



Department of Mechanical Engineering



Engineering Management

MCE 511: Engineering Management

Dr Christian Bolu

Department of Mechanical Engineering, Covenant University, Ota, Ogun State, Nigeria

Raising a New Generation of Leaders





Department of Mechanical Engineering



1. Organisation Structures
2. ERP Basics, Engineering Management Overview
3. Business Statistics, Forecasting, Research Methods
4. Work Study and Work Measurement
5. Procurement Cycle
6. Materials Planning
7. Inventory and Warehousing Management
8. Production Planning and Control





Department of Mechanical Engineering



9. Sales Order Management

10. Enterprise Asset Management

11. Project Management, CPM, PERT, Prince 2

12. Human Capital Management

13. Financial Accounting

14. Management Accounting

15. Business Intelligence

16. Strategic Enterprise Management





Department of Mechanical Engineering



1. Organisation Structures

2. ERP Basics, Engineering Management Overview

3. Business Statistics, Forecasting, Research Methods

4. Work Study and Work Measurement

5. Procurement Cycle

6. Materials Planning

7. Inventory and Warehousing Management

8. Production Planning and Control





Organisation Structures

Topics

- 1. *What are Organisations?***
- 2. *Organisation Structures***





Organisations

1.1 What are Organisations?

□ Definitions

- ◆ Intricate human strategies designed to achieve certain objectives
– *Argyris, 1960*
- ◆ Systems of behaviour designed to enable humans and their machines to accomplish goals – a joint function of human characteristics and the nature of the task environment – *Simon, 1960*

□ Components *(in terms of work organisation)*

- ◆ Purpose/Goal
- ◆ People
- ◆ Technology
- ◆ Structure
- ◆ Culture
- ◆ Environment





Organisations

1.1 What are Organisations?

□ Components

- ◆ **Purpose/Goal** – mission statements, organisational policies, organisational strategies
- ◆ **People** – knowledge, skills and competencies, different perceptions and meaning, in groups and individuals
- ◆ **Technology** – machines, offices, information processing
- ◆ **Structure** – corporate structure, task structure, roles
- ◆ **Culture** – organisational values, management style, sub-cultures, eg R & D. There is implicit & explicit culture.
- ◆ **Environment** – political, social, technological, market, economic pressure





Components of Organisation





Organisation Theorists

Theorists	Period	Viewpoint
F. W Taylor, Henri Fayol, L.F. Urwick, Frank & Lilian Gilbreth	Between 1 st and 2 nd World wars	Scientific Management School
Elton Mayo, D. McGregor, F. Herzberg, Abraham Maslow	After 2 nd World War	Human Relation School or Social Psychology School
Victor Vroom, Tavistock Group	1940-70	Systems Theorists
Lawrence & Lorsch, Aston School, Henry Mintzberg	1960-80	Contingency View





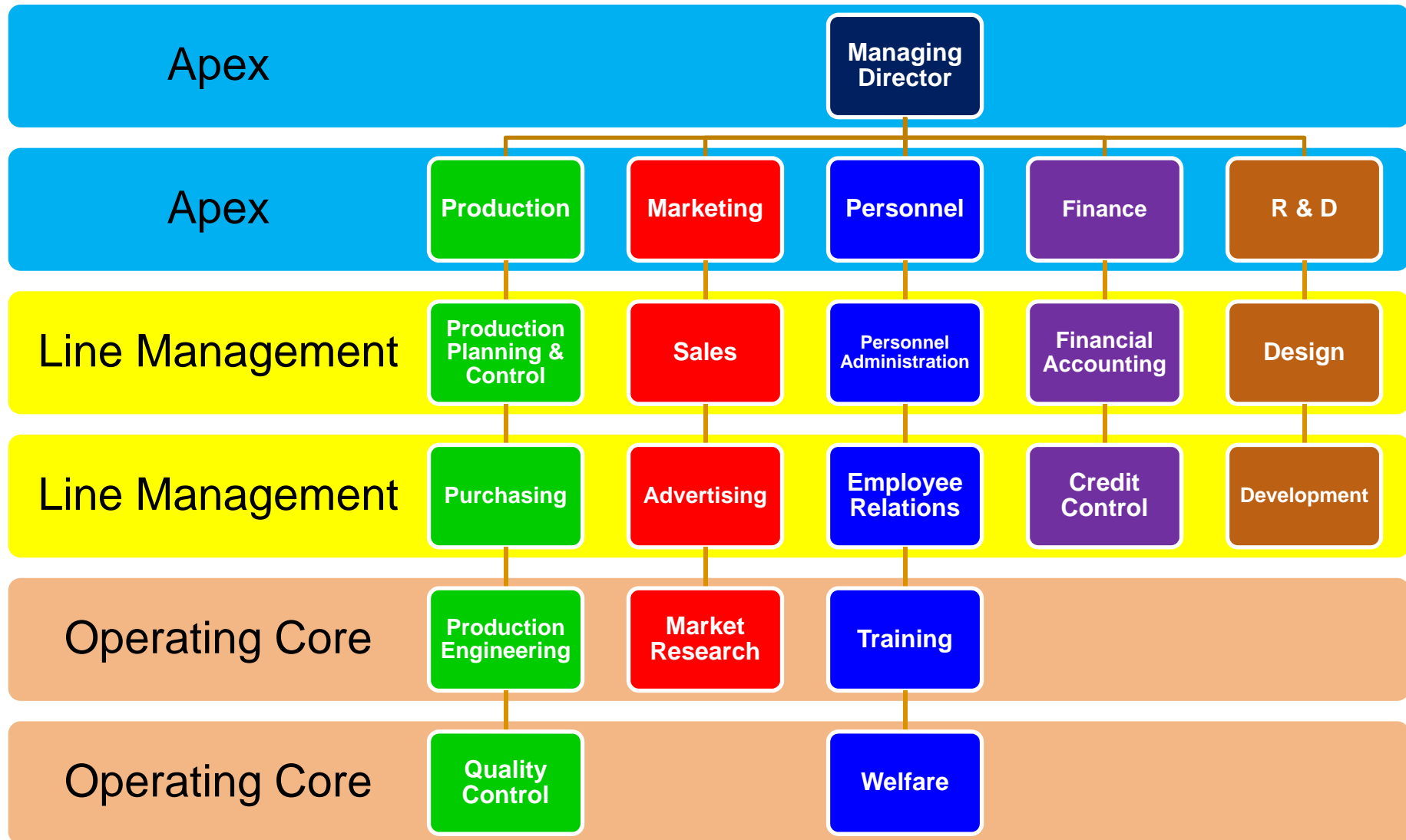
Organisation Structures - Features

Features	Description
1. Foundations	<ul style="list-style-type: none"><input type="checkbox"/> Basic parts (apex, middle line, operating, technostructure, support staff)<input type="checkbox"/> Coordinating mechanism (mutual, supervision, standardisation)<input type="checkbox"/> System of flow (flow of authority, material, information, decision process)
2. Design Parameters	<ul style="list-style-type: none"><input type="checkbox"/> Job Specialisation<input type="checkbox"/> Behaviour formulation<input type="checkbox"/> Training & Indoctrination<input type="checkbox"/> Unit grouping<input type="checkbox"/> Unit size<input type="checkbox"/> Planning and control systems<input type="checkbox"/> Liaison devices<input type="checkbox"/> Vertical decentralisation (devolution of power down line of authority)<input type="checkbox"/> Horizontal decentralisation (devolution of power to specialist staff)
3. Contingency Factors	<ul style="list-style-type: none"><input type="checkbox"/> Age & size<input type="checkbox"/> Technical system (controls & complexity)<input type="checkbox"/> Environment (stability, complexity, diversity, hostile market)<input type="checkbox"/> Power (control by outside group, internal or socio-cultural norms)
4. Structural Configurations	<ul style="list-style-type: none"><input type="checkbox"/> Simple structure<input type="checkbox"/> Machine bureaucracy<input type="checkbox"/> Professional bureaucracy<input type="checkbox"/> Divisionalised form<input type="checkbox"/> Adhocracy





Specialisation by Function





Specialisation by Function

Advantages

- Grouping, deployment and control of Expertise
- Career & promotion path created

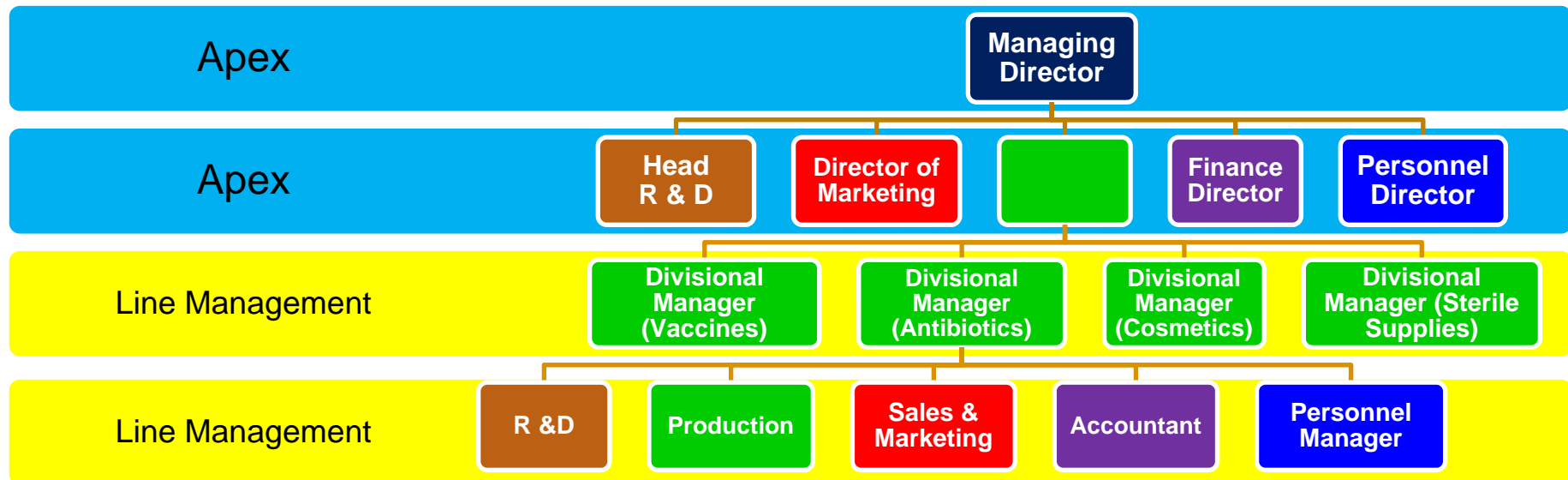
Disadvantages

- Encourage sectional interests
- Discourage lateral links





Specialisation by Product/Service





Specialisation by Product/Service

Advantages

- Enable Product groups to concentrate on priorities
- Group own specialist resources
- Enable group culture development
- Encourage top management concentrate on corporate issues

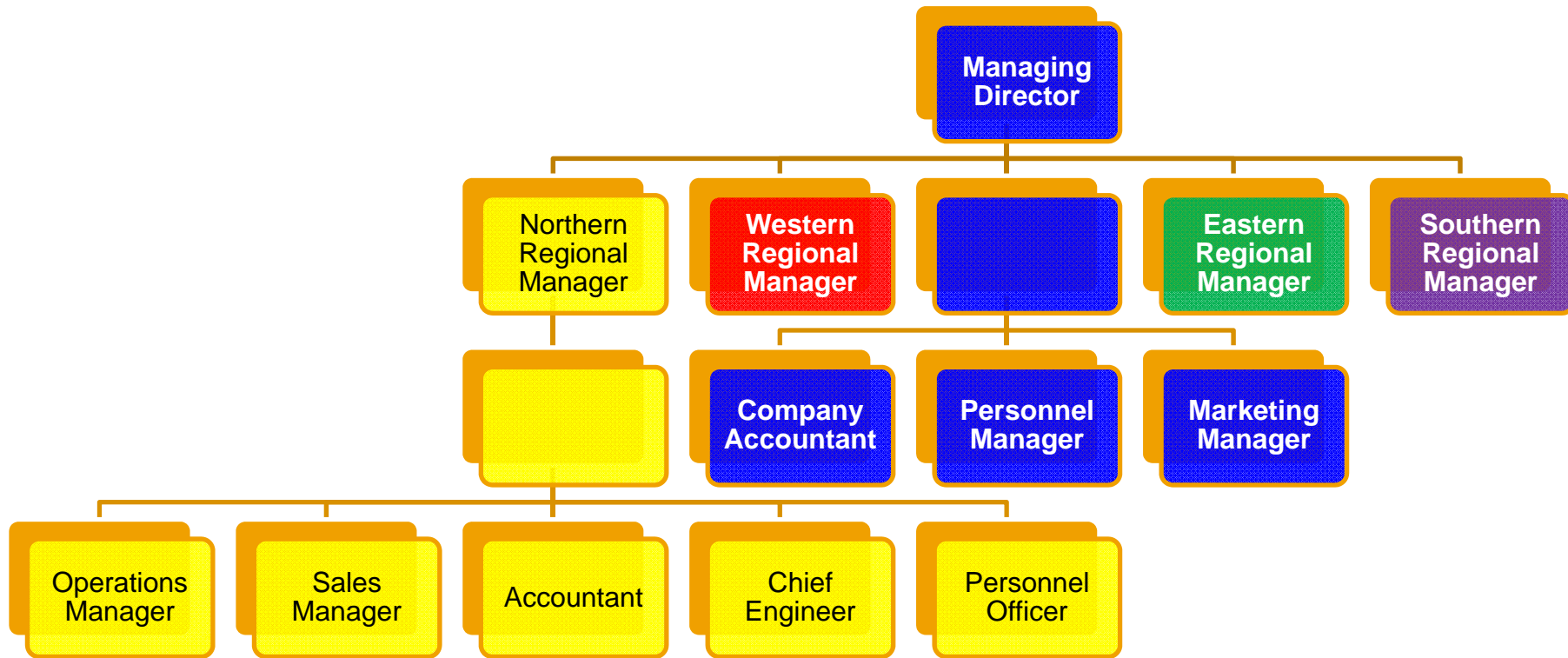
Disadvantages

- Division interest may endanger wider, corporate strategies





Geographically-Based Structure





Geographically-Based Structure

Advantages

- ❑ Widely-spread markets can be catered for
- ❑ Local knowledge utilised
- ❑ Better controlled service at the point of delivery

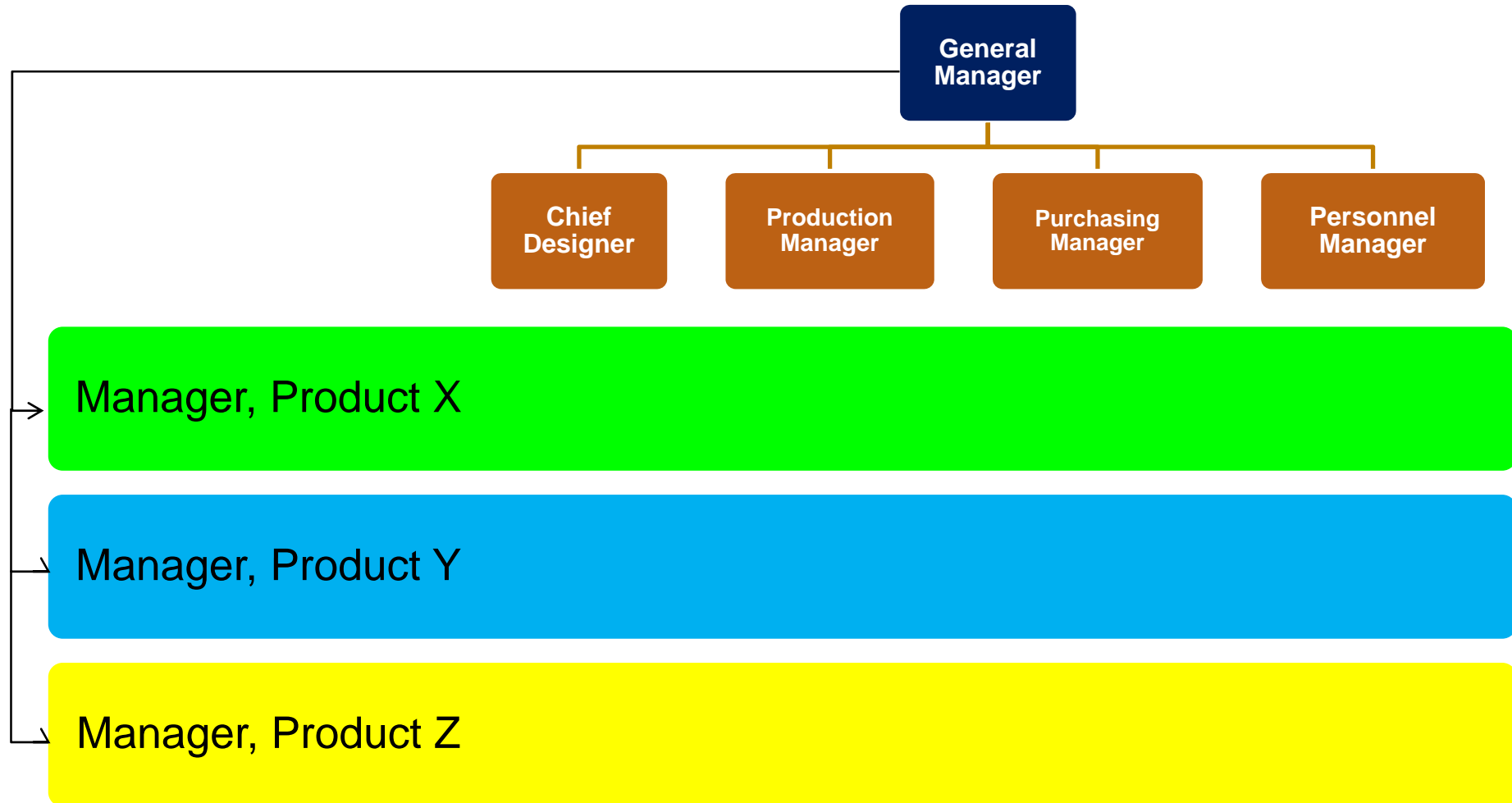
Disadvantages

- ❑ Possible tension between 'Head Office' and 'Regions'





Matrix Structure





Matrix Structure

Advantages

- ❑ Combines relative stability of hierarchical structure with flexible and informality of organic structure

Disadvantages

- ❑ Potential conflict on resource allocation
- ❑ Dilution of functional management responsibility
- ❑ Possibility of disloyalty of project teams in relation to own manager and functional superiors.





Decentralisation

Advantages

- Prevents top-management overload
- Speeds up operational decisions
- Local management decisions reflect local conditions
- Enables management to focus on important cost and profit centres
- Contribute to staff motivation and staff initiative

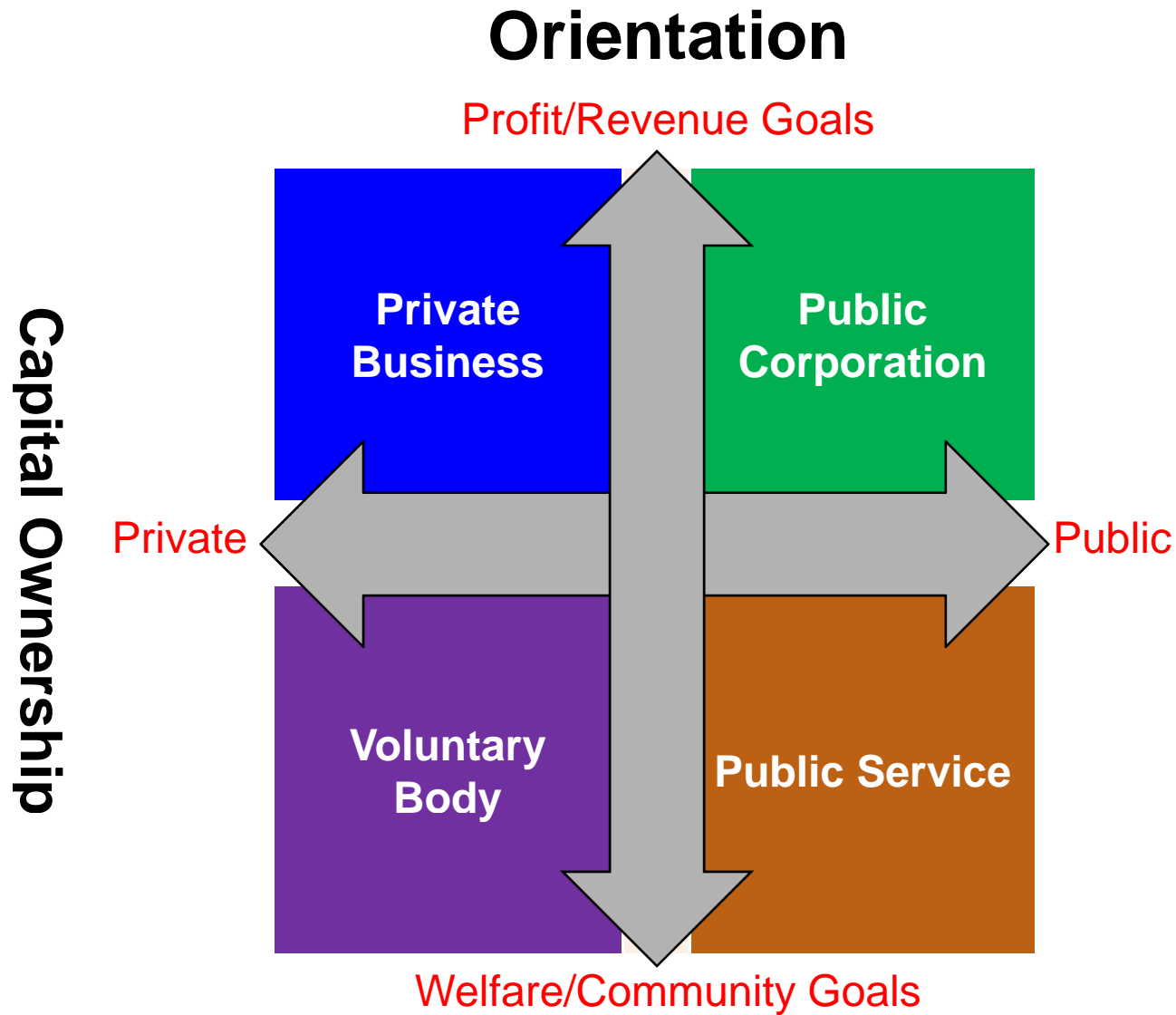
Disadvantages

- Requires adequate control and communication
- Requires increased coordination
- Could lead to inconsistency of treatment to customers
- May encourage parochialism in subsidiary units
- Requires more capable and well-motivated managers for increased responsibility created by decentralisation





Types of Organisation





Review

1.3 Summary & Quiz

1. Which of these Organisation Structure best-fits the University? Choose the correct answer(s)

- A. Functional
- B. Product & Service
- C. Geographically-Based
- D. Matrix

2. One of the Core Values of the University is 'Sprituality', which of the components of Organisations are we referring to? Choose the correct answer(s)

- A. People
- B. Values
- C. Culture
- D. Purpose

3. Visit the website of any two large manufacturing Companies in Nigeria and compare and contrast the two organisations, in terms of their work organisation.





Department of Mechanical Engineering



1. Organisation Structures

2. ERP Basics, Engineering Management Overview

3. Business Statistics, Forecasting, Research Methods

4. Work Study and Work Measurement

5. Procurement Cycle

6. Materials Planning

7. Inventory and Warehousing Management

8. Production Planning and Control

