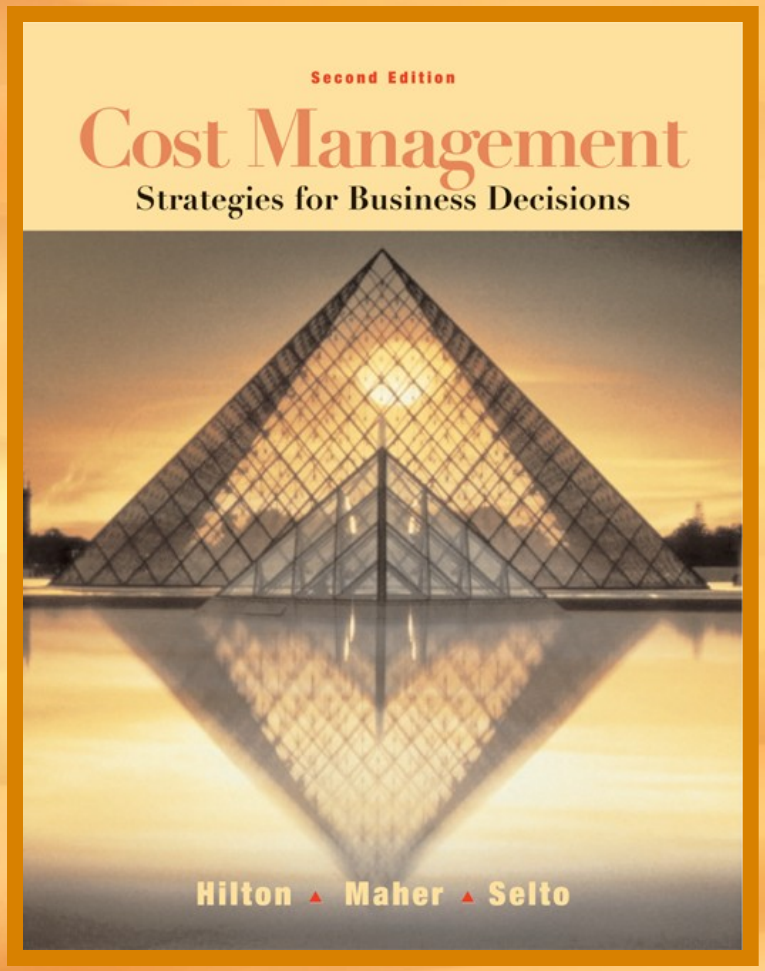

Second Edition
Cost Management
Strategies for Business Decisions
Hilton ▲ Maher ▲ Selto

Managing Quality and Time to Create Value

Quality At Any Cost?

Total Quality Management?

Which is more mportant?

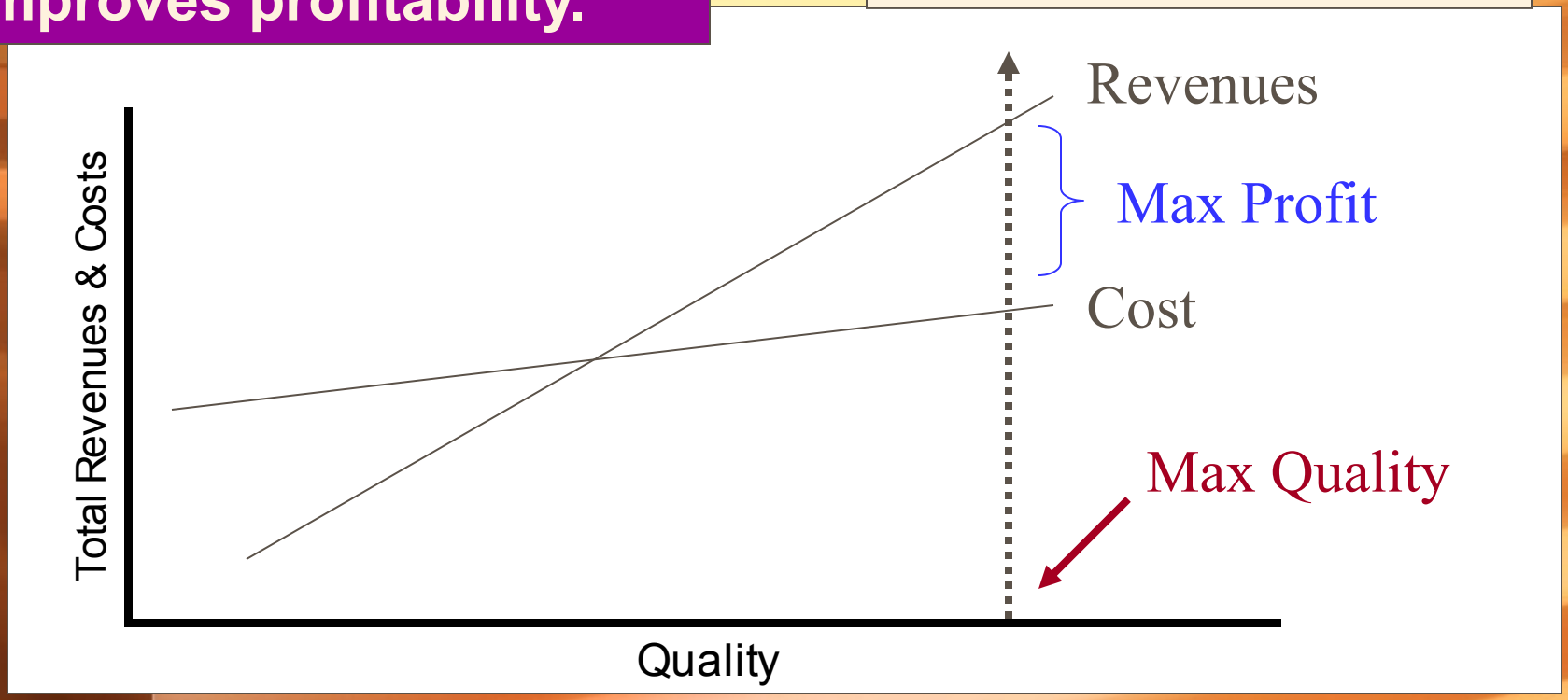
Return on Quality?

Total Quality Management (TQM)

Total Quality Management (TQM)

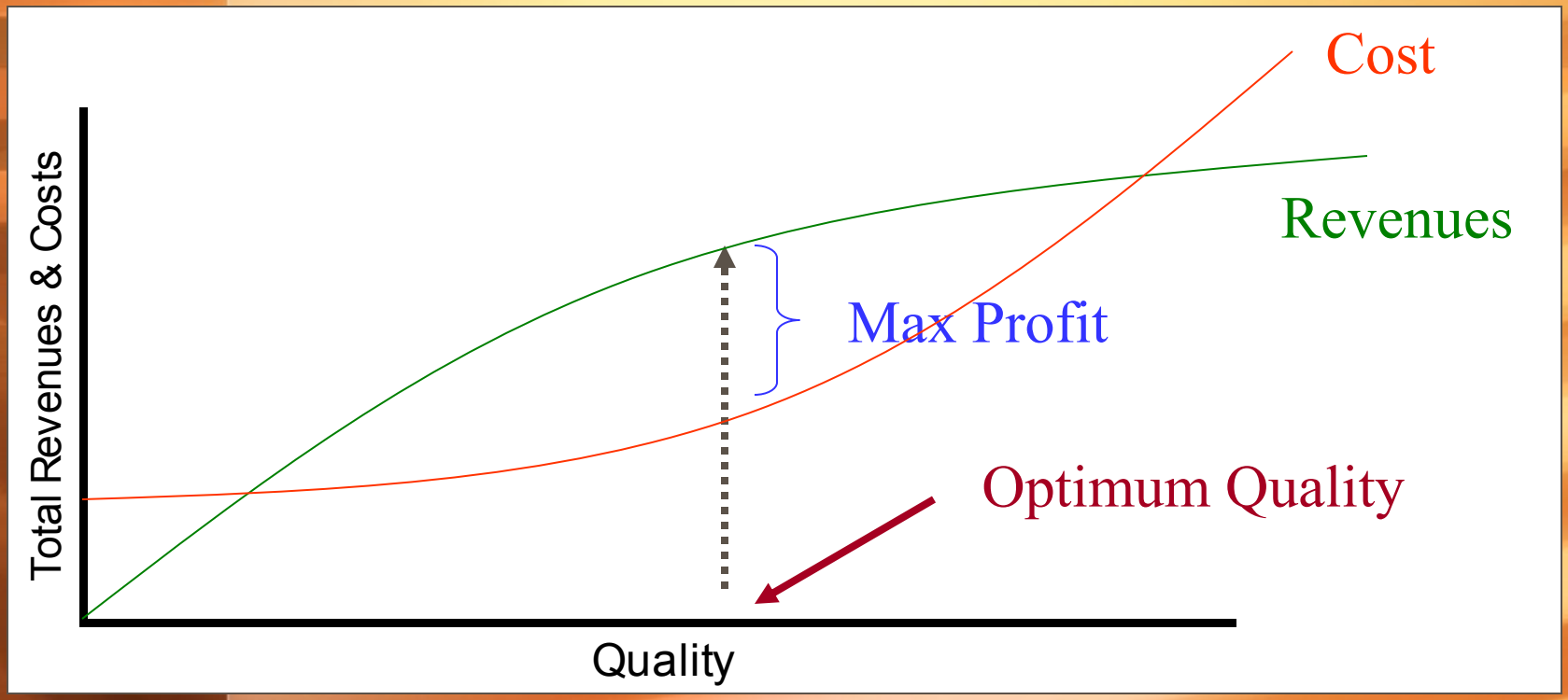
W. Edwards Deming proposed that improving quality reduces cost and improves profitability.

Quality can be and should be improved continuously.



Return on Quality (ROQ)

Profit is maximized at the optimum quality level.	The optimum quality level is always achieved before maximum attainable profit is reached.

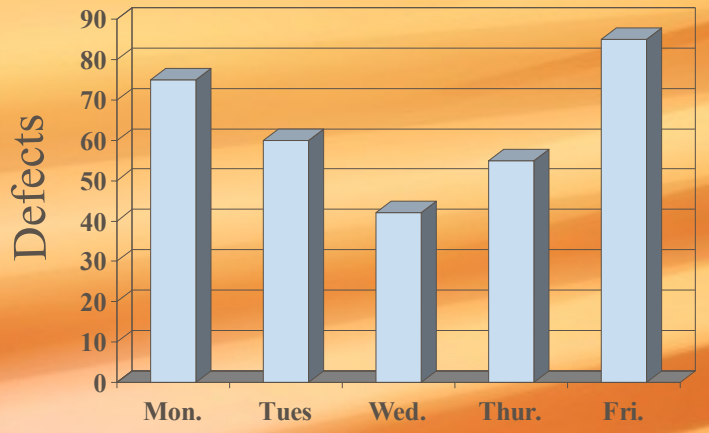


Lead Indicators of Quality

Variation indicates poor quality. To measure variation, there are several tools that can be used:

Histograms | **Run Charts** | **Control Charts**

A graphical display of the frequency distribution of attributes.



Lead Indicators of Quality

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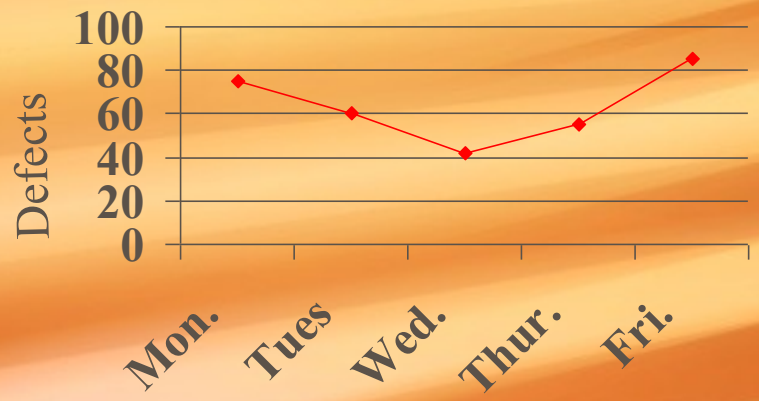
Histograms | **Run Charts** | **Control Charts**

A graph showing trends in variation over time.



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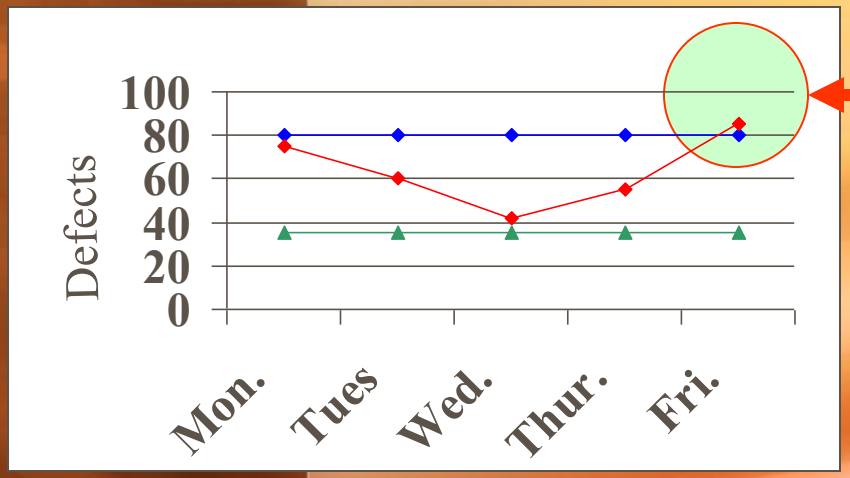


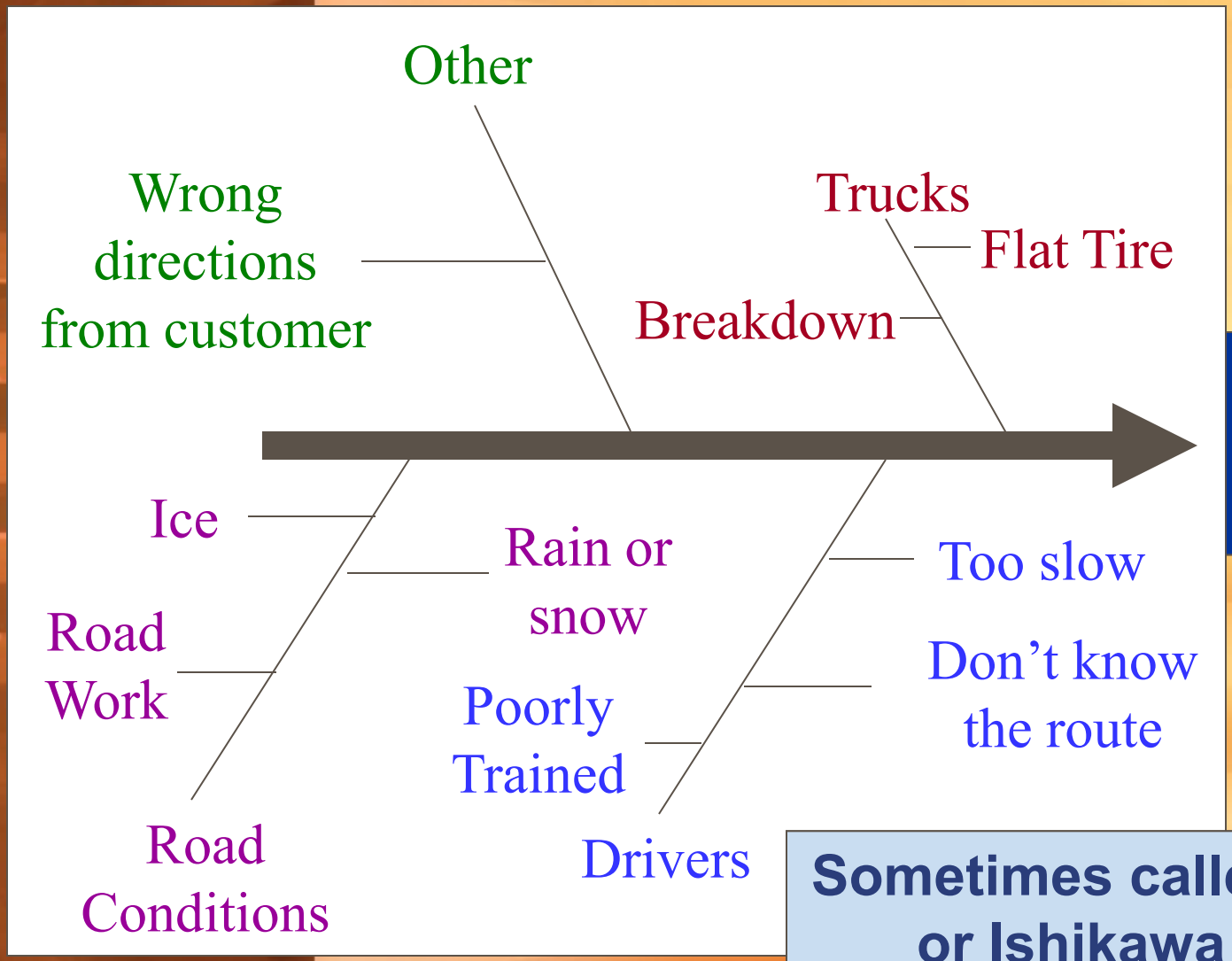
Notice that this process seems to be out of control on Fridays.

Diagnostic Information

While lead indicators tell that there IS a problem, diagnostic tools help determine WHAT the problem is.

- Cause-and-Effect Diagrams
- Flow Charts
- Scatter Diagrams
- Pareto Charts

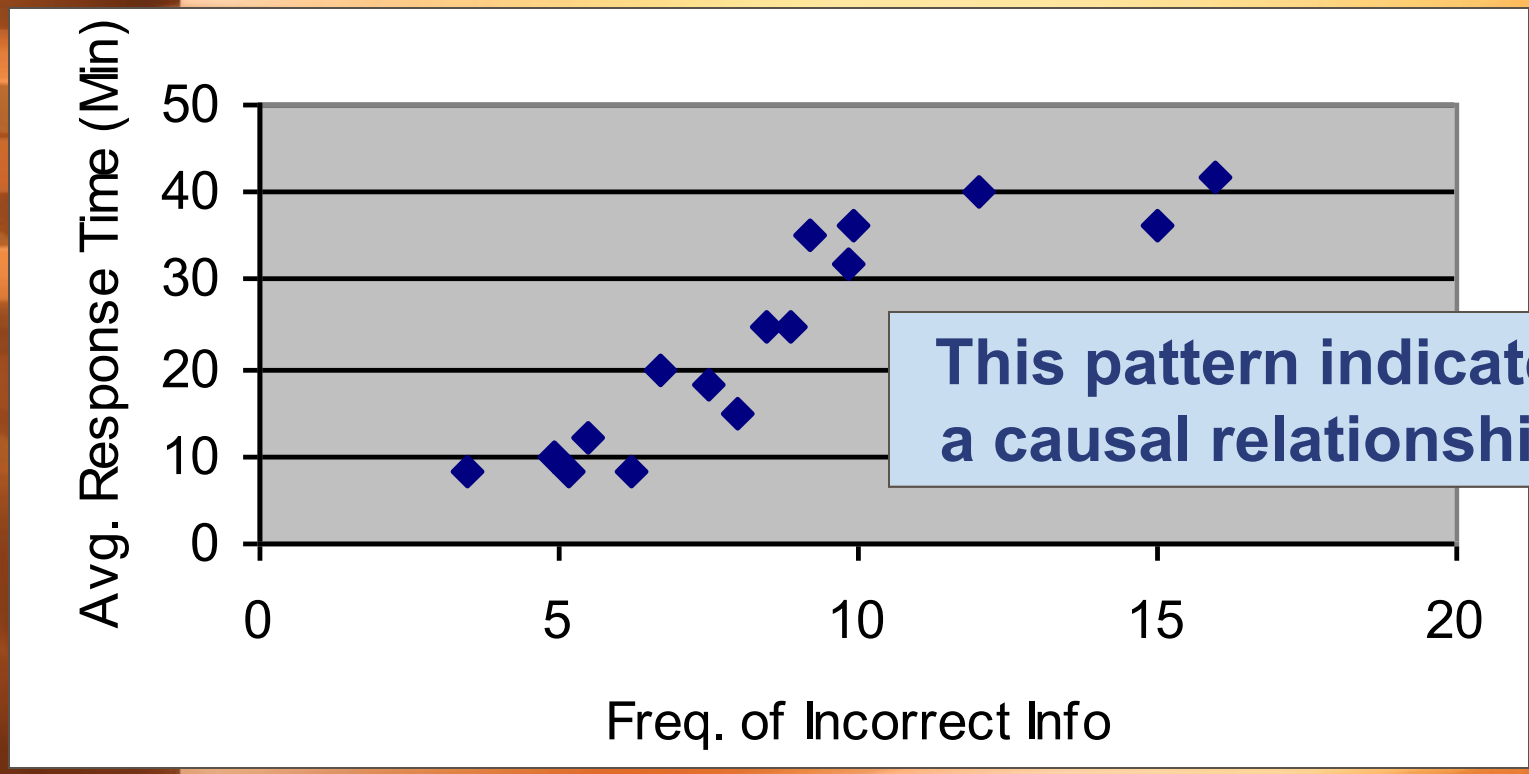
Cause-and-Effect Diagrams



Sometimes called "fishbone" or Ishikawa diagrams

Scatter Diagrams

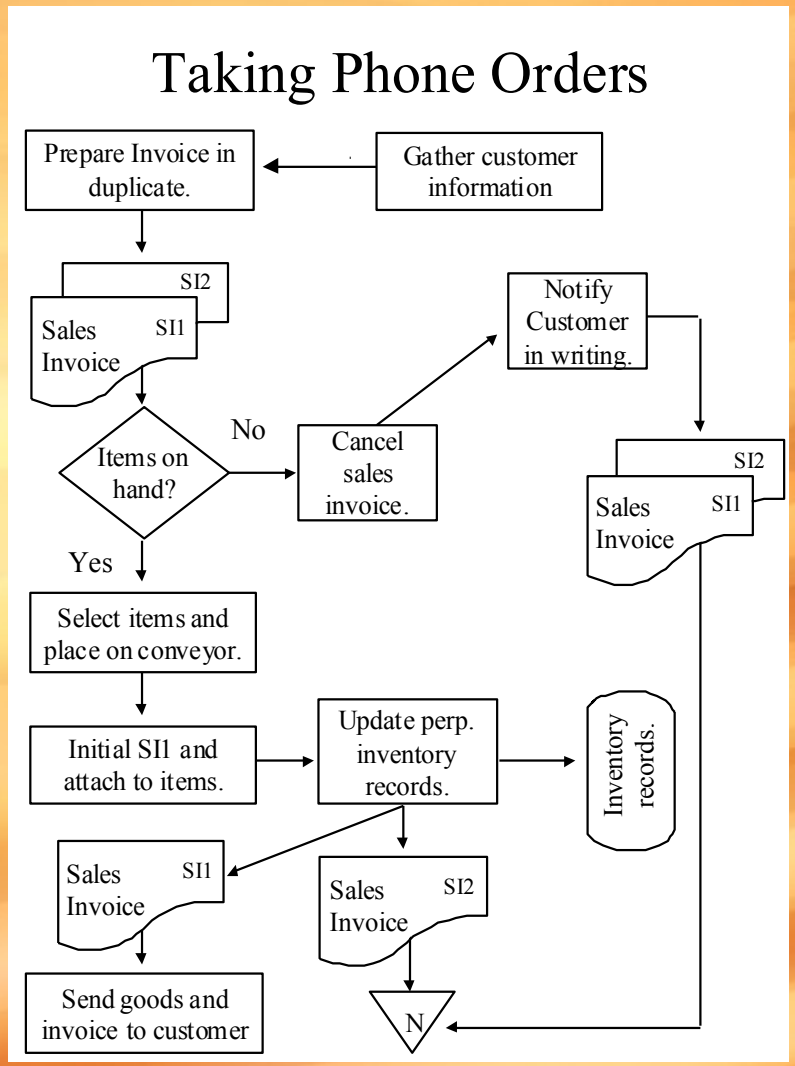
A plot of two variables that might be related. A Patterns often indicates a causal relationship.



Flowcharts

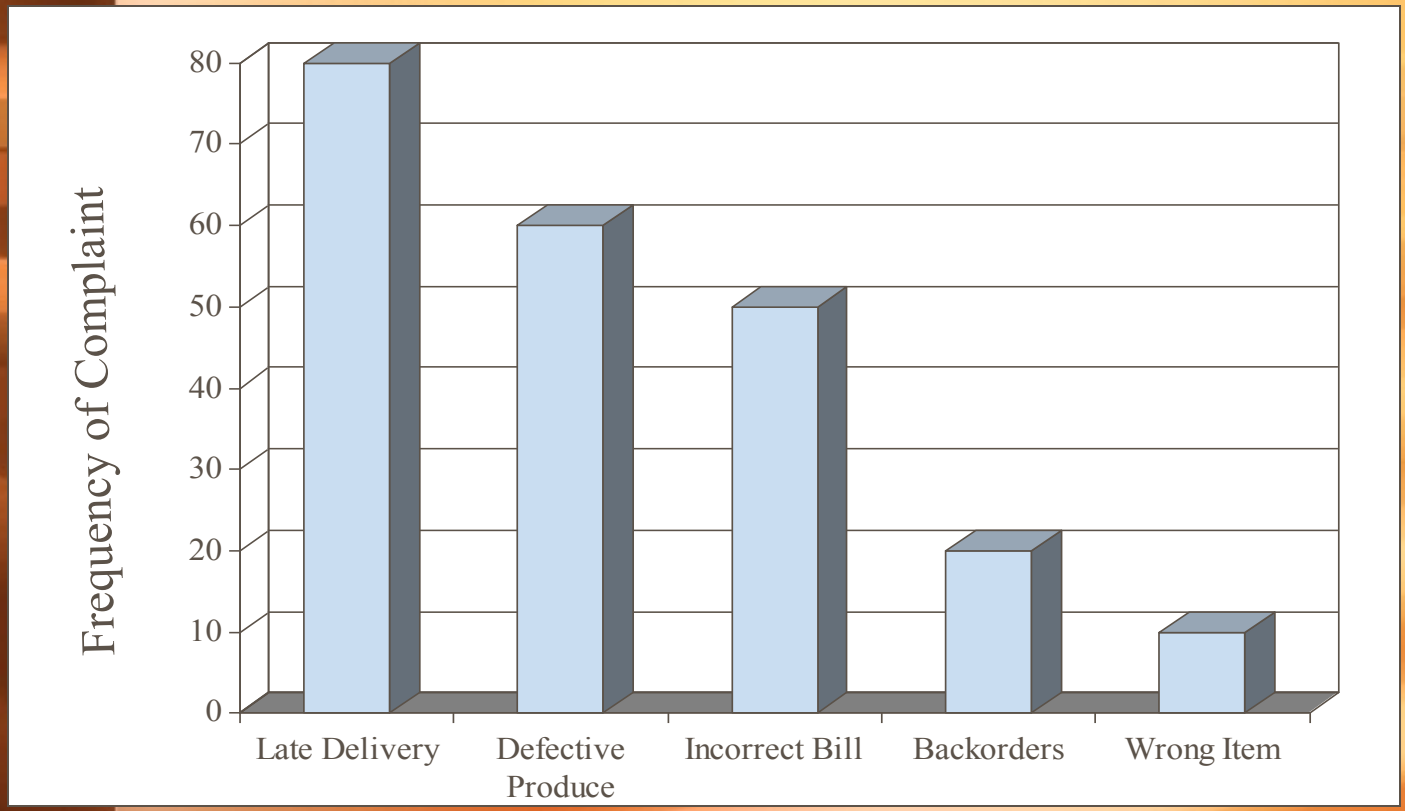
A graphical illustration of sequential linkages among process activities.

Standardized symbols are used to represent decisions, actions, documents, and storage devices.



Pareto Charts

A histogram of causes of errors or errors arranged in order of frequency or size. Helps in prioritizing actions to address problems.



Customer Satisfaction

The degree to which expectations of product attributes, customer service, and price have been met or exceeded.

Common tools for measuring customer satisfaction

- Phone Surveys
- Questionnaires
- Focus Groups
- # of Customer Complaints
- “Phantom” Shoppers

Cost of Quality (COQ)

Out-of-pocket costs associated with quality generally fall into two categories:

Costs associated with activities to correct failure to control quality.

Costs associated with controlling quality.

Cost to Control Quality

Prevention

Activities that seek to prevent defects in the products or services being produced.

- *Certifying Suppliers*
- *Designing for Manufacturability*
- *Quality Training*
- *Quality Evaluations*
- *Process Improvements*

Appraisal

Activities for inspecting inputs and attributes of individual units of product and service.

- *Inspecting Materials*
- *Inspecting Machines*
- *Inspecting Processes*
- *Statistical Process Control*
- *Sampling and Testing*

Costs of Failing to Control Quality

Internal Failure

Costs associated with defects in processes and products that are found prior to delivery to customers.

- *Disposing of Scrap*
- *Rework*
- *Reinspecting/Retesting*
- *Delaying Processes*

External Failure

Costs associated with defects in processes and products that are detected after delivery to customers.

- *Warranty Repairs*
- *Field Replacements*
- *Product Liability*
- *Restoring reputation*
- *Lost Sales*

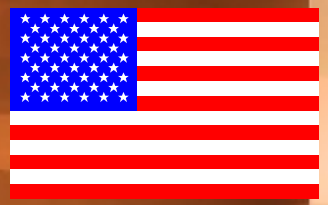
Costs of Quality (COQ)

It is easier to MEASURE the COQ in organizations that use ABC and ABM.

COQ is not required to be reported in the financial statements.

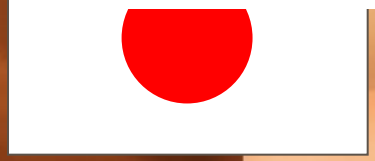
When COQ is reported, it is usually expressed as a % of sales.

Quality Awards and Certificates



Malcolm Baldrige National Quality Award

The Deming Prize



Japan

ISO 9000

European Community

Managing Time in a Competitive Environment

We need to reduce . . .

Less time means quicker response to changing customer needs and to changing conditions of the marketplace.

Measuring Results: Process Efficiency

Process efficiency

- The ability to transform inputs into outputs at lowest cost.

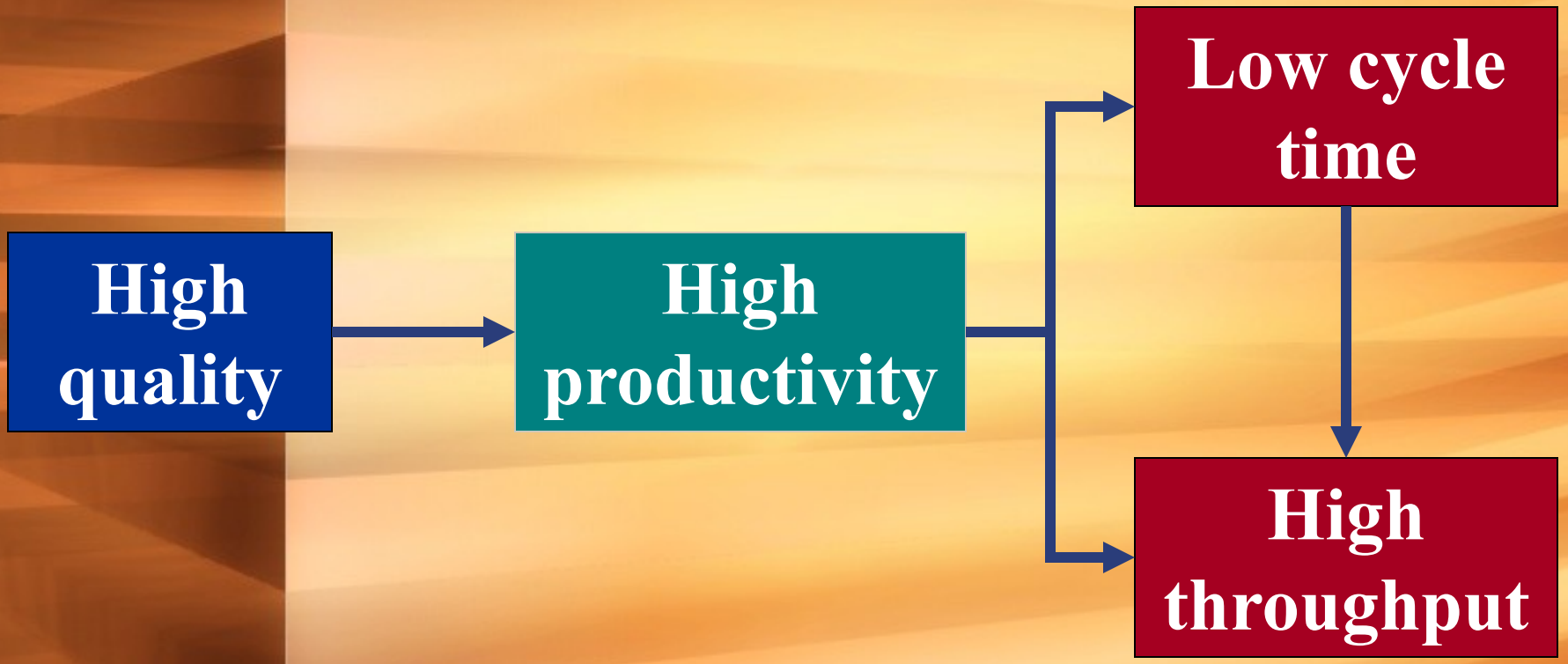
Production processes

- Result directly in the production of products or services provided to external customers.

Business process

- Support or enable production processes.

Measuring Results: Process Efficiency



Measuring Productivity

Total Factor Productivity	=	Value of Goods & Services	÷	Total cost of Providing Goods & Services

Specific productivity measures compare:

Outcomes Valued by Customers	to	The scarcest or most valuable resources used to achieve the outcomes.

Measuring Cycle Time

The average time necessary to complete and deliver all good units and dispose of units that have to be reworked or scrapped because of defects.

$$\text{Average Cycle Time} = \text{Total Processing Time} \div \text{Good Units Produced}$$

Measuring Throughput Efficiency

A measure of the amount of time spent adding value compared to the total cycle time.

$$\text{Throughput Ratio} = \text{Value-added Time} \div \text{Total Processing Time}$$

Measures of Capacity

Process Capacity

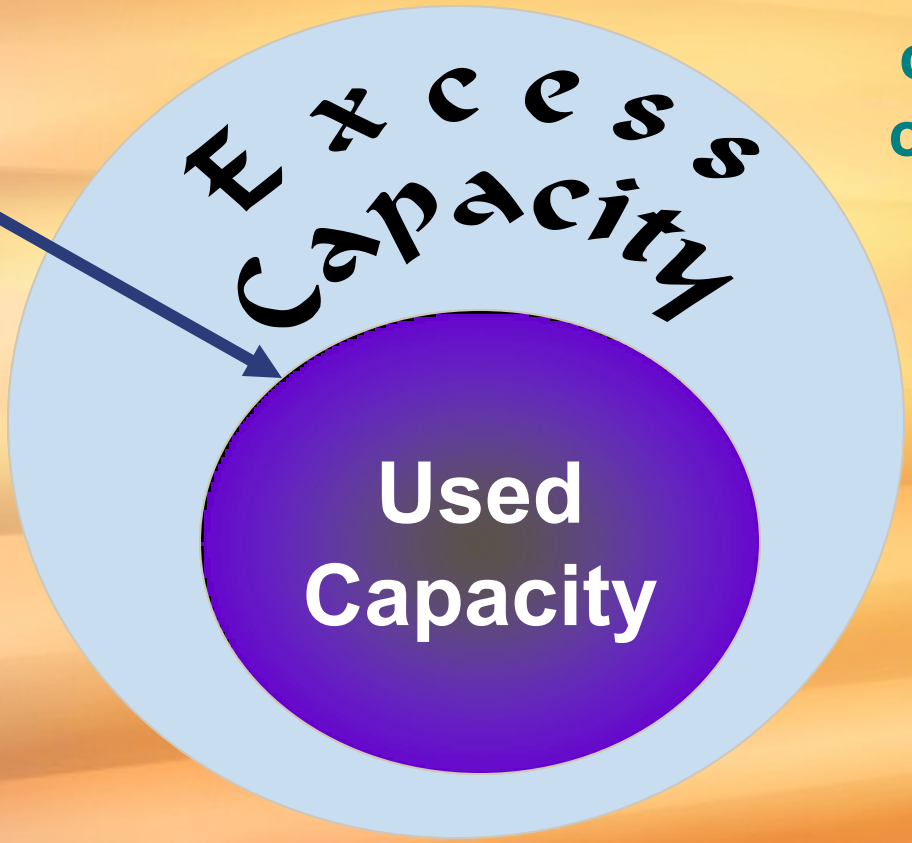
A measure of a process's ability to transform resources into valued products and services.

Practical Capacity

It is possible for "capacity demand" to exceed practical capacity.

Measures of Capacity

Used Capacity is the amount of the practical capacity that is actually used.

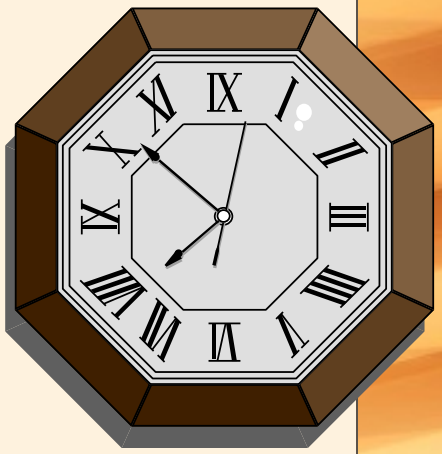


In some cases, "used capacity" can actually exceed "practical capacity."

Managing Quality + Time + Productivity + Capacity = JIT

The objective of JIT is to . . .

- *purchase materials*
- *produce products*
- *and deliver products*



. . . just when they are needed.

Managing Quality + Time + Productivity + Capacity = JIT

The goal is to manage costs so that the savings associated with JIT exceed the cost of implementing JIT

Cost savings:

- Inventory warehouse rent or cost
- Inventory managers and personnel
- Less warranty cost

Implementation costs:

- Employee retraining
- Technology improvement
- Exposure to work stoppage risks.

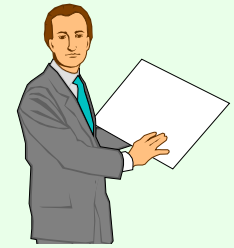
Traditional "Push" Manufacturing - Example

Computer Manufacturer

Forecast Sales →

Order components →

Store Inventory



Prepare Production Schedule ←

Begin Production in Anticipation of Sales ←

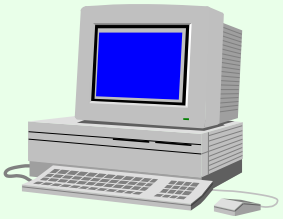
Make sales from finished goods inventory

JIT "Pull" Manufacturing - Example

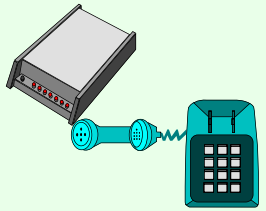
Computer Manufacturer

Customer places an order

Create Production Order



Generate component requirements

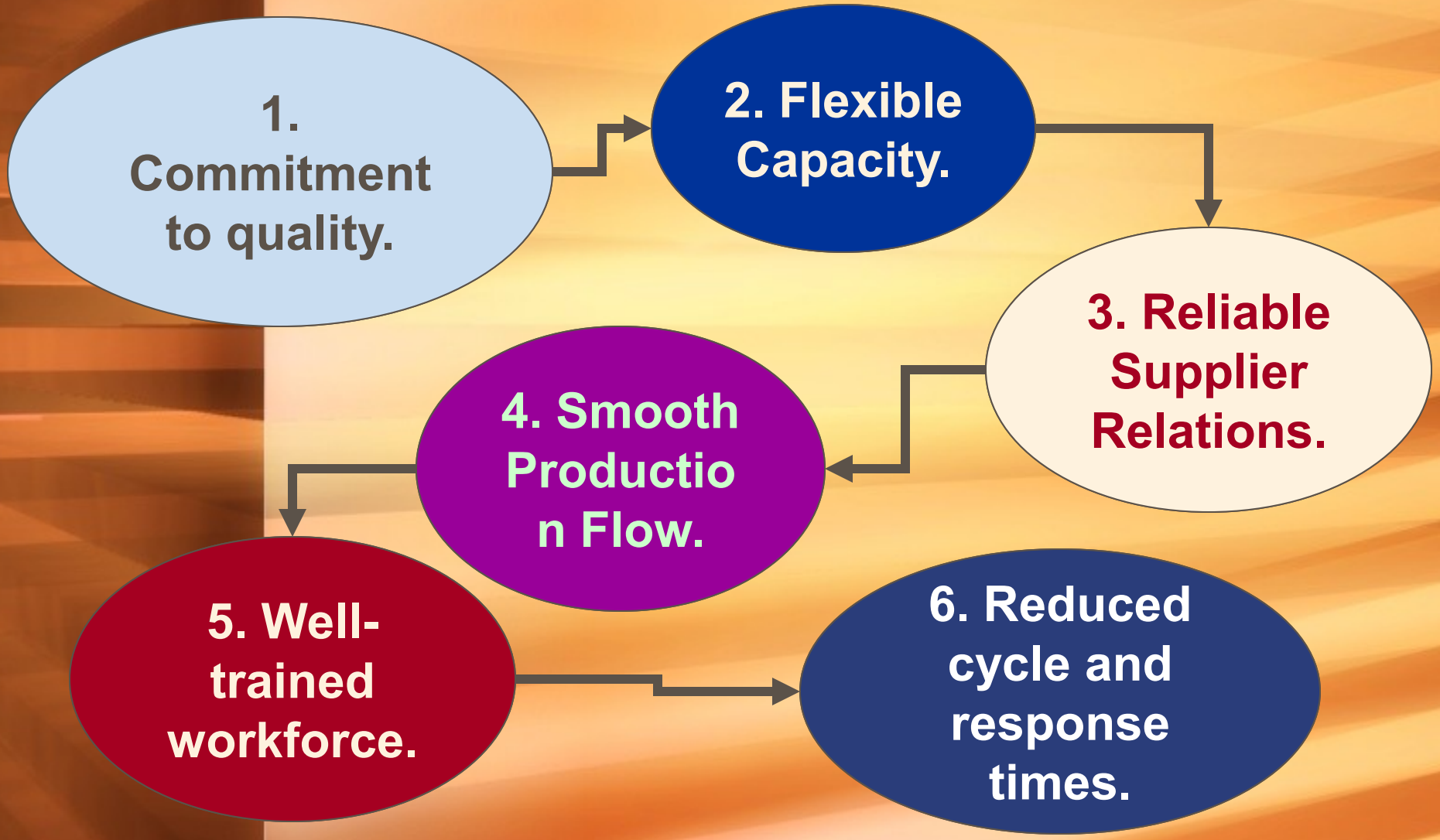


Components are ordered

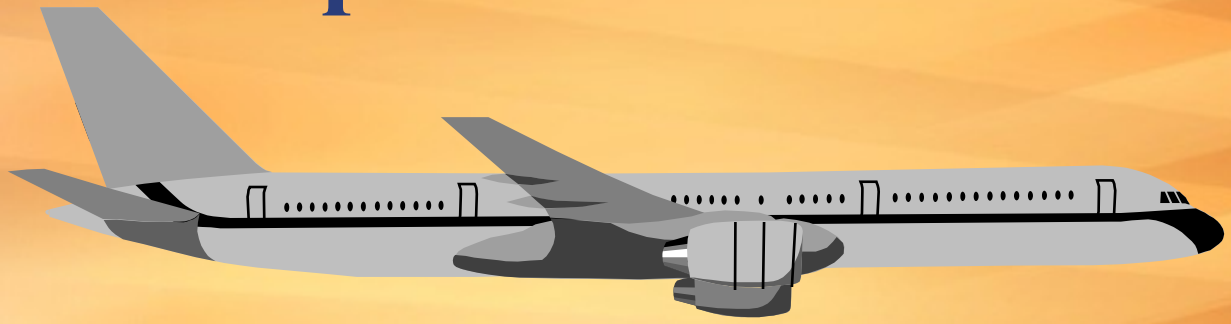
Production begins as parts arrive

Goods delivered just in time

JIT Success Factors



End of Chapter 7



Uh, Boss? My luggage was Just-in-Time, but I wasn't!