Determinants of Organisational Structure
- Strategy
- Organisation size
- Technology
- Environment
- Power-control

Organisational Structure

Organisational Designs:
- Design options
- Bureaucracy
- Adhocracy

Applications:
- Managing the environment
- Managing organisational change
- Managing organisational culture
- Managing organisational evolution
- Managing gender

Organisational Effectiveness

Done already
Do it today

Do it tomorrow
Determinants of Organisational Structure II
Technology, Environment & Power-Control

- To understand the technology-structure imperative
- To understand and explain the various technology-structure approaches
- To be able to identify the information technology impact on structure
Outline

- Technology-Structure Debate
- Landmark Studies
- Technology and Information Processing
- What is IT Value?
Technology

What is technology?
Landmark Studies
Advanced Information Technologies and effect on structure
What is technology?

- Technology refers to information, equipment, techniques and processes required to transform inputs into outputs in an organisation.
Technology-structure debate

- Difficulty in measuring technology
  - Dependent on size of the firm
  - Dependent on the type of firm
  - Primary vs secondary vs tertiary industry
  - Level of analysis (job vs work unit)
  - Dependent on our definition of ‘technology’
    (work process vs high-tech)
Four Landmark Studies on the Technology Imperative

- Woodward (mid 60s)
  - Research focused on production technology
  - Focused heavily on manufacturing firms
- Perrow
  - The notion of “knowledge technology”
  - Task variability & routine technologies
- Thompson
  - Technology uncertainty
- Gailbraith
  - Task uncertainty
## Relationship Between Technological Complexity and Structure (Woodward)

<table>
<thead>
<tr>
<th></th>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>Number of Vertical Levels</td>
<td>3</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>Supervisor’s Span of Control</td>
<td>24</td>
<td>48</td>
<td>14</td>
</tr>
<tr>
<td>Manager/total employee ratio</td>
<td>1:23</td>
<td>1:16</td>
<td>1:8</td>
</tr>
<tr>
<td>Proportion of skilled workers</td>
<td>High</td>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td>Overall complexity</td>
<td>Low</td>
<td>High</td>
<td>Low</td>
</tr>
<tr>
<td>Fomalisation</td>
<td>Low</td>
<td>High</td>
<td>Low</td>
</tr>
<tr>
<td>Centralisation</td>
<td>Low</td>
<td>High</td>
<td>Low</td>
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</table>
Perrow’s Technology Classification

<table>
<thead>
<tr>
<th>Problem Analysability</th>
<th>Task Variability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Craft</td>
<td>Few Exceptions</td>
</tr>
<tr>
<td></td>
<td>Well-defined</td>
</tr>
<tr>
<td>Routine</td>
<td>Many Exceptions</td>
</tr>
<tr>
<td></td>
<td>Ill-defined</td>
</tr>
<tr>
<td>Engineering</td>
<td></td>
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</tbody>
</table>

- Routine
-非-routine

- Few Exceptions
- Many Exceptions
# Perrow: Technology-Structure Predictions

<table>
<thead>
<tr>
<th>Cell Technology</th>
<th>Formalisation</th>
<th>Centralisation</th>
<th>Span of Control</th>
<th>Coordination and Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>Routine</td>
<td>High</td>
<td>High</td>
<td>Wide</td>
<td>Planning and rigid rules</td>
</tr>
<tr>
<td>Engineering</td>
<td>Low</td>
<td>High</td>
<td>Moderate</td>
<td>Reports and meetings</td>
</tr>
<tr>
<td>Craft</td>
<td>Moderate</td>
<td>Low</td>
<td>Moderate-wide</td>
<td>Training and meetings</td>
</tr>
<tr>
<td>Non-routine</td>
<td>Low</td>
<td>Low</td>
<td>Moderate-narrow</td>
<td>Group norms and group meetings</td>
</tr>
</tbody>
</table>
Thompson’s technology classification

Long-linked technology (sequential interdependence)

Input → A → B → C → D → Output

Mediating technology (pooled interdependence)

Client A → Transformation Process → Client B

Intensive technology (reciprocal interdependence)

Input

Resources: A, B, C, D → Transformation Process → Output

Feedback
Gailbraith’s Organisation Design Strategies

1. Rules and programs
2. Hierarchical referral
3. Goal setting
4. Creation of slack resources
5. Creation of self-contained tasks
6. Investment in vertical information systems
7. Creation of lateral relations

Reduce the need for info. processing
Increase the capacity to process info.
## Comparing the technology-structure approaches

<table>
<thead>
<tr>
<th>Contributor</th>
<th>Routine Technology</th>
<th>Non-Routine Technology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Woodward</td>
<td>Mass, process</td>
<td>Unit</td>
</tr>
<tr>
<td>Perrow</td>
<td>Routine, engineering</td>
<td>Craft, non-routine</td>
</tr>
<tr>
<td>Thompson</td>
<td>Long-linked, mediating</td>
<td>Intensive</td>
</tr>
<tr>
<td>Galbraith</td>
<td>Low uncertainty, Low info. processing</td>
<td>High uncertainty, High info. processing</td>
</tr>
</tbody>
</table>
Technology and Information Processing

- Advanced information technologies (AIT):
  - Day-to-day operations
  - Improve communications
  - Control systems
  - Decision support systems
  - Inter-organisational systems

- AIT Impacts Structure
  - Middle management, decision-making, communications, department structure
What is IT Value?

<table>
<thead>
<tr>
<th>Real</th>
<th>The Role of IT</th>
<th>Perceived</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost of IT operations</td>
<td>IT is supporting the business</td>
<td>Efficiency</td>
</tr>
<tr>
<td>Contribution to the business</td>
<td>IT is acting like a business</td>
<td>Ability to enable</td>
</tr>
<tr>
<td>Market value of IT</td>
<td>IT is acting like the business</td>
<td>Ability to drive the business</td>
</tr>
</tbody>
</table>
Environment - outcomes

- To understand how changes in the environment can impact on the organisation structure
- To have the ability to identify recent environmental changes
- The ability to view organisation structural change as a political process
Environment - Outline

- What is the Organisational Environment?
- Landmark Contributions on Environment Structure
- Major Environment Changes
- Population-Ecology View
- What is Power Control?
What is the Organisational Environment?

- **General environment**
  - Encompasses conditions that *may* have an impact on the organisation

- **Specific environment**
  - Is that part of the environment that is directly relevant to the organisation achieving its goals

- **Domain**
  - Is the “space” in which the organisation “plays”
  - Change in domain = change in environment
Landmark Contributions in Environment-Structure

- Burns and Stalker
  - Mechanistic vs organic structures

- Emery and Trist
  - 4 kinds of environments any organisation might find itself in

- Lawrence and Lorsch
  - Differentiation & integration
  - Match internal environment to external
Emery & Trist: 4 Kinds of Environment

- Placid-randomised environment
  - Relatively unchanging; Demands are distributed randomly and changes take place slowly over time

- Placid-clustered environment
  - Threats to the organisation are clustered rather than random
  - Forces in the environment are linked with one another

- Disturbed-reactive environment
  - Many competitors seeking similar ends
  - One or more organisations are large enough to exert influence over their own environment; large firms can dominate

- Turbulent-field environment
  - Most dynamic and highest uncertainty; Change is ever present and elements in the environment are increasingly interrelated
Major Environment Changes in Recent Years

- Technological
  - Intro. of PCs (even wireless PDAs)
  - Intro. of networks (even broadband access)
  - Worldwide telephone direct dialing (even fax)

- Social
  - Women’s movement (e.g. workforce)
  - Concern for physical health, fitness

- Economic
  - Deregulation of various industries (even privatisation)

- Political
  - Rise of the “green” movement (e.g. sustainable yield notion)
  - Rights of the child/worker
Assessing the Environment

- **Capacity of an environment**
  - Is the degree to which it can support growth

- **Volutility**
  - The degree of instability in an environment

- **Complexity**
  - The degree of heterogeneity and concentration among environmental elements
  - Simple environments are homogeneous and fairly concentrated
The Environment Imperative

Simple

Stable

Abundant

Scarce

Dynamic

Complex
Population-ecology View

- Last decade has seen the growth and development of what stands as an environmental-imperative position.
- Survival-of-the-fittest type view
- Organisational forms must either fit their environmental niche or fail
- The notion of natural selection

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Variation -> Selection -> Retention
```
Power-Control

Child’s Strategic Choice
Power-control Model
What is Power-control?

- Power-control view states that an organisation’s structure, at any given time, is to a large extent the result of those in power selecting a structure that will, to the maximum degree possible, maintain and enhance their control.
Child’s Strategic Choice

- The idea of strategic choice
- Contingency perspective
  - Rationality
  - Dominant coalition
- Non-rationality
- Divergent interests
- Power
  - authority, control resources, network centrality
Structural Decisions as a Political Process

- Resource allocation
- Position in the hierarchy
- Interdepartmental coordination
- Structure change
- Building coalitions
- Defining the nature of the problem
- Enhancing legitimacy and expertise
- Make preference explicit, but keep power implicit
- Expanding networks of influence
Power-control Model

Decision-making

The decision will be made by the dominant coalition

The criteria and preferences in the decision will reflect the self-interest of the dominant coalition

Constraints

Strategy, Size, Technology, Environment

“Satisficing” Level of Organisational Effectiveness

Structural Alternatives

Emergent Structure

The decision will be made by the dominant coalition

The criteria and preferences in the decision will reflect the self-interest of the dominant coalition

Strategy, Size, Technology, Environment

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Strategy, Size, Technology, Environment

“Satisficing” Level of Organisational Effectiveness

Structural Alternatives

Emergent Structure
Managing new technologies:

- Knowledge Management (KM)
- E-Commerce
- Customer relations management (CRM)
- Business Intelligence (BI)
- Enterprise Resource Planning (ERP)
- Supply Chain Management
Knowledge Management:

- What is it
- Why is it important
- How is it acquired
- Application factors for success
Knowledge

- Data – Set of discrete, objective facts
- Information – Data which the receiver feels informs or adds value to the data
- Knowledge – Information, combined with experience. In the mix, there may be more information, or more experience, but either ingredient has a synergistic effect on the other, to increase knowledge
Knowledge

- Experience implies a correct response when action (decision) is required

- Experience suggests the person has made these choices before ie. decisions made when facing a new situation, will be based on the experience of previous situations
Knowledge

- Organisations hire for experience more often than for intelligence, or education.

- When a difficult decision needs to be made, the person making the decision will seek out someone with knowledge rather than seek an answer in a database

Knowledge vs Information
Intellectual Capital (or Corporate Knowledge) includes:

- The skills that an organisation has developed in relation to its goods and services.
- The employees whose knowledge is deemed critical to a company's continued success.
- The aggregation of documents about processes, customers, research results, and other information that might have value for a competitor that is not common knowledge. (whatis.com)
Intellectual Capital is becoming THE most expensive resource, replacing natural recourses.

This is because the only competitive advantage to organisations on the same enterprise tier, is Intellectual Capital. (This is what keeps Microsoft and IBM at the forefront of their industry sector).

Organisations must protect and safeguard their Intellectual Capital, and probably more importantly, must maximise the potential of that asset, by implementing a Knowledge Management System.
Knowledge Management

- All other things being equal, organisations who manage their Human Resources better than their competitors, will outperform their competitors.

- However, management of the human resource, brings with it a complex and difficult set of issues.
Knowledge Management

- The issue of Knowledge is also closely linked to training and (increasing knowledge). Organisations go to great lengths to ensure that knowledge gained (on the job), remains on the job.

- Organisations may also be reticent to invest in too much training, because the human resource may be acquired by the opposition before the investment has been repaid.
Knowledge Management

- This has been a genuine problem for Enterprise level organisations, who could not see any satisfactory solution.
  - Buying in the skills was very costly.
  - Increasing the skills of in-house personnel could mean losing skills before they were used

- Currently a number of possible solutions are being tried out in the marketplace.
Knowledge Management

- Organisations are moving ‘off shore’ to develop new technology. The level of knowledge may not be as high, but then neither are the costs.
- Organisations are moving to treat human resources in a more human way:
  - Flexible work hours
  - Flexible work sites
  - On site Child Minding facilities
  - Paid study leave
  - Flexible income packages
One novel approach

- Some organisations are testing a “transfer system”, which rates the employee on entry into the organisation against a knowledge scale. Via contract with the employee, a career path is planned which includes:
  - Education
  - Training
  - Research opportunities
  - Mentoring etc.

- On exit, the new employer or the old employee (or both) pay a transfer fee to the old employer as ‘return on investment’
Implementation

Knowledge Management:

– Must be linked to the strategic direction of the enterprise to ensure that the intellectual capital is managed and leveraged in support of the overall business strategy

– Requires an organisational culture acceptance that promotes and supports knowledge sharing, collaboration across and among employees/business units, and a drive toward innovation.
Implementation components

A database containing the empirical knowledge, with accompanying search engine:

- Competencies
- Skill set
- Attitudes
- Location

- Good example is the Resume data model
Implementation components

A Knowledge map containing the location of tacit (unspoken) knowledge
- A more abstract query method
- Linked to the empirical database
- Linked to an A.I. Engine (possibly)
- Linked to a GIS system to provide physical characteristics (possibly)
Implementation components

Provide employees with access to the KM system, and an interface to deposit tacit knowledge and register empirical knowledge.

These systems are now being used by organisations to innovatively grow the business.
Innovative enterprises are extending the enterprise's explicit knowledge base by codifying experience, insight or judgment into a form that can be reused by others. (Davenport)

In this case, the Knowledge Management system is integrated enterprise wide, and proactively adopted by all employees.
Another method is to select appropriate business units and implement the Knowledge Management system as a complementary process to the business unit, with a longer term, staging of integration.

For example, HP has a worldwide KM system being used to provide ‘how to’ information about the repair of photocopiers. This is generating large scale savings in service turnaround time, particularly in 2nd and third world countries. This is also beneficial in organisations where enterprise adoption is either not appropriate or not being culturally well accepted.
Collaboration (internal/external) and Work Management Practices are another area where KM is being maximised:

– Enterprises depend on the optimum interaction between human resources.

– Requirements for implementing c-business are the availability of knowledge that enables electronic decision-making.

– Also the capabilities for applications, people and extended chains to electronically communicate, exchange information and cooperate.
Benefits of Corporate Intelligence

- A knowledge enabled enterprise is more agile, poised for change, and better able to manage change.
- Enterprise IQ (EIQ) is a composite view and formal assessment of the enterprise's capabilities in:
  - Competitive intelligence (CI)
  - Business intelligence (BI)
  - Internal intelligence (II)
Competitive intelligence (CI)

- Focuses on the external marketplace to enable the enterprise to understand market dynamics, position itself in the marketplace and allocate internal resources (markets, industries, products or business processes)

- Includes market intelligence, competitive benchmarking, competitor intelligence and competitive analysis.
Business intelligence (BI)

- Represents the enterprise's capability to access, explore and analyze domain-specific, structured information. Typically stored in a data warehouse.
- Used to develop insights and understanding, leading to improved, informed decision making.
- Techniques may be applied to internal product and customer data as well as external market or competitor data.
Internal Intelligence (II)

- Focuses on internal competencies and the ability to identify and assemble knowledge and expertise rapidly
- Collaborate, innovate, add insight, and apply knowledge to problems and opportunities.
- Is an enterprise's skill in managing and leveraging its intellectual assets (i.e., people, processes, and digitised information).
Factors for success (Davenport)

- A knowledge oriented culture
- Technical and organisational infrastructure
- Senior management support
- A link to the value chain
- Process orientation
- Vision and language
- Motivational support
- A knowledge structure
- Multiple channels for knowledge transfer
Knowledge oriented culture

- The organisation needs to foster a culture within the organisation that allows employees to freedom to chase and investigate knowledge within and outside the organisation.

- Support a positive orientation towards the sharing of knowledge, for the benefit of both the organisations and the employees.
Technical and organisational infrastructure

- The organisation must take advantage of technology to provide a means of acquiring, storing and sharing knowledge. The Web, network access to data and knowledge repositories, seminars and talkfests
- Setting up internal procedures, and roles to facilitate the transfer of knowledge between the people using and communicating the knowledge
Senior management support

- Strong support from executives and senior managers is fundamental to the success of KM implementations
- Provide funding for cultural acceptance
- Incorporating the KM concept into the organisational vision
- Managers themselves, proactively adopting the KM concept
Link to the value chain

- KM will always provide ‘indirect’ benefits, but steps should be taken to determine a metric for review.
- Because the KM concept is in itself difficult to quantify, the organisation needs to find ways to imbed the cost/benefits of KM in the value chain of the organisation.
Process orientation

The Implementation process should be treated like any other project carried out by the organisation:

- Clearly stated goals and objectives
- Resource requirements
- Functional Requirements
- Systems Analysis/Design
- Task and Implementation schedules, including Metrics and review periods
Vision and language

- Everyone in the organisation needs to be working towards a common ‘knowledge’ goal.
- In order to make sure that everyone is working towards that goal, a clear and unambiguous statement of what constitutes knowledge needs to be available.
- The organisation must instill these statements into all levels of the documentational structure, i.e. From vision/mission statement to operational procedures
Motivational support

- Human nature is not geared naturally to sharing, an atmosphere which promotes the sharing of knowledge must be fostered within the organisation.

- Sometimes motivational, and incentive measures (prizes, promotions, cash etc.) may need to be implemented to generate a knowledge sharing culture within the organisation.
Knowledge structure

- In order to be effective, KM users must know how to input knowledge, and how to extract it (an interface), and this method of I/O will be constantly evolving, also;
- The interface may not be the same for all users within the organisation and may need to be tailored for the specific needs of some classes of users.
- Users will need to be continually updated on the evolving structure of the KM system.
Channels for knowledge transfer

- The organisation must provide facilities to allow knowledge to be transferred through multiple channels of communication:
  - Access to the KM repository
  - Telephone
  - Face to face meetings
  - Conferences
  - Seminars
  - Publications
  - Multi Media
Assignment hints

The expression “technology measures” just means “technology actions” (or strategies)

Example: a company, like DBS Bank, becomes more complex e.g. more product lines: insurance, superannuation, stock market service etc.

DBSB might need these technology measures:

- New or improved networks,
- Shared database systems for transaction processing
- Better intra-organisational communication facilities
- EIS to give divisional managers info they need
- The company can be ANY global IT company. It doesn’t have to be one you work in or one from the list. Any global IT company is OK and you don’t need any further approval from me or Calvin.

- Make sure that the company has
  
  a) undergone a number of changes in the last few years
  
  b) modified its structure to some extent.

- If a company you are interested in has NOT undergone BOTH of these phenomena, do NOT use it for assignment.

- Your target company must have experienced both types of changes or it’s no good.
For your chosen company, describe:

a) The company itself: say 100 words,

b) the changes that have occurred to the company over the last 4 or 5 years: say 200 – 300 words

c) the changes to the companies structure that have occurred as a result. Provide 200 – 300 words on each of the headings:
   a) complexity       b) formalisation       c) centralisation.

d) Describe the technological changes that MIGHT have been made to facilitate these changes. This will be mainly your own thinking about the problems being faced. 200 – 300 words is enough.