

Chapter 6

The General Systems Model of the Firm

- **Modeling in Business**
- **The General Systems Model**
- **Evaluation of an Organization**

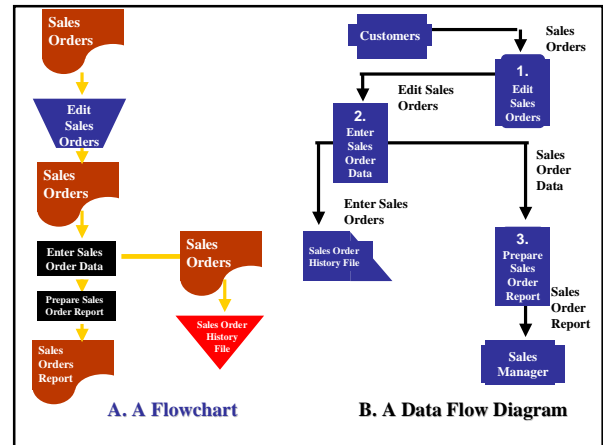
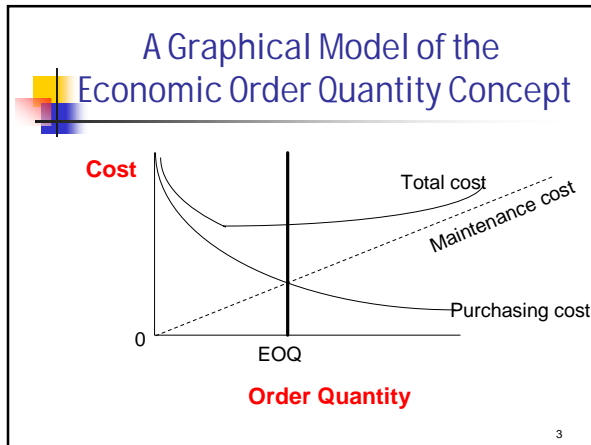
1

Models Used To Solve Problems

- **Physical models**
 - Three dimensional representation such as a scale model. Architectural, Automotive, etc.
- **Narrative models**
 - Spoken or written description
- **Graphic models**
 - Abstraction of lines, symbols, or shapes
- **Mathematical models**
 - Equation(s)

$$EOQ = \sqrt{\frac{2PS}{M}}$$

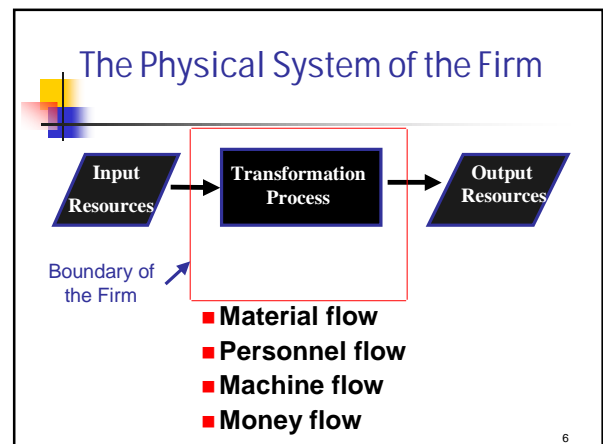
2



Uses of Models

- **All four models facilitate understanding and communication.**
- **The mathematical model also helps predict the future.**

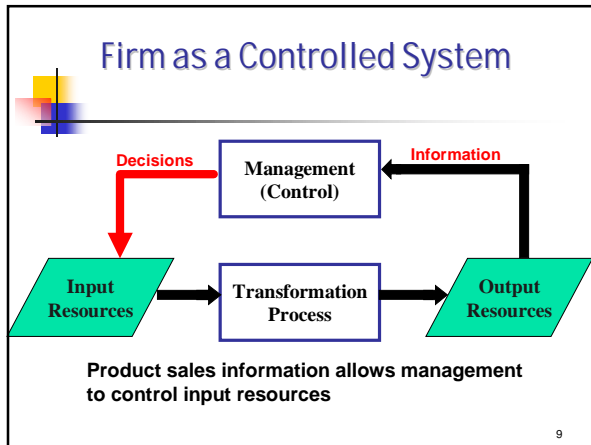
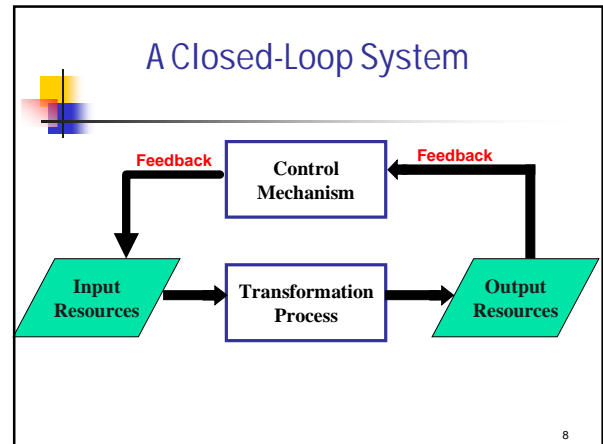
5



The Conceptual System

- Open-loop systems
- Closed-loop systems (feedback loop)
- Management control
- The information processor

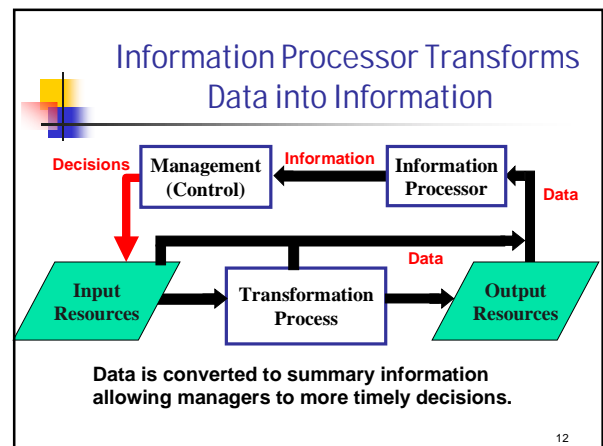
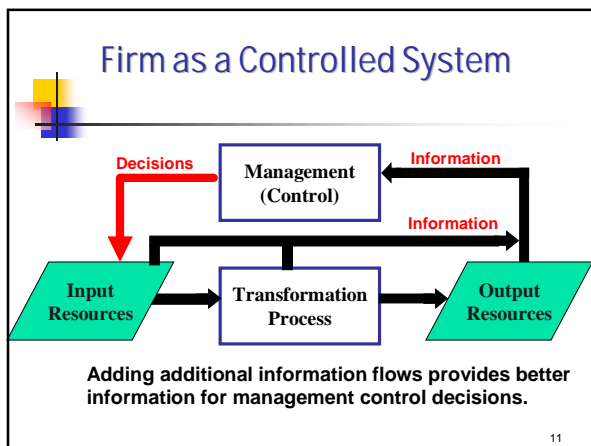
7



Sales Report of Fast Moving Products (Output)

Item Number	Item Description	Year-to-Date Sales Volume	% of Total Year-to-Date Sales
400293	BRAKE PIPE	\$1,702.93	.068
319421	DOOR HANDLE GASKET	1,624.00	.065
786402	CLUTCH DRIVEN PLATE	1,403.97	.056
190796	CARPET SNAP	1,102.00	.044
001007	SPARK PLUG	1,010.79	.040
739792	HOSE CLIP	949.20	.038
722210	RUBBER PLUG	946.73	.038
410615	UPPER DOOR HINGE	938.40	.038
963214	REAR TUBE SHOCK	922.19	.037
000123	NEEDLE VALVE	919.26	.037
Totals		\$11,519.47	.461

10



Dimensions of Information

- **Relevancy:** Pertains to problem on hand.
- **Accuracy:** Varying requirements; financial vs. stochastic projection.
- **Timeliness:** Information available when needed
- **Completeness:** Too little or too much.

13

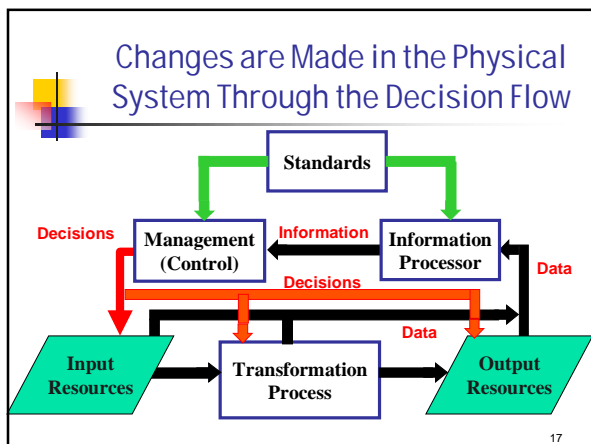
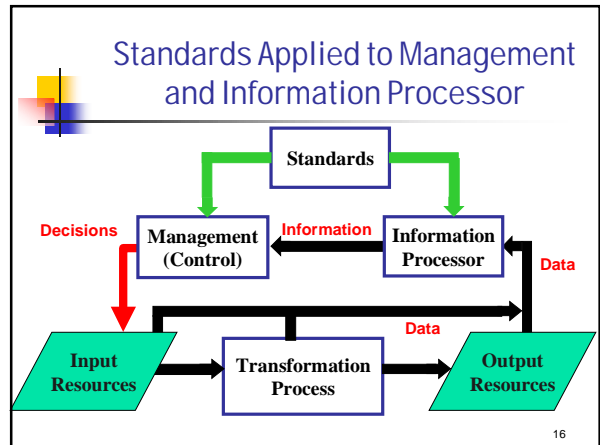
A Comparison of Objectives and Standards

Objectives	Standards of Performance
Satisfy Customer Needs	Achieve an annual sales volume of at least \$25 million Maintain a 20% share of the market Maintain an annual growth rate of 15%
Produce a return on investment for the owners	Pay dividends to stockholders each quarter Maintain the price of the firm's common stock above \$85 per share
Operate efficiently	Realize an after-tax profit of 15% of sales Maintain a record of accident-free days Keep employee turnover below 10%
Invest in the future	Invest in a minimum of 15% of sales revenue in research and development
Develop sources of supply	Achieve stockout on no more than 2% of the items in inventory during the year Keep the number of backorders to less than 5% of all orders processed
Operate ethically	Have no plant shutdowns due to unavailable materials Have no legal actions filed against the firm by customers, suppliers, and the government

Conceptual System

- Controls the physical system
- Consists of:
 - Management
 - Information processor
 - Standards
- Management by exception.
 - Become involved when out of range.
 - Good opportunities, Bad problems.

15



Use of the General Systems Model

- A Supermarket
 - All flows are present but the materials flow is most prominent
- A Law Firm
 - Flows may be less obvious but they do exist
- UMUC
- U.S. Marine Corps

18

Problem -- good and bad.

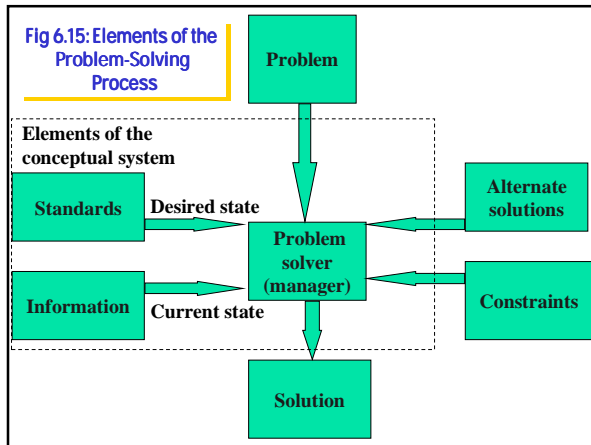
- **Problem solving -- respond to problems to:**
 - Suppress harmful effects
 - Capitalize on opportunity for benefit
- **Decision -- selection of a course of action**
 - The act of selecting a strategy or action

19

Elements of Problem Solving

- **Desired state**
- **Current state**
- **Constraints**
 - Internal -- limited resources
 - External -- pressures to restrict resource flows

20



Problems versus Symptoms

Know the difference

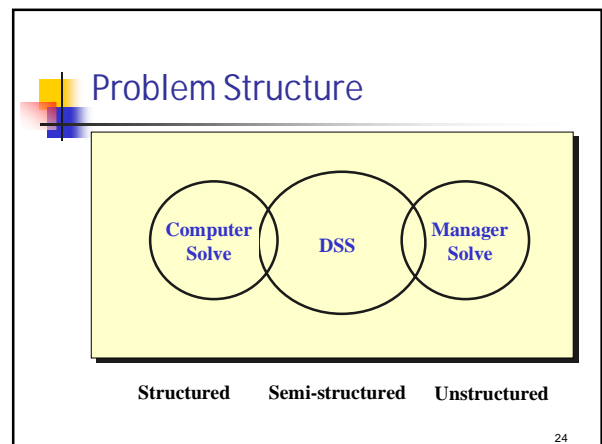
- symptoms are produced by the problem
- the problem causes the symptoms
- when the problem is corrected the symptoms will cease , but not vice versa

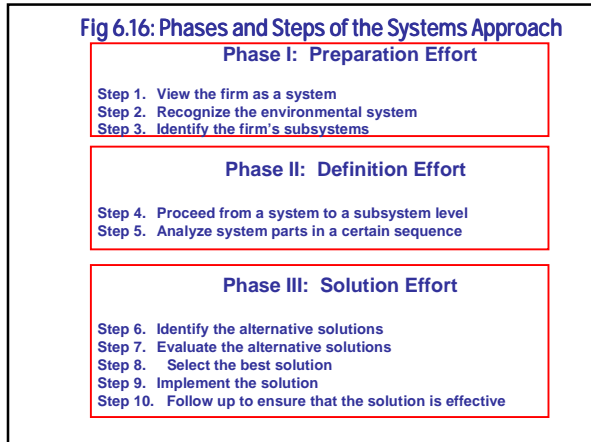
22

Problem Structure

- **Structured -- elements and relationships understood**
- **Unstructured**
- **Semistructured**
 - **Decision Support Systems (DSS):** Concept of managers and the computer working jointly towards a solution

23

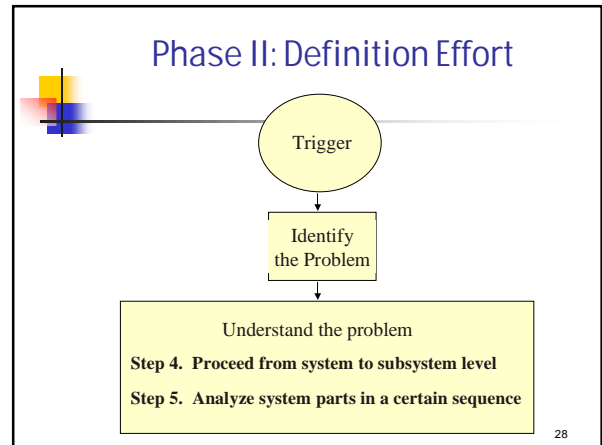
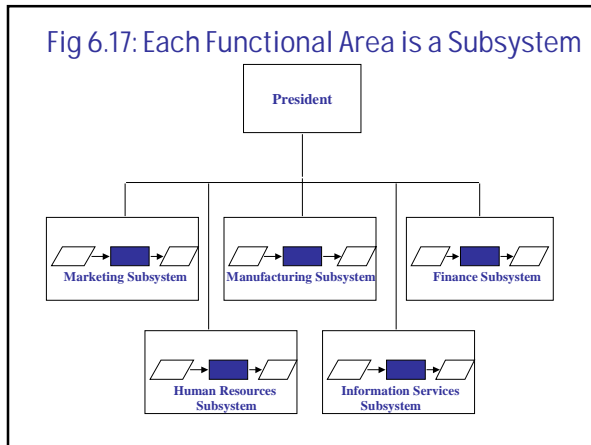




Phase 1: Preparation Effort

- **Step 1 View the firm as a system**
- **Step 2 Recognize environmental system**
- **Step 3 Identify the firm's subsystems**

26



Something Triggers the Definition Effort

The trigger can be:

1. **An action**
2. **The passage of time**
3. **From within the firm or the environment**

29

Step 4: Proceed from System to Subsystem Level

- **Each level is a system**
- **Are subsystems integrated into a smoothly functioning unit?**
- **Does the subsystem need to be broken down further?**

30

Step 5: Analyze System Parts in a Certain Sequence

1. Evaluate standards. They must be:
 - valid
 - realistic
 - understandable
 - Measurable
2. Compare system outputs with standards
3. Evaluate management

31

Analyze System Parts (continued)

4. Evaluate the information processor
5. Evaluate the inputs and input resources
6. Evaluate the transformation processes
7. Evaluate the output resources

32

Example:

Symptom: Firm not meeting its sales objective

Following the sequence of system parts

1. Marketing management has experienced a high turnover
2. Marketing standards have been unrealistic
3. Marketing research has been providing inadequate information
4. Marketing research needs an improved information processor

33

Phase III: Solution Effort

Step 6: Identify alternatives

Find *different* ways to solve the *same* problem

- Brainstorming -- Informal presentation of ideas and discussion
- Joint Application Design (JAD) session -- Formal with written proceedings

34

Example

Problem: Inadequate computer

Alternatives:

1. Upgrade existing system
2. Get larger computer
3. Go to LAN

35

Step 7: Evaluate Alternative Solutions

Evaluation Criteria

1. Cost
2. User training
3. Responsiveness
4. Data security
5. Adaptability to changing user needs

36



Step 8: Select the Best Solution

Three ways that managers can select the best alternative:

1. Analysis = Systematic Evaluations
2. Judgment = One Manager
3. Bargaining = Negotiations between managers

37



Final Steps of the Solution Effort

- Step 9: Implement the solution
- Step 10: Follow-up to ensure that the solution is effective

38



Systems Approach Summary

- Common sense method
- Only one method to solve problems
- The basic methodology for solving problems with many derivatives

39