ICS 132: Organizational Information Systems

Performance and Competition

metaphor grounding

• machine metaphor
  – regulation, repeatability, standardization, etc
• now focus on the organism metaphor
  – internal differentiation and integration
  – the organism and its environment
    • behavior affected by ecological factors
    • interaction with others

today’s topic

• information systems and economic performance
  – how can information systems make an organisation more competitive?
  – what does it mean for an organisation to be competitive, anyway?
  – where do information and information systems fit into the processes that make an organisation effective?
• so we’ll look at:
  – economics: competition and markets
  – information systems and strategies

competition

• competitive strategies
  – you create and sell software development environments (like Visual Café, BlueJ, etc).
  – you have a number of competitors making similar tools
  – how are you going to compete?
  – what, specifically, will you do?

some basic economics

• economics is about the allocation of scarce resources amongst possible uses
• collective effects achieved through individual behaviour
  – individual people
  – individual organizations
• the “rational actor”
  – consider alternatives
  – maximise payoff

some basic economics

• economics talks about iteration
  – the outcomes of repeated events
  – it’s the steady state that matters
• marginality is the effect of iteration
  – utility
    • the benefit an individual receives
  – marginal utility
    • the amount of utility gained by adding one unit
    • marginal utility often decreases with numbers
  – similarly:
    • cost & marginal cost
supply, demand, markets

- availability from all suppliers is supply
- amount acquired by all consumers is demand
- supply and demand are balanced through
  - price mechanisms
  - in a market where goods are exchanged
- price-elasticity
  - demand for an elastic good falls as price rises
  - and rises as price falls
  - demand for an inelastic good remains the same

markets

- a perfect market has **five conditions**
  - many buyers and sellers, all small w.r.t the market
  - homogeneous product
  - no barriers to entry and exit
  - perfect information amongst customers
    - information about products and prices
    - no switching costs
- in perfect markets...
  - prices driven down to marginal cost of production
  - suppliers forced to be very efficient
  - customers win through low prices

back to the real world

- the most important thing about perfect markets?

back to the real world

- the most important thing about perfect markets?
  - they don’t exist (or, at best rarely and fleetingly)
    - perfect information amongst customers?
      - hard to achieve, and hard to exercise
    - no barriers to entry and exit?
      - inertia; advertising; brand; production facilities; skill set
    - no large players?
      - dominant companies and conglomerates
      - also dominant customers
    - not too many people buy 747s, C-17s or large rockets
  - no switching costs?
    - economic ones?
    - psychological?

competition

- Porter’s competitive strategies
  - **cost leadership strategy**
    - Kia, Target
  - **product differentiation strategy**
    - Apple, Bang & Olufsen
  - **focus strategy**
    - first edition books
- what are the risks of each?
  - one is probably not enough...

competitive strategies

- create barriers to entry
- increase customer’s switching costs
- change competition
  - new services and products
- alliances
- Bakos and Treacy
  - gain bargaining power
  - achieve comparative efficiency
**Competitive Advantage**

Bakos and Treacy, 1986

- search-related costs
- unique product features
- switching costs
- inter-organizational efficiency
- internal efficiency

Gain bargaining power

Increase comparative efficiency

**Bargaining Power**

- The ability of one partner to control the outcome of an interaction
  - e.g. I have more power than you to control the outcome of any bargain we strike over grades
  - Can work in either direction, producer/consumer
  - Producer holds more bargaining power
    - e.g. when product search costs are high
    - Hard to discover alternatives
  - Customer can also use the same factors
    - E.g. may be hard to find a good customer
    - E.g. Producer can also suffer switching costs

**Information-Based Products**

- The cost of adding information is small (and decreasing...)

**Unique Product Features?**

Information

Service

Physical

**Unique Product Features**

- One strategy for increasing value
  - Combine elements from the model
    - Add service or information to a physical product
      - Training, operation, maintenance, ...
    - Add physical or service component to information
      - Updates, ancillary materials, ...
    - Add information or physical component to service
      - Supplies, usage summaries, tracking...
### Customisation

- Information integration supports customisation
  - Easy access to a historical record
  - Tightly integrate sales with manufacturing
  - Both switching costs and unique product features
- E-commerce can support massive customisation
  - Everybody sees different home page on Amazon.com
  - Marginal cost of dynamic web page approaches zero!
- When customisation goes wrong...
  - Individual pricing?
  - "Price transparency"

### Efficiency

- Two aspects to efficiency in Beakos and Treacy
  - Internal and inter-organizational
- Internal
  - Return to the machine metaphor
  - Measuring and regulating organizational function
  - E.g., through workflow and process technology
- Inter-organizational
  - How and why organizations partner and interact
  - Transaction cost model

### Transaction Costs

- **Coase's question**
  - If the market is the most efficient way to do things, then why do organizations exist?
- **Two aspects to efficiency in Beakos and Treacy**
  - Internal and inter-organizational
  - Internal
    - Return to the machine metaphor
    - Measuring and regulating organizational function
    - E.g., through workflow and process technology
  - Inter-organizational
    - How and why organizations partner and interact
    - Transaction cost model

#### Diagram: Organization vs. Market

- **Coase's question**
  - If the market is the most efficient way to do things, then why do organizations exist?
  - Transaction costs have a cost
  - Focus on the balance between transaction costs (external) and organizational costs (internal)

#### Diagram: Organization vs. Market

- **Transaction costs**
  - Carry out activities where they make sense
    - I.e., wherever the costs are lower
    - E.g., as a fast food manufacturer, is it cheaper for me to ship my own supplies or to get someone else to do it?
- **Factors include**
  - Specialization, diversity, information, transmission

### Transaction Costs

- **Transaction costs and organizational size**
  - Carry out activities where they make sense
    - I.e., wherever the costs are lower
    - E.g., as a fast food manufacturer, is it cheaper for me to ship my own supplies or to get someone else to do it?
- **Factors include**
  - Specialization, diversity, information, transmission

#### Diagram: Organization vs. Market

- **Transaction costs**
  - The usual argument
    - "Friction-free" internet commerce reduces transaction costs
  - So, we move to "virtual organizations"
  - **The more subtle argument**
    - IT reduces organization costs too…

#### Diagram: Organization vs. Market
### summary

- Information systems in support of competition
  - Improving organisational efficiency
  - Improving bargaining power
- Product elements
  - Information, physical, service
- Customer lifecycle
  - Requirements, acquisition, use, maintenance, retirement
  - Information systems also critical to integrating them

### what’s coming up

- From today’s lecture:
  - Look at the Bakos & Treacy paper on the web
  - [http://www.ics.uci.edu/~jpd/classes/ics132w04](http://www.ics.uci.edu/~jpd/classes/ics132w04)
- Tuesday
  - Database assignment due (it’s on the web too)
- Next up...
  - More “organism” metaphor
  - Communication