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 organsation 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
        - » Microsoft, Starbucks
      - also dominant customers
        - » not too many people buy 747s, C-17s or large rockets
    - no switching costs?
      - economic ones?
      - psychological?

competition

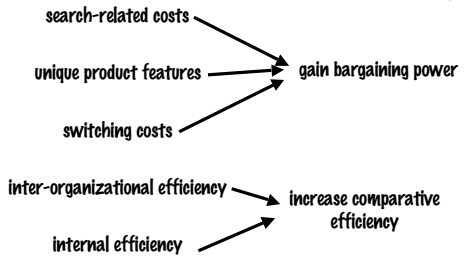
- Porter's competitive strategies
  - *cost leadership* strategy
    - Kia, Target
  - *product differentiation* strategy
    - Apple, Bang & Olufsen
  - *focus* strategy
    - first edition books
- what are the risks of each?
  - one is probably not enough…

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

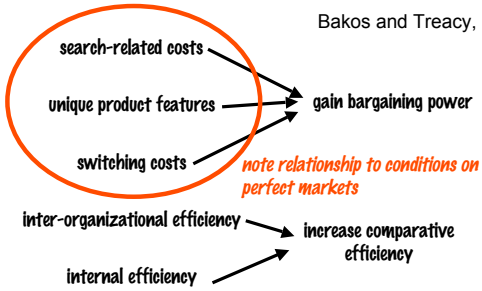
competitive advantage

Bakos and Treacy, 1986



competitive advantage

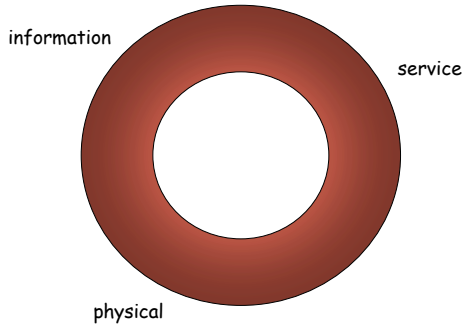
Bakos and Treacy, 1986



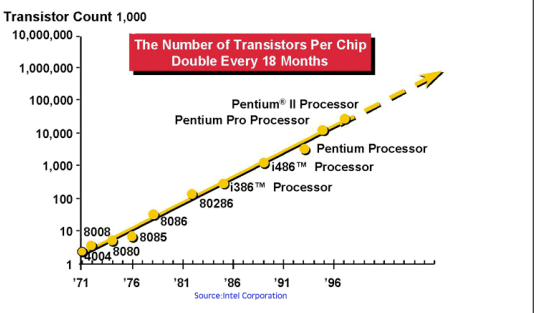
bargaining power

- 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

unique product features?



information-based products



the cost of adding information is small (and decreasing...)

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*
- ecommerce 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

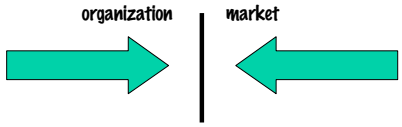
- two aspects to efficiency in Beakos and Treacy
  - internal and inter-organizational
- internal
  - return to the machine metaphor
    - measuring and regulating organizational function
    - e.g. through workflow and process technology
- inter-organizational
  - how and why organizations partner and 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?

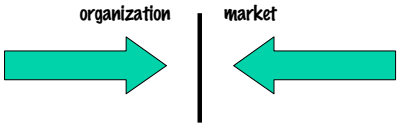
transaction costs

- Coase's question
  - if the market is the most efficient way to do things, then why do organizations exist?
    - market transactions have a cost
    - search costs, transfers, etc
  - focus on the balance between transaction costs (external) and organizational costs (internal)



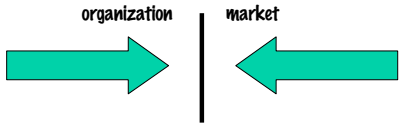
transaction costs

- transaction costs and organizational size
  - carry out activities where they make sense
    - ie 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

- 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…



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
- tuesday
  - database assignment due (it's on the web too)
- next up…
  - more "organism" metaphor
  - communication