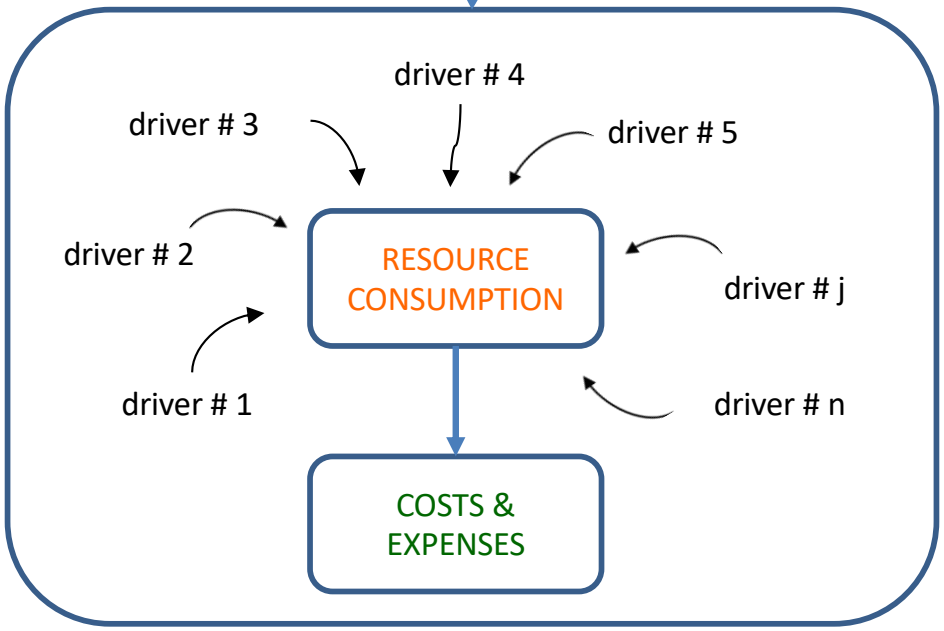
«The objective of managerial **costing** is to provide a **monetary reflection** of the **utilization** of business **resources** and related cause and effect insights».

COST-VOLUME-PROFIT MODEL

SELECTED CONCEPTS AND SELECTED RELATIONSHIPS BETWEEN THEM

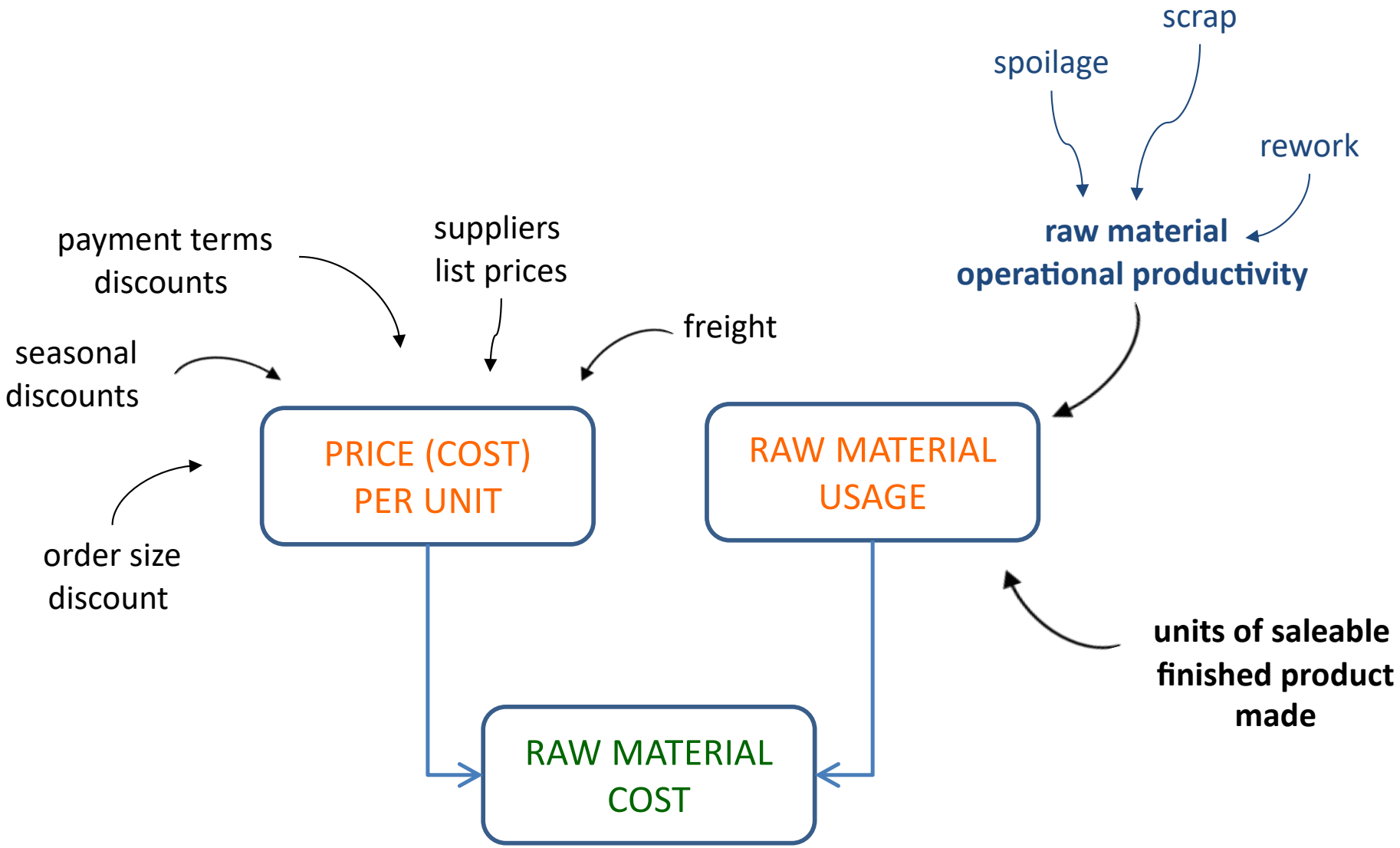


DECISION MODEL

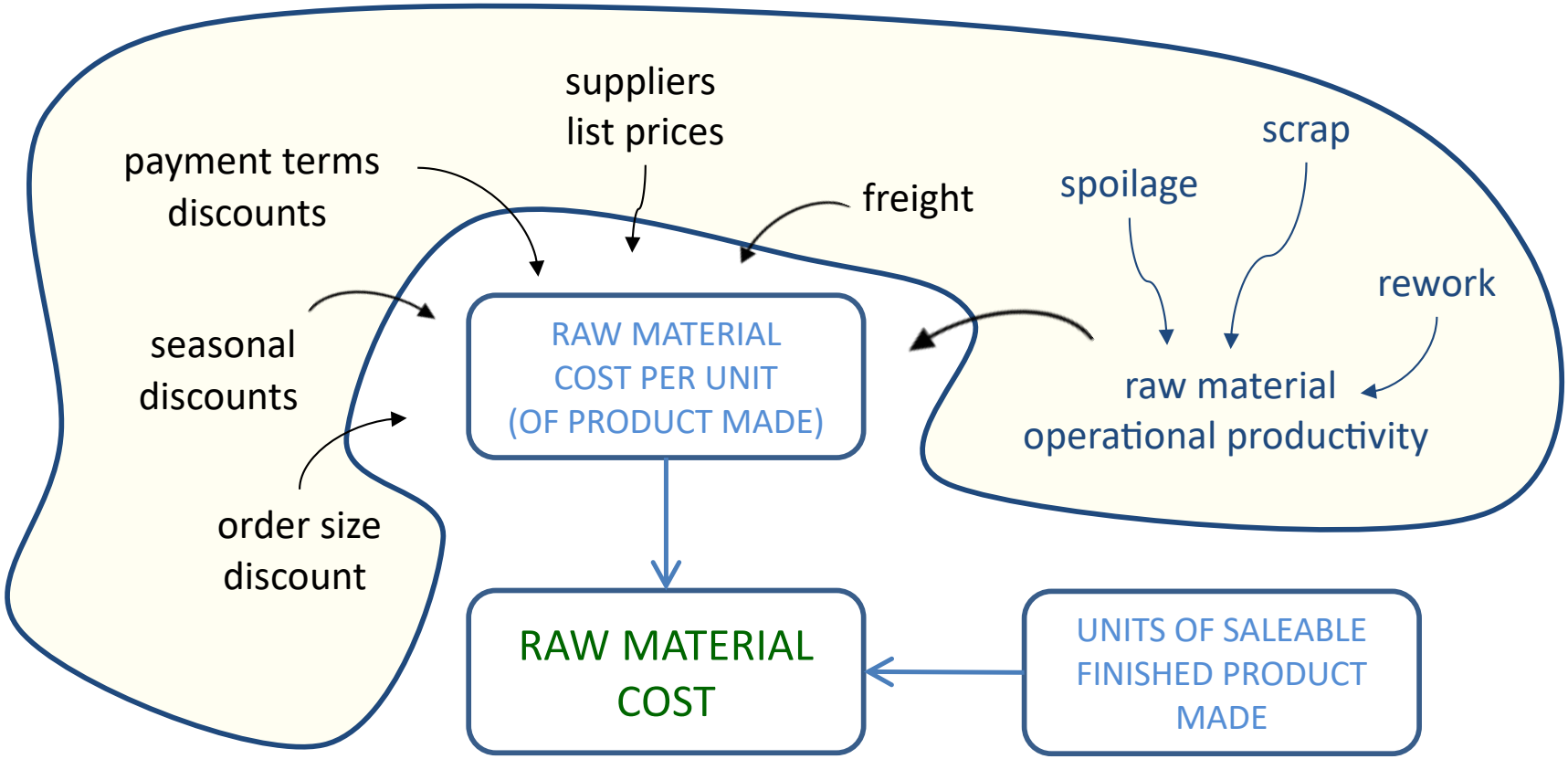


REALITY

COST OF RAW MATERIAL UTILISATION



COST OF RAW MATERIAL UTILISATION



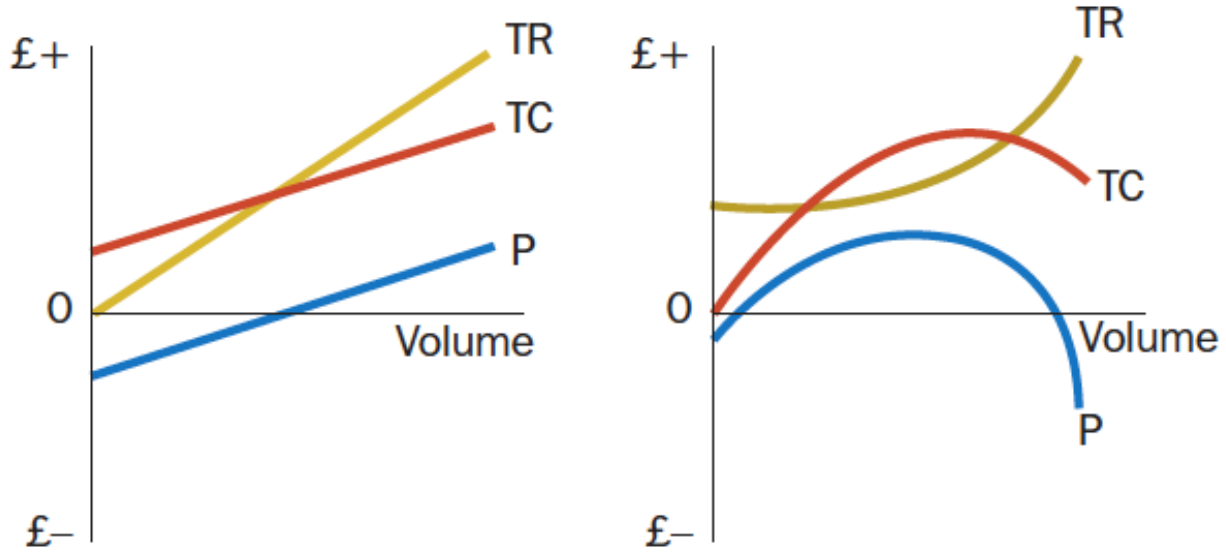
COMPARE

The graphs shown below show cost–volume– profit relationships as they are typically represented in

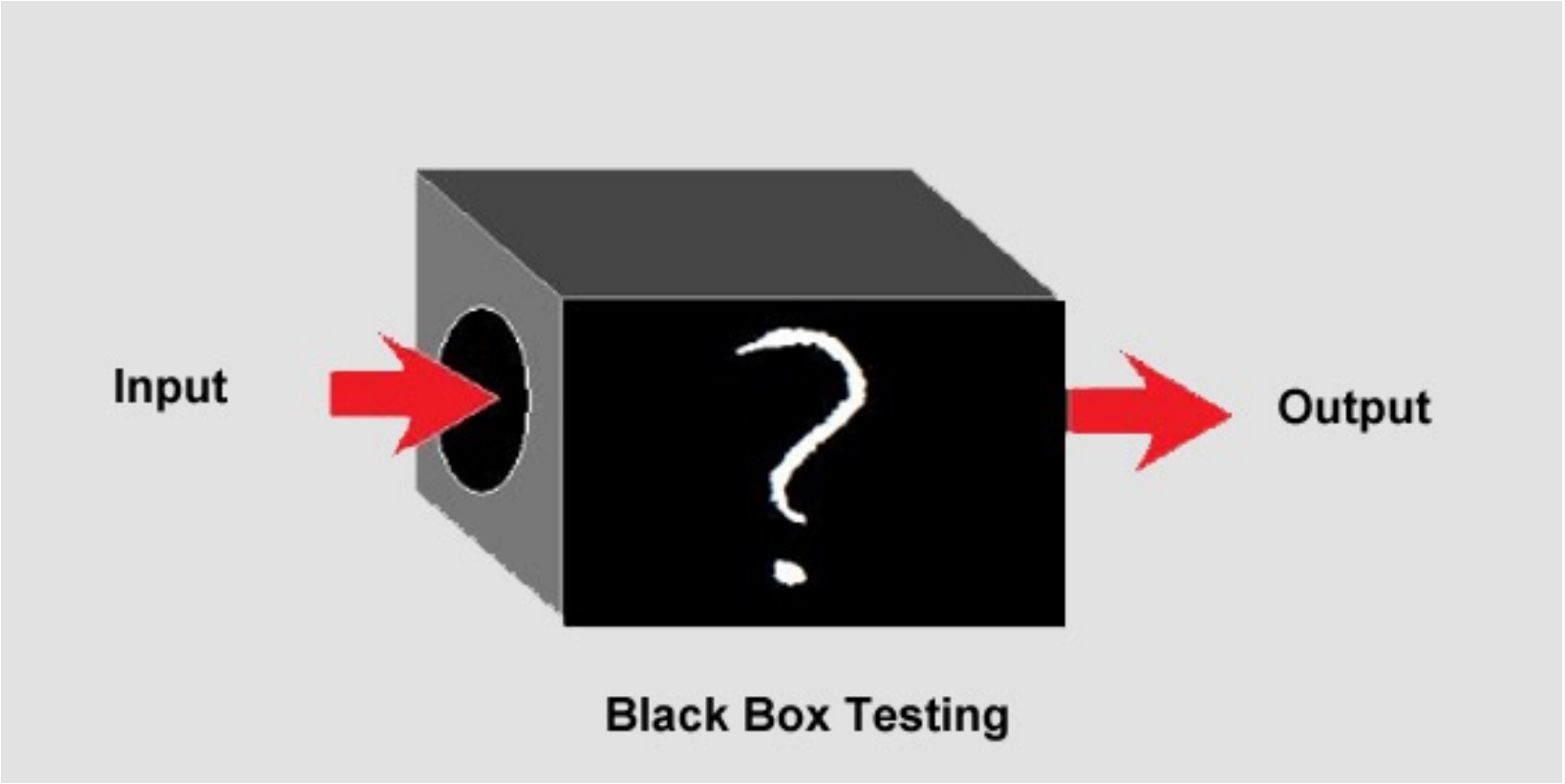
1. management accounting and
2. economic theory.

In each graph T = total revenue, TC = total cost, and P = profit.

You are required to compare these different representations of cost–volume–profit relationships, identifying, explaining and commenting on points of similarity and also differences.



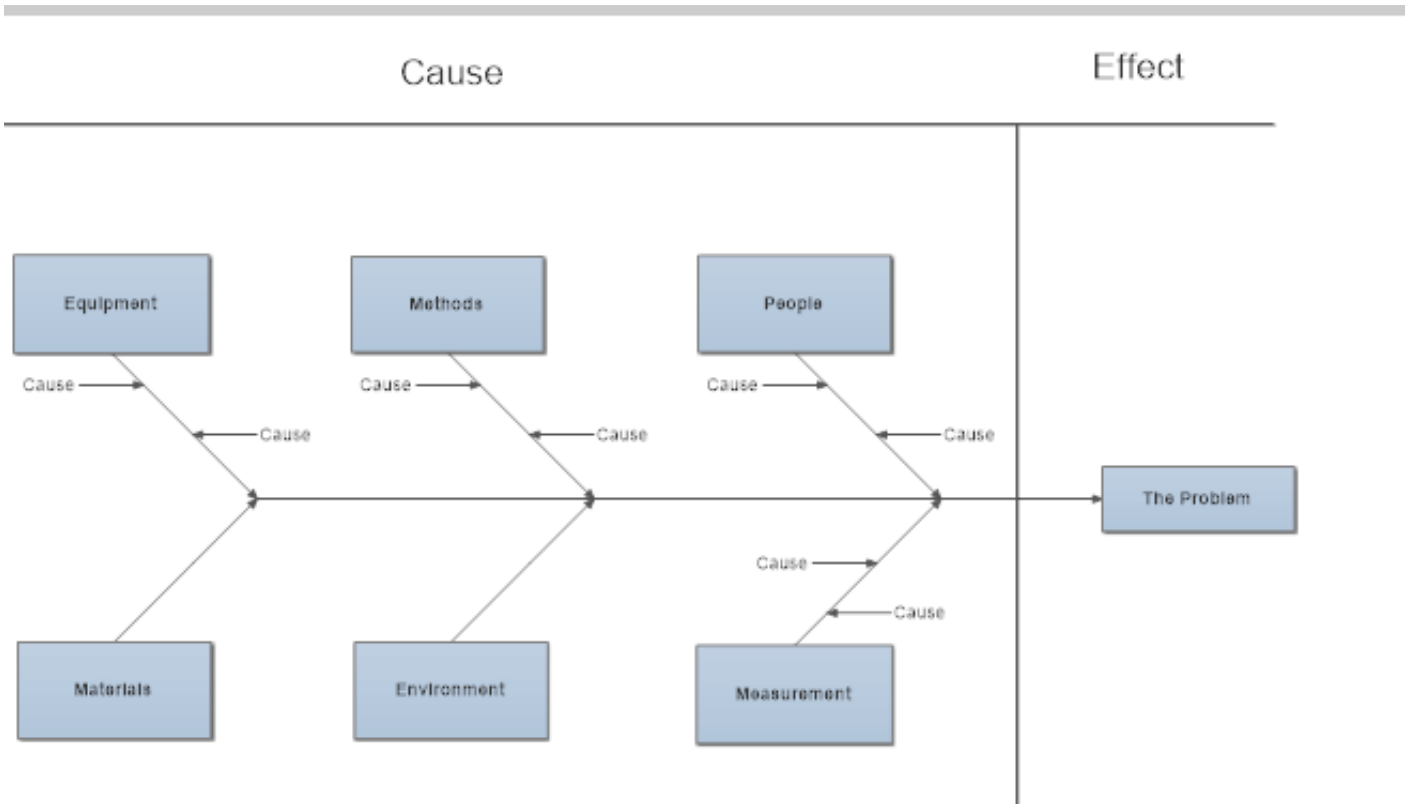
THE FIRM AS A “BLACK BOX”



<<In most of the microeconomic theory, the firm is depicted as a “black box” consisting of a set of production activities or even a presumed production function with a finite set of inputs to be adjusted so-as-to generate a set of outputs corresponding to a maximal level of profits or some other measure of owner utility. The inputs controlled by the firm are then assumed to be put to their most efficient use without having a look “inside” the firm or “outside” in the relations with other economic agents, excepting for competition with other firms>>.

SOURCE: Andersson & Johansson, “Inside and outside the black box: organization of interdependencies”

CAUSES AND EFFECTS RELATIONSHIPS



If one really wants to manage a business, one must know the various cause-effect relationships that link inputs and outputs. One must make the black box transparent by reconstructing (on the basis of the measurement of analytical reasoning) which are the main relationships on which attention must be focused if the desired effects are to be produced. Managing requires a focus on causes so that effects can be produced.

CASUALITY AS THE GUIDING PRINCIPLE IN COST MODELING

Cost modeling provides a monetary representation of the organization's resources, processes, and products and services. […].

The guiding principle for operations modeling (and, hence, cost modeling) is **causality,** the ability to reflect **cause-and-effect relationships**.

A useful cost model must efficiently guide a manager

(1) from a monetary effect to the operational cause and

(2) to clear and direct insight into the probable monetary effect of a particular operational action (or cause) being considered

Causality: The relation between a managerial objective's quantitative output and the input quantities consumed if the output is to be achieved

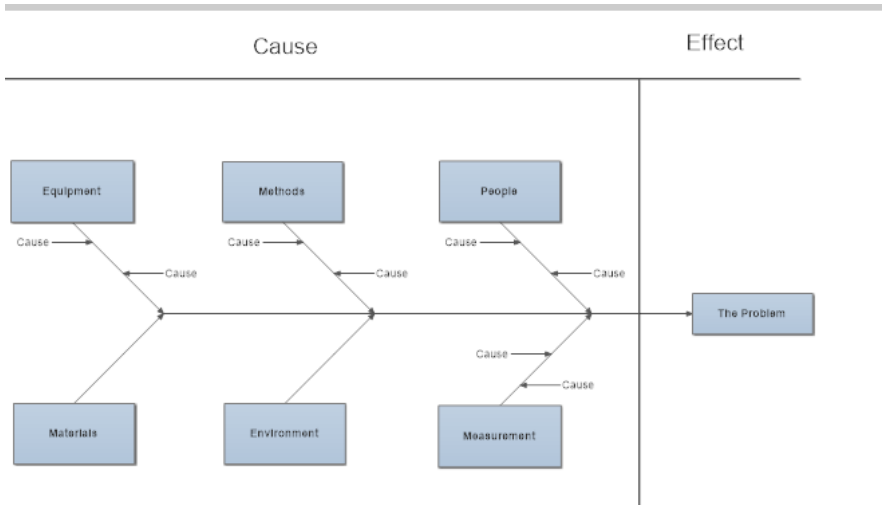
By applying the principle of causality and its associated concepts, **we can create a model that represents an organization's operations and explains the resulting financial results.** This establishes the baseline from which managers will seek to achieve strategy in an optimal manner.

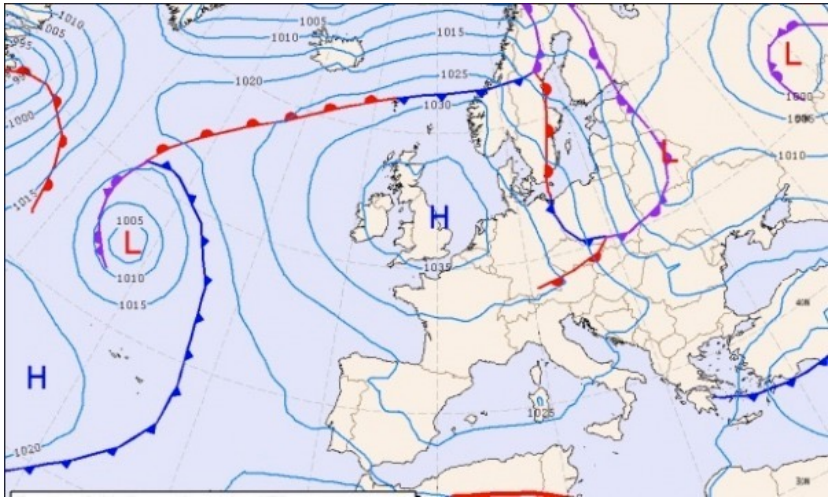
Source: IMA (Institute of Management Accountants), "The Conceptual Framework for Managerial Costing," Statement on Management Accounting

AN INPUT-PROCESS-OUTPUT MODEL OF THE FIRM

A well-designed cost model highlights the relationships that exist between the different **resources that are used**, the specific **activities that are carried out** as a result of the use of the different resources available, and the multiple **outputs (tangible or intangible) that are obtained** as a result of carrying out the activities that constitute the business process

ANALOGY AS THE GUIDING PRINCIPLE FOR DECISION MAKING

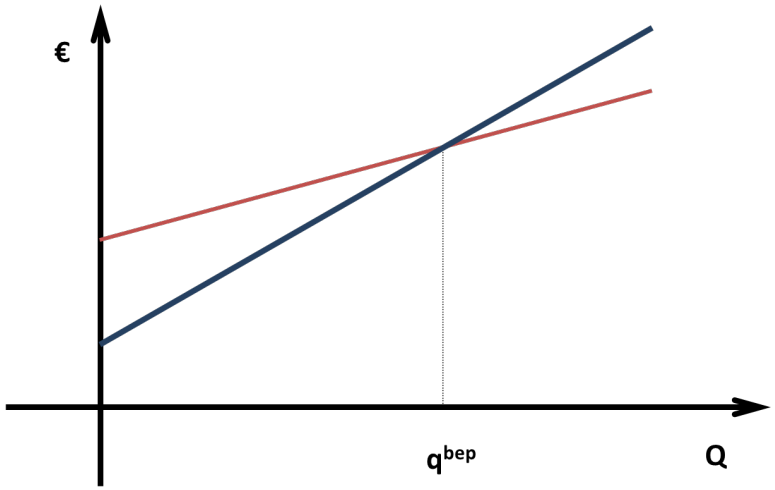




The guiding principle for decision making is **analogy**—the **use of causal insights to infer past or future causes or effects.** Managers use cost information by applying the principle of analogy to infer past or future causes or effects. This results in learning from the past, making plans for the future, and supporting resource application decisions to achieve strategic objectives.

Source: IMA (Institute of Management Accountants), "The Conceptual Framework for Managerial Costing," Statement on Management Accounting

INFERRING THE FUTURE USING THE CURRENT INFORMATION

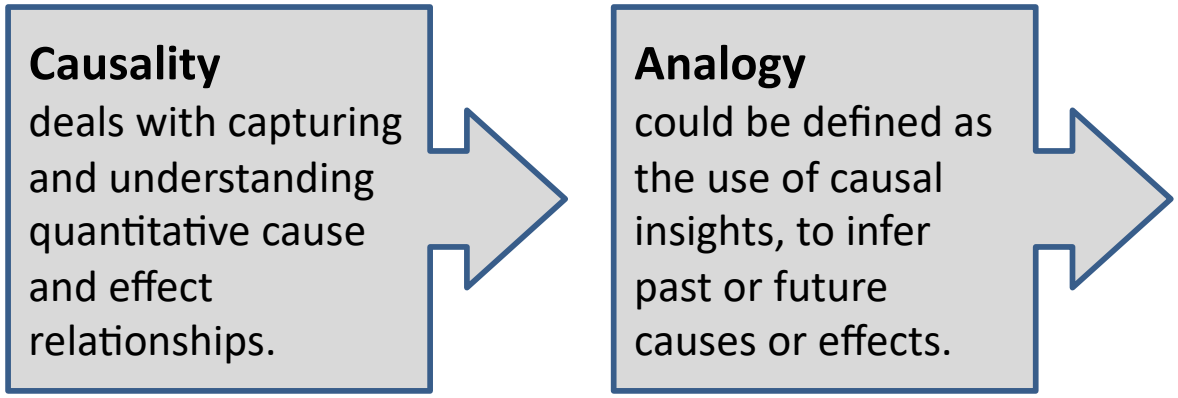


Contribution Margin per unit: $ 375.00
Total Fixed Costs: $ 2,625,000
Actual level of Sales: 11,250 units

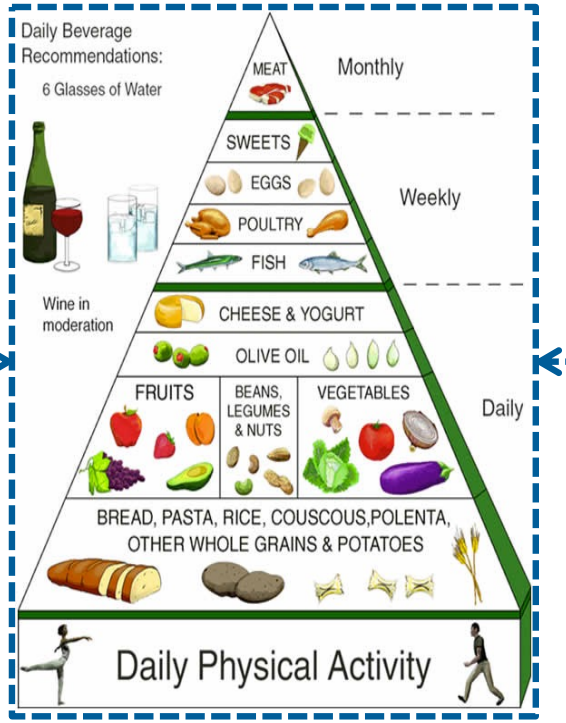
if the quantity sold were to increase by 20% and fixed costs were to rise by 10%, then the new break-even point would be 7,700 units and EBIT would rise by 36.47%.

PURPOSES OF MEASUREMENT

- To understand the **real causes** of the value creation process.



ABILITY TO INDUCE ORGANIZATIONAL BEHAVIOR



DECISION MODELS

MANAGEMENT CONTROL

BOTH ARE NEEDED!

There are basically two ways to get people to do what you want. You can **threaten them with punishment** or you can also **entice them with rewards**. Normally we do both. One way of saying this is what we call "the **carrot-and-stick approach**."

MANAGEMENT INVOLVES DIRECTING THE ACTIVITIES OF OTHERS

A dual sets of **control mechanisms** Is needed

The first is designed to **guard against undesirable behavior.** It aims, therefore, to **avoid that wrong or dangerous actions are carried out.** It performs the same functions of **"brakes"** in a car: it blocks actions, avoids collisions.

The second set of control mechanisms is used in order to **encourage desirable behavior,** to **motivate people** to perform better than average, to induce them, if possible, to **go above and beyond their duties and abilities**. The aim of this different group of control mechanisms, therefore, is to "provide energy to the system". The analogy, here, is clearly with the **"accelerator"** (throttle) of the car.

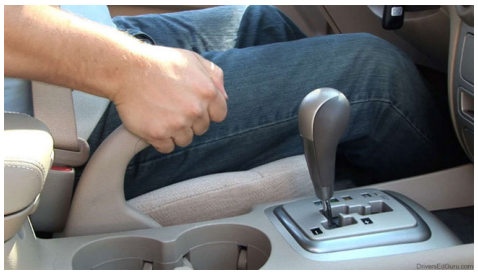
MANAGEMENT INVOLVES DIRECTING THE ACTIVITIES OF OTHERS

A dual sets of
control mechanisms
Is needed

LIMITS AGAINST UNDESIRABLE BEHAVIOR

The "Administration" responsibility centre may not, in the coming year, exceed the following values for any single cost item

- consultancy costs $250,000
- training expenses $120,000
- travel and transfers $80,000



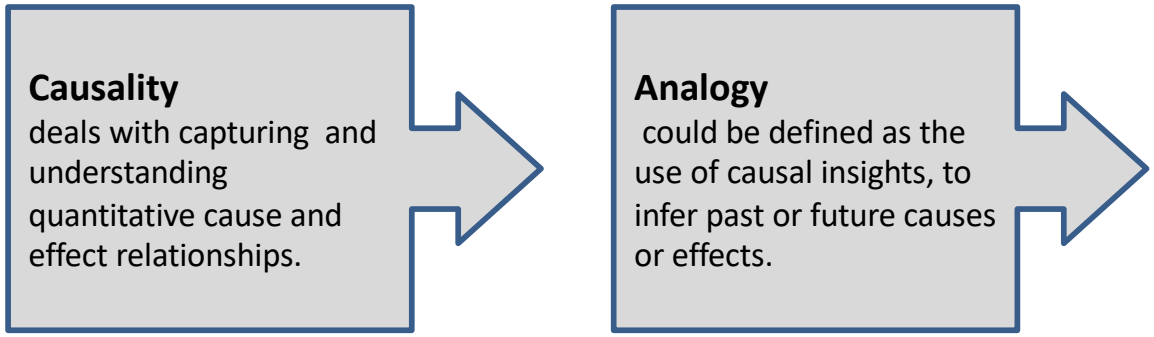
INCENTIVE TO CARRY OUT DESIRED ACTIONS

The manager of the “Painting” centre will receive a bonus if the average cost per square centimetre painted is less than $ 2.15

PURPOSES OF MEASUREMENT

What are the purposes of measurement applied to management?

- To understand the **real causes** of the value creation process.



- To influence (to drive) **behavior.**

> Human beings adjust behavior based on the metrics they're held against. Anything you measure will impel a person to optimize his score on that metric. What you measure is what you'll get. Period.
>
> Dan Ariel

CONTROLING AS DRIVING: A GREAT ANALOGY

Like a formula 1 driver, a manager must have the ability to direct the resources assigned to him or her along winning directions!

IF HE OR SHE WANTS TO WIN, A GOOD DRIVER MUST…

- know at all times where he is and have an idea of where he wants to go and, therefore, which trajectories he wants to follow
- know how the opposing drivers are behaving
- know perfectly well how the 'resource' (the car) at his disposal really works
- have the ability to perceive the onset of any problems before they are manifested
- have at the same time the ability to understand what is working properly
- have sufficient information flow (from the pits) and be able to interpret it correctly and quickly
- be able to extract the maximum result from his vehicle, without depleting it, but on the contrary making it grow in quality over time.

WHY ARE CONTROLS NEEDED?

If all personnel always did what was best for the organization, control - and even management - would not be needed. But, obviously individuals are sometimes **unable or unwilling** to act in the organization's best interest, and a set of controls must be implemented to guard against undesirable behavior and to encourage desirable actions.

Personal limitations. **People do not always understand what is expected of them nor how they can best perform their jobs, as they may lack some requisite ability, training, or information.** In addition. human beings have a number of innate perceptual and cognitive biases, such as an inability to process new information optimally or to make consistent decisions and these biases can reduce organizational effectiveness. Some of these personal limitations are correctable or avoidable but for others. controls are required to guard against their deleterious effects.

Lack of goal congruence. **Even if employees are properly equipped to perform a job well. some choose not to do so. because individual goals and organizational goals may not coincide perfectly**. In other words. there is a lack of goal congruence. Steps must often be taken either to increase goal congruence or to prevent employees from acting in their own interest where goal incongruence exists.

SOURCE: Kenneth A. Marchant, The control Function of Management, Sloan Management Review, Summer 82, (43-55)

ABSORPTION COSTING – COGS FORMAT

Income Statement (COGS)	Whole Company	Per unit
+ Sales Revenue	**€ 5.928.000**	**€ 6,89**
- COGS (@manufacturing cost)	€ 3.388.578	€ 3,94
= Manufacturing Margin	**€ 2.539.422**	**€ 2,95**
- S.G.&A. Expenses	€ 1.816.209	€ 2,11
= EBIT	**€ 723.213**	**€ 0,84**
- Financial cost	€ 85.000	€ 0,10
= EBT	**€ 638.213**	**€ 0,74**

ABSORPTION COSTING – TOTAL OUTPUT FORMAT

Income Statement (Total Output)	Whole Company	Per unit
+ Sales Revenue	**€ 5.928.000**	**€ 6,89**
+ Change in Inventory	€ 685.596	€ 3,94
= Total Output	**€ 5.242.404**	**€ 7,64**
- Manufacturing costs	€ 2.702.982	€ 3,94
= Manufacturing Margin	**€ 2.539.422**	**€ 3,70**
- Period costs	€ 1.816.209	€ 2,65
= EBIT	**€ 723.213**	**€ 1,05**
- Financial cost	€ 85.000	€ 0,12
= EBT	**€ 638.213**	**€ 0,93**

VARIABLE COSTING – COGS FORMAT

Income Statement (COGS)	Whole Company		Per unit	
+ Sales Revenue	**€**	**5.928.000**	**€**	**6,89**
- COGS (@ variable manufacturing cost)	€	2.199.055	€	2,56
= Manufacturing Variable Margin	**€**	**3.728.945**	**€**	**4,34**
- Selling variable costs	€	1.035.384	€	1,20
= Contribution Margin	**€**	**2.693.561**	**€**	**3,13**
+ Fixed Reveues	€	-	€	-
- Fixed Costs	€	1.729.677	€	2,01
= EBIT	**€**	**963.884**	**€**	**1,12**
- Financial cost	€	85.000	€	0,10
= EBT	**€**	**878.884**	**€**	**1,02**

VARIABLE COSTING – TOTAL OUTPUT FORMAT

Income Statement (COGS)	Whole Company	Per unit
+ Sales Revenue	**€ 5.928.000**	**€ 6,89**
+ Change in Inventory	€ 444.925	€ 2,56
= Total Output	**€ 5.483.075**	**€ 7,99**
- Manufacturing variable costs	€ 1.754.130	€ 2,56
= Manufacturing Variable Margin	**€ 3.728.945**	**€ 5,44**
- Selling variable costs	€ 1.035.384	€ 1,51
= Contribution Margin	**€ 2.693.561**	**€ 3,93**
+ Fixed Reveues	€ -	€ -
- Fixed Costs	€ 1.729.677	€ 2,52
= EBIT	**€ 963.884**	**€ 1,41**
- Financial cost	€ 85.000	€ 0,12
= EBT	**€ 878.884**	**€ 1,28**

EXPLANATION OF THE DIFFERENTIAL

+ Manufacturing full cost per unit	€	3,94
- Manufacturing variable cost per unit	€	2,56
= Differential in cost per unit	**€**	**1,38**
Change in inventory (IN #)	-	174.000
Differential in cost per unit	€	1,38
Differential in value of the net change	**-€**	**240.671**
EBT @ variable costing	**€**	**878.884**
+ differential in value of the net change	-€	240.671
EBT @ absorption costing	**€**	**638.213**

EXERCISE 2 _ ABSORPTION COSTING

+ Sales Revenue	**£ 47.500**		**£ 47.500**
- Cost of good sold	-£ 22.800		-£ 19.000
= Gross margin	**£ 24.700**		**£ 28.500**
- S.G.& A. Expenses	-£ 21.900		-£ 21.900
+ Fixed revenues	£ 300		£ 300
= EBIT	**£ 3.100**		**£ 6.900**
- Interest epenses	-£ 4.100		-£ 4.100
= EBT	**-£ 1.000**		**£ 2.800**

EXERCISE 2 _ VARIABLE COSTING

+ Sales Revenue	**£ 47.500**	**£ 47.500**
- Cost of good sold	-£ 7.600	-£ 7.600
= Manufacturing variable margin	**£ 39.900**	**£ 39.900**
- Selling variable costs	-£ 1.900	-£ 1.900
= Contribution margin	**£ 38.000**	**£ 38.000**
+ Fixed revenues	£ 300	£ 300
- Fixed costs	-£ 36.000	-£ 36.000
= EBIT	**£ 2.300**	**£ 2.300**
- Interest epenses	-£ 4.100	-£ 4.100
= EBT	**-£ 1.800**	**-£ 1.800**

EXERCISE 4 _ INITIAL POSITION

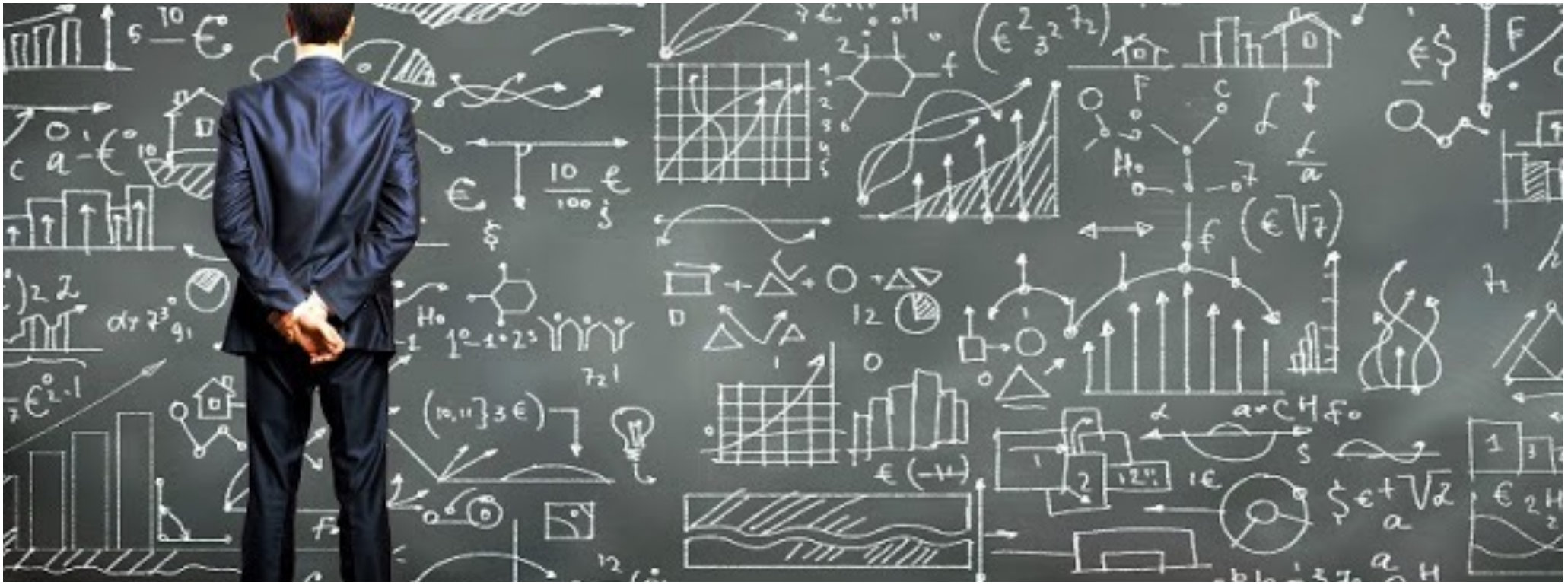
	Company A	Company B
Quantity made	900	900
Quantity sold	1000	750
Average price per unit	$ 10	$ 20
Manufacturing variable cost per unit	$ 3	$ 14
Selling variable cost per unit	$ 1	$ 4
Fixed revenues	$ 700	$ 300
Fixed costs	$ 6.200	$ 1.300
+ Sales Revenue	**$ 10.000**	**$ 15.000**
- Cost of good sold	$ -3.000	$ -10.500
= Manufacturing variable margin	**$ 7.000**	**$ 4.500**
- Selling variable costs	$ -1.000	$ -3.000
= Contribution margin	**$ 6.000**	**$ 1.500**
+ Fixed revenues	$ 700	$ 300
- Fixed costs	$ -6.200	$ -1.300
EBIT	**$ 500**	**$ 500**
Degree of Operating Leverage	12	3

EXERCISE 4 _ INITIAL POSITION

	Company A	Company B
Quantity made	1050	900
Quantity sold	1050	675
Average price per unit	$ 10	$ 20
Manufacturingariable cost per unit	$ 3	$ 14
Selling variable cost per unit	$ 1	$ 4
+ Sales Revenue	**$ 10.500**	**$ 13.500**
- Cost of good sold	$ -3.150	$ -9.450
= Manufacturing variable margin	**$ 7.350**	**$ 4.050**
- Selling variable costs	$ -1.050	$ -2.700
= Contribution margin	**$ 6.300**	**$ 1.350**
+ Fixed revenues	$ 700	$ 300
- Fixed costs	$ -6.200	$ -1.300
EBIT	**$ 800**	**$ 350**
Percentage change in EBIT	60%	-30%
Degree of Operating Leverage	7,88	3,86

COST AND REVENUE ANALYSIS

How to produce partial profitability information



EFFICIENCY

1. **OPERATIONAL PRODUCTIVITY**

$$\frac{O_{PHYSICAL}}{I_{PHYSICAL}}$$

   a) **Partial** ✔
   b) **Total** ✘

2. **FINANCIAL PRODUCTIVITY**

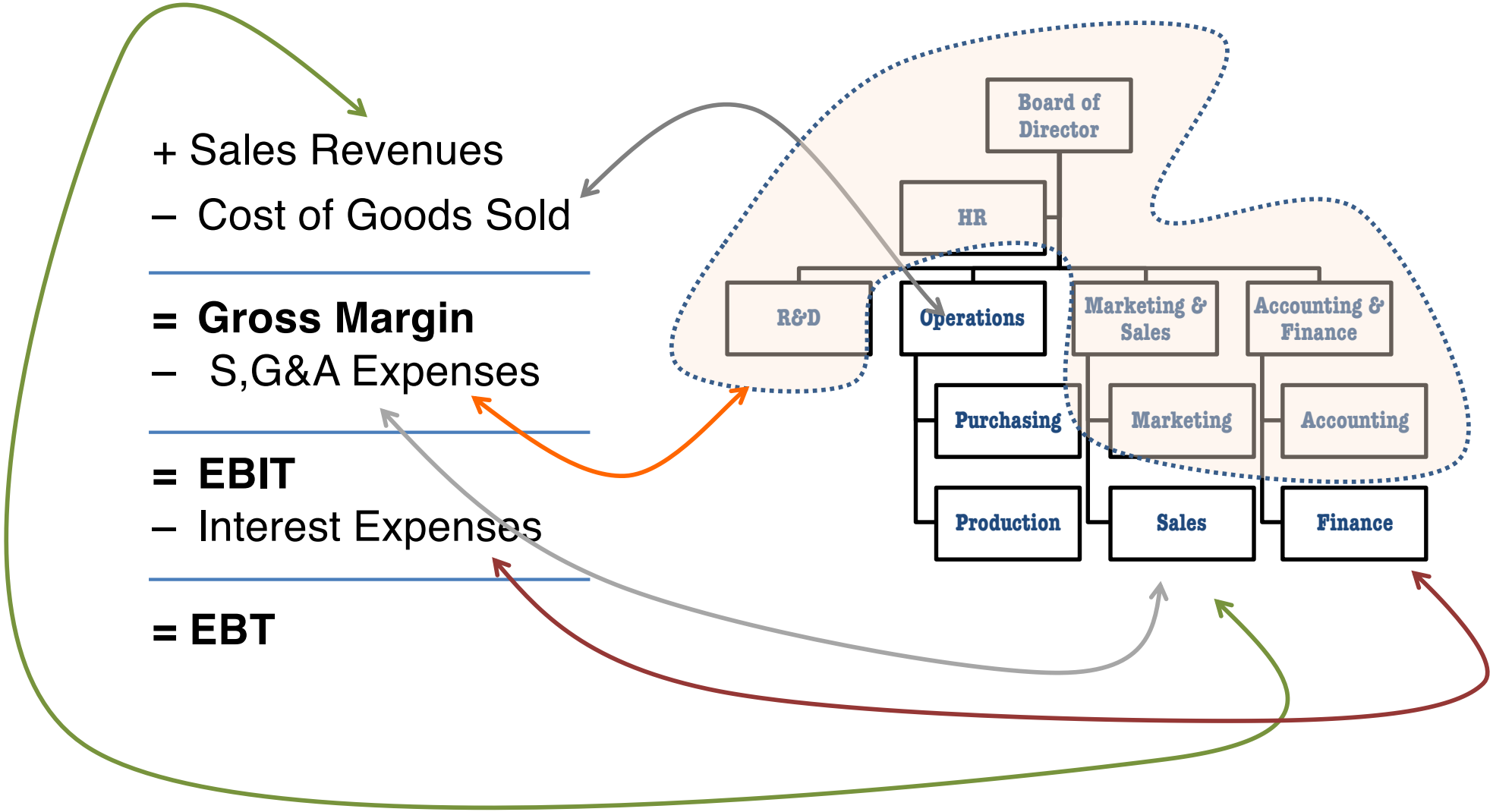
$$\frac{O_{REVENUES}}{I_{EXPENSES}}$$

   a) **Partial** ✘
   b) **Total** ✔

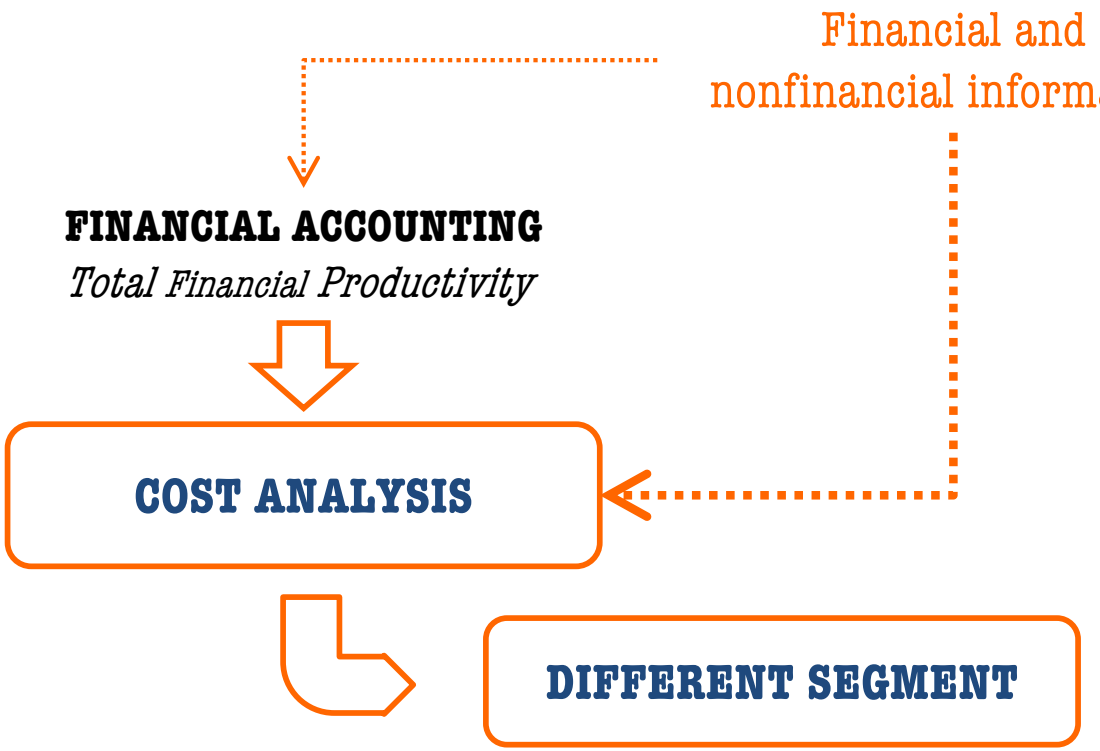
DIFFERENT POSSIBLE PROFIT MARGINS

+ Sales revenues	**€**	**265.780**	**100,00%**
- Cost of goods sold (@manufacturing variable cost)	-€	85.330	-32,11%
= Manufacturing variable margin	**€**	**180.450**	**67,89%**
- Sales variable costs	-€	24.550	-9,24%
= Contribution margin	**€**	**155.900**	**58,66%**
- Fixed costs (excluding depreciation and amortization costs)	-€	83.009	-31,23%
= EBITDA	**€**	**72.891**	**27,43%**
- Depreciation and amortization costs	-€	38.126	-14,34%
= EBIT	**€**	**34.765**	**13,08%**
- Interst expenses	-€	12.500	-4,70%
= EBT	**€**	**22.265**	**8,38%**
- Income taxes	-€	6.680	-2,51%
= EAT	**€**	**15.586**	**5,86%**

SOME IMPORTANT RELATIONSHIPS



FROM TOTAL TO PARTIAL FINANCIAL PRODUCTIVITY



+ Operating revenues	€	4.207.565
- Operating costs	-€	3.705.816
= Operating profit	**€**	**501.749**

MANAGERIAL ACCOUNTING and MANAGERIAL COSTING

Partial Financial Productivity

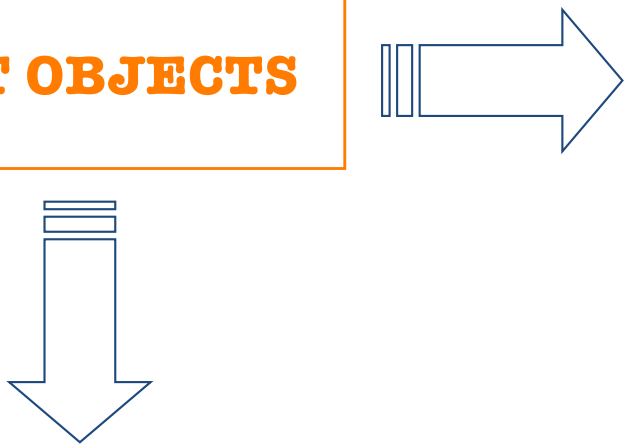
Product "A"	€	657.235
Product "B"	€	546.763
Product "C"	€	432.267
.....	.....	
Product "N"	-€	138.758
Operating profit	**€**	**501.749**

Customer "X"	€	432.001
Customer "Y"	€	367.455
Customer "W"	€	312.826
.....	.....	
Customer "K"	-€	25.789
Operating profit	**€**	**501.749**

Responsability center "1"	€	2.433.015
Responsability center "2"	€	1.774.550
Responsability center "3"	-€	64.520
.....	.....	
Responsability center "12"	-€	835.519
Operating profit	**€**	**501.749**

DIFFERENT COST OBJECTS

COST OBJECTS



"Internal"

Resources (Means of Production)
Responsibility Centers (Departments)
Activities or Processes
Projects
WIPs
Products or Product Lines

"External"

Customers or clusters of Customers
Distribution Channels
Geographical Areas
Suppliers

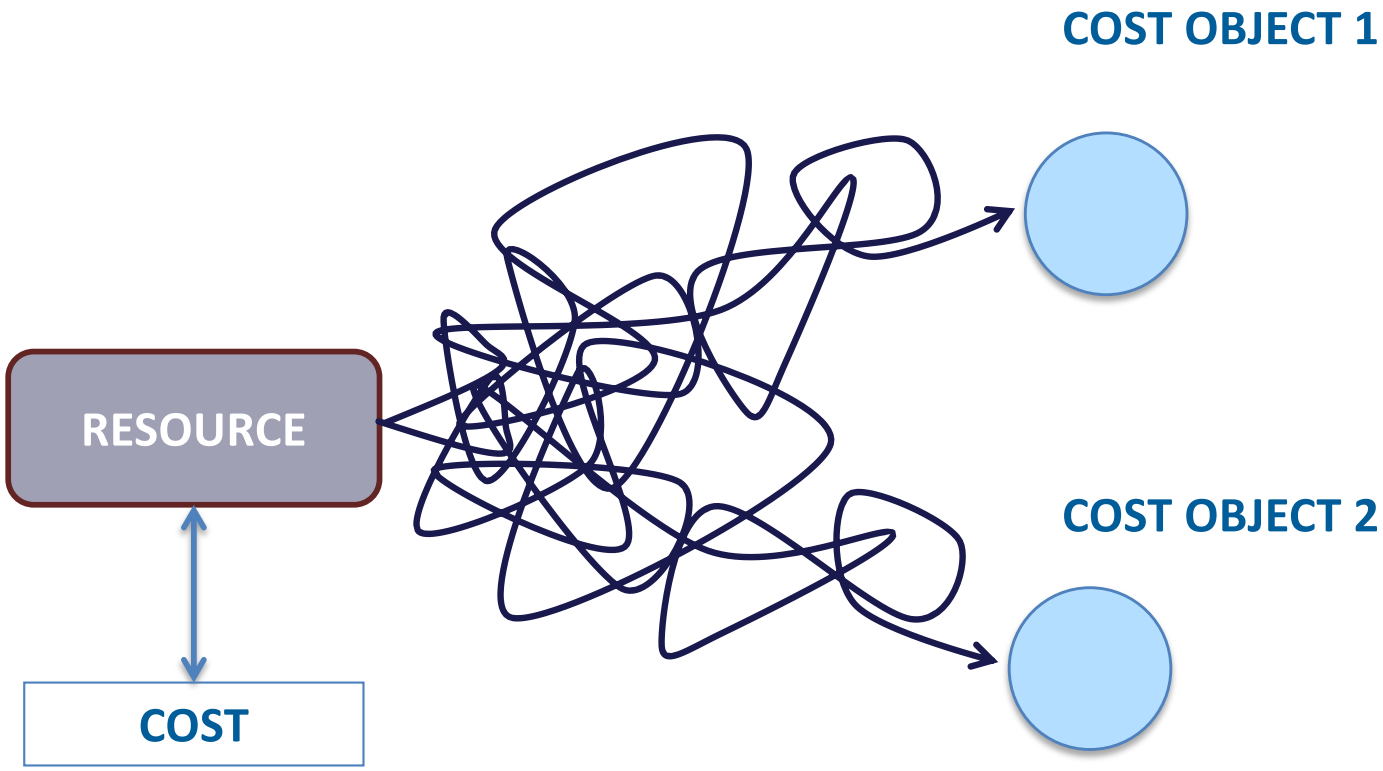
These cost objects are the most innovative: they denote the adoption of a more modern management control. The focus is on the outside world.
Those who adopt this perspective seek to obtain the information necessary to manage market competition more effectively

A SEGMENT INCOME STATEMENT

	JOB 1	JOB 2	JOB 3	JOB ...	JOB N	Total
+ Sales Revenues	xxx	xxx	xxx	xxx	xxx	∑
- Sales Commissions	xxx	xxx	xxx	xxx	xxx	∑
= Net Revenues	**= xxx**	**= xxx**	**= xxx**	**= xxx**	**= xxx**	**= ∑**
- Direct Materials	- xxx	- xxx	- xxx	- xxx	- xxx	∑
= First Margin	**= xxx**	**= xxx**	**= xxx**	**= xxx**	**= xxx**	**= ∑**
- Outsourced Work	- xxx	- xxx	- xxx	- xxx	- xxx	∑
= Second Margin	**= xxx**	**= xxx**	**= xxx**	**= xxx**	**= xxx**	**= ∑**
- Other Direct Costs	- xxx	- xxx	- xxx	- xxx	- xxx	- ∑
- Direct Labor	- xxx	- xxx	- xxx	- xxx	- xxx	- ∑
= Job Orders Direct Margin	**= xxx**	**= xxx**	**= xxx**	**= xxx**	**= xxx**	**= ∑**
- Manufacturing Overhead						- xxx
- Selling Overhead Expenses						- xxx
- Administrative Expenses						- xxx
- General Expenses						- xxx
= Ebit						**= xxx**

WHY IT IS DIFFICULT TO COMPUTE….

Partial financial productivity measure:



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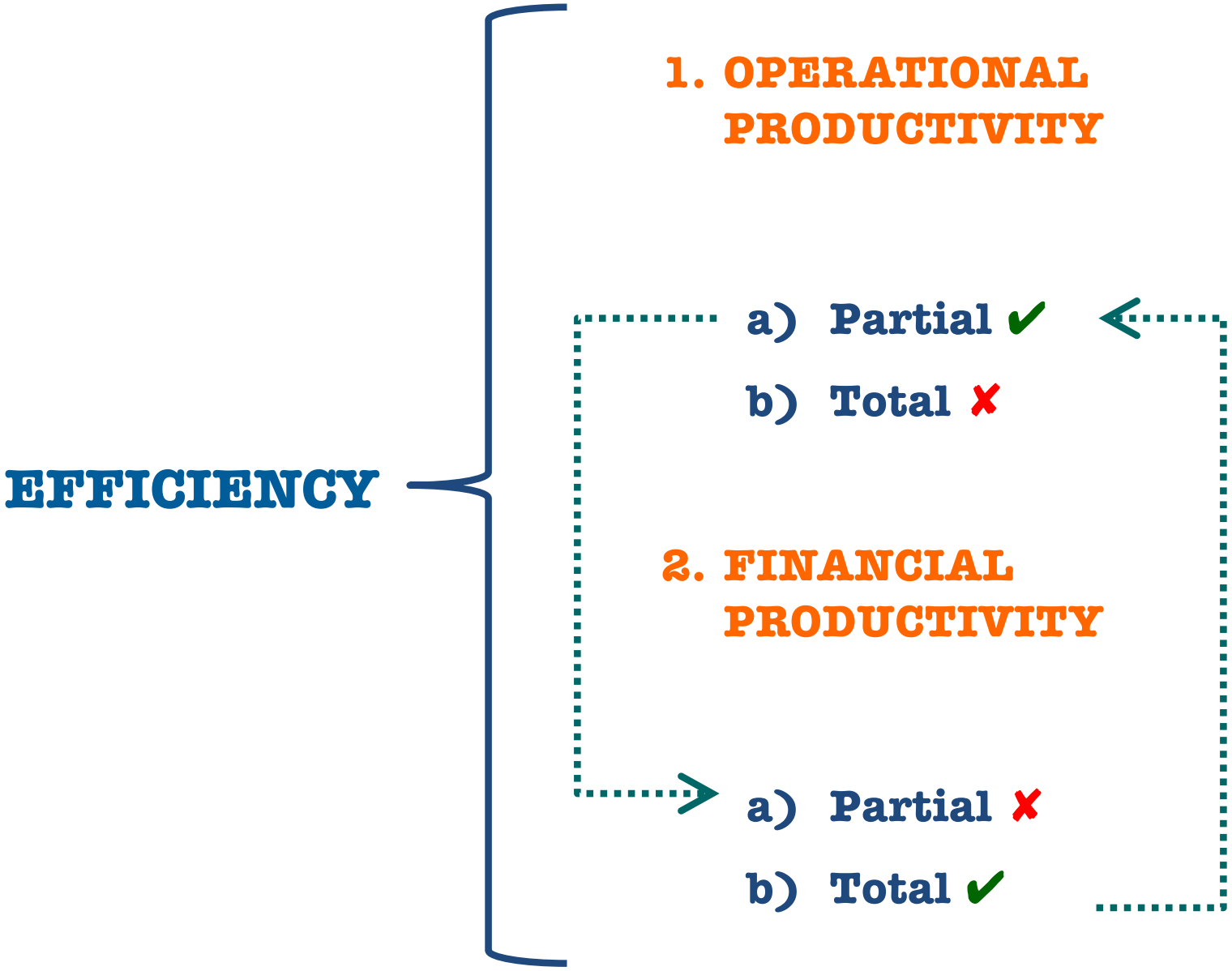
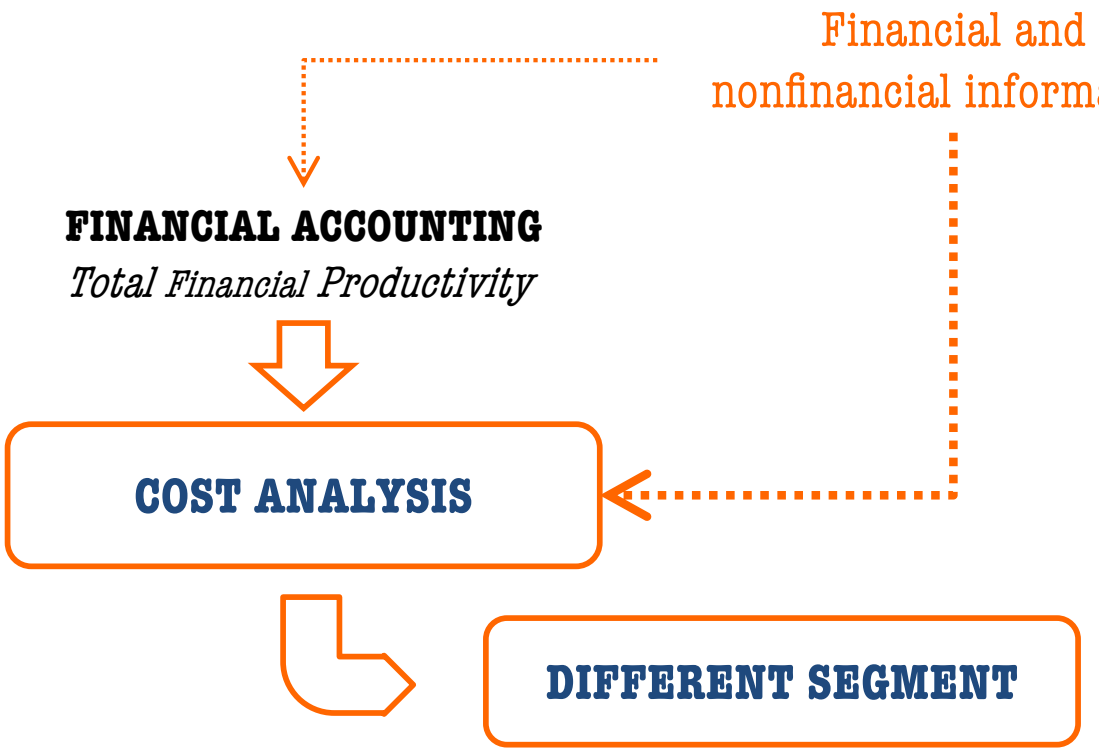


FROM TOTAL TO PARTIAL FINANCIAL PRODUCTIVITY



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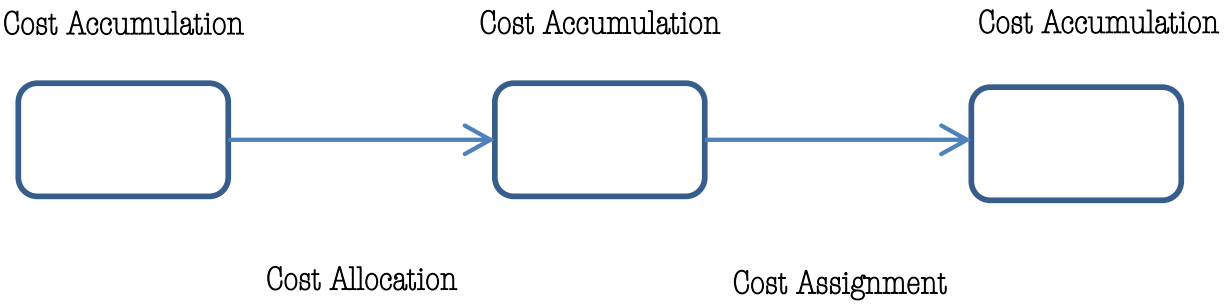
COST COLLECTION SYSTEMS

Cost accumulation is the collection of cost data in some organized way by means of an accounting system.

Cost collection systems typically accounts for costs in two broad stages:

1. they initially **accumulates** costs classifying them **"by nature":** that is to say into categories that remind us the **type of resources purchased or consumed** (e.g., raw materials, depreciation, transports costs, rent expenses, wages and salaries, etc.). Later this criterion is combined with other two that focus their attention on **cost behavior** (fixed and variable costs) or on the **robustness of the** relation that link a cost to a specific cost objects (direct and indirect costs) .
2. They then **assign** these costs to cost objects.

COST COLLECTION AND ASSIGNMENT PROCESS



The "cost collection and assignment process" can be viewed as a set of cost accumulation and assignment steps. We can think of the accumulation phases as the arrival and departure points of the process (but also the intermediate stopping points) while the assignment phases represent the moments of movement from a specific point to the next one.

A RESOURCE AS A COST OBJECT

hours of work performed

tyres

lubricating oil

repairs and maintenance

driving activity

brakes

casualty insurance

mechanical parts

gasoline

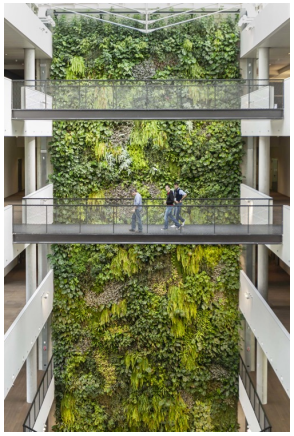
Please note: the cost of operating a tractor is a **compound cost consisting of the sum of many elementary costs**. some of these costs are incurred exclusively for the operation of the tractor (tyres depreciation) others, however, are also incurred for other reasons (the cost of personnel who, in addition to doing other things, drive the tractor).

ROBUSTNESS OF THE RELATION

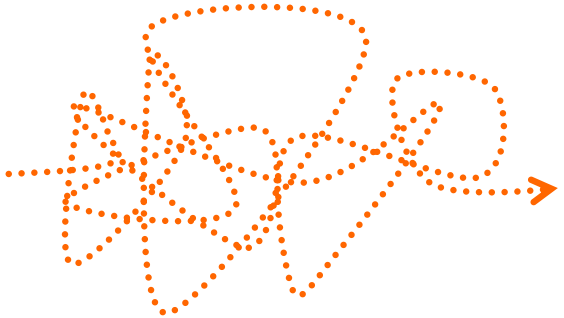
denim fabric

clear, obvious consumption relationship

pair of jeans

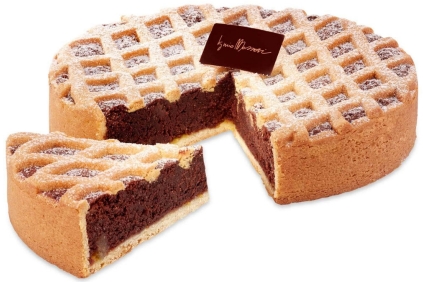


gardening services

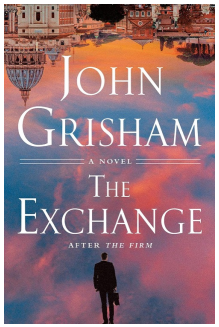


consumption relationship uncertain,
not obvious, imprecise

ROBUSTNESS OF THE RELATION



ROBUSTNESS OF THE RELATION



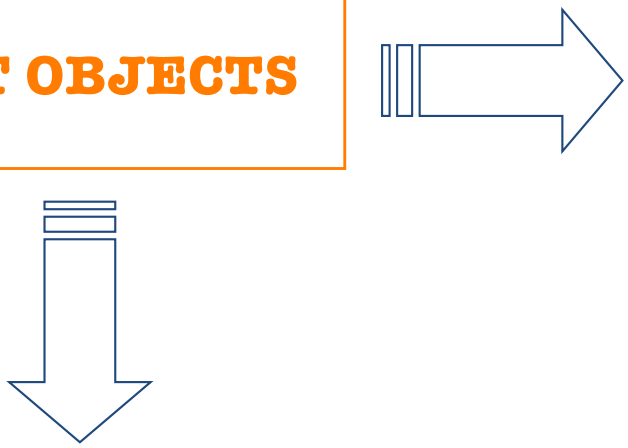
COST ANALYSIS

The concrete implementation of a proper cost analysis requires to make some basic decisions about the following issues:

- Cost Object
- Periodicity of the analysis (one time “had hoc” versus systematic)
- Portion of the cost base that is to be assigned to the cost object: selection of the “cost rule” that is to say of the evaluation criterion – in terms of cost – for the cost object)
- Structure of the cost flow: selection of the proper accumulation’s method
- Input measurement base

DIFFERENT COST OBJECTS

COST OBJECTS



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RELATION BETWEEN DIFFERENT COST OBJECTS

SPRAYER
(Resource)

TRACTOR
(Resource)

GRAPE TRANSPORTATION
(Activity)

PHYTOSANITARY TREATMENTS
(Activity)

VINEYARD
(Resource)

GRAPE
(WIP)

WINE
(WIP)

BOTTLE OF WINE
(PRODUCT)

A VAN AS A RESPONSIBILITY CENTER

cost of goods

carriage paid

custom duty paid

transit insurance

€

loading and unloading charges

tyres

lubricating oil

repairs and maintenance

gasoline

brakes

casualty insurance

mechanical parts

basic wage

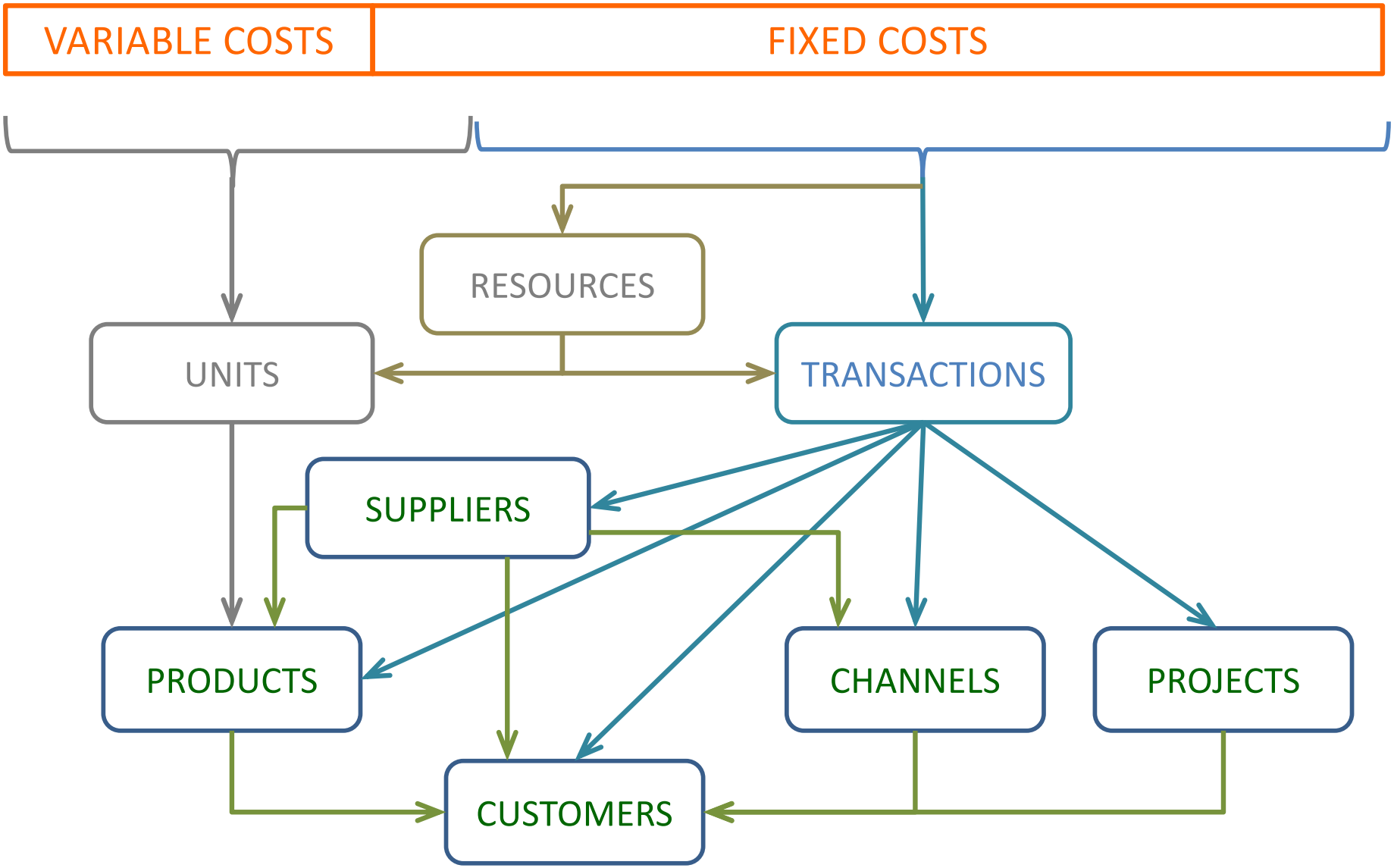
bonuses

dearness allowance

fringe benefits

employer's contribution to employees' state insurance

RELATION BETWEEN DIFFERENT COST OBJECTS



DIFFERENT DECISIONS , DIFFERENT SETS OF INFORMATION

Decision to be made:

A. Things to do in Rome while visiting the city as a tourist for a five days period

- Different possible hotel/B&B accommodations
- Best restaurants in town
- Underground tickets and weekly pass
- Best Museum
- Exercise drills

B. Things to do in Rome while spending a six months period in the city for work

- Apartments monthly rates
- Convenient grocery stores nearby
- Used cars prices, buses and train monthly pass
- Places to visit in the surrounding area
- Gym and swimming pool memberships

WHY DOES ONE NEED TO COMPUTE THE COST OF A PRODUCT?

- To evaluate inventory and other assets for financial and tax statements, allocating periodic production costs between goods sold, period costs and goods in stock.

- To justify costs or compute reimbursement amounts

- To provide information for economic decisions
  - Short Term
  - Medium Long Term

- To motivate managers and other employees

COST OBJECTS AND COST RULES

When you think of cost, you invariably think of it in the context of finding the cost of a particular thing. We call this thing a **cost object**, which is anything for which a measurement of costs is desired.

SOURCE: Charles T. Horngren, Srikant M. Datar, Madhav V. Rajan, "Cost Accounting. A Managerial Emphasis" 14th Edition

A **cost object** is anything for which cost data are desired—including products, customers, jobs, and organizational subunits.

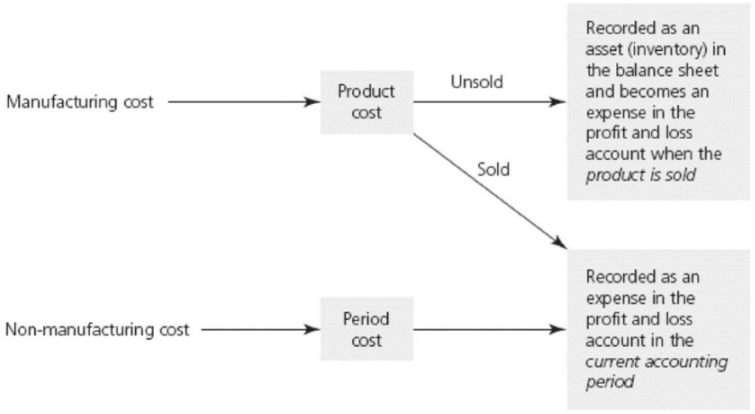
SOURCE: Ray H. Garrison, Eric W. Noreen, Peter C. Brewer, "Managerial Accounting", 15th Edition

A **cost rule** is a conventional "norm" (not necessarily a legal one) that establishes which components (in terms of individual cost items) must be considered in order to achieve a specific valuation (in cost terms) of a given cost object.
The cost rule, therefore, establishes which classes of cost items are to be assigned to the cost object and which are to be excluded from the calculation process.
As mentioned above, since the relevant information changes in relation to the type of decision to be made, we clearly need different cost rules that allow us to calculate different cost values for the same cost object.

COST OBJECTS AND COST RULES

COST ACCOUNTING

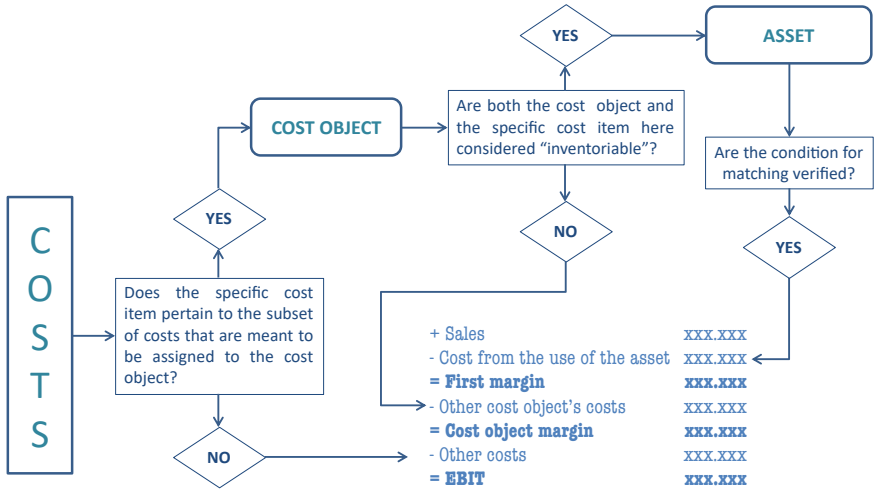
PRODUCT



Within financial accounting we essentially have a single cost object (the "product", typical or atypical, produced by the enterprise) and a single cost rule (called "absorption costing")

MANAGERIAL COSTING

PRODUCT CUSTOMER DEPARTMENT SALE CHANNEL



For managerial costing requirements we have, on the other hand, the need to calculate the cost of several different objects (several very different entities) and apply several cost rules in order to obtain the relevant information with respect to the decisions to be taken

PERIODICITY OF THE ANALYSIS

SYSTEMATIC AND CONSTANT INFORMATION FLOWS

COST & REVENUES ANALYSIS

A set of logic, criteria, methods and techniques for the

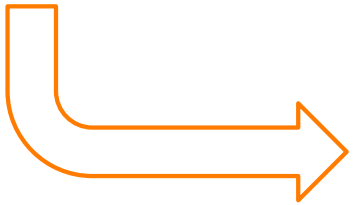
- ✧ collection,
- ✧ classification,
- ✧ aggregation and
- ✧ attribution

of **costs** and **revenues**

COST SYSTEMS

Focused on cost-objects that are considered particularly relevant for day-by-day decisions and, therefore, that need constant monitoring

PRODUCTION OF "AD HOC" INFORMATION IN RELATION TO SPECIFIC DECISION MAKING



ONE-OFF COST ANALYSIS

Relating to specific cost-objects, from time to time different depending on the type of decision to be taken

DIFFERENT DECISIONS , DIFFERENT SETS OF INFORMATIONS

Decision to be made:

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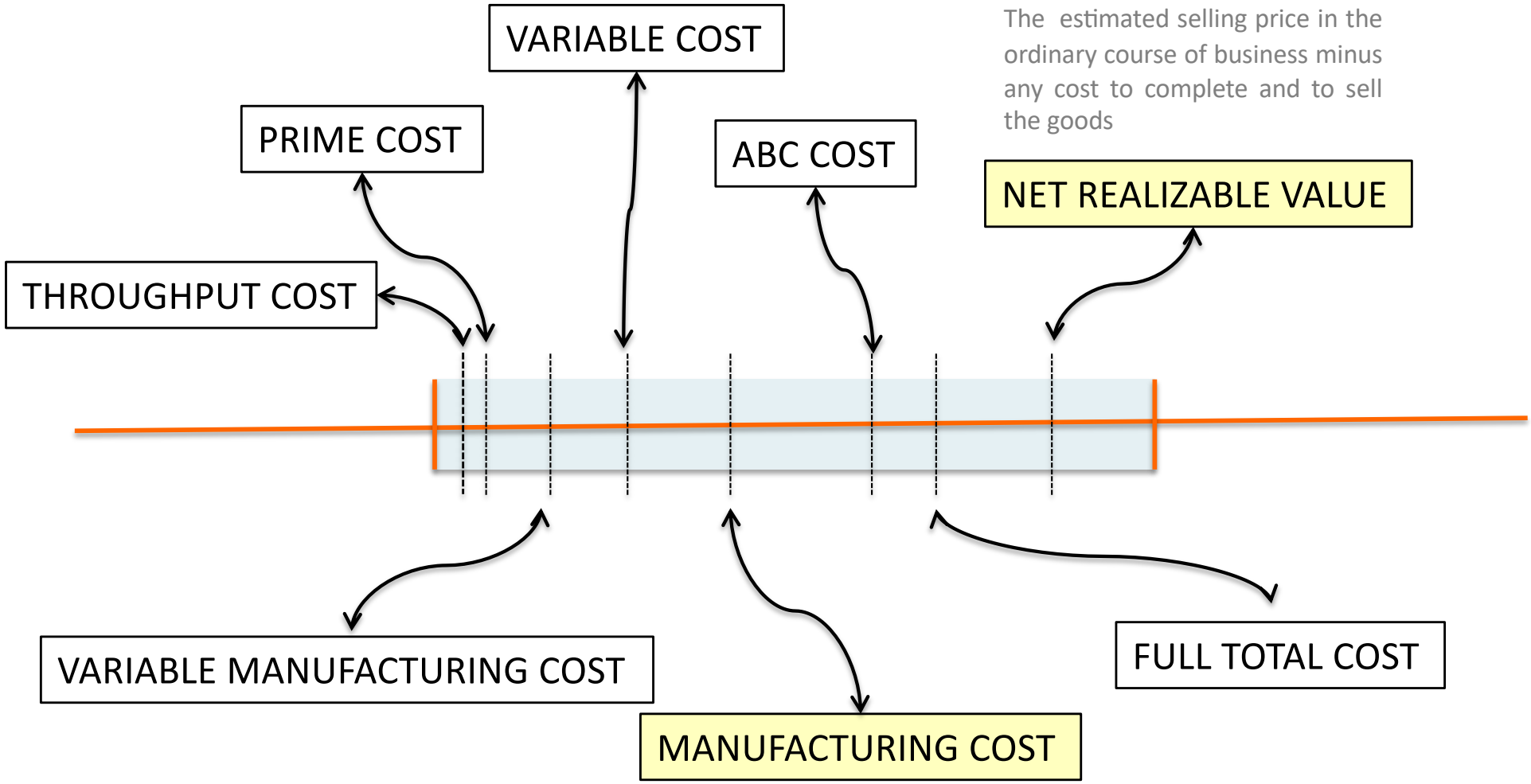
DIFFERENT FUNCTIONS, DIFFERENT DEMANDS

Functions	Frequency	Allocation	Scope of System	Nature of Variability	Degree of Objectivity
Inventory valuation	Monthly or quarterly	Aggregate	Factory costs	Irrelevant	High
Operational control	Daily, by unit of work accomplished	None	Responsibility center	Short-term variable and fixed	High
Product cost measurement	Annually and at major change points	Extensive, down to individual products or product lines	Entire organization including marketing and distribution, engineering, service, and administration	All variable	Low

SOURCE: Kaplan, "One Cost System Isn't Enough", *Harvard Business Review*, January - February 1988

DIFFERENT VALUATION CRETERIA FOR A PRODUCT



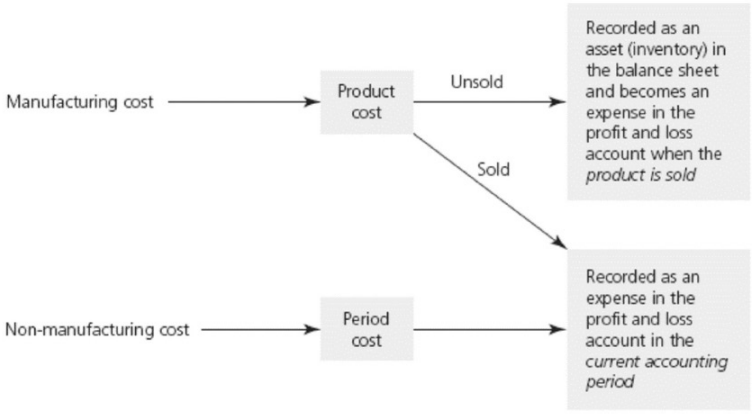
The estimated selling price in the ordinary course of business minus any cost to complete and to sell the goods

The costs necessary to convert raw materials into products. All manufacturing costs must be attached to the units produced for **external financial reporting under US GAAP**. The resulting unit costs are used for **inventory valuation** on the balance sheet and for the calculation of the **cost of goods sold** on the income statement.

COST OBJECTS AND COST RULES

COST ACCOUNTING

PRODUCT



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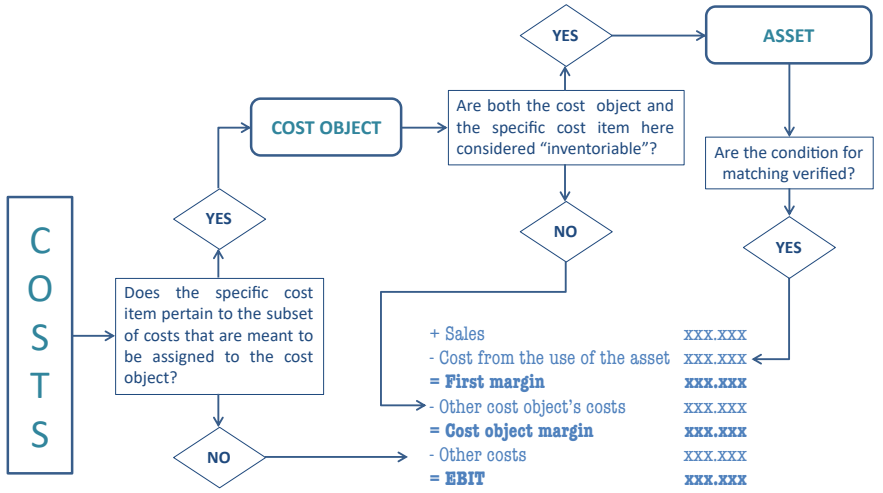
MANAGERIAL COSTING

PRODUCT **CUSTOMER** **DEPARTMENT** **SALE CHANNEL**



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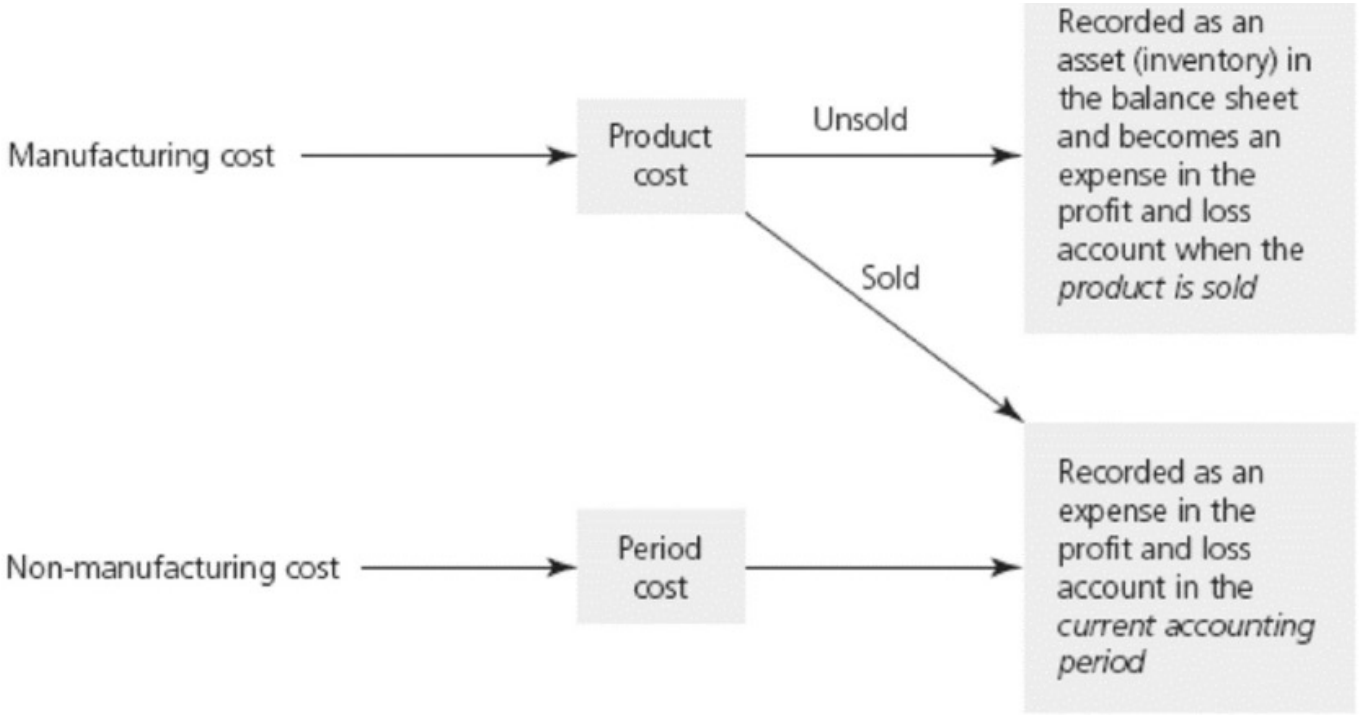
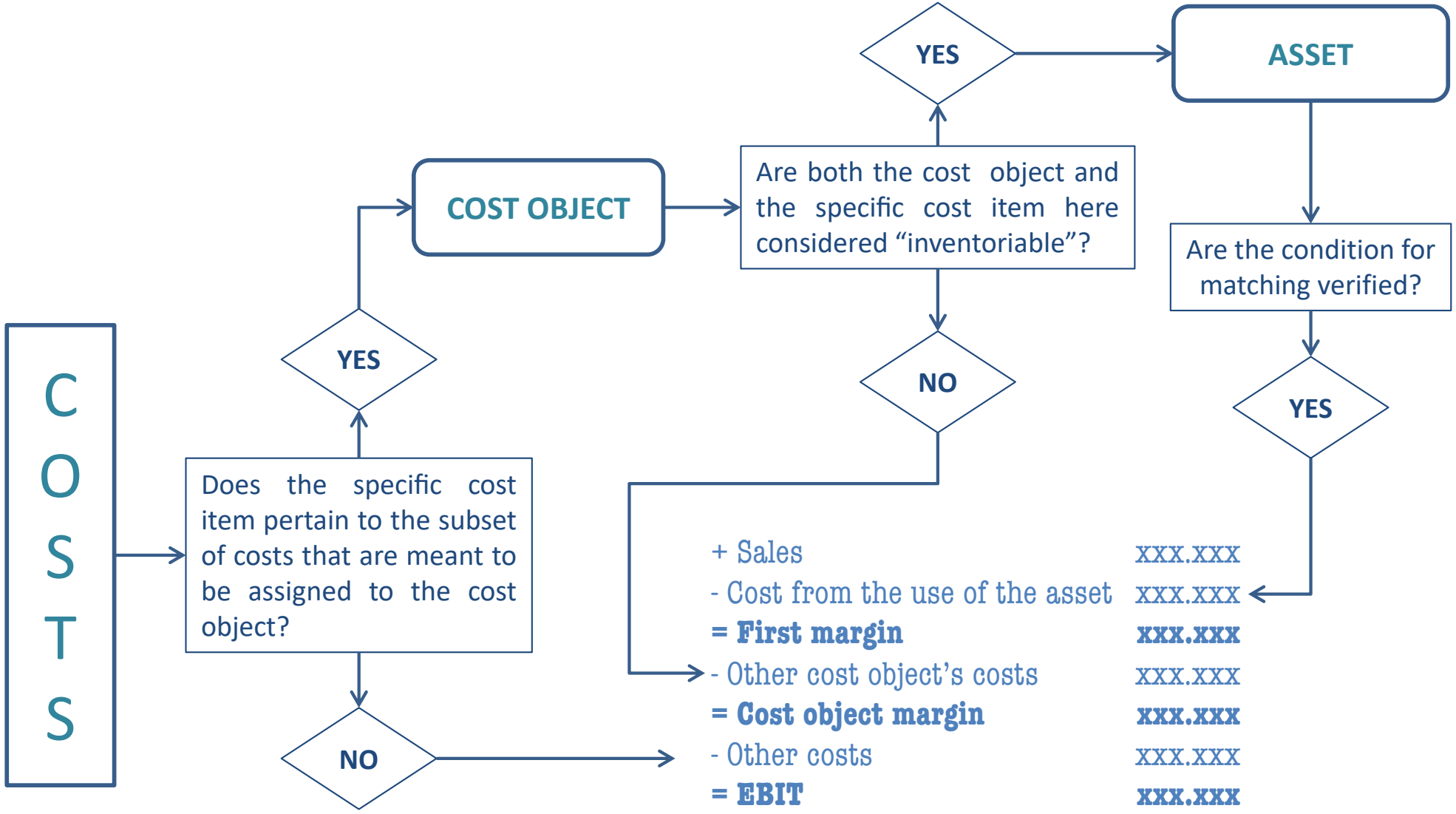
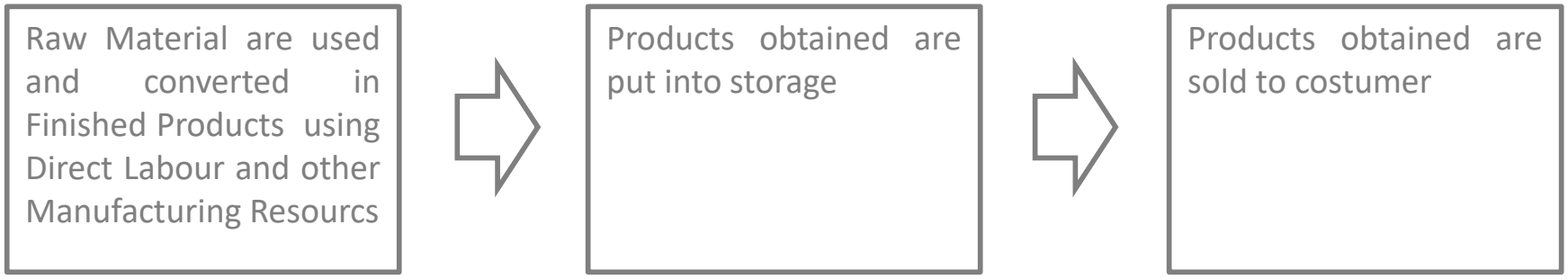
ABSORPTION COSTING



VARIABLE COSTING



VARIABLE COSTING

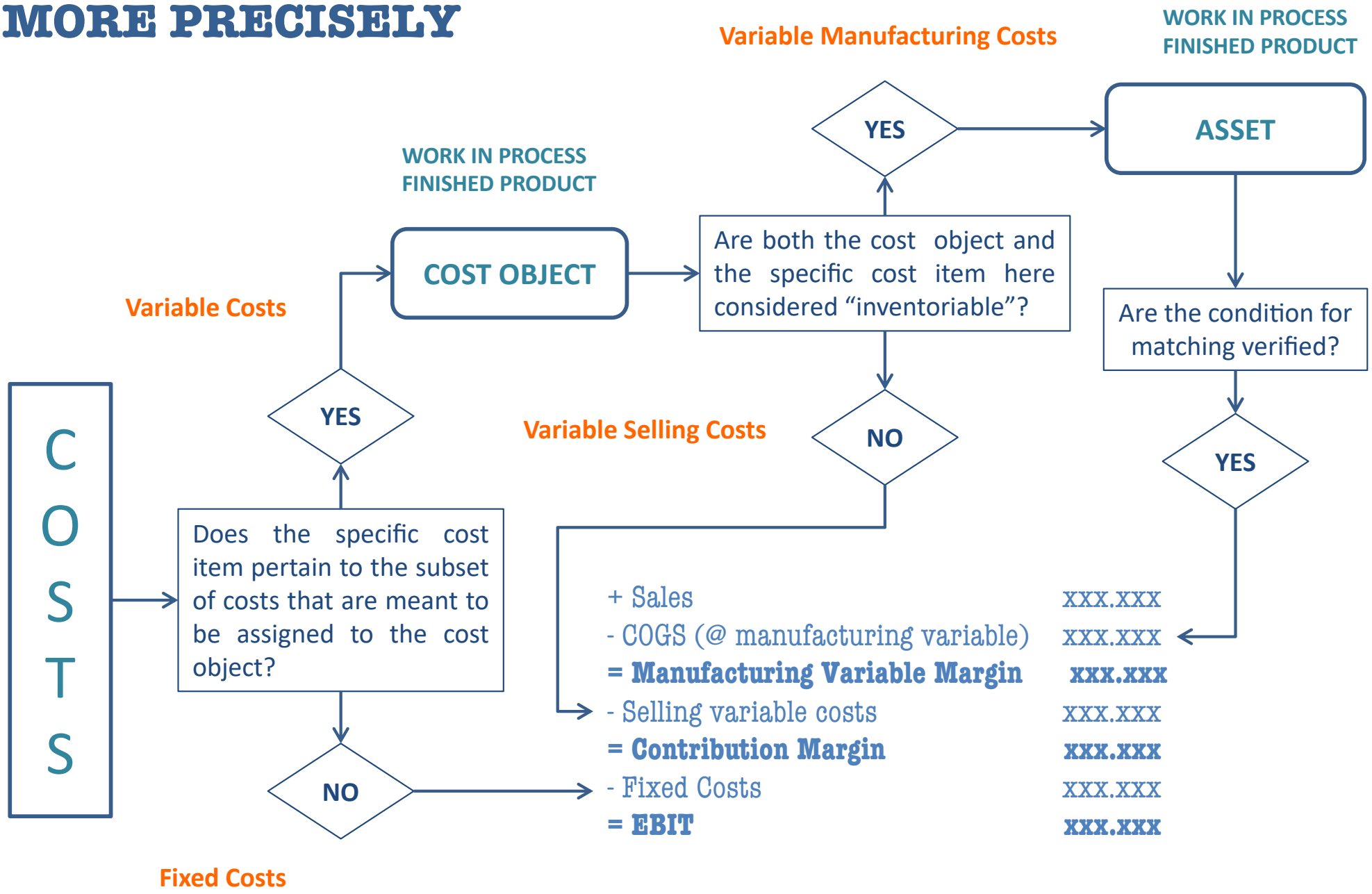


RAW MATERIALS ⇨ WORK IN PROCESS ⇨ FINISHED PRODUCT ⇨ COST OF GOODS SOLD

Variable **Manufacturing** Costs are incurred

Variable **Selling** Costs are incurred

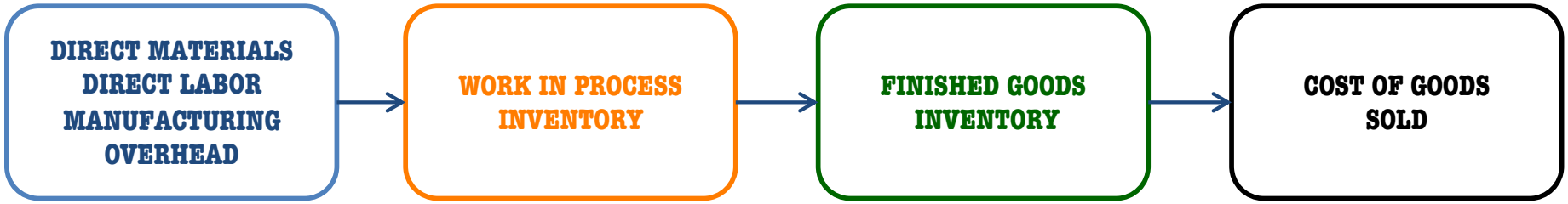
MORE PRECISELY



PROCESS COST AND JOB ORDER COST

Process Cost System			Job Order Cost System		
Company	Product		Company	Product	
Jones Soda, PepsiCo	Soft drinks		Young & Rubicam, J. Walter Thompson	Advertising	
ExxonMobil, Royal Dutch Shell	Oil		Disney, Warner Brothers	Movies	
Intel, Advanced Micro Devices	Computer chips		Center Ice Consultants, Ice Pro	Ice rinks	
Dow Chemical, DuPont	Chemicals		Kaiser, Mayo Clinic	Patient health care	

JOB COSTING SYSTEM



Job costing is a costing system that accumulates costs and assigns them to specific jobs, customers, projects, or contracts. The basic supporting document (usually in electronic form) in a job costing system is the **job cost sheet**. It records and summarizes the costs of direct materials, direct labor, and factory overhead for a particular job.

A **job costing system** is used by companies that produce **unique products or jobs**. Examples of companies that use job costing systems include Boeing (airplanes), Lockheed Martin (advanced technology systems), and Deloitte & Touche (accounting).

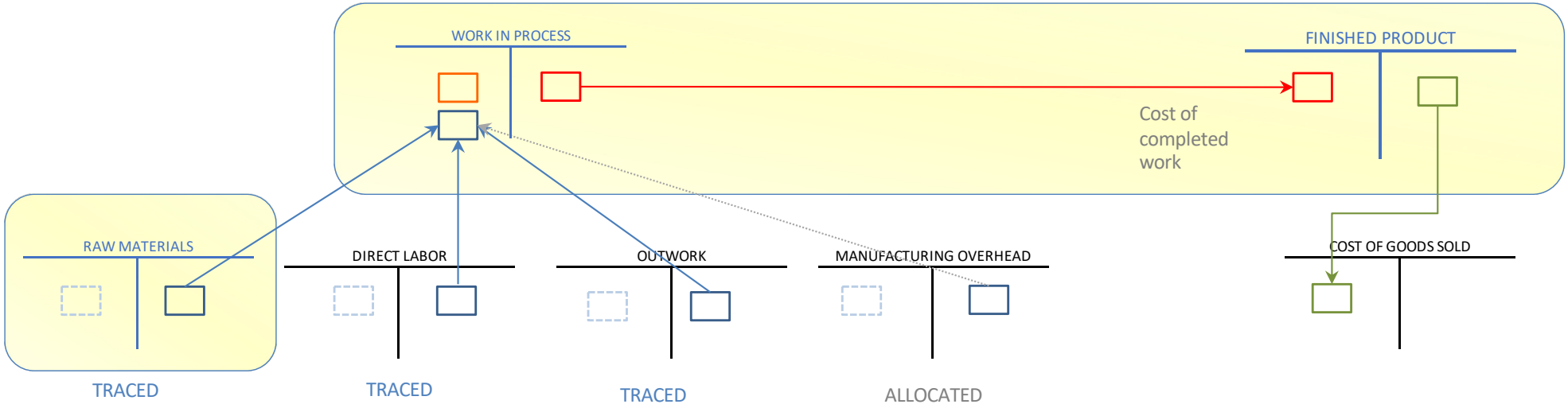
JOB COSTING SYSTEM

JOB COSTING SYSTEM

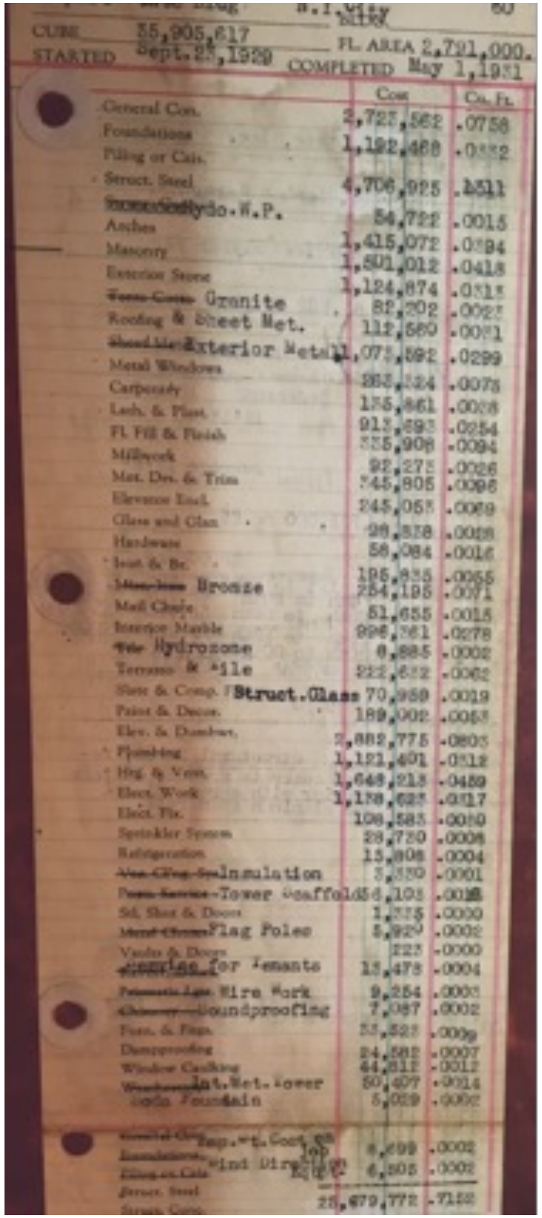
Automotive Job Costing Solutions

Automotive job costing can often be a complicated endevour. Getting an accurate sum of labour and materials can be the differrence between profitability and loss, data inaccuracies or lack of tracking can ensure issues in the future. Keeping track of client and vehicle records is important for customer service. We have the solutions to get your business running at peak performance as well as giving you a complete view of your business activities.

FLOW OF COSTS IN JOB COST SYSTEM



JOB COSTING SYSTEM

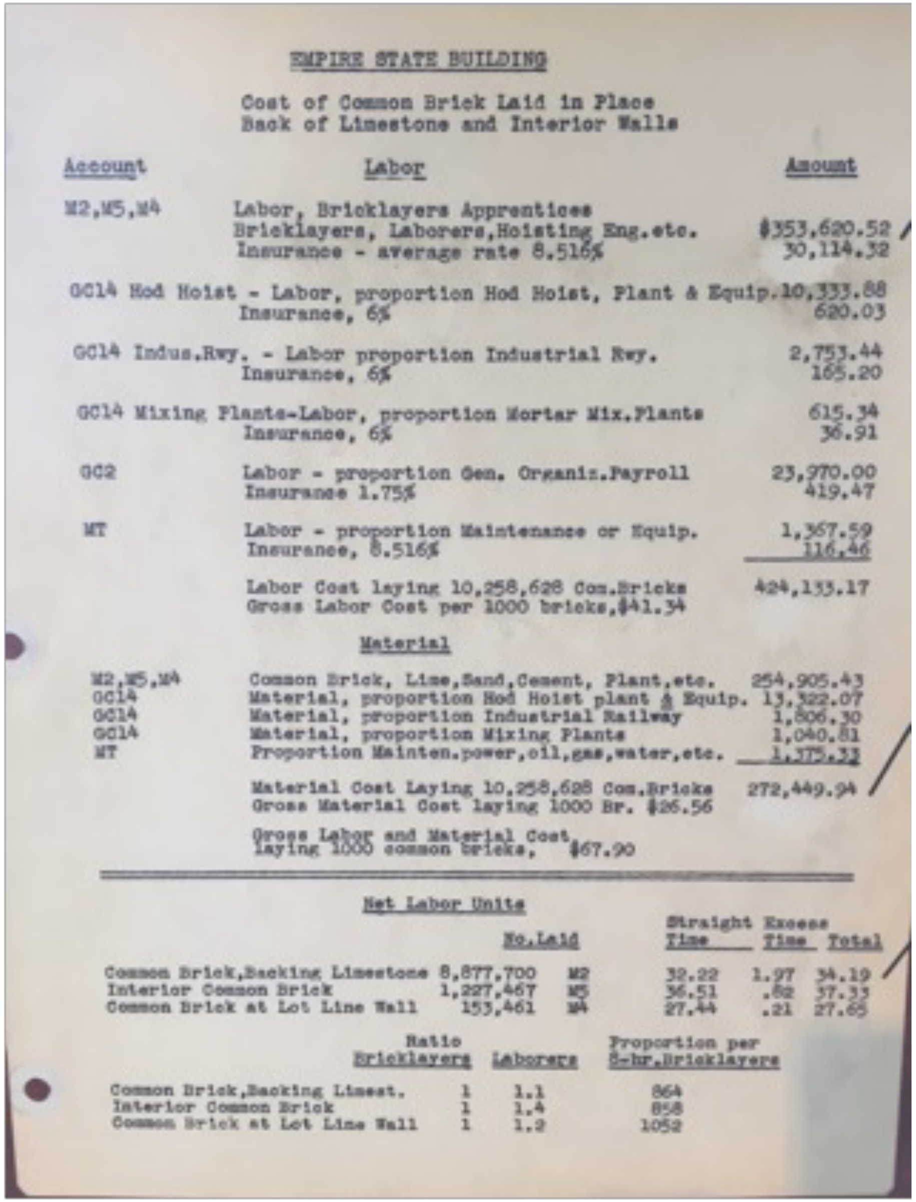


N.Y. City 60

CUBE 35,905,617 FL. AREA 2,791,000.

STARTED Sept. 2[illegible],1929 COMPLETED May 1,1931

	Cost	Cu. Ft.
General Con.	2,727,562	.0758
Foundations	1,192,468	[illegible]
Piling or Cais.		
Struct. Steel	4,706,925	.1311
Hydro. W.P.	54,722	.0015
Anchors		
Masonry	1,415,072	.0394
Exterior Stone	1,501,012	.0418
	1,124,874	.0313
Granite	82,202	.0023
Roofing & Sheet Met.	112,580	.0031
Exterior Metal	1,073,592	.0299
Metal Windows	263,[illegible]24	.0073
Carpentry	155,861	.0028
Lath. & Plast.	913,693	.0254
Fl. Fill & Finish	335,908	.0094
Millwork	92,273	.0026
Met. Drs. & Trim	345,805	.0096
Elevator Encl.	245,053	.0069
Glass and Glaz.	28,328	.0008
Hardware	58,084	.0016
Insul. & Br.	195,835	.0055
Bronze	254,195	.0071
Mail Chute	51,655	.0015
Interior Marble	996,361	.0278
Hydrozone	8,885	.0002
Terrazzo & Tile	222,632	.0062
Struct. Glass	70,959	.0019
Paint & Decor.	189,002	.0053
Elev. & Dumbwtr.	2,882,775	.0803
Plumbing	1,121,401	.0312
Htg. & Vent.	1,648,213	.0459
Elect. Work	1,138,625	.0317
Elect. Fix.	108,583	.0030
Sprinkler System	28,720	.0008
Refrigeration	13,906	.0004
Insulation	3,330	.0001
Tower Scaffold	56,103	.0016
Stl. Shut & Doors	1,335	.0000
Flag Poles	5,929	.0002
Vaults & Doors	223	.0000
Services for Tenants	13,478	.0004
Wire Work	9,254	.0003
Soundproofing	7,087	.0002
Furn. & Fixt.	33,527	.0009
Dampproofing	24,582	.0007
Window Caulking	44,812	.0012
Int. Wet. Tower	50,407	.0014
Soda Fountain	5,029	.0002
Temp. Wt. Cost	8,299	.0002
Wind Dir. Equip.	6,805	.0002
	25,679,772	.7152



EMPIRE STATE BUILDING

Cost of Common Brick Laid in Place
Back of Limestone and Interior Walls

Account	Labor	Amount
M2,M5,M4	Labor, Bricklayers Apprentices Bricklayers, Laborers, Hoisting Eng. etc.	$353,620.52
	Insurance - average rate 8.516%	30,114.32
GC14	Hod Hoist - Labor, proportion Hod Hoist, Plant & Equip.	10,333.88
	Insurance, 6%	620.03
GC14	Indus.Rwy. - Labor proportion Industrial Rwy.	2,753.44
	Insurance, 6%	165.20
GC14	Mixing Plants-Labor, proportion Mortar Mix. Plants	615.34
	Insurance, 6%	36.91
GC2	Labor - proportion Gen. Organiz. Payroll	23,970.00
	Insurance 1.75%	419.47
MT	Labor - proportion Maintenance or Equip.	1,367.59
	Insurance, 8.516%	116.46
	Labor Cost laying 10,258,628 Com. Bricks	424,133.17
	Gross Labor Cost per 1000 bricks, $41.34	

Material

M2,M5,M4	Common Brick, Lime, Sand, Cement, Plant, etc.	254,905.43
GC14	Material, proportion Hod Hoist plant & Equip.	13,322.07
GC14	Material, proportion Industrial Railway	1,806.30
GC14	Material, proportion Mixing Plants	1,040.81
MT	Proportion Mainten. power, oil, gas, water, etc.	1,375.33
	Material Cost Laying 10,258,628 Com. Bricks	272,449.94
	Gross Material Cost laying 1000 Br. $26.56	

Gross Labor and Material Cost laying 1000 common bricks, $67.90

Net Labor Units

	No. Laid		Straight Time	Excess Time	Total
Common Brick, Backing Limestone	8,877,700	M2	32.22	1.97	34.19
Interior Common Brick	1,227,467	M5	36.51	.82	37.33
Common Brick at Lot Line Wall	153,461	M4	27.44	.21	27.65

	Ratio Bricklayers	Laborers	Proportion per 8-hr. Bricklayers
Common Brick, Backing Limest.	1	1.1	864
Interior Common Brick	1	1.4	858
Common Brick at Lot Line Wall	1	1.2	1052

REAL LIFE EXAMPLE

RAW MATERIALS

OUTWORK

SUPPLIES WITH IINSTALLATION

PROCUREMENT

INBOUND LOGISTIC

STORAGE

DIRECT LABOR

SALES

ENGENEERING

CARPENTRY

SHEET METAL

ELEMETS

ASSEMBLY

PHYSICAL SPACES

UTILITY COSTS

TRAVEL COSTS

OTHER COSTS

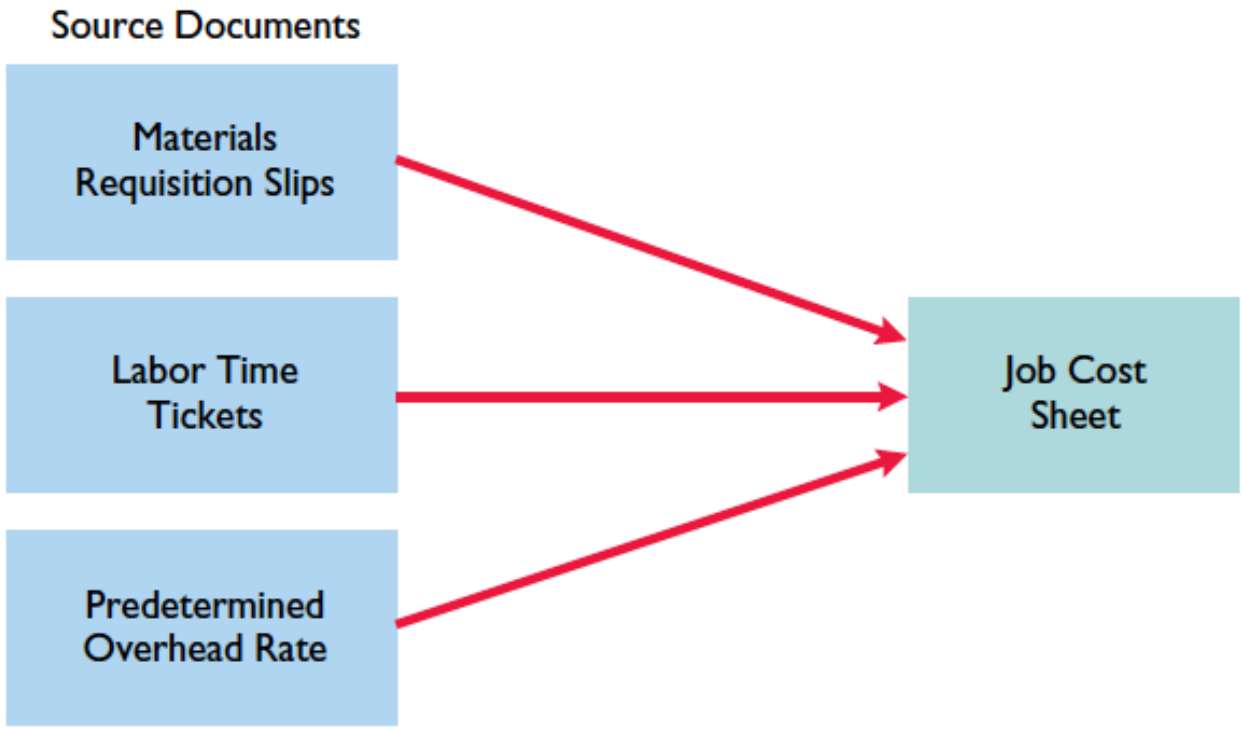
ANCILLARY SERVICES

BUILDING

SHARED EQUIPMENT

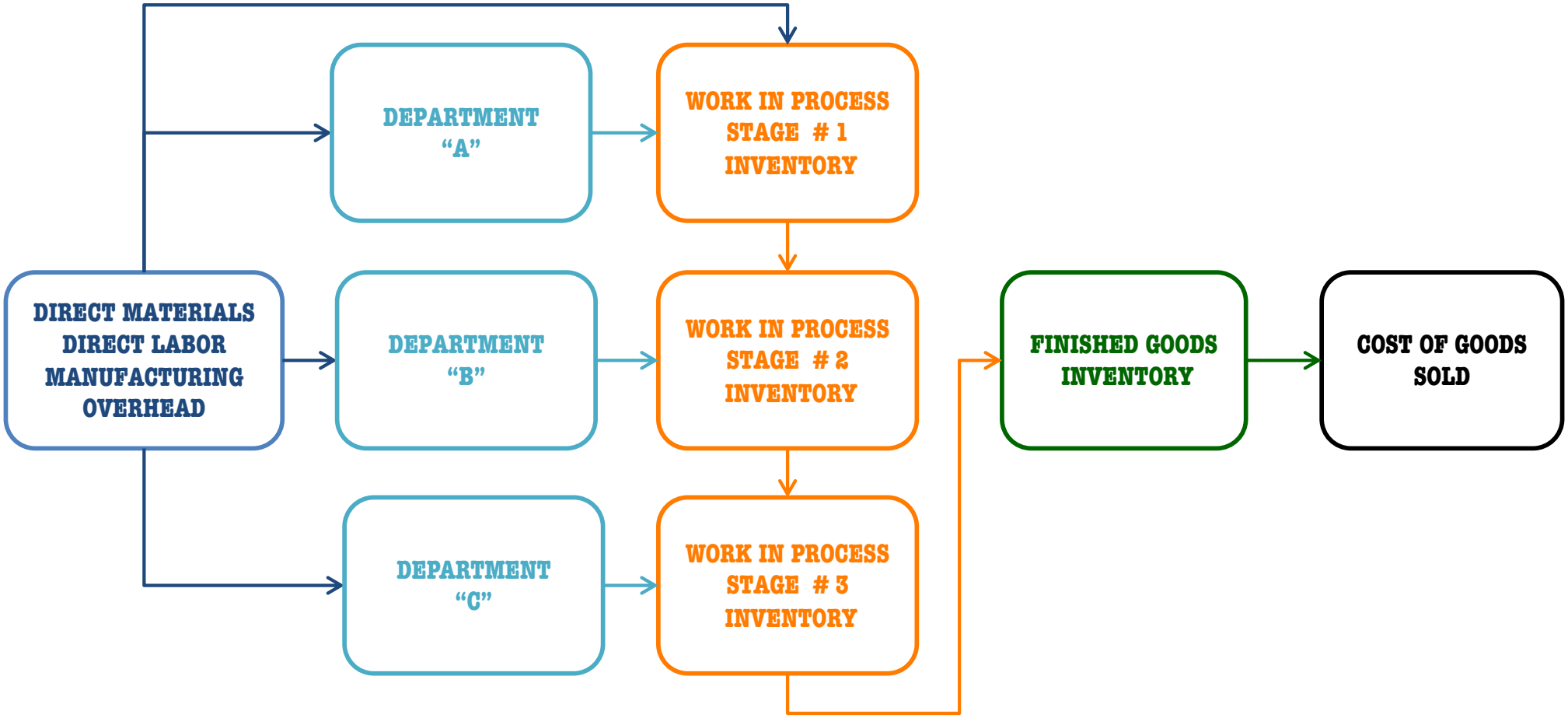
INCOME STATEMENT

FLOW OF DOCUMENTS



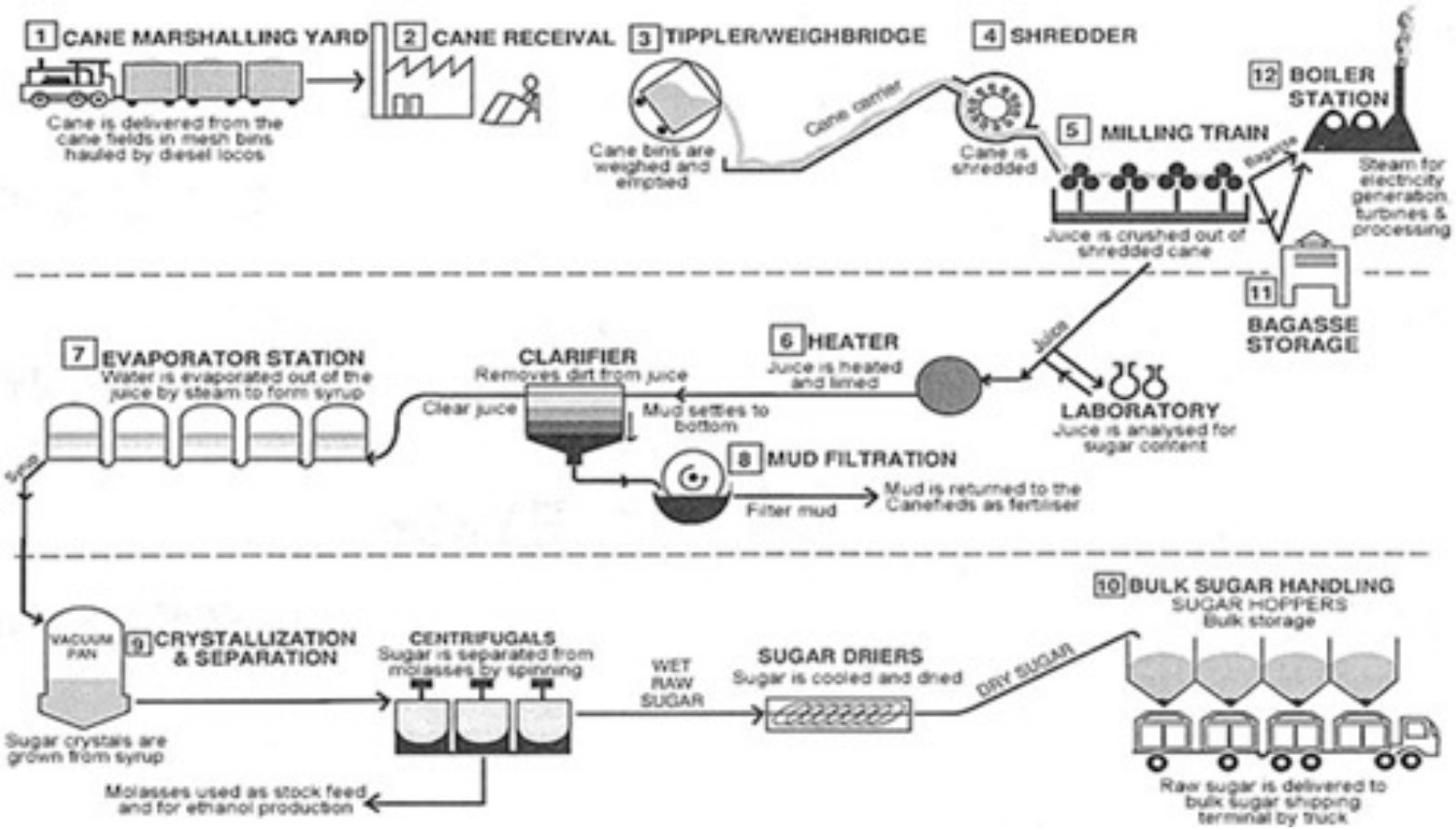
The job cost sheet summarizes the cost of jobs completed and not completed at the end of the accounting period. Jobs completed are transferred to finished goods to await sale.

PROCESS COSTING SYSTEM



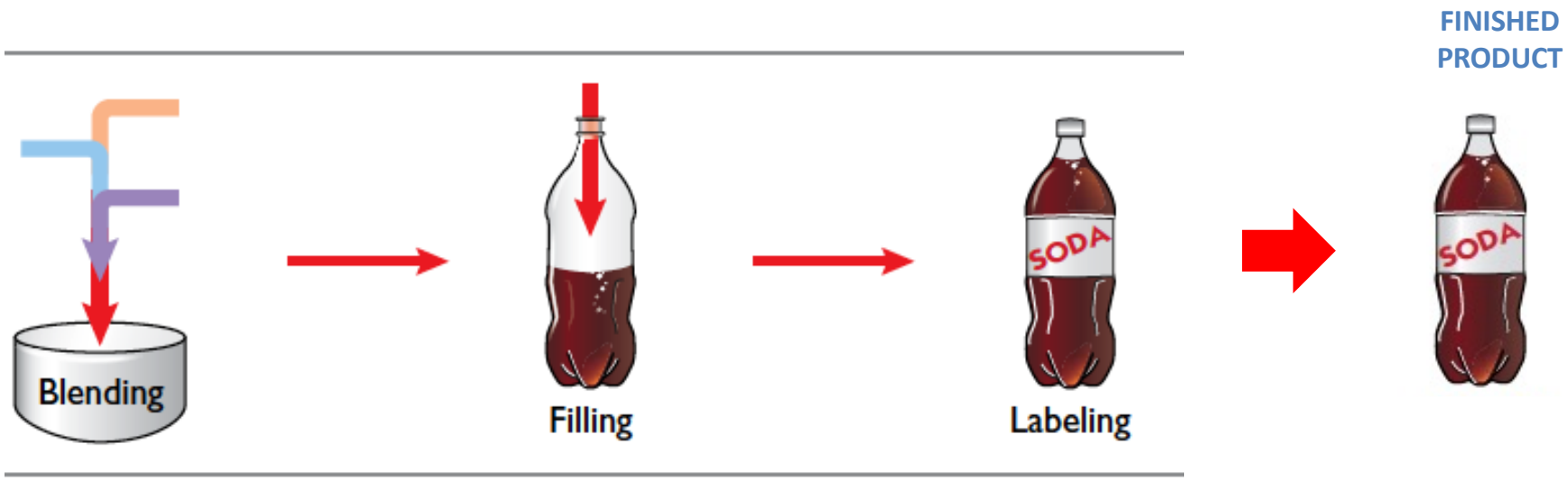
Process costing is a product costing system that accumulates costs according to processes or departments and assigns them to a large number of nearly identical products. A **process costing system** is used by companies that **employs a standardized production process to manufacture homogeneous products .** Examples of companies that use process costing include Chevron Corporation (petroleum products), the Wrigley Company (chewing gum), and Pittsburgh Paints (paint).

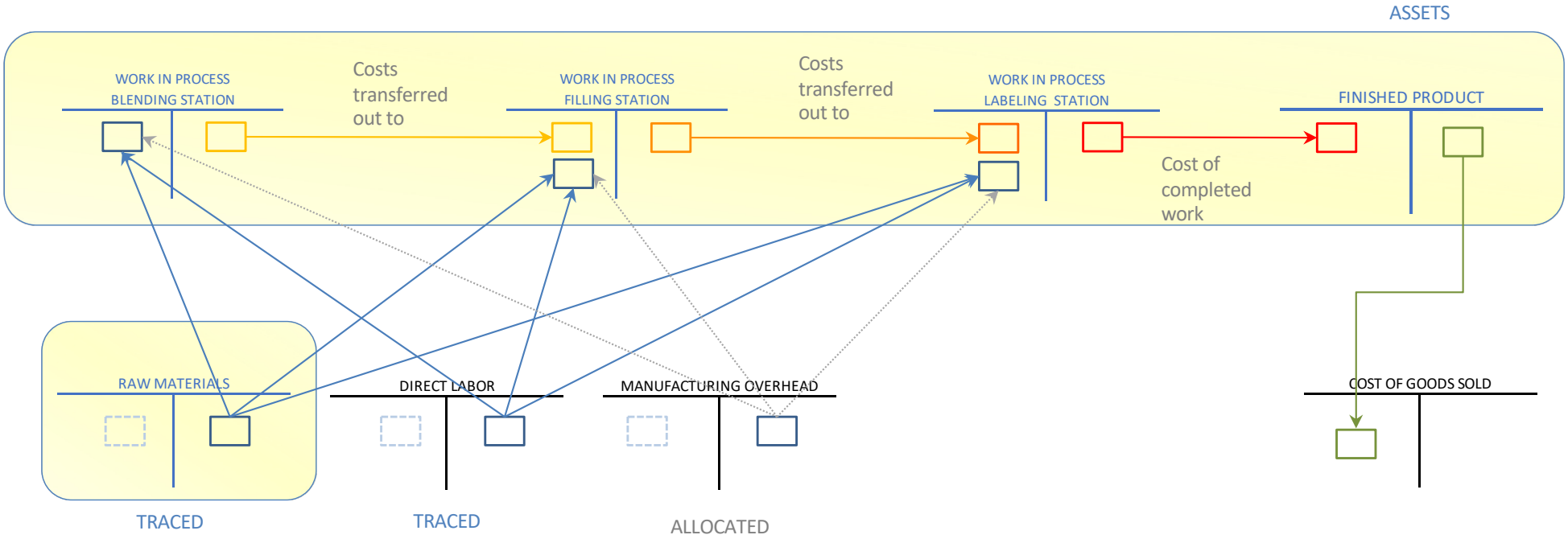
PROCESS COSTING SYSTEM



PROCESS COSTING SYSTEM

FLOW OF COSTS IN PROCESS COST SYSTEM





JOB ORDER VERSUS PROCESS COST SYSTEMS

Feature	Job Order Cost System	Process Cost System
Work in process accounts	One work in process account	Multiple work in process accounts
Documents used	Job cost sheets	Production cost reports
Determination of total manufacturing costs	Each job	Each period
Unit-cost computations	Cost of each job ÷ Units produced for the job	Total manufacturing costs ÷ Equivalent units produced during the period

FINANCIAL ACCOUNTING VS. MANAGERIAL ACCOUNTING

FINANCIAL ACCOUNTING

- Reports to those **outside** the organization:
  - Owners
  - Creditors
  - Tax Authorities
  - Regulators
- Emphasizes financial consequence of **past** activities
- Emphasizes **precision**
- Emphasizes **companywide** reports (focus on the **whole**)
- **Must** follow GAAP/IFRS
- **Mandatory** for external reports.

MANAGERIAL ACCOUNTING

- Reports to manager **inside** the organization for
  - Planning
  - Controlling
- Emphasizes decisions affecting the **future**
- Emphasizes **timeliness**
- Emphasizes **segment** reports (focus on **parts**)
- Need **not** follow GAAP/IFRS
- **Not mandatory**

"supporting documents" are normally needed (receipts, invoices, proofs of payment, etc.)

SOURCE: Adapted from Garrison, Noreen, Brewer, "Managerial Accounting", 16th Edition

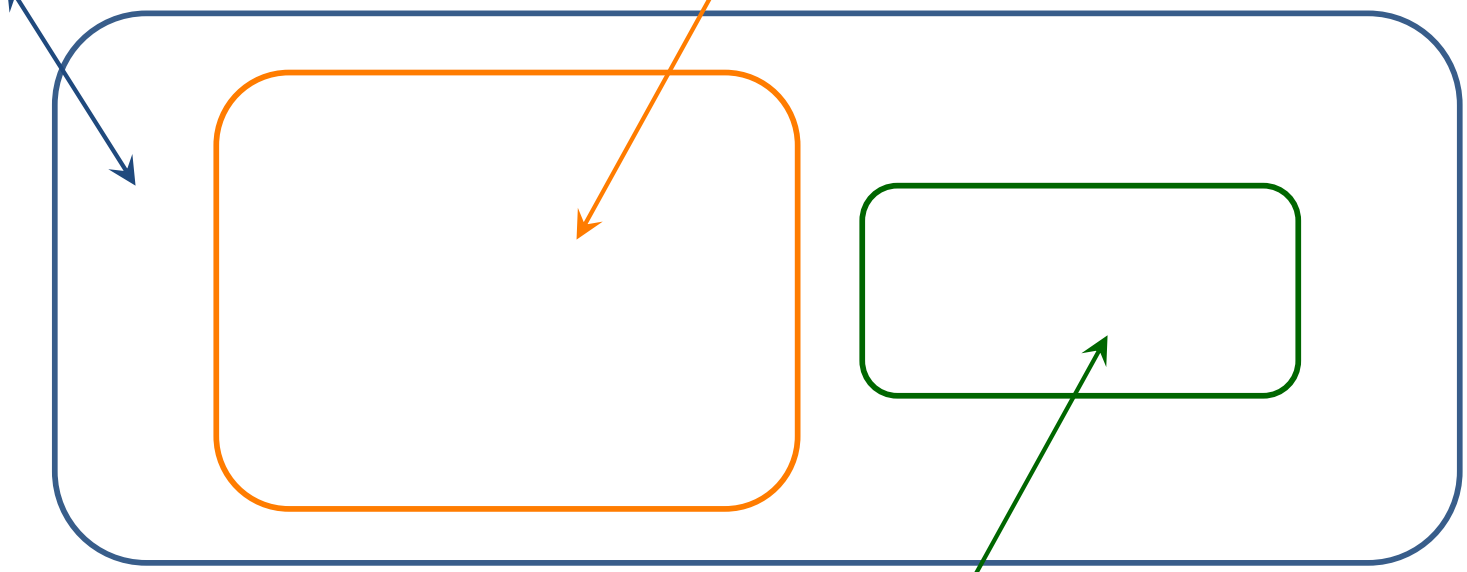
SOME BASIC DEFINITIONS

COSTS

All resources that are sacrificed or forgone in order to achieve a specific objective.

EXPENSES

Costs of assets consumed, or services used in the process of earning revenue.



OPPORTUNITY COSTS

Forgone benefits that could have been realized for the best forgone alternative use of an actual resource

INPUT MEASUREMENT BASE

	DIRECT COST	INDIRECT COST
ACTUAL COSTING SYSTEM	Actual	Actual
NORMAL COSTING SYSTEM	Actual	Standard
STANDARD COSTING SYSTEM	Standard	Standard