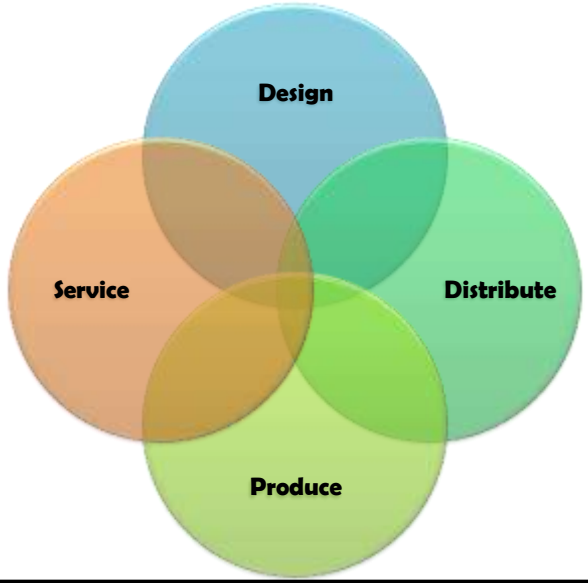
Quality System in The Food Industry

MMRP 2014

Food Science & Technology Department

BASIC PRODUCTION SYSTEM IN FOOD INDUSTRY

Production System



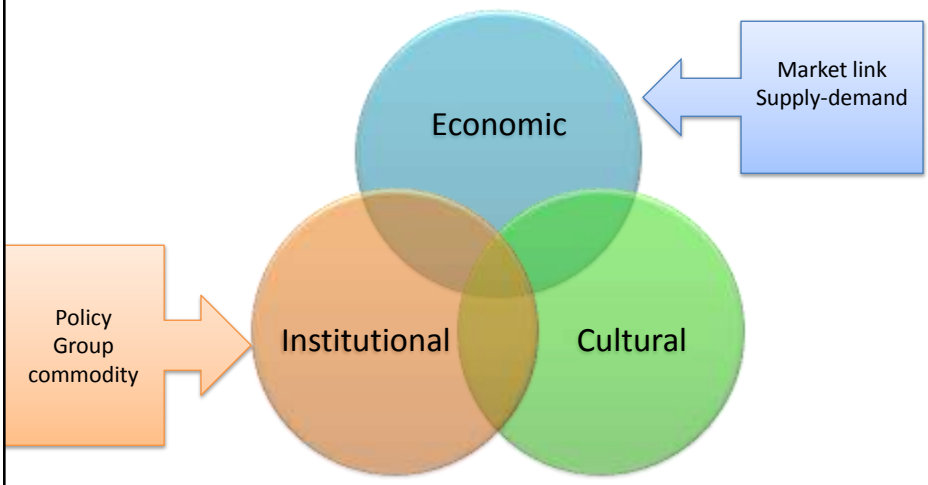
Food Product

- Perishable – materials & product
- “Living” product – enzyme, metabolism, microbial growth
- Wide variation – over time, types, batch, handlers, sources
- Perceived by consumer – individual taste, experience, emotion, behaviour

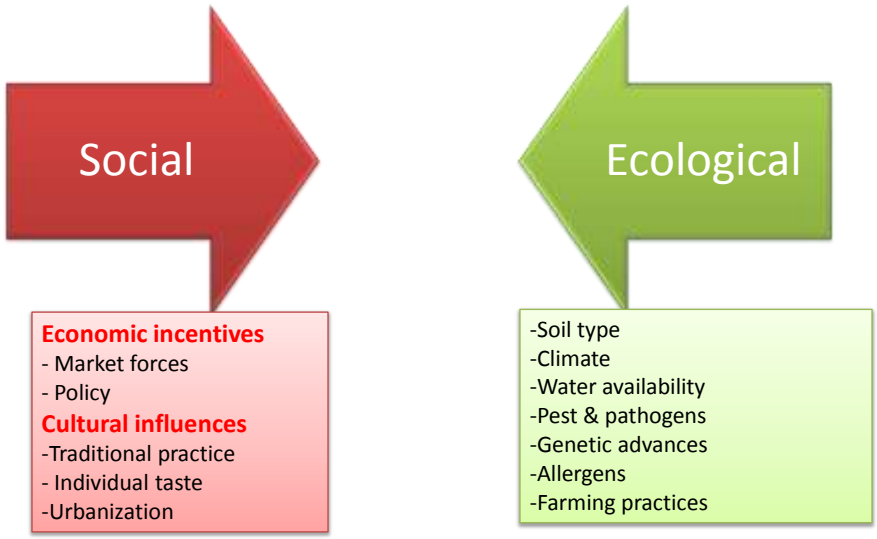
Food Industry

- Mass production – effective cost
- Labour intensive
- Different scale, different ingredient interaction
- Socio-cultural dependent

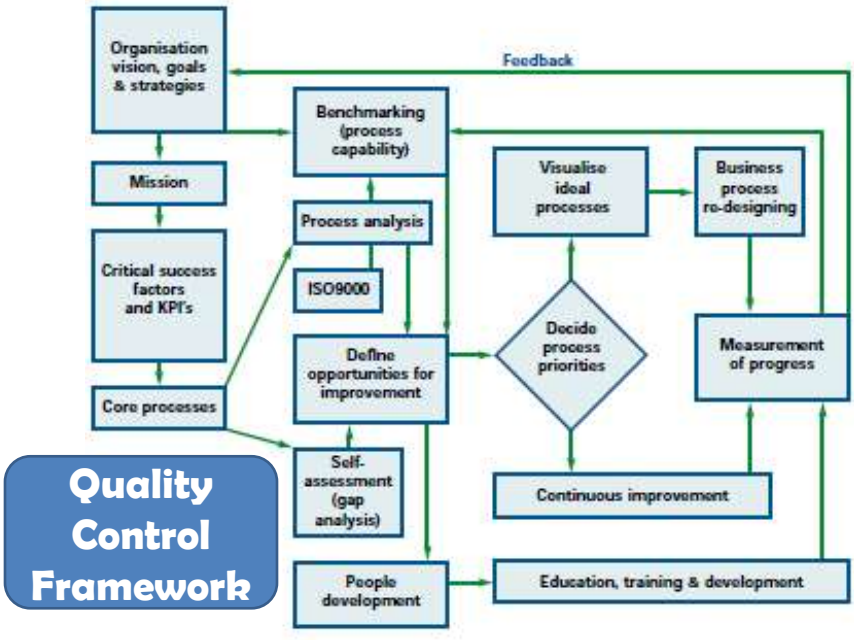
Global food production system

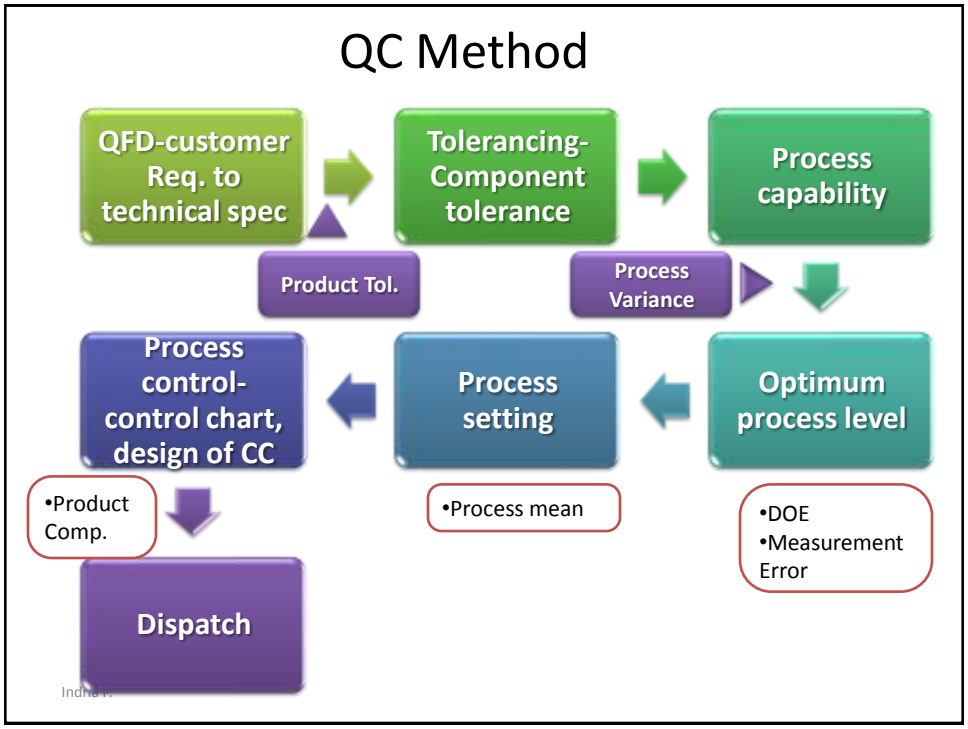


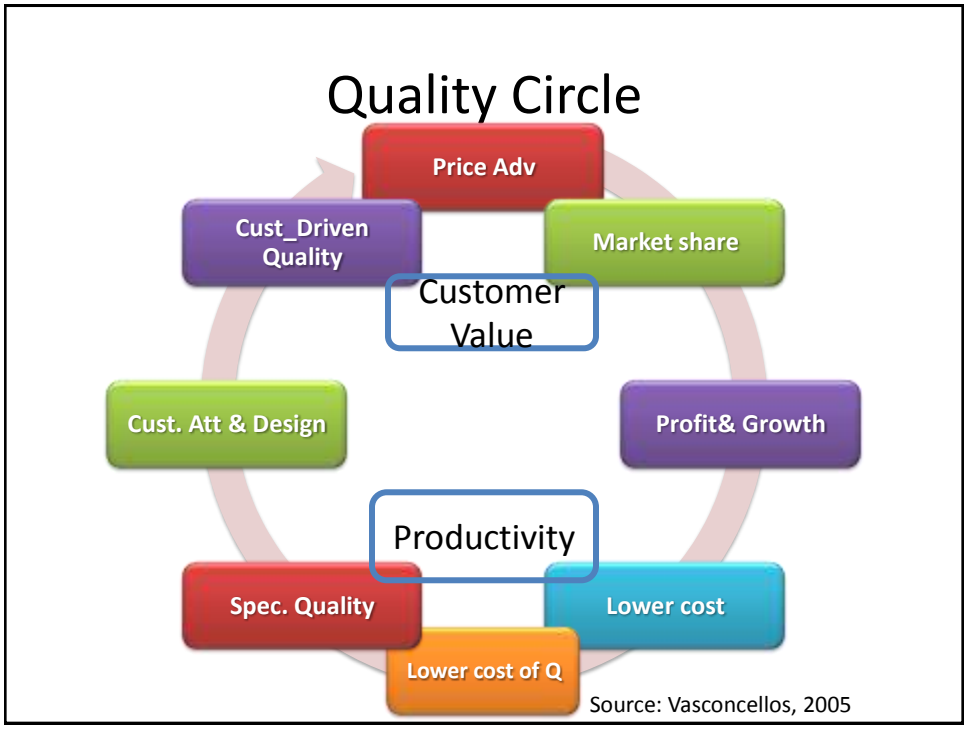
Factors affecting food production system



QUALITY CONTROL FRAMEWORK

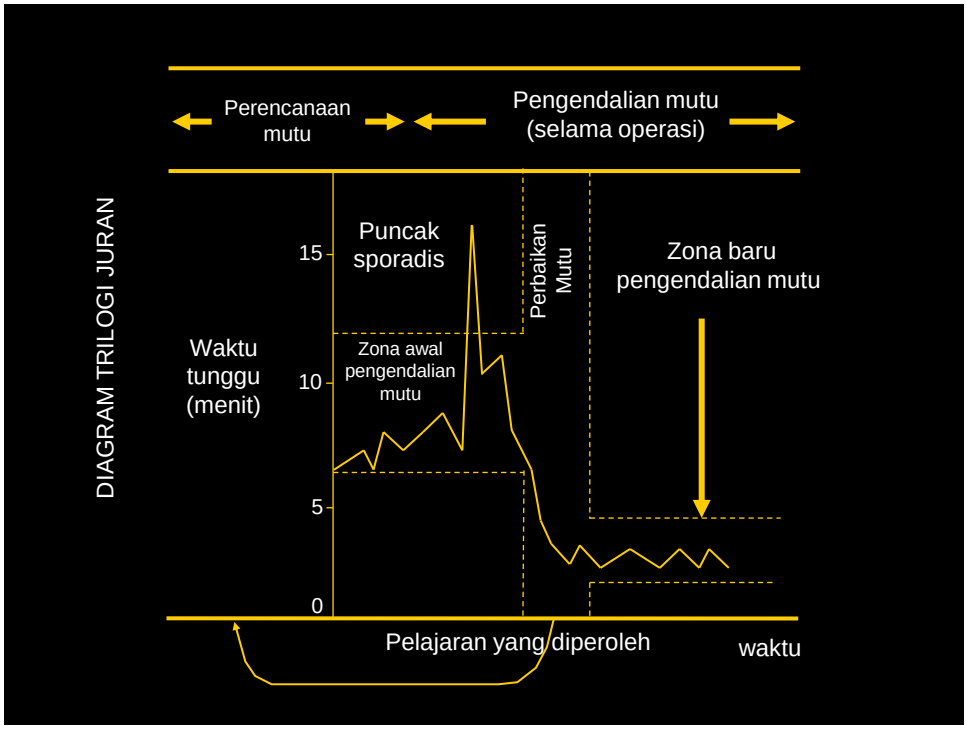



QC Method
QFD-customer Req. to technical spec
Tolerancing-Component tolerance
Process capability
Product Tol.
Process Variance
Process control-control chart, design of CC
Process setting
Optimum process level
•Product Comp.
•Process mean
•DOE
•Measurement Error
Dispatch


Quality Circle
Price Adv
Cust_Driven Quality
Market share
Customer Value
Cust. Att & Design
Profit& Growth
Productivity
Spec. Quality
Lower cost
Lower cost of Q
Source: Vasconcellos, 2005

Strategic planning process

Gryna, 2001



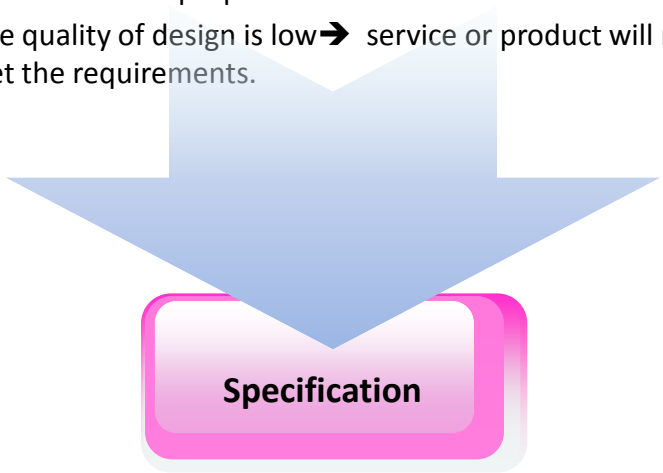
Control & Measurement

- Control
  - Are we doing the job correctly ??
  - Detection vs prevention
  - Transformation process
  - Management responsibility
- Measure
  - Quality of design
  - Quality of conformance

QUALITY-PROCESS-CONTROL

Quality of Design

- A measure of how well the product or service is designed to achieve its stated purpose.
- If the quality of design is low➔ service or product will not meet the requirements.



Specification

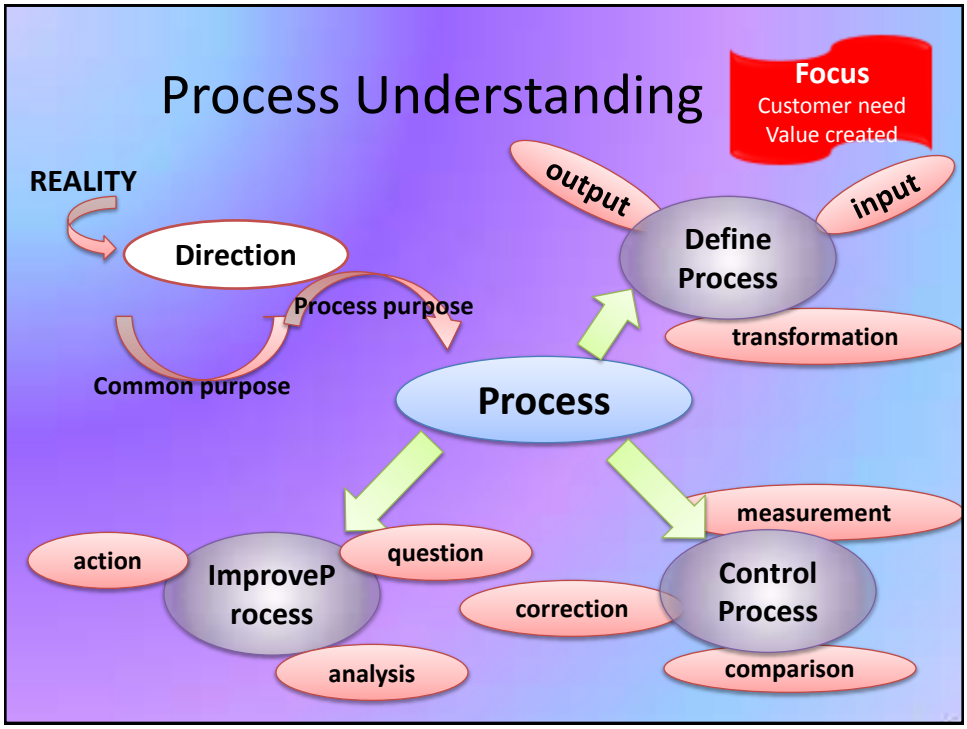
- Defines the product or service
- Should be a comprehensive statement of all aspects which must be present to meet the customer's requirements.
- Must be precise ➔vital in the purchase of materials and services for use in any conversion process.
- Should refer to published standard

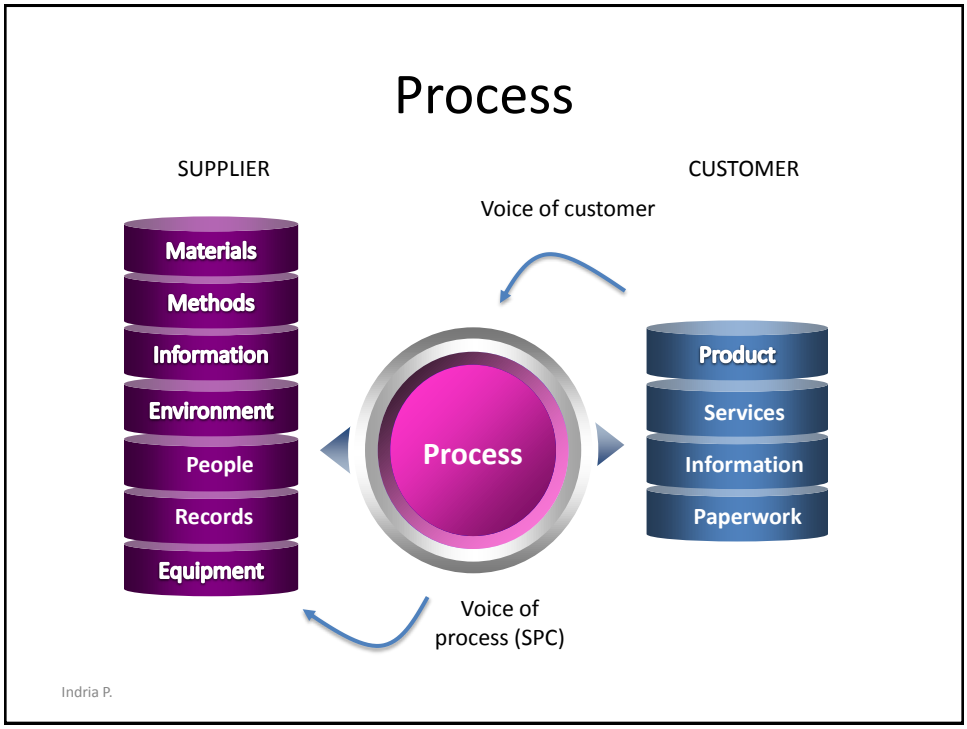
Quality of conformance to design

- Product or service achieves the specified design.
- The customer satisfaction must be designed into the production system.
- Inspection → end-checking : spiralling costs and decreasing viability.
- Conformance to a design → quality performance of the actual operations.
- The recording and analysis of information and data
- Statistical methods must be applied for effective interpretation.

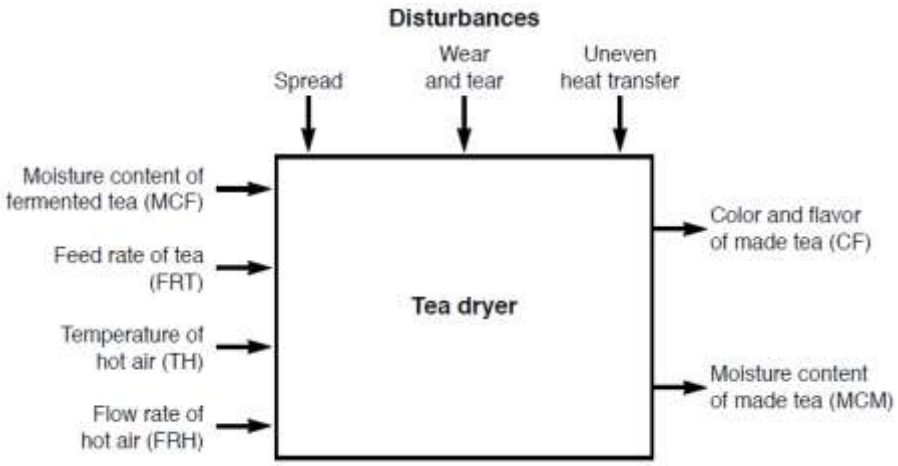
What is a process?

- The transformation of a set of inputs, which can include materials, actions, methods and operations, into desired outputs, in the form of products, information, services or – generally – results


Process Understanding
Focus
Customer need
Value created
REALITY
Direction
Process purpose
Common purpose
output
input
Define Process
transformation
Process
measurement
action
ImproveP rocess
question
correction
Control Process
analysis
comparison


Process
SUPPLIER
CUSTOMER
Voice of customer
Materials
Methods
Information
Environment
People
Records
Equipment
Process
Product
Services
Information
Paperwork
Voice of process (SPC)
Indria P.

Process Example



Bhunyan, 2007. Measurement & Control in Food Processing. Pp.12

Process structure

- Open loop
  - Blind operation toward input, output & surrounding
- Closed loop
  - Feedback / feedforward manner
  - Feedback → output related to current operation
  - Feedforward → input/surrounding related to current operation

Understanding the Process

Objectives

- To further examine the concept of process management and improving customer satisfaction.
- To introduce a systematic approach to:
  - defining customer–supplier relationships;
  - defining processes;
  - standardizing procedures;
  - designing/modifying processes; improving processes.
- To describe the various techniques of block diagramming and flowcharting and to show their use in process mapping, examination and improvement.
- To position process mapping and analysis in the context of business process re-engineering (BPR).

Improving customer satisfaction through process management

- An approach to improvement based on
  - process alignment, starting with the organization's mission statement,
  - analysing its critical success factors (CSFs),
  - key or critical processes
- engage the people in an enduring change process. In addition to the knowledge of the business as a whole, which will be brought about by an understanding of the mission→CSF→process breakdown links, certain tools, techniques, and interpersonal skills will be required for good communication around the processes, which are managed by the systems. These are essential for people to identify and solve problems as teams, and form the components of the model for TQM.

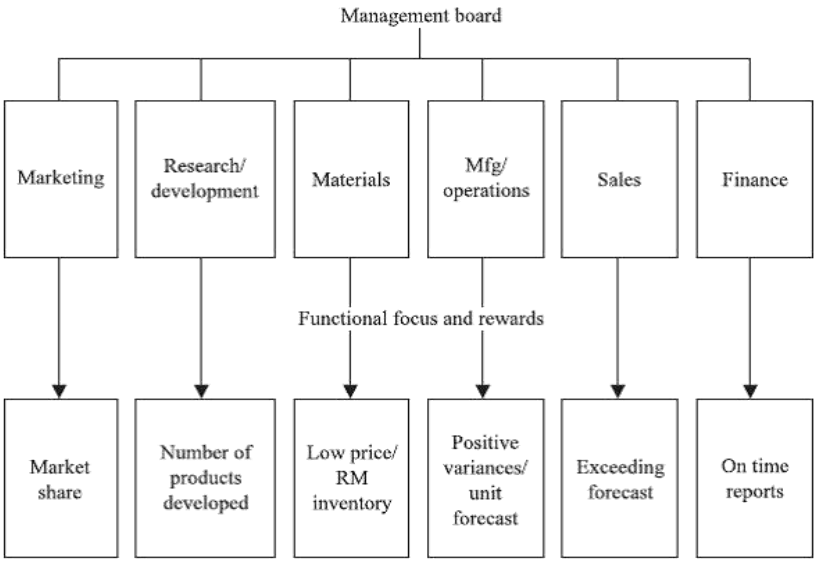


Figure 2.1 *Typical functional organization*

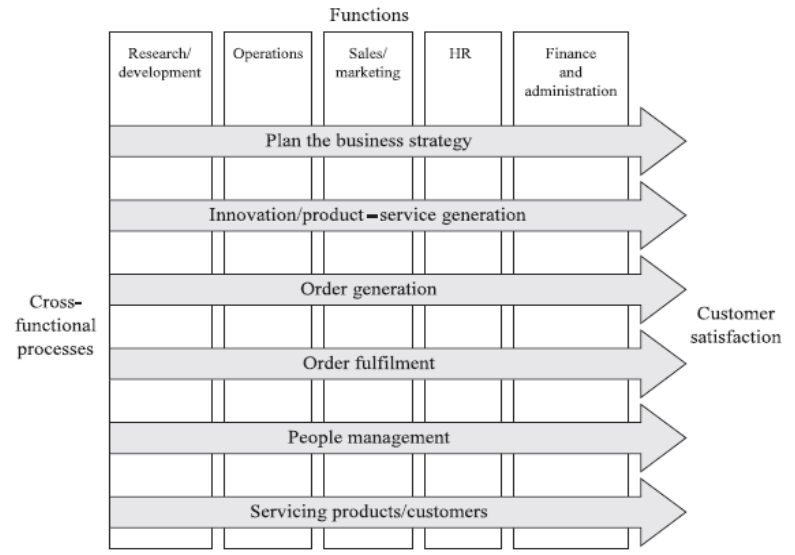


Figure 2.2 *Cross-functional approach to managing core processes*

Improving customer satisfaction through process management

- An approach to improvement based on
  - process alignment, starting with the organization's mission statement,
  - analysing its critical success factors (CSFs),
  - key or critical processes

Indria P.

What is control?

- '*Are we doing the job correctly?*'
- Monitor the process and the controls on it
- Detection vs prevention
- Transformation process
- Management responsibility

Summary

- *Can we do the job correctly? (capability)*
- *Are we doing the job correctly? (control)*
- *Have we done the job correctly? (quality assurance)*
- *Could we do the job better? (improvement)*