Information & Organization
SIKS course, Sep 2006
Hans Weigand, UvT

Course overview

Monday, September 25: Block I
10.45 - 12.00 Introduction (dr. H. Weigand, UvT)
12.00 - 13.30 Lunch
13.30 - 14.00 Case
14.00 - 16.30 Mintzberg on coordination II (dr. R. Batenburg, UU)

Tuesday, September 26: Block II
09.00 - 12.00 IT, Strategy and Innovation (prof. dr. R. O’Callaghan, UvT)
11.45 - 13.30 Lunch
16.00 - 17.00 E-government (vd Zee)

Wednesday, September 27: Block III
09.00 - 09.45 Economic approaches to organizations (dr. H. Weigand)
09.45 - 11.45 Interorganizational coordination (prof. dr. Y.H. Tan, VU)
11.45 - 12.00 Closing, evaluation (dr. H. Weigand, UvT)

What is an organization?

• Definition
• Importance of Organizations
  – Bring together resources to achieve desired goals and outcomes
  – Produce goods and services efficiently
  – Facilitate innovation
  – Use modern manufacturing and computer-based technology

An open system and its subsystems

Importance of organizations

– Adapt to and influence a changing environment
– Create value for owners, customers and employees
– Accommodate ongoing challenges of diversity, ethics, and the motivation and coordination of employees
Division of labor

specialization

\[ \text{co-ordination} \]

\[ \text{markets} \quad \text{information} \quad \text{organization} \]

Douma & Schreuder

Information and Coordination

- Information asymmetry
- The value of information
- Game theory (simultaneous/sequential games)
- Behavioral theory of the firm (Simon & March)
- Coordination mechanisms vs interdependence
- Agency theory
- Transaction costs economics
- Evolutionary approaches, organizational ecology

Coordination mechanisms vs type of interdependence

(Galbraith, Lawrence, Lorsch)

\[ \text{pooled} \quad \text{serial} \quad \text{reciprocal} \]

Instead of more complicated coordination mechanisms, it is also possible to reduce coordination need (e.g. buffers)

Information Management vs CS/IS - traditional view

Information Management vs CS/IS – object view

Information Management vs CS/IS – agent view
What can you learn from this course?

- Organizational context of Information Systems?
- Innovation management?
- Principles of coordination?

Write down at least one thing you want to learn.

Behavioral theory of the firm
(Simon, March, Cyert)

- The firm as a coalition of participants
- Participants have goals (aspiration levels)
- Inducements/contributions: satisficing
- The firm as a coalition of groups of participants (consumers, investors, ..)
- Bounded rationality
- Information transmission has its costs

Differences Between Large and Small Organizations

- **LARGE**
  - Economies of scale
  - Global reach
  - Vertical hierarchy
  - Mechanistic
  - Complex
  - Stable market
  - "Organization men"

- **SMALL**
  - Responsive
  - Flexible
  - Regional reach
  - Flat structure
  - Organic
  - Simple
  - Niche finding
  - Entrepreneurs

Organization size, life cycle and control (Daft, ch 8)

Organization growth
**Bureaucracy in a changing world**

Bureaucracies have been successful, but …

- The need for flexibility
- Increased professionalism of employees

Remedial actions:.:

- Downsizing, decentralization
- Alternative control strategies
- Role of IT

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**Management Control Systems Used as Part of Bureaucratic Control**

<table>
<thead>
<tr>
<th>Subsystem</th>
<th>Content and Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Budget</td>
<td>Financial, resource expenditures, monthly</td>
</tr>
<tr>
<td>Statistical reports</td>
<td>Non-financial outputs, weekly or monthly, often computer-based</td>
</tr>
<tr>
<td>Reward systems</td>
<td>Annual evaluation of managers based on department goals and performance</td>
</tr>
<tr>
<td>Operating procedures</td>
<td>Rules and regulations, policies that prescribe correct behavior, continues</td>
</tr>
</tbody>
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**Weber’s Dimensions of Bureaucracy and Bases of Organizational Authority**

- **BUREAUCRACY**
  1. Rules and procedures
  2. Specialization and division of labor
  3. Hierarchy of authority
  4. Technically qualified personnel
  5. Separate position and incumbent
  6. Written communications and records

- **LEGITIMATE BASES OF AUTHORITY**
  1. Rational-legal
  2. Traditional
  3. Charismatic

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**Three Organizational Control Strategies**

<table>
<thead>
<tr>
<th>TYPE</th>
<th>REQUIREMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bureaucratic</td>
<td>Rules, standards, hierarchy, legitimate authority</td>
</tr>
<tr>
<td>Market</td>
<td>Prices, competition, exchange relationship</td>
</tr>
<tr>
<td>Clan</td>
<td>Tradition, shared values and beliefs, trust</td>
</tr>
</tbody>
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**Major Perspectives of the Balanced Scorecard**

- **Financial**
  - Do actions contribute to improving financial performance?
  - Examples of measures: profits, return on investment

- **Internal Business Processes**
  - Does the chain of internal activities and processes add value for customers and shareholders?
  - Examples of measures: order rate fulfillment, cost per order

- **Customers**
  - How well do we serve our customers?
  - Examples of measures: customer satisfaction, customer loyalty

- **Learning and Growth**
  - Are we learning and changing?
  - Examples of measures: continuous process improvement, employee retention, new product introductions
**Agency theory**

- Positive theory
  - Firm is a nexus of contract
  - Explain organizational forms as they are
  - Conceptual
  - Separation of ownership and control
- Formal theory of principal and agent
  - Predict reward structure
  - Mathematical form

**Jensen & Meckling 76**

- Assume manager owns all shares
- Conflicting objectives: maximize value of the firm vs on-the-job consumption

What happens when the manager sells a fraction of the shares?

- Manager will spend more on consumption-on-the-job → value of the firm will decrease

What happens if outsiders anticipate on this?

- They will pay less
- Value of the firm lower
- For the manager: decrease in share value, increase in on-the-job consumption, but total utility is lower.
- So why should the manager sell?
- Monitoring and bonding
- Discipline of the manager job market (Fama, 80)
Team production

- A situation in which two or more persons can produce more than when they work separately.
- Problem: shirking (free-riding)
- To avoid shirking, a monitoring role can be installed
- Monitor role must have a proper reward function, and control power
  → entrepreneurial firm

Theory of principal and agent

3 cases

1. The principal can observe the agent’s behavior
2. The principal has no information about the agent’s behavior
3. The principal cannot observe the agent, but he can observe a signal concerning the level of effort by the agent

Symmetric information

Possible reward structure

Value

Agent’s level of effort

Possible reward structure

Expected pay-off (gross)

Indifference curve

W_0 = agent reward

R_0 = net pay-off for principal

Asymmetric information (case 2)

- P can only observe payoff
- P does not know what created the payoff (could A have worked harder?)
- Reward structure:
  - Wage contract (A gets fixed salary)
  - Rent contract (A gets payoff – rent)
- Differences in distribution of rewards, and also in distribution of risks

Asymmetric information (cnt)

- If both P and A are risk-neutral, the best reward structure is a rent contract
- If A is risk-averse, he wants to be compensated for the risks by higher expected income -> risk sharing
- In general, A is more risk-averse than P.

Using signals

- Signal can be the working time (clocking)
- Using signal for the reward structure is good iff the agent is risk-averse
- If agent is risk-neutral, then rent contract is better.
Eisenhardt (1989)

- When the contract between the principal and the agent is outcome-based, the agent is more likely to behave in the interest of the principal.
- When the principal has information to verify agent behavior, the agent is more likely to behave in the interests of the principal.

Eisenhardt (cnt)

- Information systems are positively related to behavior-based contracts and negatively related to outcome-based contracts.
- Outcome uncertainty is positively related to behavior-based contracts and negatively related to outcome-based contracts.

Eisenhardt (cnt)

- The risk aversion of the agent is positively related to behavior-based contracts and negatively related to outcome-based contracts.
- The risk aversion of the principal is negatively related to behavior-based contracts and positively related to outcome-based contracts.

Eisenhardt (cnt)

- The goal conflict between principal and agent is negatively related to behavior-based contracts and positively related to outcome-based contracts.
- Task programmability is positively related to behavior-based contracts and negatively related to outcome-based contracts.

Eisenhardt (cnt)

- Outcome measurability is negatively related to behavior-based contracts and positively related to outcome-based contracts.
- The length of the agency relationship is positively related to behavior-based contracts and negatively related to outcome-based contracts.

Comparative studies (Knott & McKelvey, 1998)

- Explain firm efficiency in a franchise setting.
  - By agency theory (residual claims).
  - By organizational routines (March & Simon; evolutionary approaches).
- Franchising seems to contradict agency theory.

Results

- Both residual claims and organizational routines are significant in explaining performance differences
- Significance of organizational routines is much higher
- Sole ownership is not the right efficiency standard

Evolutionary approaches to organizations

- From static to dynamic perspective
- Organizational ecology (Hannan, Freeman)
- Evolutionary theory of economic change (Nelson, Winter)

Why do giraffes have long necks?

- creationist
- evolutionist: cumulative adaptation
  - Lamarckian:
    - principle of use and disuse
  - Darwinian:
    - natural selection

How does this apply to organizations?

Organizational ecology (Hannan, Freeman- 1989)

- Levels of analysis
  - demography
  - population ecology
  - community ecology
- Population defined by “organizational form”
- Relative inertia

Inertia and survival

Organizational population

- Density is determined first by carrying capacity of the niche
- Density is further determined by competition and legitimation

Founding rates as a function of density
Mortality as a function of density
Evolutionary theory of economic change (Nelson, Winter - 1982)

- Organizational routines
  - Cf. tacit knowledge (Polanyi, 1962)
  - Serve as organizational memories
  - Represent a truce in intra-organizational conflict
- Mutations of organizational routines
  - By chance
  - By deliberation (typically, “local search”)
  - Successful routines will be replicated quickly